



Waste Management Facility

Audit Information

Updated: January 2017

WASTE MANAGEMENT FACILITY AUDIT INFORMATION

TABLE OF CONTENTS

	PAGE #
FACILITY OVERVIEW	3
PARENT COMPANY	4
A. COMPANY IDENTITY	4
B. FACILITY DESIGN & OPERATION	9
C. WASTE DESCRIPTION & QUANTITIES	16
D. DESCRIPTION OF ACCEPTABLE WASTE CONTAINERS	18
E. SETTING UP A WASTE STREAM AT GAR	18
F. QUALITY CONTROL	20
G. MANAGEMENT OF CEMENT KILN DUST (CKD)	25
H. FACILITY MANAGEMENT RECORDS	26
I. WASTE FUELS INFORMATION MANAGEMENT SYSTEM	27
J. PERMITS/REGULATORY AGENCY INFORMATION/INSURANCE	28
K. SITE GEOLOGY/HYDROLOGY/GROUNDWATER MONITORING	29
L. SECURITY	31
M. SAFETY & TRAINING	32
N. COMMUNITY RELATIONS	34
APPENDIX A WASTE MANAGEMENT FACILITIES	35
APPENDIX B ACCEPTABLE WASTE CODES	37
APPENDIX C WASTE PROFILE SURVEY FORM	38
APPENDIX D LAND DISPOSAL RESTRICTION FORM	42
APPENDIX E ARTIFICIAL SOIL PROJECT SYNOPSIS	43
APPENDIX F CERTIFICATE RECYCLING ENERGY RECOVERY	44
APPENDIX G PERMITS & INSURANCE INFORMATION	45
APPENDIX H TYPICAL SUBSURFACE GEOLOGY	46
APPENDIX I CERTIFICATE OF LIABILITY INSURANCE	47

FACILITY OVERVIEW

Green America Recycling, LLC (GAR) operates a Part B permitted RCRA Treatment, Storage and Disposal (TSD) facility adjacent to Continental Cement Company, LLC (CCC) in Hannibal, Missouri. GAR's full service capability includes waste stream pre-qualification, unloading and processing of RCRA hazardous and non-hazardous solids and liquids.

GAR can accept a wide variation of waste materials, to include, but not limited to: refinery still bottoms, paint solids, tars, solvents, degreasers, off-specification chemicals, dry powders, and debris. Acceptable waste containers include: drums, end dumps, totes, roll-offs, sludge/vacuum boxes, tank trucks, cubic yard boxes and bags, consumer packaging, rail intermodals, rail tankers and rail gondolas. Processing systems center on enclosed blending and processing buildings venting organic vapors to the burning zone of CCC's cement kiln.

Processing facilities operate 24 hours a day, seven days a week. Deliveries are typically accepted Monday through Friday, and delivery times are established in accordance with pre-arranged scheduling, including the flexibility of "drop and swap".

GAR operates a fully capable waste fuel laboratory, offering onsite analytical services to meet facility processing and regulatory analytical requirements.

PARENT COMPANY

Continental Cement Company, LLC (CCC)

Continental Cement Company, LLC is a private, American-owned, cement manufacturer with a single plant located in Hannibal, Missouri and its Corporate and Sales offices residing in Chesterfield, Missouri. It is located approximately three miles south of Hannibal, in Ralls County Missouri. The property consists of approximately 3,500 acres, with the hazardous waste management facility occupying about five acres and the cement production facility occupying about 30 acres.

Since 1986, CCC has safely and effectively utilized hazardous waste-derived materials to supplement coal as a fuel for the cement manufacturing process. These alternative fuels are a safe and effective energy source, providing the needed energy to produce a quality cement product.

For more information on CCC, visit <http://www.continentalcement.com>.

A. COMPANY IDENTITY

1. SITE IDENTIFICATION

USEPA ID #: MOD054018288

Missouri Identification #: 002430

SIC: 3241

NAICS: 327310 (Manufacturer of Portland Cement)

NAICS: 562211 (Hazardous Waste Treatment & Disposal)

2. SITE LOCATION

Physical location of facility:

10107 Highway 79, Hannibal, MO 63401

Mailing address of facility:

10107 Highway 79, Hannibal, MO 63401

County: Ralls

Latitude and Longitude at entrance gate:

Latitude: 39.679722

Longitude: -091.311389

The facility is located three miles south of the city of Hannibal, Missouri in a remote location. Highway 79 and the Mississippi River to the east border the facility. Uses for the Mississippi River are mainly navigation, recreation and drinking water. Site topography consists of rolling hills with slight to moderate slopes and old limestone quarries. Farmland and occasional rural residences are located on the remaining boundaries. The nearest residential community is unincorporated Monkey Run with a population of approximately 50 people. The approximate residential population within one mile of the site is 187; within three miles of the site the approximate population is 2,787.

Nearest School (A.D. Stowell Elementary)	2.5 miles from facility
Camp Okotipi (summer camp for children)	2.4 miles from facility
Mark Twain Cave/Sawyers Creek	1.25 miles from facility
Nearest Hospital (Hannibal Regional)	8.5 miles from facility

3. PERMIT OPERATORS

a. Continental Cement Company, LLC (CCC) - KILN

10107 Highway 79, Hannibal, MO 63401

Telephone: 573-221-1740

Fax: 573-221-1689

B .Green America Recycling, LLC (GAR)-Treatment Storage Disposal Facility

10107 Highway 79, Hannibal, MO 63401

Telephone: 573-248-0730

Fax: 573-221-8487

c. Contacts

GAR General Manager: Pat Arnold

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Environmental Health & Safety Specialist: Talya Mayfield

Telephone: 573-221-1740 ext. 307

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National Sales Manager: Kurt Gerdes

kurt.gerdes@greenamericarecycling.com

[GAR Website: www.greenamericarecycling.com](http://www.greenamericarecycling.com)

4. GAR & CCC EMPLOYEE STATISTICS

Number of full time employees

31-GAR Salaried

64-CCC Salaried

39-GAR Hourly

113-CCC Salaried

Current turnover rate: <1%

5. GAR & CCC INCIDENCE RATES

	2013	2014	2015	2016
Total Recordable Incident Rate (TRIR)	4.10	1.48	1.37	2.58
Lost Time Incident Rate (LTIR)	1.12	0.37	0	0
Lost Days Incident Rate (LDIR)	8.19	0	2.74	0

The rate of nonfatal occupational injury and illness cases requiring days away from work to recuperate was 112 cases per 10,000 full-time workers in 2012

Slightly more than 3.0 million nonfatal workplace injuries and illnesses were reported by private industry employers in 2013, resulting in an incidence rate of 3.3 cases per 100 equivalent full-time workers, according to estimates from the Survey of Occupational Injuries and Illnesses (SOII) conducted by the U.S. Bureau of Labor Statistics.

[http://data.bls.gov/search/query/results?q=non-fatal workplace injuries in 2014](http://data.bls.gov/search/query/results?q=non-fatal+workplace+injuries+in+2014)

6. SITE HISTORY

The cement manufacturing facility was originally constructed from 1901 through 1903 (Plant 1) and 1905 (Plant 2) by the Atlas Company (Atlas). Prior to that time the area was undeveloped and likely used as pasture land or wooded area. In the early 1930s, Atlas Company merged with the United States Steel Corporation to form the Universal Atlas Cement Division (Universal Atlas), and Plant 1 was dismantled. In the mid-1960s, Universal Atlas ceased operations in Plant 2 after completing construction of Plant 3, which operated until October 2008. The dry process rotary cement kiln system currently online today (Plant 4), started construction in July 2006 and completed construction in August 2008. Over the years, the plant has been upgraded and enlarged to its current size and capacity and became a subsidiary of Summit-Materials in 2008. The mission of Summit Materials is to acquire and grow established, successful construction materials businesses, creating a whole greater than the sum of its parts.

In September 1980, Universal Atlas Cement was purchased by a West German company and renamed the Lehigh Portland Cement Company, acquired in 1981 by Euroc/Material Service, and finally by Continental Cement Company, LLC (CCC) in 1996.

A waste management program was developed at CCC and began operation in November 1986, to lend support to the cement manufacturing business. The program includes the use of solid, liquid and sludge wastes. In the years of operation the facility has had many improvements with the addition of several waste handling systems, increased storage capacity, computerized monitoring and control devices, construction of waste preparation buildings, and a new waste fuels laboratory.

7. REGULATORY BACKGROUND

CCC applied for an interim status permit under the Resource Conservation and Recovery Act (RCRA) in 1986 to operate a waste management facility where hazardous wastes were stored and prepared for use as a fuel for the cement kiln. In 1989, CCC filed a RCRA Part B Permit Application for treatment and storage.

A Compliance Test and Trial Burn were conducted in accordance with the Boiler and Industrial Furnace (BIF) regulations, finalized August 21, 1992. The results of these tests were filed along with an amended and updated Part B Application in July 1992. Another modified and updated Part B was required and filed on May 26, 1994. The Part B Permit was issued on October 14, 1999. The Permit was issued for a ten-year period. A Permit Renewal Application was submitted to the Missouri Department of Natural Resources (MDNR) on October 13, 2009.

