

## PERMIT TO INSTALL

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**Common Abbreviations / Acronyms**

| <b>Common Acronyms</b>    |  | <b>Pollutant / Measurement Abbreviations</b> |   |
|---------------------------|--|--|---|
| AQD                       | Air Quality Division                                       | acfm   | Actual cubic feet per minute  |
| BACT                      | Best Available Control Technology                          | BTU  | British Thermal Unit  |
| CAA                       | Clean Air Act  | °C   | Degrees Celsius   |
| CAM                       | Compliance Assurance Monitoring                            | CO   | Carbon Monoxide   |
| CEM                       | Continuous Emission Monitoring                             | CO <sub>2e</sub>                             | Carbon Dioxide Equivalent   |
| CFR                       | Code of Federal Regulations                                | dscf   | Dry standard cubic foot   |
| COM                       | Continuous Opacity Monitoring                              | dscm   | Dry standard cubic meter  |
| Department/<br>department | Michigan Department of Environmental<br>Quality            | °F   | Degrees Fahrenheit  |
| EU                        | Emission Unit  | gr   | Grains  |
| FG                        | Flexible Group   | HAP  | Hazardous Air Pollutant   |
| GACS                      | Gallons of Applied Coating Solids                          | Hg   | Mercury   |
| GC                        | General Condition  | hr   | Hour  |
| GHGs                      | Greenhouse Gases   | HP   | Horsepower  |
| HVLP                      | High Volume Low Pressure*                                  | H <sub>2</sub> S                             | Hydrogen Sulfide  |
| ID                        | Identification   | kW   | Kilowatt  |
| IRSL                      | Initial Risk Screening Level                               | lb   | Pound   |
| ITSL                      | Initial Threshold Screening Level                          | m  | Meter   |
| LAER                      | Lowest Achievable Emission Rate                            | mg   | Milligram   |
| MACT                      | Maximum Achievable Control Technology                      | mm   | Millimeter  |
| MAERS                     | Michigan Air Emissions Reporting System                    | MM   | Million   |
| MAP                       | Malfunction Abatement Plan                                 | MW   | Megawatts   |
| MDEQ                      | Michigan Department of Environmental<br>Quality            | NMOC   | Non-methane Organic Compounds                                       |
| MSDS                      | Material Safety Data Sheet                                 | NO <sub>x</sub>                              | Oxides of Nitrogen  |
| NA                        | Not Applicable   | ng   | Nanogram  |
| NAAQS                     | National Ambient Air Quality Standards                     | PM   | Particulate Matter  |
| NESHAP                    | National Emission Standard for<br>Hazardous Air Pollutants | PM10   | Particulate Matter equal to or less than 10<br>microns in diameter  |
| NSPS                      | New Source Performance Standards                           | PM2.5  | Particulate Matter equal to or less than 2.5<br>microns in diameter |
| NSR                       | New Source Review  | pph  | Pounds per hour   |
| PS                        | Performance Specification                                  | ppm  | Parts per million   |
| PSD                       | Prevention of Significant Deterioration                    | ppmv   | Parts per million by volume   |
| PTE                       | Permanent Total Enclosure                                  | ppmw   | Parts per million by weight   |
| PTI                       | Permit to Install  | psia   | Pounds per square inch absolute                                     |
| RACT                      | Reasonable Available Control<br>Technology                 | psig   | Pounds per square inch gauge  |
| ROP                       | Renewable Operating Permit                                 | scf  | Standard cubic feet   |
| SC                        | Special Condition  | sec  | Seconds   |
| SCR                       | Selective Catalytic Reduction                              | SO <sub>2</sub>                              | Sulfur Dioxide  |
| SNCR                      | Selective Non-Catalytic Reduction                          | TAC  | Toxic Air Contaminant   |
| SRN                       | State Registration Number                                  | Temp   | Temperature   |
| TEQ                       | Toxicity Equivalence Quotient                              | THC  | Total Hydrocarbons  |
| USEPA/EPA                 | United States Environmental Protection<br>Agency           | tpy  | Tons per year   |
| VE                        | Visible Emissions  | µg   | Microgram   |
|                           |  | µm   | Micrometer or Micron  |
|                           |  | VOC  | Volatile Organic Compounds  |
|                           |  | yr   | Year  |

\*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

### GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
  - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
  - b) A visible emission limit specified by an applicable federal new source performance standard.
  - c) A visible emission limit specified as a condition of this Permit to Install.
  
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**
  
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

**SPECIAL CONDITIONS**

**EMISSION UNIT SUMMARY TABLE**

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

| <b>Emission Unit ID</b>  | <b>Emission Unit Description<br/>(Process Equipment &amp; Control Devices)</b>   | <b>Installation Date /<br/>Modification Date</b> | <b>Flexible Group ID</b> |
|--|--|--|--------------------------|
| EUBOILER#1   | Temporary permit to allow combustion of engineered fuel pellets for up to 180 days. Boiler with capability of burning tire derived fuel (TDF), creosote treated railroad ties, wood chips, wood fines and bark, and natural gas. EUBOILER#1 has a maximum heat input rating of 324 million BTU per hour and will produce steam and electricity. The existing electrical generator is rated at 22.0 megawatts. The boiler is controlled by a multicyclone followed by a three (series) section electrostatic precipitator. While burning engineered fuel pellets, sorbent injection or equivalent control will be utilized. | 1959<br>1974<br>04/15/2008<br>10/26/2011         | FGBOILERMACT-6J          |
| EUSORBENT  | Delivery, unloading, storage, and handling of dry sorbent material. Dry sorbent delivered by enclosed tanker truck or railcar tanker and conveyed pneumatically to the storage silo. The load-in conveying air discharges through a high efficiency cartridge fabric filter or equivalent control.   | 2017   | NA                       |
| Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290. |  |  |                          |

**The following conditions apply to:**  
**EUBOILER#1**

**DESCRIPTION:** Temporary permit to allow combustion of engineered fuel pellets for up to 180 days. Boiler with capability of burning tire derived fuel (TDF), creosote treated railroad ties, wood chips, wood fines and bark, and natural gas. EUBOILER#1 has a maximum heat input rating of 324 million BTU per hour and will produce steam and electricity. The existing electrical generator is rated at 22.0 megawatts.

**Flexible Group ID:** FGBOILERMACT-6J

**POLLUTION CONTROL EQUIPMENT:** The boiler is controlled by a multicyclone followed by a three (series) section electrostatic precipitator. While burning engineered fuel pellets, sorbent injection or equivalent control will be utilized.

