

SUMMIT

Materials



GREEN AMERICA
RECYCLING

2023

CONTINENTAL CEMENT
COMPANY & GREEN AMERICA
RECYCLING



SUMMIT MATERIALS HEADQUARTERS

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS & OTHER GENERAL DISCLOSURES

Information contained in this report, which are not statements of historical facts, and the documents incorporated by reference herein, may be “forward-looking statements.” Such forward-looking statements are identified by words such as “will,” “seek,” “should,” “expects,” “anticipates,” “believes,” “plans,” “intends” and similar expressions and such statements involve risks, uncertainties, assumptions and other factors that could cause actual results, performance, prospects and opportunities to differ materially from those expressed or implied by such forward-looking statements.

Although Summit Materials, Inc. (“Summit,” or “Company”) believes that the assumptions inherent in these forward-looking statements are reasonable, the reader should not place undue reliance on these statements. Forward looking information as of April 2, 2024. Important factors could affect our results and could cause results to differ materially from those expressed in our forward-looking statements, including but not limited to factors impacting the Company’s inability to achieve its environmental, social and

governance (ESG) targets within the projected timelines or in the projected manner, the lack of economically viable market-based CO₂e offsets and credits, the performance of our environmental management system, the performance of existing technology related to CO₂e emission reductions, the development of future technologies related to CO₂e emissions, the continued evolution and development of ESG methodologies, frameworks and standards, market adoption of products with less environmental impact, including without limitation, Portland-limestone cement, the ability to reduce turnover at the desired levels and within the desired timelines, and the factors discussed in the section entitled “Risk Factors” in Summit’s Annual Report on Form 10-K for the fiscal year ended December 30, 2023 as filed with the Securities and Exchange Commission, as such may be updated by our subsequent filings. Summit disclaims any intention or obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise, except to the extent required by applicable laws.

This report contains some figures that have been approximated or rounded. This report and data within have not been reviewed by a third party and contains non-GAAP information. Various environmental, social and governance (ESG) metrics understand the concept of materiality differently and we do not attempt to reconcile these different understandings. The information that we disclose in this report cross reference certain frameworks, when applicable. However, we also disclose information not mentioned by such frameworks that we believe relevant to our sustainability initiatives. Over time, we will continue to seek to achieve more alignment with leading frameworks, even as such frameworks continue to evolve. Inclusion of information in this report should not be construed as a characterization of materiality or financial impact of such information.



At Continental Cement Company (“CCC” or “Continental”), a subsidiary of Summit Materials, cement is our business. We started making cement in Hannibal, MO, in 1903 and are the proud producers of quality cement that has been used in many iconic construction projects, like the Empire State Building and the Panama Canal. More recently, our cement has been used in the Minnesota Vikings’ new football stadium, the St. Louis Cardinals’ newest baseball stadium and the new Major League Soccer stadium for the St. Louis FC.

We have manufacturing facilities in Davenport, Iowa and Hannibal, Missouri and nine distribution terminals along the Mississippi River between Minneapolis, Minnesota and New Orleans, Louisiana.

At CCC, we highly prioritize safety. In fact, it’s our core value. Our goal is to ensure that our employees go home safely each day, because they are foundational to our success. We are committed not only to the safety of our employees, but also to conducting business in an ethical manner. We are committed to manufacturing cement in a sustainable way and CCC is the proud owner of [Green America Recycling, LLC \(GAR\)](#). Operating facilities adjacent to our plants in Hannibal and Davenport, GAR has been sustainably reusing waste materials for fuel in the cement manufacturing process for more than 30 years. In fact, Continental Cement’s Hannibal, Missouri location is one of only 12 cement manufacturers permitted to handle federally-regulated hazardous liquid waste materials as a fuel source, and one of only two cement manufacturers permitted to handle federally-regulated solid hazardous waste materials.

The cement industry continues to explore new ways of producing cement in an environmentally responsible way. Since 1975, the U.S. cement industry has reduced its carbon dioxide emissions by 33 percent and reduced its energy consumption by as much as 37 percent.

CEMENT MANUFACTURING PROCESS

1. QUARRY

For its raw materials, cement manufacturing uses minerals containing the four essential elements for its creation: calcium, silicon, aluminum and iron. Most plants rely on a nearby quarry for limestone. The most common combination of ingredients is limestone coupled with much smaller quantities of clay and sand. Other raw materials, such as mill scale, shale, bauxite and fly ash, are brought in from outside sources when necessary. Rock from the quarry and/or underground mine is transported to the primary crusher, where chair-sized rocks are broken into pieces the size of baseballs. Some plants use a secondary crusher, depending on process needs.

2. PROPORTIONING BLENDING & RAW GRINDING

The raw materials are analyzed in real-time using cross-belt analyzers and in the plant laboratory, blended in the proper proportion, and then ground even finer. Plants grind the raw material with heavy, wheel-type rollers that crush the materials into powder against a rotating table. After grinding, the material is known as raw meal and is now ready for the preheater tower.