The BIF regulations have been superseded by the Hazardous Waste Combustor (HWC) Maximum Achievable Control Technology (MACT) regulations. Hazardous waste management prior use as fuel in the kiln remains under the authority of RCRA, while the use in the kiln is now under the authority of the Clean Air Act MACT, Subpart EEE. The HWC MACT provides compliance standards for air emissions and requires stack testing to demonstrate compliance. Stack testing was performed in December of 2009 and February of 2010. CCC submitted a "Notice of Compliance" in March, 2010. In April of 2012 a limited CPT for Dioxin Furan test was completed. CCC meets all HWC MACT compliance requirements. In May of 2015 a complete CPT test was completed.

B. FACILITY DESIGN AND OPERATION



1. CEMENT PRODUCTION PROCESS

CCC produces up to 1.25 million tons of Portland cement annually. The kiln requires an average of 20 TPH (tons per hour) of coal. Waste-derived liquid and solid fuels can be fed at up to 12.21 TPH to replace coal.

CCC quarries much of the essential raw materials within several quarry systems located on the property or nearby. Other needed ingredients providing silica, iron and alumina may be shipped from offsite locations. These materials include fire clay, mill scale, ash and other suitable materials. Raw materials may require crushing in the primary crusher or may be fed directly to the dry process milling system. From the milling system, raw materials are fed to the pre-heater/pre-calciner/kiln system. Clinker is milled with gypsum to produce Portland cement, which is packaged onsite, or shipped in bulk quantities via rail, barge or truck.

The cement kiln is fueled by coal as the primary fuel; however, solid and liquid waste-derived fuels may be fired to replace a portion of the coal required for cement production. Pumpable waste-derived liquid fuels are fired at a rate up to 11.28 TPH through a pipe to the low-NO_x burner in the pre-calciner. Waste-derived solid fuels are pneumatically conveyed to the kiln through a separate feed pipe to the low-NO_x burner in the pre-calciner. The combined total

liquid and solid waste cannot exceed 12.21 TPH. Currently, all waste-derived fuel is introduced into the kiln's pre-calciner.

2. SITE ACTIVITIES

- Treatment
- Recycle/Energy Recovery
- Storage
- Transfer
- Waste Generation

3. TYPES OF WASTE-DERIVED FUELS (WDF)

Dry Solids

These are typically rags, wood, and off-specification products, with no free liquids. They are dumped on the floor in the Feed Prep #1 waste management unit (Feed Prep #1) and fed with a front-end loader to a three stage, nitrogen-inert shredder. The granulated WDF is then placed in piles, ready to be fed to the kiln. The individual piles are analyzed for regulated components and loaded into a sealed wagon for transport to the dry solids "feed processing" building where the material is pneumatically conveyed to the kiln through a separate feed pipe to the low-NO_x burner in the pre-calciner.

Dispersible Solids

These are typically sludge and tank bottoms, processed either through a drum decanter and mixed with liquid WDF or fed to a ball mill filled with liquid WDF acting as a diluent. The stream is screened and fed to the liquid storage tanks; the solids are kept dispersed in the liquid phase by tank mixers.

Liquids

The liquid fuels are unloaded directly into one of six waste fuel blend tanks. A vapor balancing system is utilized between tanks and trucks during fuel offloading. Venting is through a carbon canister. The liquids, with dispersed solids, are placed in one of two kiln feed waste fuel (burn) tanks. The tank contents are analyzed for regulated constituents and injected into the burn zone of the kiln. A burn tank will typically take about 24 hours to empty.

All three of the above mentioned fuels are also received in 55-gallon drums and similar containers. The dry solid fuels are dumped in Feed Prep #1 and processed with the bulk dry solids. The dispersible solids are processed in a drum auger/decanter system. Drums are loaded onto a conveyor, and then lifted by

an elevator to the drum auger. Any solids that do not fall out into the screw conveyor feeding the drum decanter are augured out, rendering the drum RCRA empty. These solids are blended with liquid fuels in the liquid receiver tank and pumped back to the fuel farm.

4. STORAGE CAPACITY

Total Liquid Fuel Tank Storage Capacity: 450,000 gallons

Liquid Fuel Tanks

(6) - 25,000 gallon storage/blend tanks

(4) - 75,000 gallon tanks

Solids Storage Silo	75 yd ³
Feed Prep #1 waste management unit	1,000 yd ³
Feed Prep #2 waste management unit	305 yd ³
Solidification/Special Treatment Unit	240 yd ³
CSA #1 waste management unit	36,000 gallons
CSA #3 waste management unit	360,000 gallons
CSA #4 waste management unit	131,250 gallons
CSA #5 waste management unit	290,000 gallons

5. HOURS OF OPERATION

WASTE FUELS RECEIVING & LABORATORY:

Monday – Friday; please call for a scheduled time slot.

PROCESSING:

24 hours/day, 7 days/week

6. EXISTING WASTE MANAGEMENT UNITS [APPENDIX A]

- a. Unloading facilities for waste-derived solids and liquids
- b. Rail tank car unloading area
- c. Liquid fuel tank farm storage and sampling/unloading facility
- d. Containment buildings for storage and processing
- e. Fuels blending facility
- f. Solidification/Special Treatment Unit
- g. Gasification Miscellaneous Treatment Unit (While we are permitted and have installed the gasification unit; it is currently not in operation)
- h. Solid feed system
- i. Drum decanting unit
- j. Cement kiln system

*Note: There are no underground tanks onsite.

7. BRIEF DESCRIPTION OF EACH UNIT

a. Unloading Facilities for Solids & Liquids

Containers are unloaded primarily to container storage area (CSA#4), located north of the Feed Prep #2 Building. Other container storage areas are: Feed Prep #2 Building;

CSA#1; CSA#5; and CSA #3 located directly east of the rail tank car unloading/storage area. Bulk liquid from tanker trucks are unloaded in the liquid sampling/unloading area directly to one of the storage tanks in the tank farm or from a rail tank car and transferred to the tank farm. Bulk solid shipments are unloaded directly into Feed Prep #1 waste management unit.



b. Rail Tank Car/Railcar Unloading Area

Railcar shipments of solid materials are unloaded into containers using a crane, backhoe or bobcat. Once full, the container is covered and transported either to the solids unloading area (dry fuel), or to the solids storage and processing building if the material requires processing.

Liquids delivered by rail tank Car are transferred to the tank farm or stored at the rail facility in one of the two 75,000-gallon above ground storage tank (AST).

Drums delivered by railcar are unloaded into box vans and transported to the drum receiving area.



c. Liquid Fuel Storage Tank Farm & Unloading Facility

Liquid WDF are analyzed and placed into storage in one of six 25,000-gallon AST's located in the liquid fuel unloading facility. Samples are obtained of the contents of tankers prior to unloading to determine conformance with established pre-qualification waste. The unloading facility is a contained area, handling two trucks simultaneously. Trucks remain in this area until unloading into a storage tank is complete. Liquids may be transferred between all storage tanks to produce a homogenous fuel. Compatible liquids are then transferred to one of two 75,000-gallon burn tanks. The larger burn tanks provide a consistent, suitable mixture of waste to the kiln.

All tanks are above ground and located within secondary containment sufficient to hold the entire contents of a tank. All waste storage tanks have high-level alarms, which shut off the tank feed if the levels reach its fill set point. The system also has automatic shutoffs if certain emissions or feed rates are exceeded.



d. Containment Building for Storage & Processing

Containment buildings are used for storage and processing of wastes into consistent, suitable fuels. The buildings are designed in accordance with the general design requirement for a containment building under 40 CFR 264, Subpart DD. Storage of bulk solids, as well as shredding, milling, blending and conveying operations, are performed within the enclosed buildings. The buildings are designed with negative pressure systems, providing emission control and exhausts to the cement kiln-burning zone.

e. Solid Debris System

This system uses a series of sizing equipment for producing a finely shredded solid. Solid fuel is transported to the solid feed system area (feed barn) located just west of CCC's pre-heater/pre-calciner

and houses a mechanical solid fuel feed system. Waste-derived solid fuels are pneumatically conveyed to the kiln through a separate feed pipe to the low-NO_x burner in the pre-calciner.

f. Drum Decanting System (Hydropulper)

Wastes in liquid, semi-solid, and dispersible solid form, received in 55-gallon drums, are emptied by a drum decanting system. The purpose of the decanting system is to empty drums of flammable waste into a closed system to prevent fires and better control fugitive emissions. The drum decanting system consists of a container emptying or auguring unit connected to a closed receiver system for liquid fuel material. The closed system includes an auger, liquid receiver tank, pump, in-line grinder and associated piping. This decanting system is located in Feed Prep #2 Building.

g. Tanker Truck & Rail Tankcar Cleaning System

The tank cleaning system is located at the north end of the rail facility. The system is capable of removing large heels from a 5,000-gallon tank truck up to a 25,000-gallon rail tank car. This is accomplished by using liquid solvent material. Two centrifugal pumps are used to boost the cleaning solvent up to 200 gpm at 200 psi. This high-pressure action will lift the solids/sludge back into the liquid suspension. The high-pressure & high volume of rinse material is generated through the use of two pumps and a grinder. Solvent rinse material is pulled from three different locations; tanker truck, rail tankcar or Tank #13. The unit can handle up to 3/8-inch solids passing through the feed nozzle; the grinder was installed to reduce the particle size to insure safe and efficient operation.

h. Solidification & Special Treatment Unit

The solidification and special treatment unit is located within an enclosure inside of the Feed Prep #2 Building. Special treatment/blending procedures to eliminate free liquids prior to storage or offsite shipment are needed. This unit provides a location for special blending to be conducted on waste-derived material where liquids have separated during transit. In this captive treatment process, absorbent materials can be blended with the waste material to eliminate liquids.