**I. EMISSION LIMITS**

| Pollutant                   | Limit  | Time Period / Operating Scenario  | Equipment  | Testing / Monitoring Method     | Underlying Applicable Requirements  |
|-----------------------------|--|---|------------|---------------------------------|-------------------------------------|
| 1. PM                       | 0.06 lb/MMBTU heat input   | Instantaneous*  | EUBOILER#1 | SC V.1                          | R 336.1205<br>R 336.1331            |
| 2. PM                       | 19.2 pph   | Hourly  | EUBOILER#1 | SC V.1                          | R 336.1205                          |
| 3. PM-10                    | 15.4 pph   | Hourly  | EUBOILER#1 | SC V.1                          | R 336.1205<br>40 CFR 52.21(c) & (d) |
| 4. SO <sub>2</sub>          | 290 pph  | Hourly  | EUBOILER#1 | SC V.1<br>SC V.2<br>SC VI.2     | R 336.1205                          |
| 5. NO <sub>x</sub>          | 145 pph  | Hourly  | EUBOILER#1 | SC V.1                          | R 336.1205                          |
| 6. CO                       | 0.3 lb/MMBTU except for startup and shutdown                               | 24-hr rolling average as determined each hour EUBOILER#1 operates                       | EUBOILER#1 | SC VI.7                         | R 336.2810<br>40 CFR 52.21(j)       |
| 7. CO                       | 97.2 pph   | Hourly  | EUBOILER#1 | SC VI.7                         | R 336.2810<br>40 CFR 52.21(j)       |
| 8. VOC                      | 50 ppmvd at 7% O <sub>2</sub> (as methane) except for startup and shutdown | Instantaneous*  | EUBOILER#1 | SC V.1                          | R 336.1205<br>R 336.1702            |
| 9. VOC                      | 9.1 pph  | Hourly  | EUBOILER#1 | SC V.1                          | R 336.1205<br>R 336.1702            |
| 10. Lead (Pb)               | 0.02 pph   | Hourly  | EUBOILER#1 | SC V.1<br>SC VI.2,<br>SC VI.3   | R 336.1205                          |
| 11. Hydrogen Chloride (HCl) | 2.17 pph   | Hourly  | EUBOILER#1 | SC V.1<br>SC V.2<br>SC VI.2     | R 336.1224<br>R 336.1225            |
| 12. HCl                     | 9.5 tons per year  | Based on a 12-month rolling time period as determined at the end of each calendar month | EUBOILER#1 | SC VI.2,<br>SC VI.3,<br>SC VI.4 | R 336.1205(3)                       |

| Pollutant          | Limit              | Time Period / Operating Scenario  | Equipment  | Testing / Monitoring Method | Underlying Applicable Requirements |
|--------------------|--------------------|---|------------|-----------------------------|------------------------------------|
| 13. Aggregate HAPs | Less than 20.0 tpy | Based on a 12-month rolling time period as determined at the end of each calendar month | EUBOILER#1 | SC VI.3,<br>SC VI.4         | R 336.1205(3)                      |

\* Compliance shall be demonstrated by three test samples, each with a minimum sample time of 60 minutes or an equivalent method approved by the AQD District Supervisor.

**II. MATERIAL LIMITS**

| Material                              | Limit                              | Time Period / Operating Scenario   | Equipment  | Testing / Monitoring Method    | Underlying Applicable Requirements |
|---------------------------------------|------------------------------------|--|------------|--------------------------------|------------------------------------|
| 1. Natural Gas                        | Less than 50% of annual heat input | 12-month rolling time period as determined at the end of each calendar month | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 2. TDF                                | 4.0 tons/hr "as received"*         | Calendar Day Average   | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 3. TDF                                | 32,800 tpy "as received"*          | 12-month rolling time period as determined at the end of each calendar month | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 4. Railroad Ties                      | 17 tons/hr "as received"*          | Calendar Day Average   | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 5. Railroad Ties                      | 72,078 tpy "as received"*          | 12-month rolling time period as determined at the end of each calendar month | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 6. Fines & Bark                       | 5.4 tons/hr "as received"*         | Calendar Day Average   | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 7. Fines & Bark                       | 44,280 tpy "as received"*          | 12-month rolling time period as determined at the end of each calendar month | EUBOILER#1 | SC VI.2                        | R 336.1205                         |
| 8. Chlorine content of railroad ties. | 400 ppm                            | Instantaneous  | EUBOILER#1 | SC III.4<br>SC V.4,<br>SC VI.3 | R 336.1224,<br>R 336.1225          |

9. The permittee may burn up to 25,000 tons of engineered fuel pellets in EUBOILER#1. **(R 336.1205, R 336.1225, 40 CFR 52.21 (c) and (d))**
10. The engineered fuel pellets burned in EUBOILER#1 shall comply with the criteria established in the November 14, 2011 letter from Margaret M. Guerriero of U. S. EPA Region 5 to James S. Rickun for the fuel pellets generated by Greenwood Fuels, LLC (see Appendix A). **(R 336.1205, R 336.1225, R 336.1401, 40 CFR 52.21 (c) and (d))**

### **III. PROCESS/OPERATIONAL RESTRICTIONS**

1. The maximum heat input for EUBOILER#1 shall not exceed 2,656,800 MMBTU per year based on a 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(3), R 336.1225, R 336.2810, 40 CFR 52.21(j))**
2. The permittee shall burn only natural gas, engineered fuel pellets as described in SC II.9 and II.10, and fuels defined in an approved *Fuel Procurement and Monitoring Plan* (FPMP) for EUBOILER#1. **(R 336.1205, R 336.1225)**
3. During startup, the permittee shall start with natural gas followed by the other fuels to EUBOILER#1. **(R 336.1205(3), R 336.1225)**
4. The permittee shall operate EUBOILER#1 according to an approved FPMP. The permittee shall utilize the FPMP at all times to ensure that only fuel, as defined in SC II Material Limits, is being burned in EUBOILER#1 and to prevent unacceptable waste from being burned in EUBOILER#1. The plan shall, at a minimum, specify the following:
  - a. A description of fuel to be burned.
  - b. Inspection and sorting procedures and protocol used to eliminate prohibited fuels and minimize unacceptable fuel.
  - c. Procedures for rejecting and/or removing unacceptable fuel, including determination of whether railroad ties have been treated with pentachlorophenol.
  - d. Supplier qualification, processing and inspection procedures for each supplier of source separated fuel.
  - e. Auditing procedures including records of fuel specification, load identification, quality control of load and fuel pile(s).
  - f. Odor minimization.