3. PREHEATER TOWER

The preheater tower supports a series of vertical cyclone chambers through which the raw meal passes on its way to the kiln. To save energy, modern cement plants preheat the meal before it enters the kiln. Rising more than 350 feet, hot gases exit from the kiln and clinker cooler combined with fuels such as ground coal, petcoke, natural gas and recycled waste streams, heat the raw materials as they swirl through the cyclones.



CEMENT MANUFACTURING PROCESS (cont.)

4. KILN

Raw meal now enters the huge rotating furnace called a kiln. It's the heart of the cement making process – a horizontally sloped steel cylinder, lined with firebrick, turning approximately four revolutions per minute. The kiln is the world's largest piece of moving industrial equipment. From the preheater, the raw meal enters the kiln at the upper end. It slides and tumbles down the kiln through progressively hotter zones toward the flame. At the lower end of the kiln, fuels such as ground coal, petcoke and natural gas feed a flame that reaches 3400 degrees Fahrenheit – one third of the temperature of the sun's surface. Here, in the hottest part of the kiln, the raw meal reaches about 2700 degrees Fahrenheit and becomes partially molten. This intense heat triggers chemical and physical changes. Expressed at its simplest, the series of chemical reactions converts the calcium and silicon oxides into calcium silicates, cement's primary constituent. At the lower end of the kiln, the raw meal emerges as a new substance: red hot particles called clinker.

5. CLINKER COOLER

The clinker tumbles onto a grate system cooled by forced air. Once cooled the clinker is ready to be ground into the gray powder known as Portland cement. To save energy, heat recovered is recirculated back to the kiln and preheater tower.

6. FINISH GRINDING

The clinker is ground in a ball mill – a horizontal steel tube filled with steel balls. A small amount of gypsum is added during final grinding to control the set as well as limestone and other mineral components to reduce the clinker content of cement. As the tube rotates, the steel balls tumble and crush the clinker into a super-fine powder. It can now be considered blended hydraulic cement also referred to as portland cement. The cement is so fine it will easily pass through a sieve that is fine enough to hold water.

7. DISTRIBUTION

From the grinding mills, the cement is conveyed to silos where it awaits shipment. Cement is shipped by trucks, rail, or barge.





We are pursuing existing and emerging technologies to achieve net zero by 2050. We have developed a long-term strategy to address our CO₂ emissions from our cement operations, as we believe this is a critical factor to combat climate change, we have established both 2030 and 2050 targets for each of the North Star Pillars, including carbon reduction.

In the interest of transparency, Summit has researched the quantum of the emissions impact that can be addressed using currently commercially available technology. We believe that approximately 25% of our 2020 baseline impacts can be addressed by 2030. We believe that 50-75% of those impacts can be addressed with currently

available technologies by 2050. As an interim step, our plan is to address the balance of those impacts with market-based offsets and credits to achieve net zero by 2050. We believe this approach strikes the right balance of leveraging technologies available today, supporting the expansion of the low carbon economy, and ultimately adopting the best of breed technology to eliminate carbon emissions from our processes once such a solution is scalable.

Summit is eagerly exploring emerging technologies, with the goal to ultimately show a clear glide path towards a true net zero by 2050. This exploration includes the evaluation of new technologies such as carbon capture and sequestration and fuel switching.

TABLE 6. CARBON REDUCTION

Our target: Reducing CO₂e emissions to reach net zero by 2050. Customers and investors are driving a lower carbon future. Ensuring Summit is a leading company among our sector’s decarbonization efforts through product and operations innovation is a priority.

	CO ₂ e Emitted (M MT CO ₂ E)	Cement Emissions Intensity (MT CO ₂ E /MT PRODUCED)	Renewable Power (BY PERCENTAGE)
2030 TARGETS	1.6 - 2.0	0.65	30%
2050 TARGETS	0.5 - 1.2 With offsets to get to net zero 0.0	0.25 With offsets to get to net zero 0.0	100%

PORTLAND CEMENT ASSOCIATION'S (PCA) ROADMAP TO CARBON NEUTRALITY: PORTLAND-LIMESTONE CEMENT

In October 2021, CCC joined an ambitious journey to achieving carbon neutrality across the cement and concrete value chain by signing onto the Portland Cement Association's ("PCA") Roadmap to Carbon Neutrality. In collaboration with PCA's other member companies and experts, the Roadmap demonstrates how the U.S. cement and concrete industry can collectively address climate change, decrease greenhouse gases and eliminate barriers that are restricting environmental progress. Given the significant role of cement in society and anticipated infrastructure development, it is critical that the industry comes together and acts now to create sustainable building solutions in the decades to come.

The PCA Roadmap focuses on a comprehensive range of reduction strategies for stakeholders to adopt across all phases of the material's life cycle, such as reducing CO₂ from the manufacturing process, decreasing combustion emissions by changing fuel sources and shifting toward increased use of renewable electricity.