C. WASTE DESCRIPTION & QUANTITIES

A list of acceptable Federal EPA Hazardous Waste Codes is provided. **[Appendix B]**

Liquid and solid WDF are accepted on the basis of the following criteria:

1. Specifications

- a. Fuel Specifications for Quality Cement Production
- b. Fuel Specifications for Part B Permit Compliance
- c. Federal EPA Hazardous Waste Codes / Part A Permit Application
- d. No TSCA regulated PCB's >50ppm, dioxins, furans, reactives, radioactive, explosives, and ammunition or biological wastes

2. Waste Derived Fuel Capacity

Approved for 12.21 TPH Total Hazardous Waste Derived Fuel (WDF)

-Pumpable WDF (11.28 TPH)

-Solid WDF

3. Restricted Wastes

Waste streams unsuitable for fuel reuse at GAR/CCC may be stored and shipped to an approved alternate disposal facility or returned to the generator at their request. The following waste streams will not be accepted at the facility:

- Wastes that exhibit the characteristic of explosive reactivity as described in 40 CFR 261.23(a) (6), (7) and (8).
- Radioactive wastes.
- Dioxins and furans as identified by waste codes F020, F021, F022, F023, F026, or F027.
- Material regulated under the Toxic Substances and Control Act (TSCA). For example, polychlorinated biphenyl's (PCB) bearing wastes with concentrations >50 ppm.
- Wastes that pose significant or unwarranted risk to facility personnel, the environment, or the cement-making process.
- Dry solid debris waste identified to exhibit flammability below 100 ☐ F will be shipped to an approved alternate facility or treated onsite to decrease flammability prior to processing.
- Gaseous wastes in high-pressure cylinders.

In addition, if any of the waste codes listed in Appendix XI of 40 CFR 268 – Metal Bearing Wastes Prohibited from Dilution in a Combustion Unit According to 40 CFR 268.3 (C) – are present, at least one of the following criteria have to be met.

- a) The waste contains hazardous organic constituents or cyanide levels exceeding the constituents – specific treatment standard found in 40 CFR 268.48; table of Universal Treatment Standards (UTS) covering approximately 126 organic compounds. The vast majority of the limiting concentrations for wastewaters are less than 1 mg/l.
- b) The waste consists of organic debris-like materials, such as, wood, paper, plastics, or cloth contaminated with inorganic metal-bearing hazardous waste.
- c) The waste, at point of generation, has reasonable heating value such as greater than or equal to 5000 Btu per pound;
- d) The waste is co-generated with wastes for which combustion is a required method of treatment. For a list of such wastes, see 40 CFR 268.40.

- e) The waste is subject to federal and/or state requirements necessitating reduction of organics.
- f) The waste contains greater than 1% Total Organic Carbon (TOC).

D. DESCRIPTION OF ACCEPTABLE WASTE CONTAINERS

Wastes are received at the facility in a variety of containers. Examples include, but are not limited to:

Drums (up to 110 gal.)

Liquid Totes

1-3 CY flexible and rigid intermediate bulk containers

Roll-off boxes or equivalent bulk containers

Vacuum boxes

Sludge boxes

Tanker trucks

Dump trailers

Tanker railcars

Intermodal containers

Box, flat and gondola railcars

Other DOT approved shipping containers

E. SETTING UP A WASTE STREAM AT GAR

Prior to shipping a waste to GAR, a GAR Waste Profile Survey Form **[APPENDIX C]** must be completed, signed and submitted to GAR's Customer Service Department. Samples are not required, but may be requested if further evaluation is needed.

Evaluation of Waste Streams

Waste streams require preliminary screening and evaluation prior to acceptance by the Waste Profile Approval Committee. This committee is comprised of Sales, Health and Safety, Environmental, Laboratory and Operations personnel. The team meets to review and approve waste streams from the perspectives of permit applicability and safety, as well as, to discuss the operational issues or concerns regarding any waste stream. The nature and extent of sampling and analysis will depend upon initial evaluation, including a description of the process generating the waste and all relevant information gathered. Data provided by the generator will be included in the evaluation and may be relied upon as the basis for decision if accompanied by a detailed evaluation of the waste stream contents and signed certification. All evaluations are conducted on a case-by-case, waste stream specific basis.

Waste Profile Survey (WPS)

Reliable information about the chemical and physical properties of the waste will be derived from knowledge of the waste generating process. Each source of waste considered for processing is qualified by asking the generator to complete a WPS form. The application requires the generator to advise GAR of the raw materials that could become part of the waste stream, as well as, the process and associated waste codes by which the waste is produced. The data submitted by the generator is used to determine the waste stream's suitability and the specific parameters necessary to characterize the waste stream. The WPS (and any updates to the form) is part of the generator's record. **[APPENDIX C]**

Sampling

All samples will be collected using sampling protocols the same as or derived from those listed in 40 CFR 261 Appendix I or Section One of USEPA SW-846 "Test Methods for Evaluating Solid Wastes." These sampling techniques are designed to provide randomly selected representative samples from various sources of waste.

Analyses

Depending upon the properties of the waste, GAR may require analysis of representative samples. These analyses are:

- Testing to pre-qualify for use at the facility. This is known as the prequalification sample.
- Testing incoming waste shipments to verify its quality match against the prequalification information. This is known as the fingerprint sample.
- Testing containerized waste prior to processing to determine safety, compliance, and operating compatibility.
- Testing of one or more samples taken during or after blending to determine the parameters of the resultant WDF.
- Testing for cement QA/QC.

Only materials that have been qualified will be accepted at the facility. If required, shipments will be analyzed for qualification before the material is accepted. Materials that are significantly different from that represented in the WPS might be processed at GAR. These wastes will be either re-qualified as a new waste or rejected.

The purpose of prequalification analysis is to assemble a detailed profile of the chemical and physical characteristics of the candidate waste stream. The profile assists in determining whether the material can be processed as a WDF and whether it can be handled safely and efficiently onsite.

Before wastes are introduced into the blend tanks, they are tested for compatibility. The blend tanks are sampled before and after solids are added.

A **Certificate of Recycling Energy Recovery [APPENDIX F]** is provided to generators upon request. The certificate states that GAR “received waste material from the above referenced entity as described on the above referenced manifest. Waste was managed in compliance with applicable laws, regulations, permits, and licenses.” It also includes a certificate number, date issued and signed by a GAR Account Coordinator.

Off-Site Shipments

<u>Type of Material</u>	<u>Destination</u>
“Dirty” Metal Waste	GAR Approved Subtitle C Landfill
RCRA Empty Drums	GAR Approved Metal Recycler
Clean Pallets	GAR Approved Pallet Recycler
Non-fuel quality waste	GAR Approved TSDF

F. QUALITY CONTROL

1. Quality Control Procedures

Analytical procedures verifying incoming waste stream characteristics:

- * All shipments must be pre-qualified.
- * Samples are taken of all shipments arriving at the facility, tested and compared against pre-qualification profiles.
- * Hazardous Waste Manifests and Land Disposal Restriction Forms must accompany all hazardous waste shipments.
- * All waste codes on the manifest are checked against GAR’s permitted waste codes.
- Arriving material is logged in daily operating records.



2. Waste Fuels Laboratory Capabilities

GAR is equipped with a fully staffed and equipped waste fuels laboratory. The laboratory provides pre-qualification analysis for potential waste streams and receipt analysis for incoming shipments. Additionally, the laboratory confirms that waste fed to the kiln meet specification parameters to conform to the Part B conditions for burning hazardous waste. Waste dust from the kiln is analyzed to verify compliance with established requirements.

All wastes are subject to procedures for:

BTU, Cl⁻, PCB, H₂O, pH, Appendix VII metals, flash point, specific gravity, radioactivity, compatibility and reactivity.

Table 1
Analytical Parameters, Methods and Rationale

Parameter	Reference Method(s)	Reason for Analysis
Organic Composition	SW-846 8260C, 8270D; ASTM D5830	Personal Exposure
PCBs	SW-846 8082A; ASTM D6160	Restricted Material
Heat Content (Btu/lb)	ASTM D5468, SW-846 5050	Fuel Quality Control Acceptance Criteria
Sulfur	ASTM D129, D4327, D5468 SW-846 9056	Fuel Quality Control
Ash	ASTM D 5468	Fuel Quality Control
Viscosity	ASTM D2196	Fuel Quality Control
Specific Gravity	ASTM D5057	Fuel Quality Control
Radioactivity	ASTM D5928	Restricted Material
Total Metals: Ba, Ag, Sb, Cd, Pb, Be, Cr, As, Hg, Tl	SW-846 3005A, 3010A, 3015A, 3050B, 3051, 3052, 7470A, 7471B, 6010C; ASTM D5513	Fuel Quality Control, Personal exposure risk assessment. HWC MACT requirement.
Fluoride, Chloride, Bromide, Sulfur	SW-846 5050, 9056A, EPA 300.0; ASTM E776	Fuel Quality (process control) HWC MACT Requirement
Compatibility	ASTM D5058	Fuel Quality Control
Free Cyanides (qualitative)	ASTM D5049	Personnel Exposure
Flash Point	ASMT D3278, D4982	Personnel Exposure
Sulfides (qualitative)	ASTM E4978	Personnel Exposure
pH	ASTM D2110, D4980, SW-846, 9040C, 9041A, 9045D	System and waste Compatibility
TCLP Metals	SW-846 1311, 3015A, 60100, 7470A	

1 “Except for those situations where the RCRA regulations specify use of a particular method, it is appropriate for the QA/QC Chemist or designee to use judgment, tempered by experience, in selecting an appropriate set of methods from SW-846 or the scientific literature for preparing and analyzing a given sample.”