The permittee shall submit any amendments to the FPMP to the AQD District Supervisor for review and approval. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205, R 336.1225)**

5. The permittee shall operate and maintain EUBOILER#1 according to the MAP as described in R 336.1911(2), for EUBOILER#1, including the hydrograte biomass fuel burning surface, boiler overfired air system, ID fan, air heater, boiler tubes, boiler tube cleaning equipment, multicyclone, electrostatic precipitator, and the CO monitoring equipment. The MAP shall include keeping a Daily Operating Log which details equipment problems found, repairs done and/or corrective action taken, and scheduled and completed maintenance on the equipment listed above. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days if new equipment is installed or upon request from the District Supervisor. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1225, R 336.1331, R 336.1702(a), R 336.1910, R 336.1911, R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d))**
6. The permittee shall not process, store, or combust any railroad ties, or any materials, which have been treated with pentachlorophenol coating or preservative. **(R 336.1205(3))**
7. The permittee shall not operate EUBOILER#1 unless a program for continuous fugitive emissions control for all plant roadways, the plant yard, all material storage piles, and all material handling operations has been submitted to the AQD District Supervisor and is approved, implemented, and maintained. The plan shall identify the specific measures to be taken to prevent fugitive dust and the frequency of these measures. **(R 336.1372, Act 451 324.5524)**

### **IV. DESIGN/EQUIPMENT PARAMETERS**

1. The permittee shall not operate EUBOILER#1 unless the boiler overfired air system, multicyclone, and the electrostatic precipitator are installed and operating in a satisfactory manner. **(R 336.1910)**



2. The permittee shall not burn fuel blends containing the engineered fuel pellets in EUBOILER#1 unless the sorbent injection or equivalent air pollution control system is installed and operating in a satisfactory manner. **(R 336.1205, R 336.1225, R 336.1910)**

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. At least once every five years, the permittee shall verify PM, PM-10, SO<sub>2</sub>, NO<sub>x</sub>, lead, and VOC emission rates from EUBOILER#1 by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in:

| <b>Pollutant</b>  | <b>Test Method Reference</b>  |
|-------------------|---|
| PM                | 40 CFR Part 60, Appendix A; Part 10 of the Michigan Air Pollution Control Rules |
| PM10/PM2.5        | 40 CFR Part 51, Appendix M  |
| NO <sub>x</sub>   | 40 CFR Part 60, Appendix A  |
| SO <sub>2</sub>   | 40 CFR Part 60, Appendix A  |
| CO                | 40 CFR Part 60, Appendix A  |
| VOC               | 40 CFR Part 60, Appendix A; Part 51, Appendix M                                 |
| Metals            | 40 CFR Part 60, Appendix A; Part 61, Appendix B; Part 63, Appendix A            |
| Hydrogen Chloride | 40 CFR Part 60, Appendix A  |
| HAPs              | 40 CFR Part 63, Appendix A  |

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 60 days prior to testing, the permittee shall submit two complete test plans to the AQD Technical Programs Unit Supervisor and the District Supervisor. The plans shall describe the test method(s) and the maximum routine operating conditions, including targets for key operational parameters associated with air pollution control equipment to be monitored and recorded during testing. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit Supervisor and the District Supervisor within 60 days following the last date of testing. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2810, 40 CFR 52.21(j))**

2. After the permittee completes four (4) consecutive quarterly testing events in accordance with the test plan that was approved by AQD, demonstrating compliance with the EUBOILER#1 HCl emission limits, the permittee shall perform two (2) HCl emission test on a semi-annual basis, followed by one HCl emission test within the next three years. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit Supervisor and the District Supervisor within 60 days following the last date of testing. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2810, 40 CFR 52.21(j))**
3. The permittee shall conduct a monthly compliance demonstration, through fuel analysis, for the following: SO<sub>2</sub> and HCl emission rates to demonstrate compliance with the SO<sub>2</sub> and HCl emission limits. Supporting documentation should include results of any fuel analyses and basis for the estimates of maximum chlorine fuel input and the corresponding HCl emission rates.

The permittee shall perform all analyses in accordance with an approved fuel procurement management plan. The permittee shall maintain a copy of all calculations and supporting documentation on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205, R 336.1225)**

4. The permittee shall perform sampling and analysis of each solid fuel as described in the MDEQ approved FPMP. Results will be reviewed to verify that no excessive changes in fuel quality, beyond typical variation, have occurred that may impact compliance with permit limits as demonstrated during the compliance demonstration. The permittee shall maintain a copy of all calculations and supporting documentation. **(R 336.1205, R 336.1331, R 336.2001, R 336.2003, R 336.2004)**

5. The permittee shall conduct an analysis of the engineered fuel pellets, in a manner acceptable to the AQD, to determine that the engineered fuel pellets comply with the criteria established in the November 14, 2011 letter from Margaret M. Guerriero of U. S. EPA Region 5 to James S. Rickun for the fuel pellets generated by Greenwood Fuels, LLC (Appendix A). The analysis shall be performed for each shipment of engineered fuel pellets received. A fuel analysis of a representative sample provided by the supplier for each shipment of engineered fuel pellets may be used to comply with this requirement. **(R 336.1205, R 336.1225, R 336.1401, 40 CFR 52.21 (c) and (d))**
6. The permittee shall verify PM, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, HCl, arsenic, lead, manganese, and nickel emission rates from EUBOILER#1 while burning engineered fuel pellets, by testing at owner's expense, in accordance with Department requirements. The testing shall be performed at various fuel mix ratios, including fuel mixes with at least three distinct percentages of engineered fuel pellets. The testing shall be used to determine the maximum percentage of engineered fuel pellets in the fuel mix, and the minimum required rate of sorbent injection. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The test plan submitted to the AQD shall include the following:
  - a. The proposed distinct percentages of engineered fuel pellets that will be tested; and
  - b. A temporary *Fuel Management and Procurement Plan* detailing fuel handling procedures for the engineered fuel pellets; and
  - c. A temporary Malfunction Abatement Plan addressing operation of the sorbent injection system or equivalent air pollution control equipment to be used while combusting engineered fuel pellets.

The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004)**

## **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the end of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.1224, R 336.1225, R 336.1901, R 336.2810, 40 CFR 52.21(j))**
2. The permittee shall monitor and keep records, in a satisfactory manner, of the following:
  - a. The amount of natural gas, by volume, burned in EUBOILER#1.
  - b. The annual heat input of natural gas burned in EUBOILER#1.
  - c. The type and amount of each solid fuel, by weight, burned in EUBOILER#1.
  - d. The annual heat input of each solid fuel burned in EUBOILER#1.