“Implicit in the proceeding argument is the fact that SW-846 was designed largely for use in showing that a waste does not contain certain hazardous constituents or characteristics. In that regard, many SW-846 sample preparation methods are designed around trace analysis rather than the percent level determinations often required for concentrated wastes. However, these methods are suitable for percent level determination analysis when appropriately modified by the QA/QC Chemist or designee.”
Reference: Federal Register, February 8, 1990, pages 4440-4445, EPA Proposed Rules-Preamble to SW-846 3rd Edition.

Table 2
Green America Recycling, LLC
Waste Fuels Laboratory Equipment Inventory

Instrument/Equipment	Quantity	Test
Parr Oxygen Bomb Calorimeter	3	Heat content
Karl Fischer Titrator	2	Water content determination
Pensky-Martens Flash Tester	1	Closed Cup Flash Point
Koehler Open Cup Flash Tester	2	Flash point analysis
Orion pH Meter	2	pH
Hewlett Packard-ECD	2	PCB Analysis
Hewlett Packard Mass Spectrometer Detector	2	organics
Dionex Ion Chromatograph	3	Halogen Analysis
Perkin Elmer ICP	2	Metals analysis
CEM Microwave Digestion Unit	1	Metals Digestion
Cetac Hg Analyzer	2	Mercury
Brookfield Viscometer	2	Viscosity
Mettler Balance	4	Specific gravity
Fisher Scientific Hotplate	1	Metals Digestion
Fisher Scientific Centrifuge	2	Solids/liquid content
Thermolyne Furnace 1400	1	Ashing
Fisher Isotemp Oven	1	Drying
Radiation Alert	2	Radioactivity
Barnstead Water Filter	2	Lab Water Filtration
Corning Water Distillation	2	Lab Water Filtration
Fisher Hotplate Cat#11-600-100H	1	Various Lab Process
Fisher Vortex Mixer Cat#02215365	1	Mixing

3. Onsite Monitoring / Emission Control

Air pollution monitoring and emission control methods include:

- Liquid fuel tanks are vented through carbon canisters and monitored weekly.
- The majority of the combustion gases exiting the rotary kiln enter the calciner. Up to 15% of the gases may bypass the pre-heater and calciner. These gases are withdrawn from the kiln riser duct, where they are conditioned by an alkaline spray dryer and directed to a separate baghouse to remove particulate material. The purpose of the baghouse is to remove alkali salts from the system. Waste dust is tested in accordance with 40 CFR 266.112 and 10 CSR 25-75.266 and managed according to the results. All gases from the bypass are then ducted to the main kiln stack by the bypass induced draft (ID) fan. Combustion gases leaving the rotary kiln enter the calciner and come in contact with a low-NOx burner. A tertiary burner is located above the low-NOx burner in the calciner to add additional heat for process purposes. Combustion gases leaving the calciner are utilized in the pre-heater to pre-heat raw materials. All gases leaving the pre-heater are directed to the in-line raw mill or main baghouse.
- Certified Continuous Emission Monitors (CEMs) are operating in compliance with HWC MACT & Part B Permit conditions. Combustion gases at the exhaust end of the kiln are continuously monitored for O₂ and CO, as these parameters are an integral portion of data utilized for kiln control. Stack gases are continuously monitored for opacity, SO_x, NO_x, CO, CO₂, O₂, and gas flow. Opacity is monitored by a cross-stack laser system. CO, CO₂, SO_x, NO_x and O₂ utilize a continuous extractive system complete with a sample conditioning system. Stack tests are conducted periodically by independent engineering and testing firms to determine emissions, as required.
- The main baghouse ID fan is utilized to maintain the kiln system under negative draft. The variable speed fan is sized to maintain a negative pressure throughout the system, effectively preventing fugitive emissions and exhausts to the main kiln stack.

4. Automatic Waste Feed Cutoff Controls

The facility has automatic waste fuel feed cut-offs based on compliance testing and in compliance with the Part B Permit. Operating parameters connected with automatic waste feed cut-off are:

- Production rate
- LVM (low volatile metals; lbs./hr.) total & pumpable
- Thermal LVM/MMBtu
- SVM (semi-volatile metals; lbs./hr.) total & pumpable
- Thermal SVM/MMBtu
- Hg MTEC (µg/dscm)
- Hg Feed Concentration (ppm HWF)
- Feed rate of total hazardous waste fuel

- Feed rate of pumpable hazardous waste fuel
- Calcliner temperature
- Calcliner Differential Pressure
- Key APCS operating parameters [baghouse inlet temperatures (bypass, main & coal)
- Cl₂/HCl feed rate
- Calcliner THC

G. MANAGEMENT OF CEMENT KILN DUST (CKD)

CKD is a by-product generated during the manufacture of Portland cement. CKD chemical makeup consists of particles of limestone (CaCO₃) that have not achieved complete dissociation of CO₂ and transformation into lime (CaO). The process of dissociating CO₂ from limestone is referred to as calcination. CKD also contains silica, trace amounts of heavy metals, sodium chlorides, potassium chlorides and other constituents indicative of the raw materials and fuels introduced into the kiln during cement production.

CKD is generated at two locations within the pyroprocessing system. All of the CKD generated in the preheater/precalcliner tower is captured in the main baghouse unit. This baghouse unit removes the dust and exhausts the gases to the main stack. Dust from this main baghouse unit is transported by a series of screw conveyors and reutilized in the raw meal process as raw feed. The rotary kiln system is equipped with an alkali bypass system. The bypass system is needed to remove salts (sodium, potassium, SO₄ and chlorides) from the system. The bypass gases are withdrawn from the kiln riser duct where the gases are air and water quenched in a spray tower conditioned by an alkaline spray dryer and cleaned in a dust collector. Dust collected by the spray tower, spray dryer and bypass dust collector is conveyed to the waste kiln dust storage bin system. The CKD is then removed from the system and shipped to a permitted disposal facility.

CKD Analysis

The waste CKD is sampled and tested in the GAR Waste Fuels Laboratory using a Mass Spectrometer to detect total levels of both volatile and semi-volatile organics using USEPA SW-846 Methods 8260C and 8270D. The TCLP (Toxicity Characteristic Leaching Procedure) metals analysis is performed on each load and designed to test the leachability of metals using USEPA SW-846 Methods 1311 and 6010A.

CKD Exemption

Presently, CKD is managed in accordance with an OM&M (Operation, Maintenance & Monitoring) Plan required by the RCRA Part B Permit.

H. FACILITY MANAGEMENT RECORDS

The following records are maintained in accordance with regulations and best management practices:

1. Operating Records

- Source of waste received
- Waste description and quantity
- Methods and dates of disposal/storage/treatment
- Waste inventory
- Analytical records, including QA/QC
- MACT qualification records for all materials going to and exiting the kiln
- Reports/summary of any incident requiring implementation of GAR's Contingency Plan
- Frequency of repeat tests
- Closure cost estimates and financial assurance for closure

2. Waste Analysis Plan and Feedstream Analysis Plan

- Test parameters and methods
- Sampling methods
- Procedures for retention of results

3. Inspection Logs

The facility has comprehensive records of daily, weekly, and monthly inspections. Any deficiencies are noted on the reports and remain until corrective actions are completed. Work orders are prepared for repairs as needed.

4. Contingency Plan

- Emergency procedures
- List and description of facility emergency equipment
- Evacuation plan

5. Training Program

- Job titles/descriptions
- Required RCRA, OSHA and MSHA training

-Continued training & accomplishments

6. Health Surveillance Plan

-All employees who handle hazardous waste receive yearly physicals including biomonitoring.

I. WASTE FUELS INFORMATION MANAGEMENT SYSTEM

The Waste Fuels Information Management System (WFIMS) automates the waste disposal process using a comprehensive application software package. This system automates the major aspects of waste disposal, formerly done manually, to improve the efficiency and significantly minimize data duplication errors. Waste tracking, laboratory data management, process control interface, and a financial systems interface are the major components of waste disposal that are automated by the WFIMS. Current phase implementation of the system includes two modules that handle the waste tracking and laboratory data management. Future phase implementation will develop and add the remaining modules into the system.

The effective Waste Tracking System (WTS) significantly improves the efficiency of waste material receiving, storage and processing. Additionally, the WTS minimizes errors and delays when matching samples, calculating prices, allocating storage locations, and issuing invoices. Facilitating response to regulatory audits and the production of required regulatory reports is an important improvement over manual methods. Furthermore, the WTS provides significant benefits to customers, both initially when arranging contracts and scheduling delivery, and when providing detailed information and reports.

The Laboratory Data Management System (LDMS) addresses the requirement to perform statistical analysis of sample data and to reduce the inefficient multiple handling and hand copying of information by automating the maintenance of the comparatively large amounts of data laboratories currently handle with manual systems. This also includes laboratory instrument interfaces to retrieve data from process control systems and laboratory instrumentation.