The permittee shall demonstrate compliance with the calendar day average for each solid fuel, and based on a monthly and a 12-month rolling time period as determined at the end of each calendar month by an acceptable method as approved by the AQD District Supervisor. **(R 336.1205, R 336.1224, R 336.1225)**

3. The permittee shall obtain and keep records of the sulfur, lead, and chlorine content of each fuel burned in EUBOILER#1. **(R 336.1205, R 336.1224, R 336.1225)**
4. The permittee shall keep records and calculations of monthly and annual HAP emissions utilizing the emission factors from the compliance demonstration or the most recent emissions testing. Additionally, the permittee shall keep records and calculations of monthly and annual emissions of all non-tested HAP utilizing AQD approved emission factors. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(3))**
5. The permittee shall keep, in a satisfactory manner, the FPMP records and information for EUBOILER#1, as required by SC III.2 and SC III.4. The permittee shall keep all records on file at the facility and make them available to the Department upon request. Alternative formats or procedures must be approved by the AQD District Supervisor. **(R 336.1205(1)(a), R 336.1205(3), R 336.1224, R 336.1225, R 336.1331, R 336.1702, R 336.1901)**

6. The permittee shall keep, in a satisfactory manner, the MAP records and information for EUBOILER#1, as required by SC III.5. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702, R 336.1901, R 336.1910)**
7. The permittee shall calibrate, maintain, and operate in a satisfactory manner a device to monitor and record the CO emissions and (CO<sub>2</sub>) diluent from EUBOILER#1 on a continuous basis. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements, and reporting detailed in Appendix 3A, and shall use the CEMS data for determining compliance with SC I.6 and SC I.7. **(R 336.2810, 40 CFR 52.21(j))**
8. The permittee shall calibrate, maintain, and operate in a satisfactory manner a device to monitor and record the visible emissions from EUBOILER#1 on a continuous basis. The permittee shall install and operate the Continuous Opacity Monitoring System (COMS) to meet the timelines, requirements, and reporting detailed in Appendix 3B, and shall use the COMS data for determining compliance with GC 11. **(R 336.1301, 40 CFR 64.6(c)(1)(i),(ii),(iii), 40 CFR 64.3(d)(2))**
9. The permittee shall calculate and keep records of PM, PM-10, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and lead emissions from EUBOILER#1 in tons per calendar year. The calculations and records shall be kept in the format and timeframes described in Appendix 4, or an alternative format acceptable to the AQD Permit Section Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, R 336.2802(4)(c), R 336.2810, 40 CFR 52.21(j))**
10. The permittee shall keep, in a satisfactory manner, records of laboratory analyses showing that the engineered fuel pellets meet the criteria established in the November 14, 2011 letter from Margaret M. Guerriero of U. S. EPA Region 5 to James S. Rickun for the fuel pellets generated by Greenwood Fuels, LLC (Appendix A). The permittee shall keep records of a laboratory analysis of a representative sample for each shipment of engineered fuel pellets being combusted in EUBOILER#1. **(R 336.1205, R 336.1225, R 336.1401, 40 CFR 52.21 (c) and (d))**
11. The permittee shall monitor and record, in a satisfactory manner, the sorbent injection rate for EUBOILER#1 on an hourly basis. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

## **VII. REPORTING**

1. The permittee shall calculate and keep records of the annual emissions of PM, PM-10, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, and lead from EUBOILER#1 in tons per year on a calendar year basis. Records shall be kept in the format described in Appendix 4, or an alternate format acceptable to the AQD Permit Section Supervisor. The permittee shall submit this information to the AQD Permit Section Supervisor within 60 days following the end of each reporting year.

The report shall contain the following information:

- a. The calendar year actual emission of criteria pollutants, as described in Appendix 4, exceed the baseline actual emissions (BAE) by a significance level as defined in R 336.1119(e).
- b. The calendar year actual emissions differ from the pre-construction projection.
- c. The name, address, and telephone number of the facility.
- d. The annual emissions as calculated pursuant to this condition.
- e. Any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection). **(R 336.2818, 40 CFR 52.21(r)(6)(c)(iii))**

2. The permittee shall submit records of the annual emission of PM, PM-10, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, and lead from EUBOILER#1 in tons per calendar year. Records shall be kept in the format described in Appendix 4, or an alternative form acceptable to both the AQD Permit Section Supervisor and the AQD District Supervisor. The records shall be transmitted within 60 days following the end of each recordkeeping year if either of the following occurs:
  - a. The yearly annual emission of PM, PM-10, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, and lead exceed the baseline actual emissions (BAE) by a significant amount, and/or
  - b. The year's actual emissions differ from the pre-construction projection.

The report shall contain the name, address, and telephone number of the facility (major stationary source); the annual emissions as calculated pursuant to EUBOILER#1, and any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection). **(R 336.1205, R 336.2802(4)(c), R 336.2810, R 336.2818, 40 CFR 52.21(j), 40 CFR 52.21(r)(6)(c)(iii))**

3. The permittee shall submit a notification to the AQD District Supervisor no less than 10 days before the first date of combustion of engineered fuel pellets in EUBOILER#1. **(R 336.1201(3), R 336.1205)**

### **VIII. STACK/VENT RESTRICTIONS**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

| <b>Stack &amp; Vent ID</b> | <b>Maximum Exhaust Diameter/Dimensions (inches)</b> | <b>Minimum Height Above Ground (feet)</b> | <b>Underlying Applicable Requirements</b>                           |
|----------------------------|---|---|---|
| 1. SVBOILER#1              | 90  | 147                                       | R 336.1225,<br>R 336.2803,<br>R 336.2804,<br>40 CFR 52.21 (c) & (d) |

### **IX. OTHER REQUIREMENTS**

1. The permittee shall repair SVBOILER#1 to remove corroded sections of the stack or to make any other necessary repairs which would have impact on the proper dispersion of the emissions from SVBOILER#1. Such repairs shall not modify the maximum exhaust diameter or minimum height above ground specified in special condition VIII.1. The permittee shall provide written notification to the AQD District Supervisor of the following:
  - a. Date when repairs will be initiated.
  - b. Date when repairs have been completed.

Notifications shall be at least five days prior to initiating repairs, and no later than five days after repairs have been completed. The stack repairs shall be completed no later than September 30, 2017. **(R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**

2. This permit shall be terminated 180 calendar days after the first date of combustion of engineered fuel pellets. To continue combustion of engineered fuel pellets in EUBOILER#1 at this site after this permit expires, the permittee must apply for and receive a new Permit To Install. **(Act 451 324.5503(c))**

### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

**The following conditions apply to:**  
**EUSORBENT**

**DESCRIPTION:** Delivery, unloading, storage, and handling of dry sorbent material. Dry sorbent delivered by enclosed tanker truck or railcar tanker and conveyed pneumatically to the storage silo.