J. PERMITS / REGULATORY AGENCY INFORMATION / INSURANCE

1. Regulatory Status

Part I Permit	3/19/2013
Part II Permit	6/30/2010
RCRA Part A Permit	11/12/2012
RCRA Part B Permit	Issued 10/14/1999 Effective through 10/14/2009

Renewal submitted 10/13/2009

Operating under previous permit until

Agency review/approval of renewal is complete

HWC MACT Compliant

3/26/2010

2. Operating Permits [APPENDIX G]

3. Facility Inspections

Routine RCRA inspections have been conducted yearly by EPA Region VII, and quarterly by the Missouri Department of Natural Resources (MDNR). MDNR Air Quality Inspections, including the HWC MACT and the Portland Cement MACT requirements, have been annual.

MDNR Contacts as of May 2016:

Maria Bonney, P.E. – Environmental Engineer (314) 416-6205

maria.bonney@dnr.mo.gov

Missouri Department of Natural Resources

Permits Section - Hazardous Waste Program

7545 South Lindbergh Boulevard Suite 210

St. Louis, MO 63125-4839

Larry Slechta – Environmental Specialist (573) 522-9532

Larry.slechta@dnr.mo.gov

Missouri Department of Natural Resources

Hazardous Waste Program

P.O. Box 176

Jefferson City, MO 65102

Brant Farris – Water Inspector

(660) 385-8000

brant.farris@dnr.mo.gov

Missouri Department of Natural Resources

Northeast Regional Office

1709 Prospect Drive

Macon, MO 63552

Dan Brownawell-Environmental Specialist (Air)

(660) 385-8000

Daniel.brownawell@dnr.mo.gov

Missouri Department of Natural Resources

Northeast Regional Office

1709 Prospect Drive

Macon, MO 63552

4. Insurance [APPENDIX G]

K. SITE GEOLOGY / HYDROLOGY / GROUNDWATER MONITORING

1. General Facility Description

The facility is located at 10107 Highway 79, three miles South of Hannibal, Missouri (pop. 18,000) on a high bluff, about 140' above the level of the Mississippi River at the eastern base of the site. The property consists of approximately 3,500-acres located in Ralls County, Missouri. The hazardous waste management facilities occupy approximately five acres of the property. The surrounding land is used primarily for agricultural purposes or is unused due to topography and tree growth.

The formations beneath the hazardous waste facility are: Burlington Limestone from 0– 10' below ground surface (bgs) underlain by Hannibal Shale 70– 140' bgs. There may be some perched groundwater in the Burlington Limestone on top of the shale. Beneath the shale is Louisiana Limestone, at a depth of from 140 – 195' bgs, the Saverton/Grassy Creek Shale/Makokata Shale from 195 – 380' bgs, and Kimswick Limestone from 380 – 540' bgs. Beneath the Kimswick is the Dakora Limestone Formation, followed by layers of mud slips and shale. Starting at a depth of approximately 590' bgs is the St. Peters Sandstone, containing a usable aquifer.

2. Site Layout

The cement kiln and main cement-manufacturing operations are situated on the west side of Highway 79. Waste storage and processing facilities are located north of the cement kiln. The railcar-unloading stations are situated 200-feet west of U.S. Highway 79. These facilities are outside the 100-year flood plain.

3. Site Groundwater Monitoring

Waste management facility – The waste management facility is constructed and operated to meet the requirements of 40 CFR 264.90(b)(2) and 10 CSR 25-7.264(E) and as such is not subject to the regulations for releases as defined in 40 CFR Subpart F. Each of the treatment and storage areas used to manage hazardous waste are designed to protect against releases into the environment. Rainwater collected in the fuels compound is contained and blended into the liquid fuels or tested to document that the water is free of contamination and released under an NPDES permit. This includes offloading, tank storage, rail car unloading and feed prep areas.

Cement manufacturing facility – Stormwater runoff from the cement manufacturing facility is conveyed to a sedimentation basin located directly southeast of the facility. **There are seven permitted outfalls. The only water that reaches the outfalls and is subject to the NPDES storm water requirements is the storm water generated from the quarry areas, and cement kiln and production areas.** There are storm water runoff ponds in the vicinity of the railroad site and in the vicinity of the artificial soil processing area. Storm water impoundments are used in non-waste management areas only, and are regulated under the NPDES permit.

4. Site Geology

CCC currently has four active quarries on the property's approximately 3,500-acres. In 2014, CCC began mining for Kimswick Limestone underground. The stratigraphic succession [FIGURE 1-3, APPENDIX H] indicates it is not located within any fault zones. The thick shale stratum provides an effective barrier to the downward migration of surface contaminants. Groundwater monitoring is not required.

5. Site Hydrology

Nearest aquifer

The depth of the uppermost now consolidated aquifer is estimated to be at 590 feet below the site within the St. Peters formation.

Potable water

Surrounding neighbors and community of Monkey Run (population approximately 50) and the cement plant are supplied by the Ralls County water Authority, which purchases treated water from the city of Hannibal. This drinking water is drawn from the Mississippi River. The intakes are upstream of the facility. The State of Missouri has mandated the use of Ralls County Water for residents due to the close proximity of the Mississippi River.

Onsite wells

The cement plant uses processed water from the Mississippi River for its process. There is one well located in the underground mine. Groundwater monitoring was conducted in monitoring of previous wells as part of a Phase 2 Site Assessment in 1996 as part of an ownership change. No impacts were identified at the time; the wells have since been properly closed.

Nearest off-site wells

The closest well is located 1-mile from the plant. Local wells are used strictly for agricultural purposes.

6. NPDES Permits

CCC has a Missouri State site-specific operating permit issued by the MDNR Water Pollution Control Program. The permit contains Effluent Limitation and Monitoring Requirements for plant operations, and outlines the frequency of sampling required for this unit. A second General Stormwater permit covers the stormwater runoff from the quarry operations

7. Wind Direction

The prevailing wind is to the south and southeast at 4 to 13 mph.

L. SECURITY

Security of the plant is maintained by controlling access. There is fencing around the entire cement plant operating site. The entire waste fuels areas, including the tank farm and rail siding, are enclosed in chain link fencing. The storage buildings for the solid and containerized waste are not fenced but can be locked. Surveillance by cameras is located at the entrance gate to the facility and burner floor. There is a guard located at the entrance gate to the facility 24-hours per day, seven days per week. Plant personnel are always present onsite.

There are various signs (warning, danger, notice) posted throughout the facility to alert personnel and visitors regarding potential dangers associated with the cement manufacturing and waste management processes.

The site maintains a formal, written security plan and key employees are trained on these requirements.

Security measures include:

- Fences and gates
- Guarded facility entrances
- Enclosed and secured buildings
- Visitor/contractor sign-in log books and passes
- 24-hour video and personnel surveillance
- Site lighting

M. SAFETY & TRAINING

1. Procedures to Prevent Hazards

The prevention of hazards at the facility is achieved through the use of safe operating practices, complete personnel training and daily attention to those areas where preventative measures have the greatest effect.

a. Inspections

The facility is maintained in good operating condition by utilizing timely inspections of all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment. These daily, weekly and monthly inspections are important in preventing, detecting and responding to conditions that could cause harm to human health or the environment.

b. Safety Communications and Emergency Preparedness Equipment

All personnel involved in unloading, blending or handling hazardous waste have immediate access to one or more of the following at all times:

- Telephones
- 2-way radios
- Water for fire control (water tower with county water and surface water from the Mississippi River)
- Utility cutoffs
- Fire control equipment (fixed and handheld foam fire suppression system, sprinkler systems, and process equipment dry chemical suppression units; infrared detectors on dry material storage piles; fire extinguishers specifically for metal fires)
- Diesel generator backup power source for suppression system water pumping
- Internal communications/alarm system
- Spill and decontamination equipment and materials
- First aid kits and materials

c. **Emergency Response**

Surprise Emergency Response Drills are conducted semi-annually. During these drills, personnel are timed on how long it takes them to get to their duty stations.

d. Spill containment

The entire waste management facility is designed to contain spills and to respond to emergencies quickly. Feed Prep #1 waste management unit, where solids are blended, is totally enclosed. Liquid wastes are transferred in above ground piping that can be easily observed and inspected. These areas, including the loading dock and rail car unloading area, are within containment. The storage tanks are equipped with high-level tank alarms and are situated in a containment area sufficient to hold the entire

contents of a tank. Containers are stored in enclosed and semi-enclosed buildings. Stacking is minimized for drum storage (2 pallets high) if needed. Container storage area floors are sloped to a sump to collect any stormwater (or spills) that may accumulate. Aisle spacing is normally maintained to 3-4 feet with container labels facing the aisle. Rolloff containers of solids can be stored in three areas. These areas are used for storage of residual wastes generated onsite, as well as, incoming bulk solids. CKD is kept on hand at strategic locations to absorb spills of liquid.

e. Facility-generated waste

Used personal protective equipment (PPE), spill cleanups, and laboratory samples are combined with other waste materials in one of the facility's waste management units.

f. Hygiene program

The facility's industrial hygiene program requires personnel to wear protective clothing and equipment whenever working with WDF.

g. Fire control

GAR maintains an on-site fire brigade. Fire control equipment is located at strategic points throughout the facility. Automatic foam fire suppression systems are installed at the liquid storage tank farm and the fuel blending facility. Portable fire extinguishers suitable for all A, B and C fires are located throughout the facility. GAR has made arrangements with local authorities to provide services in dealing with any emergency situation.

The GAR facility is designed and operated in accordance with standard industry practices, as well as building, fire and electrical codes to minimize the potential for fires, explosions and/or unplanned releases of hazardous waste or hazardous constituents to the air, soil or water. All electrical fittings are explosion proof and hand-held tools are spark resistant. GAR conducts at a minimum two (2) fire drills per year.