**Flexible Group ID:** NA

**POLLUTION CONTROL EQUIPMENT:** The load-in conveying air discharges through a high efficiency cartridge fabric filter or equivalent control.

**I. EMISSION LIMITS**

| <b>Pollutant</b> | <b>Limit</b> | <b>Time Period / Operating Scenario</b> | <b>Equipment</b>                            | <b>Testing / Monitoring Method</b> | <b>Underlying Applicable Requirements</b> |
|------------------|--------------|---|---|------------------------------------|---|
| 1. PM            | 0.01 gr/dscf | Instantaneous*                          | Each individual fabric filter for EUSORBENT | GC 13                              | R 336.1331                                |
| 2. PM10          | 0.01 gr/dscf | Instantaneous*                          | Each individual fabric filter for EUSORBENT | GC 13                              | 40 CFR 52.21 (c) & (d)                    |
| 3. PM2.5         | 0.01 gr/dscf | Instantaneous*                          | Each individual fabric filter for EUSORBENT | GC 13                              | 40 CFR 52.21 (c) & (d)                    |
| 4. Opacity       | 5 percent    | 6-minute average                        | Each individual fabric filter for EUSORBENT | GC 13                              | R 336.1301                                |

\* Compliance shall be demonstrated by three test samples, each with a minimum sample time of 60 minutes or an equivalent method approved by the AQD District Supervisor.

**II. MATERIAL LIMITS**

NA

**III. PROCESS/OPERATIONAL RESTRICTIONS**

1. The permittee shall submit a temporary malfunction abatement plan (MAP) as described in Rule 911(2), for EUSORBENT, within 60 days of permit issuance. The temporary MAP shall include the keeping of a Daily Operating Log which details equipment problems found, repairs done and/or corrective action taken, and scheduled and completed maintenance on the equipment listed above. The permittee shall submit the temporary MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the temporary MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. The temporary MAP shall be terminated 180 calendar days after the first date of combustion of engineered fuel pellets. **(R 336.1331, R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**
2. The permittee shall operate EUSORBENT according to the *Program for Continuous Fugitive Emissions Control* as described in Rules 336.1371 and 336.1372 and Act 451 324.5524 for all material handling operations. This program is included in the facility MAP as Appendix A. The permittee shall submit any amendments to the Program to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the Program or amended Program shall be considered approved. **(R 336.1371, R 336.1372, R 336.1901, 40 CFR 52.21(c) and (d), Act 451 324.5524)**

**IV. DESIGN/EQUIPMENT PARAMETERS**

1. The permittee shall not operate transfer sorbent into the storage silo unless the cartridge fabric filter is installed, maintained and operated in a satisfactory manner. Satisfactory manner includes operating and maintaining each control device in accordance with an approved MAP for EUSORBENT as required in SC III.1. **(R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep, in a satisfactory manner, all records and information associated with the MAP for EUSORBENT, as required by SC III.1. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1331, R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**
2. The permittee shall keep, in a satisfactory manner, records and information associated with the *Program for Continuous Fugitive Emissions Control* for EUSORBENT, as required by SC III.2. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1371, R 336.1372, R 336.1901, 40 CFR 52.21(c) and (d), Act 451 324.5524)**

**VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTIONS**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

| <b>Stack &amp; Vent ID</b> | <b>Maximum Exhaust Diameter/Dimensions (inches)</b> | <b>Minimum Height Above Ground (feet)</b> | <b>Underlying Applicable Requirements</b> |
|----------------------------|---|---|---|
| 1. SVSORBENTSILO           | 24  | 40  | 40 CFR 52.21 (c) & (d)                    |

**IX. OTHER REQUIREMENTS**

NA

**FLEXIBLE GROUP SUMMARY TABLE**

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

| <b>Flexible Group ID</b> | <b>Flexible Group Description</b>   | <b>Associated Emission Unit IDs</b> |
|--------------------------|---|-------------------------------------|
| FGBOILERMACT-6J          | Conditions for any existing large ( $\geq 10$ mmBtu/hr) biomass-fired industrial, commercial or institutional boiler (equipped with an oxygen trim system) as defined in 40 CFR 63.11237 (excluding seasonal and limited-use boilers) that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in 40 CFR 63.2, except as specified in 40 CFR 63.11195. | EUBOILER#1                          |

**The following conditions apply to:**  
**FGBOILERMACT-6J**

**DESCRIPTION:** Conditions for any existing large ( $\geq 10$  mmBtu/hr) biomass-fired industrial, commercial or institutional boiler (equipped with an oxygen trim system) as defined in 40 CFR 63.11237 (excluding seasonal and limited-use boilers) that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in 40 CFR 63.2, except as specified in 40 CFR 63.11195.

**Emission Units:** EUBOILER#1

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMITS**

NA

**III. PROCESS/OPERATIONAL RESTRICTIONS**

1. For affected sources subject to the work practice standard or the management practices of a tune-up, the permittee must conduct a performance tune-up according to paragraph (b) of Section 63.11223, stated in SC III.4, and keep records as required in Section 63.11225(c), stated in SC VI.1, to demonstrate continuous compliance. The permittee must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up. **(40 CFR 63.11223(a))**
2. The permittee must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of Section 63.11223, as listed below. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. **(40 CFR 63.11223(b))**
  - a. As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the permittee may delay the burner inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. **(40 CFR 63.11223(b)(1))**
  - b. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. **(40 CFR 63.11223(b)(2))**
  - c. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. **(40 CFR 63.11223(b)(3))**
  - d. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject. **(40 CFR 63.11223(b)(4))**
  - e. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. **(40 CFR 63.11223(b)(5))**



- f. Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (b)(6)(i) through (iii) of Section 63.11223, as listed below. **(40 CFR 63.11223(b)(6))**
  - i. The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler. **(40 CFR 63.11223(b)(6)(i))**
  - ii. A description of any corrective actions taken as a part of the tune-up of the boiler. **(40 CFR 63.11223(b)(6)(ii))**
  - iii. The type and amount of fuel used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit. **(40 CFR 63.11223(b)(6)(iii))**
- g. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of startup. **(40 CFR 63.11223(b)(7))**