The primary means of achieving such protection to human health and the environment include:

- Provision of adequate personal safety and emergency response equipment.
- Comprehensive personnel training, contingency, inspection and waste analysis plan.
- Spill protection and secondary containment systems for all storage and process units.
- Separation and protection of ignitable wastes from sources of ignition or reaction.

2. Training Program Overview

The program developed to train employees in the safe handling of hazardous waste materials is based on the requirements established by the U.S. Environmental Protection Agency, the Missouri Department of Natural Resources, the Occupational Safety and Health Administration and the Mine Safety and Health Administration. During the training program, employees are provided with information and hands-on introduction to the potential conditions they may encounter while performing their assigned tasks.

At a minimum, employees are instructed about safe work practices, personal protective equipment, respiratory and hearing protection, fire and spill response, inspection procedures, first aid, personal

hygiene and toxicology, emergency and automatic shutoff procedures, communications and alarms, contingency plan implementation, and evacuation procedures.

The training program consists of classroom training, in addition to on-the-job training. Specialized training on plant equipment will be completed prior to the employee being assigned to operate equipment. In addition, key personnel will attend specialized courses/seminars available outside the facility in the area of hazardous waste management, for specific skill enhancement.

The training techniques used are a combination of classroom lectures, video presentations, self-study of process procedure manuals, supervised on-the-job training and practical demonstration. This will consist of 24-hours minimum and will follow the general guidelines of 29 CFR 1910.120 paragraph (p)(7) and 40 CFR 264.16(a)(3) to insure the facility's compliance and to insure employees are able to respond effectively to emergencies. Employees will also undergo annual refresher training and specialized training as appropriate.

Each new employee is given a training schedule, combining the RCRA requirements of 40 CFR 264.16, OSHA and MSHA with specific job assignment training. This training must be completed before the employee is allowed to work unsupervised in an area containing hazardous waste. On-the-job training will be work specific to assignment. A new employee will be supervised for a minimum of 24 hours and then until he/she demonstrates proficiency and safe work procedures required for the assignment.

N. COMMUNITY RELATIONS

The facility enjoys a good relationship with their neighbors. GAR & CCC have a very positive advertising campaign with an environmental focus. The ongoing Community Awareness Program interacts with a representative cross-section of the immediate population regarding facility operations, environmental issues and concerns, permitting, and future expansion activities



APPENDIX A
WASTE MANAGEMENT FACILITIES

Appendix B

Acceptable Waste Codes

**GREEN AMERICA RECYCLING, LLC & CONTINENTAL CEMENT COMPANY, LLC
HANNIBAL, MISSOURI
HAZARDOUS WASTE-DERIVED FUELS ACCEPTABLE WASTE CODES
(APPROVED: 09.11.2012)**

D-Codes	F-Codes	K-Codes			P-Codes			U-Codes				
D001	F001	K001	K061	K150	P001	P060	P122	U001	U056	U111	U164	U221
D002	F002	K002	K062	K151	P002	P062	P123	U002	U057	U112	U165	U222
D003	F003	K003	K069	K156	P003	P063	P188	U003	U058	U113	U166	U223
D004	F004	K004	K071	K157	P004	P064	P204	U004	U059	U114	U167	U225
D005	F005	K005	K073	K158	P005	P065		U005	U060	U115	U168	U226
D006	F006	K006	K083	K159	P006	P066		U006	U061	U116	U169	U227
D007	F007	K007	K084	K161	P007	P067		U007	U062	U117	U170	U228
D008	F008	K008	K085	K169	P008	P068		U008	U063	U118	U171	U234
D009	F009	K009	K086	K170	P009	P069		U009	U064	U119	U172	U235
D010	F010	K010	K087	K171	P010	P070		U010	U066	U120	U173	U236
D011	F011	K011	K088	K172	P011	P071		U011	U067	U121	U174	U237
D012	F012	K013	K093	K174	P012	P072		U012	U068	U122	U176	U238
D013	F019	K014	K094	K175	P013	P073		U014	U069	U123	U177	U239
D014	F024	K015	K095	K176	P014	P074		U015	U070	U124	U178	U240
D015	F025	K016	K096	K177	P015	P075		U016	U071	U125	U179	U243
D016	F032	K017	K097		P016	P076		U017	U072	U126	U180	U244
D017	F034	K018	K098		P017	P077		U018	U073	U127	U181	U246
D018	F035	K019	K099		P018	P078		U019	U074	U128	U182	U247
D019	F037	K020	K100		P020	P081		U020	U075	U129	U183	U248
D020	F038	K021	K101		P021	P082		U021	U076	U130	U184	U249
D021	F039	K022	K102		P022	P084		U022	U077	U131	U185	U271
D022		K023	K103		P023	P085		U023	U078	U132	U186	U278
D023		K024	K104		P024	P087		U024	U079	U133	U187	U279
D024		K025	K105		P026	P088		U025	U080	U134	U188	U280
D025		K026	K106		P027	P089		U026	U081	U135	U189	U328
D026		K027	K107		P028	P092		U027	U082	U136	U190	U353
D027		K028	K108		P029	P093		U028	U083	U137	U191	U359
D028		K029	K109		P030	P094		U029	U084	U138	U192	U364
D029		K030	K110		P031	P095		U030	U085	U140	U193	U367
D030		K031	K111		P033	P096		U031	U086	U141	U194	U372
D031		K032	K112		P034	P097		U032	U087	U142	U196	U373
D032		K033	K113		P036	P098		U033	U088	U143	U197	U387
D033		K034	K114		P037	P099		U034	U089	U144	U200	U389
D034		K035	K115		P038	P101		U035	U090	U145	U201	U394
D035		K036	K116		P039	P102		U036	U091	U146	U202	U395
D036		K037	K117		P040	P103		U037	U092	U147	U203	U404
D037		K038	K118		P041	P104		U038	U093	U148	U204	U409
D038		K039	K123		P042	P105		U039	U094	U149	U205	U410
D039		K040	K124		P043	P106		U041	U095	U150	U206	U411
D040		K041	K125		P044	P108		U042	U096	U151	U207	
D041		K042	K126		P045	P109		U043	U097	U152	U208	
D042		K043	K131		P046	P110		U044	U098	U153	U209	
D043		K044	K132		P047	P111		U045	U099	U154	U210	
		K045	K136		P048	P112		U046	U101	U155	U211	
		K046	K141		P049	P113		U047	U102	U156	U213	
		K047	K142		P050	P114		U048	U103	U157	U214	
		K048	K143		P051	P115		U049	U105	U158	U215	
		K049	K144		P054	P116		U050	U106	U159	U216	
		K050	K145		P056	P118		U051	U107	U160	U217	
		K051	K147		P057	P119		U052	U108	U161	U218	
		K052	K148		P058	P120		U053	U109	U162	U219	
		K060	K149		P059	P121		U055	U110	U163	U220	

APPENDIX C

WASTE PROFILE SURVEY FORM

Green America Recycling, LLC

10107 Highway 79
Hannibal, MO 63401
(573) 248-0730 Fax (573) 221-8487
Toll Free (866) 229-6262

GAR USE ONLY	
Customer #	
S.I.D. #	
Date Received	
GAR Sales Representative	

SAMPLE SUBMITTED ☐ Yes ☐ No

GAR, retains the right to request samples at any point in the approval process.

Waste Profile Survey

A. Generator		EPA ID #
Generator's Name		Missouri ID #
Is the Generator a TSDF? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Facility (Manifest) Address		
Street		P.O. Box
City	State	Zip
Tech. Contact	Title	Phone No.
B. Billing		
Billing Name		
Street		P.O. Box
City	State	Zip
Tech. Contact	Title	Phone No.
C. General Waste Information		
Material Description		
Process Description		
Shipping Container -Check all that apply <input type="checkbox"/> Bulk <input type="checkbox"/> Drums <input type="checkbox"/> Boxes/Bags		
Shipping Method -Check all that apply <input type="checkbox"/> Truck <input type="checkbox"/> Railcar		
Shipping Volume and Frequency -Give Details Example- 50 Drums per month		
D. Attach MSDS for components requiring employee communication under OSHA		
Also, if available, attach current analysis representative of the material.		
<input type="checkbox"/> MSDS attached <input type="checkbox"/> Analysis attached <input type="checkbox"/> No attachments		

[illegible]

Explosive	<input type="checkbox"/> Yes <input type="checkbox"/> No	Air Reactive	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Shock Sensitive	<input type="checkbox"/> Yes <input type="checkbox"/> No	Polymerizable	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Pyrophoric	<input type="checkbox"/> Yes <input type="checkbox"/> No	Reactive Sulfide	<input type="checkbox"/> Yes <input type="checkbox"/> No, If Yes Concentration:	ppm
Oxidizer	<input type="checkbox"/> Yes <input type="checkbox"/> No	Reactive Cyanide	<input type="checkbox"/> Yes <input type="checkbox"/> No, If Yes Concentration:	ppm
Water Reactive	<input type="checkbox"/> Yes <input type="checkbox"/> No			
Other Incompatibles	<input type="checkbox"/> Yes <input type="checkbox"/> No, If Yes Please Describe:			

[illegible]