#### **IV. DESIGN/EQUIPMENT PARAMETERS**

NA

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee must maintain the records specified in paragraphs (c)(1) through (7) of Section 63.11225, as listed below. **(40 CFR 63.11225(c))**
  - a. As required in Section 63.10(b)(2)(xiv), the permittee must keep a copy of each notification and report that the permittee submitted to comply with 40 CFR Part 63, Subpart JJJJJ and all documentation supporting any Initial Notification or Notification of Compliance Status that the permittee submitted. **(40 CFR 63.11225(c)(1))**
  - b. The permittee must keep records to document conformance with the work practices, emission reduction measures, and management practices required by Sections 63.11214 and 63.11223 as specified in paragraphs (c)(2)(i) through (vi) of Section 63.11225, as applicable. **(40 CFR 63.11225(c)(2))**
    - i. Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned. **(40 CFR 63.11225(c)(2)(i))**
    - ii. For each boiler required to conduct an energy assessment, the permittee must keep a copy of the energy assessment report. **(40 CFR 63.11225(c)(2)(iii))**
  - c. Records of the occurrence and duration of each malfunction of the boiler. **(40 CFR 63.11225(c)(4))**
  - d. Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions in Section 63.11205(a), stated in SC IX.4, including corrective actions to restore the malfunctioning boiler to its normal or usual manner of operation. **(40 CFR 63.11225(c)(5))**
2. The permittee's records must be in a form suitable and readily available for expeditious review. The permittee must keep each record for 5 years following the date of each recorded action. The permittee must keep each record on-site or be accessible from a central location by computer or other means that instantly provide access at the site for at least 2 years after the date of each recorded action. The permittee may keep the records off site for the remaining 3 years. **(40 CFR 63.11225(d))**

#### **VII. REPORTING**

NA

### **VIII. STACK/VENT RESTRICTIONS**

NA

### **IX. OTHER REQUIREMENTS**

1. If the permittee owns or operates an existing affected boiler, the permittee must achieve compliance with the applicable provisions in 40 CFR Part 63, Subpart JJJJJJ as specified in paragraphs (a)(1) and (3) of Section 63.11196. **(40 CFR 63.11196(a))**
2. At all times the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. **(40 CFR 63.11205(a))**
3. For affected boilers that switch fuels or make a physical change to the boiler that results in the applicability of a different subcategory within 40 CFR Part 63, Subpart JJJJJJ or the boiler becoming subject to 40 CFR Part 63, Subpart JJJJJJ, the permittee must demonstrate compliance within 180 days of the effective date of the fuel switch or the physical change. Notification of such changes must be submitted according to Section 63.11225(g), stated in SC VII.8. **(40 CFR 63.11210(h))**
4. No later than February 7, 2018 and in accordance, as applicable, with a state implementation plan or a federal implementation plan addressing the requirements of 40 CFR Part 60, Subpart DDDD, permittee shall:
  - a. Maintain documentation that EUBoiler#1 qualifies as a small power-production facility under section 3(17)(C) of the Federal Power Act (16 U.S.C. 796(17)(C)).
  - b. Maintain documentation that EUBoiler#1 combusts only natural gas and non-hazardous secondary material which is homogeneous waste (not including refuse-derived fuel) to produce electricity.
  - c. Submit notification as required by the state or federal implementation plan that the facility is a qualifying small power-production facility combusting homogeneous waste. **(40 CFR 60.2740(v), 40 CFR 60.2555(e))**

#### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

**APPENDIX A**

November 14, 2011 letter from Margaret M. Guerriero of U. S. EPA Region 5 to James S. Rickun for the fuel pellets generated by Greenwood Fuels, LLC.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

L-8J

NOV 14 2011

Mr. James S. Rickun  
James S. Rickun Environmental Consulting  
4933 Black Oak Drive  
Madison, Wisconsin 53711-4373

Dear Mr. Rickun:

In your letter of June 11, 2011, and follow-up letter of June 22, 2011, you requested confirmation from the U.S. Environmental Protection Agency Region 5 that Greenwood Fuels LLCs' fuel pellets would not be considered a solid waste when burned in a combustion unit in accordance with the requirements in 40 C.F.R. § 241.3(b)(4). To be designated as a non-waste fuel under that section, the rule requires that processing of the non-hazardous secondary material (NHSM) meets the definition of processing in 40 C.F.R. § 241.2. Also, after processing, the NHSM must meet the legitimacy criteria in 40 C.F.R. § 241.3(d)(1) to be designated a non-waste fuel. Based on the information provided in your letter and supporting materials, we believe the 40 C.F.R. Part 241 regulations would identify the fuel pellets generated by Greenwood Fuels, LLC and burned in combustion units as a non-waste fuel.<sup>1</sup> The remainder of this letter provides the basis for our position. *If there is a discrepancy in the information provided to us, it could result in a different interpretation.*

Processing

Processing is defined in 40 C.F.R. § 241.2 as operations that transform discarded NHSMs into a non-waste fuel or non-waste ingredient, including operations necessary to: remove or destroy contaminants; significantly improve the fuel characteristics, e.g. sizing or drying of the material in combination with other operations; chemically improve the as-fired energy content; or

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<sup>1</sup> Note that a non-waste determination under 40 C.F.R. Part 241 does not preempt a state's authority to regulate a non-hazardous secondary material as a solid waste. Non-hazardous secondary materials may be regulated simultaneously as a solid waste by the state, but as a non-waste fuel under 40 C.F.R. Part 241 for the purposes of determining appropriate emissions standards under the Clean Air Act for the combustion unit in which it is used.

improve the ingredient characteristics. Minimal operations that result only in modifying the size of the material by shredding do not constitute processing for purposes of the definition.

In your letters, you state that the feedstock materials accepted by Greenwood Fuels include a variety of industrial off-spec materials, misprints, excess ends, etc., from a variety of paper, packaging, non-woven, and wood working industries. As you note in your letters, the fact that no post-consumer material is used limits the contamination present in the material. These fiber and polymer-based materials are separated by type, shredded, mixed, cleared of metals, mixed and shredded again, and then densified and shaped into pellets of uniform shape and consistency. The fuel pellets are one and one-half (1 ½) to two (2) inches in size, which makes them suitable for use in existing coal-fired stoker boilers as a substitute for coal.

Based on this description---that is, pre-shredding and pre-mixing to improve the fuel characteristics, removing metal to reduce contaminants, further mixing and re-shredding the feedstock materials to improve the fuel characteristics of the finished material thereby achieving a specified BTU range, and pelletizing the finished material into a homogenous fuel product for use in coal-fired stoker boilers as a replacement for coal, we believe the definition of processing in 40 C.F.R. § 241.2 has been met.