H. Specific Analysis of Waste

-Must be completed if an analysis is not attached or a sample is not submitted

Arsenic	ppm	Fluorine	%
Selenium	ppm	Chlorine	%
Silver	ppm	Bromine	%
Nickel	ppm	Phosphorus	%
Lead	ppm	Sulfur	%
Thallium	ppm	Iodine	%
Cadmium	ppm	Aluminum	ppm
Barium	ppm	Silicon	ppm
Beryllium	ppm	Heat of Combustion	BTU/lb
Chromium	ppm	Specific Gravity	
Antimony	ppm	pH (range)	to
Mercury	ppm	Water	%
		Ash	%
		Flash point	°F

I. Physical Properties

(Provide if available)

1. If **Liquid**, Viscosity ☐ Low ☐ Medium ☐ High
2. Is this material pumpable with centrifugal pump? ☐ Yes ☐ No ☐ Varies, Explain: _____
3. Can waste be heated to improve flow? ☐ Yes ☐ No
4. Is waste soluble in water? ☐ Yes ☐ No
5. Is waste multi-layered? ☐ Yes ☐ No, If Yes Describe: _____
6. Percent Solids in Liquid: _____ %
7. Physical State ☐ Liquid ☐ Sludge ☐ Solid ☐ Lean Water

J. Check all of the following substances which may be in the material:

If any of these are checked identify substance and concentration on the line(s) :

- ☐ Nitrocellulose (Usually found in LACQUER DUST Streams) _____
- ☐ DOT Corrosives, Poisons, Forbiddens, Radioactives, Explosives, or Gases _____
- ☐ TSCA regulated materials (PCBs, PBBs, Chlorinated dibenzodioxins or furans) _____
- ☐ Materials used exclusively as pesticides, herbicides, insecticides, etc. _____
- ☐ Toxic components with ACGIH TLV less than 2 ppm or 8 mg/m³ _____
- ☐ CERCLA Regulated (Superfund) Waste _____
- ☐ Water reactive components (Isocyanates, Acid Chlorides, Anhydrides, etc.) _____
- ☐ Biological hazards (Pathogenics, Infectious agents, Etiologic agents, etc.) _____
- ☐ None of the above _____

K. DOT Information

Proper shipping name _____

Revised 9/3/2009

3

Hazard Class	UN/NA Number	P.G.
Special Handling Information		

☐ Not a DOT Hazardous Material

L. Required Certifications (Must be signed for acceptance by GAR)

Regarding the waste material submitted for acceptance to GAR, I certify all of the following:

- 1) That any PCB materials present at < 50 ppm in the waste shipment DID NOT result from any dilution of materials containing > 49 ppm PCBs. Furthermore, I certify that the waste shipment meets NONE of the definitions of descriptions of PCBs, PCB items, or PCB contaminated materials found in 40 CFR 761.1, 761.3, and 761.70.
- 2) In addition, if any of the waste codes listed in Appendix XI of 40 CFR 268 - Metal Bearing Wastes Prohibited from Dilution in a Combustion Unit According to 40 CFR 268.3 (C) - are present, at least one of the following criteria have been met.
 - a) The waste contains hazardous organic constituents or cyanide at levels exceeding the constituents - specific treatment standard found in 40 CFR 268.48. This is the table of Universal Treatment standards covering 126 organic approximately compounds. The vast majority of the limiting concentrations for waste waters are less than 1 mg/l.
 - b) The waste consists of organic debris-like materials, such as, wood, paper, plastics, or cloth, contaminated with inorganic metal-bearing hazardous waste.
 - c) The waste, at point of generation, has reasonable heating value such as greater than or equal to 5000 Btu per pound;
 - d) The waste is co-generated with wastes for which combustion is a required method of treatment.
For a list of such wastes, see 40 CFR 268.40.
 - e) The waste is subject to federal and/or state requirements necessitating reduction of organics.
 - f) The waste contains greater than 1% Total Organic Carbon (TOC).
- 3) The waste does not contain Hg at concentrations equal to or greater than 260mg/kg or is otherwise subject to the lax ban restriction on the combustion of Hg containing wastes found in 40CFR 268.40.

I further certify that all information submitted in this and all attached documents contains true and accurate descriptions of the waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed to GAR.

Name (Printed) _____
 Title _____
 Signature of Generator's Company Representative _____
 Date _____

Please list any other information you wish to communicate to GAR regarding this material.
 Attach additional sheets if necessary.

APPENDIX D

LAND DISPOSAL RESTRICTION FORM

LAND DISPOSAL NOTIFICATION AND CERTIFICATION

Green America Recycling, LLC

EPA ID# MOD054018286

10107 Hwy. 79, Hannibal, MO 63401

Phone: 573-248-0730

1. GENERAL INFORMATION

Generator: _____ US EPA ID No. _____

Manifest No.: _____ Manifest Line No.(s) _____ of 9.b. (or 27.b.)

EPA Waste Code No.(s): _____

Waste Category: _____ Non-wastewater _____ Wastewater

Waste Subcategory, if applicable: _____

2. TREATMENT STANDARDS:

A. F001 - F005 Solvent Waste (check each constituent present in the waste)

Regulated Constituent	Non- Waste water mg/L	Non- water mg/kg	Regulated Constituent	Non- Waste water mg/L	Non- water mg/kg	Regulated Constituent	Non- Waste water mg/L	Non- water mg/kg
Acetone	0.28	180	o-Cresol	0.11	5.6	Nitrobenzene	0.088	14
Benzene	0.14	10	Cyclohexanone	0.36	NA	Pyridine	0.014	16
n-Butyl alcohol	5.6	2.6	o-Dichlorobenzene	0.088	6.0	Tetrachloroethylene	0.056	6.0
Carbon tetrachloride	0.057	6.0	Ethyl acetate	0.34	33	Toluene	0.080	10
Carbon disulfide	3.8	NA	Ethyl benzene	0.057	10	1,1,1-Trichloroethane	0.054	6.0
Chlorobenzene	0.057	6.0	Ethyl ether	0.12	160	1,1,2-Trichloroethane	0.054	6.0
Cresol-mixed isomers	0.88	11.2	Isobutyl alcohol	5.6	170	1,1,2-Trichloro-1,2,2 trifluoroethane	0.057	30
(Cresylic acid) (sum of o-, m-, p-cresol concentrations)			Methanol	5.6	NA	Trichloroethylene	0.054	6.0
Cresol (m- and p-isomers)	0.77	5.6	Methylene chloride	0.089	30	Trichloromono-fluoromethane	0.020	30
			Methyl ethyl ketone	0.28	36	Xylenes (total)	0.32	30
			Methyl isobutyl ketone	0.14	33			

B. D001 Treatment Standards (check, if applicable)

Waste Description	Wastewater	Non-wastewater
<input type="checkbox"/> High TOC ignitable characteristic liquids subcategory based on 40 CFR 261.21(a)(1) greater than or equal to 10% total organic carbon	NA	RORGS; or CMBST
<input type="checkbox"/> Ignitable characteristic waste, except for the 261.21(a)(1) high TOC subcategory, that are managed in non-CWA / non-CWA-equivalent / non-Class I SDWA systems	DEACT and meet 268.48 standards; or RORGS; or CMBST	DEACT and meet 268.48 standards; or RORGS; or CMBST

C. Corrosive Waste Treatment Standards (check, if applicable)

Waste Description	Wastewater	Non-wastewater
<input type="checkbox"/> Corrosive characteristic wastes that are managed in non-CWA / non-CWA equivalent / non-Class I SDWA systems	DEACT and meet 268.48 standards	DEACT and meet 268.48 standards

D. California List Prohibited Wastes (check, if applicable)

<input type="checkbox"/> HOC's 1000.0 mg/L	<input type="checkbox"/> Arsenic 500.0 mg/L	<input type="checkbox"/> Nickel 134.0 mg/L	<input type="checkbox"/> Acid ≤2 pH
<input type="checkbox"/> PCB's 50.0 mg/L	<input type="checkbox"/> Mercury 20.0 mg/L	<input type="checkbox"/> Thallium 130.0 mg/L	

E. Hazardous Debris (check, if applicable)

☐ This waste is hazardous debris and is subject to the treatment standards in 40 CFR 268.45.

3. F039, D001, D002, or D012 through D043 (write the underlying waste constituents below)

US EPA Waste Code(s)	Regulated Constituent Present in Waste
1.	
2.	
3.	
4.	

4. Certifications (Check one)

☐ Waste does not meet applicable treatment standards in 40 CFR 268.40; or exceeds applicable prohibition levels of 40 CFR 268.32 or RCRA Section 3004(d).

☐ Waste is subject to exemption from land ban treatment standards due to national capacity variance; or case-by-case extension under 40 CFR 268.5; or approved petition under 40 CFR 268.6 or 268.44.

☐ Waste can be land-disposed without further treatment. It meets all applicable treatment standards in 40 CFR 268.40 and it does not exceed the prohibition levels upon generation. (Note: Additional certification must be signed.)

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Signature _____ Date _____

I hereby certify that all information supplied above, and attached, is complete and accurate to the best of my knowledge and ability to determine that no omissions or errors exist.

SIGNATURE X _____ TITLE _____ DATE _____

Revised March 17, 2007

APPENDIX E

Artificial Soil Project Synopsis

Continental Cement Company, LLC (CCC) produces Portland cement at the facility in Hannibal MO. Depending upon the sulfur/alkali balance, a portion of the dust collected from the air pollution control device (bypass baghouse) is wasted in order to eliminate salts from the system. This improves the quality of the cement product. This waste material is known in the industry as cement kiln dust, or CKD.