#### Legitimacy Criteria

Under 40 C.F.R. § 241.3(d)(1), the legitimacy criteria for fuels includes: 1) management of the material as a valuable commodity based on the following factors – storage prior to use must not exceed reasonable time frames and management of the material must be in a manner consistent with an analogous fuel, or where there is no analogous fuel, adequately contained to prevent releases to the environment; 2) the material must have meaningful heating value and be used as a fuel in a combustion unit that recovers energy; and 3) the material must contain contaminants at levels comparable to or less than those in traditional fuels which the combustion unit is designed to burn.<sup>2</sup> The term contaminants is defined in 40 C.F.R. § 241.2 as constituents in the NHSM that will result in emissions of air pollutants under Clean Air Act Section 112(b) or the nine pollutants listed under Clean Air Act Section 129, including those constituents that could generate products of incomplete combustion.

#### *Manage As A Valuable Commodity*

Regarding the first legitimacy criterion, you state that the fuel pellets are stored at Greenwood's facility in either silos or bunkers, which are covered and have sidewall containment, for up to three (3) days prior to being shipped off-site. The facility has a Storm Water Pollution Prevention Plan to prevent storm water run-off. Furthermore, you indicate that the one and one-

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<sup>2</sup> The legitimacy criteria would apply once the pelletized fuel is produced; it would not apply to the input material to the processing operation.

half (1 ½) to two (2) inch fuel pellets contain few fines, such that wind-blown dust is not an issue. You also state that the storage and transportation requirements for Greenwood's fuel pellets are almost identical to coal storage and handling. The pellets are shipped to the customer within one (1) to three (3) days of production via coal dump trailers, walking floor trailers, or rail, as is typical for coal. Combustion facilities receiving the pellets either store the pellets in dedicated storage areas or mix the pellets with coal upon their receipt at the facility. Storage locations may be inside or outside. You indicate that although the majority of pellets are consumed within twenty-four (24) hours of delivery, some customers mix the pellets with coal, and most of those customers store pellets for no more than one (1) week, which is typical for coal storage.

Based on this information, we believe the material is managed as a valuable commodity: storage does not exceed a reasonable time frame and storage in silos or bunkers is adequate to prevent releases. Also, management of the pellets by the combustion unit appears to be analogous to the management of coal that is burned as a fuel.

#### ***Meaningful Heating Value and Use As A Fuel In A Combustion Unit That Recovers Energy***

Regarding the second legitimacy criterion, you state that the fuel pellets contain an average of 10,470 Btu/pound, which is derived from weekly analyses (occurring between January and May of 2011) provided by an independent, certified lab. As discussed in the final rule, 5,000 Btu/pound was established as a general guideline for meaningful heating value. In addition, coal-fired stoker boilers would recover energy from the use of this material as a non-waste fuel. Thus, the material meets this criterion.

#### ***Comparability of Contaminant Levels***

Regarding the third criterion, you provided data on the average concentration of specified contaminants in Greenwood's pellets from weekly lab tests occurring between January and May of 2011, and you compared those levels to the contaminant data for coal as outlined in the materials characterization paper (MCP) "Traditional Fuels and Key Derivatives."<sup>3,4,5</sup> (See

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<sup>3</sup> The Materials Characterization Paper on *Traditional Fuels and Key Derivatives* can be found at [www.epa.gov/epawaste/nonhaz/define/index.htm](http://www.epa.gov/epawaste/nonhaz/define/index.htm).

<sup>4</sup> EPA notes that the contaminant values listed in the *Traditional Fuels and Key Derivatives* MCP for coal (and other traditional fuels) may be revised in the future based on the availability of new or additional data. Any future revisions to the values will not impact the conclusions made in this letter; the values are based upon the data that is available at the time EPA responds to a request.

<sup>5</sup> You may use other data on the contaminant levels in traditional fuels in determining whether the levels are comparable to Greenwood's pellets. That is, other data on the level of contaminants in traditional fuels that your company has or may become aware of may also be considered in determining whether the level of contaminants

attached Table.) Please note that only those constituents identified in the contaminant definition under § 241.2 are relevant with respect to meeting the contaminants legitimacy criterion.

As indicated in your attached Table, the fuel pellets meet the legitimacy criterion for these contaminant levels when compared to coal, the traditional fuel that the combustion unit is designed to burn.<sup>6</sup> This conclusion is based only on the constituents you identified in your laboratory analysis. We presume that additional contaminants are present at levels comparable to or less than those in coal, based on your knowledge of the NHSM.

Overall, based on the information provided in your letter, and given the assumptions and data limitations outlined in this letter, the fuel pellets meet both the processing definition and the legitimacy criteria outlined above. Accordingly, we would consider this NHSM a non-waste fuel under the 40 C.F.R. Part 241 regulations.

If you have any other questions, please contact Julie Gevrenov of my staff at 312-886-6832.

Sincerely,



Margaret M. Guerriero  
Director  
Land and Chemicals Division

Enclosure

cc: George Faison, EPA/ORCR  
Ethan Chatfield, EPA R5/ARD  
Stuart Hersh, EPA R5/ORC  
Dan Harris, Ohio EPA

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in Greenwood's pellets are comparable to those in the traditional fuel that the combustion unit is designed to burn.

<sup>6</sup> The term "volatiles" is not related to the term "volatile organic compound (VOC)" and is not pertinent to the definition of "contaminants" specified in §241.2. Instead, the term "volatiles" comes from a proximate analysis of fuels, a common test performed to characterize fuels by determining percentages for moisture, volatiles, ash, and fixed carbon that add up to 100 percent. In such an analysis, a sample is weighed, burned at a specified temperature, and weighed again. The percent weight difference is called "volatiles" and includes any gases or vapors driven off at the specified temperature, a large portion of which is likely to be non-contaminants.