CKD has traditionally been used as an agricultural amendment due to its high pH and significant potash content. With the recently upgraded cement kiln system, the CKD now has a much higher salt content rendering the dust unusable in the artificial soil project. The artificial soil project has been scaled back to support the biosolids reuse needs for the city of Hannibal's wastewater treatment plant.

With the previous cement kiln, CKD was a minor component in the soil project. The primary constituent of the artificial soil blend is compost. CCC utilizes ground yard waste as a carbon component, and waste water treatment sludge (biosolids) as the nitrogen component. These materials are mixed to a specific ratio and composted until the compost is stabilized and ready for plant growth. A passive composting approach is employed whereby the nitrogen and carbon components are blended and monitored to determine composting has begun. The mixture is then placed to a depth of approximately 2' – 3' in the quarry reclamation area. Passive composting then proceeds for several months, after which time the blend is determined to be stabilized. Once stabilized, planting can begin, or the material can be utilized throughout CCC's Land Reclamation program as a topsoil material. Materials for the project come from the City of Hannibal, MO (yard waste and biosolids), and the local area.

A mixture of native grasses is initially planted on prepared sites providing habitat for wildlife. A variety of wildlife has been observed utilizing the project site, including deer, turkey, and many species of songbirds. Since the project began in 2002, an initial area has been completed and a second reclamation area underway.

APPENDIX F



Green America Recycling L.L.C.
10107 Hwy 79 Hannibal, MO 63401
Phone: 573.248.0730 866.823.6364
Fax: 573.221.8487

Certificate No. 3035-1

CERTIFICATE OF RECYCLING FOR ENERGY RECOVERY

Issued To:

Manifest Number:

Date Received:

Green America Recycling L.L.C. has received waste material from the above referenced entity and as described on the above referenced manifest. Waste was managed in compliance with applicable laws, regulations, permits and licenses.

Date Issued:

The undersigned, on behalf of Green America Recycling L.L.C. to the best of my knowledge, certifies that the information provided is correct.

Signed:
Name/Title

Account Coordinator

Appendix G

PERMITS & INSURANCE INFORMATION

CCC and GAR

OPERATING PERMITS AND INSURANCE

Permit/Registration#	Permit Description	Regulatory Authority	Permit Holder	Effective Date	Expiration Date
OP2011-046A	Part 70 Air Operating Permit	MDNR	CCC	7/18/2013	9/22/2016
MO-0111686	NPDES-Hannibal Plant Operations Treatment & Discharges of Sanitary Systems	MDNR	CCC	11/1/2011	11/09/2016
MO-G490248	NPDES-Hannibal Plant Operations-All Outfalls; Storm water and Other Specified Discharges from Limestone and Other Rock	MDNR	CCC	11/18/2011	10/05/2016
MOD054018288	RCRA Part B Permit	MDNR	CCC/GAR	10/14/1999	10/14/2009; renewal submitted Awaiting permit; currently operating under existing permit
060214560025W	Hazardous Materials Registration	US DOT Pipeline & Hazardous Materials Safety Administration	GAR	06/05/2015	06/30/2016

INSURANCES

Policy#	Insurance Description	Carrier	Effective Date	Expiration Date	Amount of Limits
HDOG27392428	General Liability	ACE (American Insurance Company)	3/31/16	12/31/2016	\$2,000,000 per occurrence
ISA H09040912	Commercial Auto	ACE (American Insurance Company)	3/31/2016	12/31/2016	\$500,000 per occurrence
42-UMO-302383-01	Umbrella Liability	Berkshire Hathaway Specialty Insurance Company	3/31/2015	12/31/2016	\$1,000,000 per occurrence

WLR C4860190A (AOS) SCF C48601923 (WI)	Workers Compensation & Employer liability	ACE (American Insurance Company) and Identity Insurance of North America	3/31/2015	3/31/2016	\$500,000 per occurrence
ZRE9242722-01	Pollution Legal Liability	Zurich	3/31/15	3/31/18	\$5,000,000 ea ch pollution event

APPENDIX H

**FIGURE 1-3: TYPICAL SUBSURFACE GEOLOGY ENCOUNTERED AT
CONTINENTAL CEMENT COMPANY**

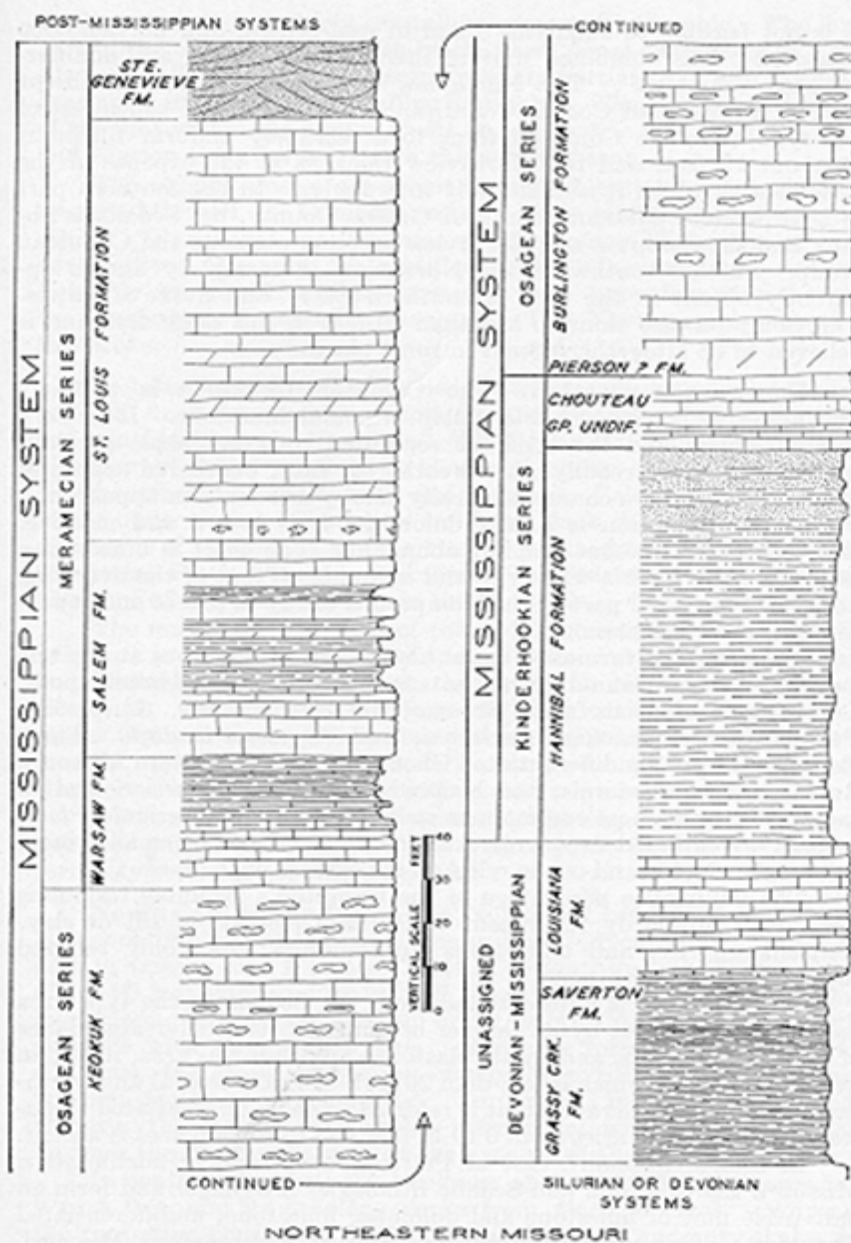



Fig. 10. Mississippian System; Kinderhookian, Osagean, and Meramecian Series, and unassigned Devonian-Mississippian formations in northeastern Missouri.

APPENDIX I

CERTIFICATE OF LIABILITY INSURANCE

		CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) 04/11/2016			
THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.							
IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).							
PRODUCER Marsh USA, Inc. 1166 Avenue of the Americas New York, NY 10036 Attn: NewYork.Certs@marsh.com Fax: 212-948-0500			CONTACT NAME: PHONE (A/C, No. Ext): FAX (A/C, No.): E-MAIL: ADDRESS:				
INSURED Green America Recycling, LLC 10107 Highway 79 Hannibal, MO 63401-7859			INSURER(S) AFFORDING COVERAGE INSURER A: ACE American Insurance Company 22667 INSURER B: Indemnity Insurance Company of North America 43575 INSURER C: N/A N/A INSURER D: Berkshire Hathaway Specialty Insurance Company 22276 INSURER E: INSURER F:				
COVERAGES		CERTIFICATE NUMBER: NYC-008429505-11		REVISION NUMBER: 5			
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.							
INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR VWR	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:			HDO G27405319	03/31/2016	12/31/2016	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 4,000,000 PRODUCTS - COMP/OP AGG \$ 4,000,000 SIR \$ 500,000
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS			ISA H09040912	03/31/2016	12/31/2016	COMBINED SINGLE LIMIT (Ea accident) \$ 5,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ SIR \$ 500,000
D	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			42-UMC-302383-01	03/31/2016	12/31/2016	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 1,000,000
B	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)			WLR C48601904 (AOS) SCF C48601923 (WI)	03/31/2016 03/31/2016	12/31/2016 12/31/2016	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)							
CERTIFICATE HOLDER Green America Recycling, LLC 10107 Highway 79 Hannibal, MO 63401-7859				CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE of Marsh USA Inc. Rudy P. Milfort			

ACORD 25 (2014/01)

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