| EPA Material Characterization Sheet, Feb. 07, 2011 Component | As-received basis Units | Coal-inf <sup>1</sup>        | Anthracite                      | Bituminous                    | Sub-bituminous                  | Lignite                     | GWF          | Coal                            | Coal                          | Coal                                | Coal                              |
|--|-------------------------|------------------------------|---------------------------------|-------------------------------|---------------------------------|-----------------------------|--------------|---------------------------------|-------------------------------|-------------------------------------|-----------------------------------|
|  |                         | Avg (Range) <sup>1,2,3</sup> | (Lackawanna, PA) <sup>5,6</sup> | (Marion, WV) <sup>1,6,7</sup> | (Sheridan, WY) <sup>1,6,8</sup> | (McLean, ND) <sup>1,6</sup> | Pellata Avg. | Bituminous Avg. <sup>4,10</sup> | Bituminous Range <sup>4</sup> | Sub-bituminous Avg. <sup>4,10</sup> | Sub-bituminous Range <sup>4</sup> |
| Moisture   | wt%                     | 5.2 (1.7-17)                 | 5.3                             | 2.3                           | 22.2                            | 36.8                        | 6.0          | -                               | -                             | -                                   | -                                 |
| Volatiles  | wt%                     | 37.8 (7.9-55.4)              | 4.1                             | 36.5                          | 33.2                            | 27.8                        | 80.9         | 2.3                             | -                             | 22.2                                | -                                 |
| Ash  | wt%                     | 9.4 (2.9-17.7)               | 9.6                             | 5.2                           | 4.3                             | 5.9                         | 6.5          | 5.2                             | -                             | 4.3                                 | -                                 |
| Calorific Value, HHV   | Btu/lb                  | 13,925 (11,277-15,342)       | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Calorific Value, LHV   | Btu/lb                  | 13,466 (10,826-14,991)       | 12,880                          | 14,040                        | 9,600                           | 7,000                       | 10,470       | -                               | -                             | -                                   | -                                 |
| <b>Elemental Analysis</b>                                    |                         |                              |                                 |                               |                                 |                             |              |                                 |                               |                                     |                                   |
| Carbon   | %                       | 78.3 (60.5-91.6)             | 79.7                            | 78.4                          | 53.9                            | 40.6                        | 6.4          | -                               | -                             | -                                   | -                                 |
| Hydrogen   | %                       | 4.92 (3.5-5.83)              | 2.9                             | 5.5                           | 6.9                             | 6.9                         | 7.5          | -                               | -                             | -                                   | -                                 |
| Oxygen   | %                       | 13.2 (2.3-33.7)              | 6.1                             | 8.5                           | 33.4                            | 45.1                        | 25.0         | -                               | -                             | -                                   | -                                 |
| Nitrogen   | %                       | 1.41 (0.76-1.9)              | 0.9                             | 1.6                           | 1.0                             | 0.6                         | 0.2          | 1.27                            | 0.85-1.54                     | 0.78                                | 0.70-0.91                         |
| Sulfur   | %                       | 1.39 (0.31-5.79)             | 0.8                             | 0.8                           | 0.5                             | 0.9                         | 0.1          | 1.97                            | 0.58-4.36                     | 0.77                                | 0.21-1.84                         |
| <b>Chemical Composition</b>                                  |                         |                              |                                 |                               |                                 |                             |              |                                 |                               |                                     |                                   |
| Chlorine   | ppm                     | 1,440 (30-7380)              | -                               | -                             | -                               | -                           | 601          | 1,240                           | 100-3,500                     | 140                                 | 10-396                            |
| Fluorine   | ppm                     | 160 (180)                    | -                               | -                             | -                               | -                           | -            | 68.8                            | 5-158                         | 52                                  | 44-65                             |
| Bromine  | ppm                     | -                            | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Aluminum   | ppm                     | 8,882 (146-15,800)           | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Arsenic  | ppm                     | 8 (5-11)                     | -                               | 0.5-80                        | -                               | -                           | 0.79         | 4,419                           | 0.49-17                       | 0.913                               | 0.4-1.7                           |
| Boron  | ppm                     | 47                           | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Barium   | ppm                     | 290                          | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Beryllium  | ppm                     | -                            | -                               | -                             | -                               | -                           | 0.05         | 1,353                           | 0.013-4.0                     | 0.377                               | 0.1-0.9                           |
| Calcium  | ppm                     | 3,750 (1,800-5,700)          | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Cadmium  | ppm                     | 0.8 (1.0)                    | -                               | 0.1-3.0                       | -                               | -                           | 0.040        | 1,131                           | 0.011-5.47                    | 0.147                               | 0.1-0.4                           |
| Cobalt   | ppm                     | 3.3 (2.0-4.5)                | -                               | 0.5-30.0                      | -                               | -                           | -            | 6,512                           | 0.056-40.9                    | 1,703                               | 1.2-2.3                           |
| Chromium   | ppm                     | 10 (2.0-18.0)                | -                               | 0.5-80.0                      | -                               | -                           | -            | 15,669                          | 2.5-121.3                     | 5,597                               | 1.6-11.3                          |
| Copper   | ppm                     | 20 (17-23)                   | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Iron   | ppm                     | 4,313 (2,940-6,900)          | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Mercury  | ppm                     | 2                            | -                               | 0.1-1.5                       | -                               | -                           | <0.01        | 0.101                           | 0.02-0.75                     | 0.056                               | 0.04-0.07                         |
| Potassium  | ppm                     | 1,688 (140-3,610)            | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Magnesium  | ppm                     | 1,150 (800-1,500)            | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Manganese  | ppm                     | 132 (53-210)                 | -                               | 5-300                         | -                               | -                           | -            | 25,977                          | 7-223                         | 10,926                              | 3.9-25.3                          |
| Molybdenum   | ppm                     | 1.8 (2.0)                    | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Sodium   | ppm                     | 723 (300-1,420)              | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Nickel   | ppm                     | 10 (3-17)                    | -                               | 0.5-50                        | -                               | -                           | 0.63         | 15,363                          | 2.26-34                       | 4,859                               | 2.1-15.6                          |
| Phosphorus   | ppm                     | 245 (160-330)                | -                               | -                             | -                               | -                           | -            | 161,921                         | 0.069-1,400                   | 213,051                             | 151-332                           |
| Lead   | ppm                     | 14 (20)                      | -                               | 2.0-80.0                      | -                               | -                           | 0.36         | 8,398                           | 1.34-32                       | 1,518                               | 0.9-2.4                           |
| Antimony   | ppm                     | 3                            | -                               | 0.05-10                       | -                               | -                           | 4.21         | 11,070                          | 0.027-235                     | 0.146                               | 0.1-0.2                           |
| Selenium   | ppm                     | 2                            | -                               | 2-10                          | -                               | -                           | 0.430        | 2,162                           | 0.42-6.49                     | 1,197                               | 0.5-2.2                           |
| Silicon  | ppm                     | 18,950 (17,900-20,000)       | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Tin  | ppm                     | 1.2                          | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Strontium  | ppm                     | 95                           | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Tellurium  | ppm                     | 450                          | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Titanium   | ppm                     | -                            | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Vanadium   | ppm                     | 17 (7-27)                    | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |
| Zinc   | ppm                     | 15 (14-15)                   | -                               | -                             | -                               | -                           | -            | -                               | -                             | -                                   | -                                 |

Notes: 1. See EPA Material Characterization Paper for description of footnotes and other general information, Feb, 2011  
2. Greenwood Fuels pellet analysis data based on weekly samples/analysis, Jan. 2011 to May, 2011