Many of the solutions included in the PCA Roadmap are products, technologies and approaches that exist today – and by bringing together a variety of collaborators, PCA intends to ensure the adoption of these solutions on a broad scale. This will accomplish near-term benefits while constantly striving toward the long-term success of reaching carbon neutrality.

3 Portland-Limestone Cement and Sustainability [https://www.cement.org/sustainability/portland-limestone-cement#:~:text=Portland%2Dlimestone%20cement%20\(PLC\),footprint%20of%2010%25%20on%20average.](https://www.cement.org/sustainability/portland-limestone-cement#:~:text=Portland%2Dlimestone%20cement%20(PLC),footprint%20of%2010%25%20on%20average.) [02/2022]

WHAT IS PORTLAND-LIMESTONE CEMENT?

Producers know that replacing some of the clinker in portland cement with ground limestone offers benefits, the most important being that it reduces the embodied CO₂ of the cement. Modifying a concrete mix design to replace higher carbon materials with lower carbon ingredients is an effective strategy to reduce its environmental footprint. Whereas the U.S. standard for portland cement allows for up to 5% of clinker to be replaced by limestone, the standard for blended cement allows for 5% to 15% limestone replacement in PLC (Type IL). The same clinker is used to make portland cement and portland-limestone cement, but there is less of it in PLC. And concrete mixes designed with PLCs are compatible with all supplementary cementing materials (SCMs), so when you substitute PLC for ordinary portland cement, you can continue to use all the other materials you use to make concrete for an even greater reduction in carbon footprint.

Other than water, concrete is the most-used material on the planet, representing about 50% of all manmade materials by mass). Due to the everyday use of concrete, small changes to its formulation can have dramatic effects on the construction industry's annual carbon footprint.

Use of limestone and binder materials when grinding clinker into the cement product provides a direct savings in CO₂ emissions. PLC cement is a new product that is being utilized by the cement industry to reduce CO₂ emissions. PLC cement includes up to 15% limestone in the finished product. The quality of the cement product is closely controlled to ensure that all quality standards are met. For each ton of material that replaces a ton of clinker, Continental Cement saves nearly one ton of CO₂ emissions.³



2023 PLC AT CONTINENTAL

In 2022 Continental Cement produced and tested a 20% Portland Limestone Cement (PLC) — the lowest carbon PLC to date — as part of a collaborative research project with the [Minnesota Department of Transportation \(MnDOT\)](#) and the [National Road Research Alliance](#) project. The new product, known as Type IL(20), features less clinker than other types of traditional cement while achieving performance characteristics required for construction. Clinker is where most of the CO₂ is contained in cement products. So, by increasing the limestone content to 20%, there is less clinker, and therefore [fewer carbon emissions](#).

PLC formulations with 5-15% limestone have already been approved for use in all major specifications and are available on the market today. But this was one of the first field applications to test a PLC with limestone content above 15%. It took a major commitment from Continental Cement to participate in the project as they had to convert a plant for an entire day to supply the necessary materials.

“This project demonstrates our commitment and is a great opportunity for the industry,” said Nicolas Marks, Senior Technical Director at Continental Cement. “We’ll learn a lot from this project and develop pathways to improve further our sustainability and product performance.”

Although the test was conducted in partnership with the Minnesota Department of Transportation, PLC isn’t limited to roadway applications. The product has the potential to be used for a wide range of applications including precast, cast in place, block manufacturing and more. Basically, anything you can use traditional cement for, you can use PLC, including those with higher limestone content.

The fact that this field test was conducted in Minnesota is not insignificant either. The state as a whole experiences some of the most extreme weather in the U.S. — hitting both [a high of 104° F](#) and [a low of -50° F](#) in 2021 alone. So, the extreme conditions provided a good testing site for a product that will hopefully be used across the country one day.



You’re looking at severe road conditions as far as freezing, thawing, exposure to road and de-icing salts and more. So, I think it just adds another layer of credibility to the study.

- Nicolas Marks

THE OPPORTUNITY: A MORE SUSTAINABLE FUTURE

What makes this innovation so exciting is that the new formulation of PLC could one day become the go-to cement for construction projects across the country — with the expected benefit of lower environmental impacts. However, it may take a while to get there. Before the product can be used in new construction, it must first be approved by a number of regulatory bodies and organizations. Changing building standards can be a slow process, but it’s one Summit is excited to be a part of as we work with stakeholders to communicate the value of this product in pushing the construction industry toward fewer carbon emissions.

The industry will also need to make progress on the production side. Cement plants already producing 5-15% PLC should be able to transition to the new formulation rather quickly, which would help accelerate widespread adoption of the product.

However long it takes for IL(20) to gain acceptance, Summit and Continental Cement plan to be here for the long haul. We believe that innovations like these are the future of the building materials industry and represent an exciting step forward toward [our environmental sustainability goals](#).

CEMENT STORAGE FACILITY

To further make our operations as efficient as possible, the Davenport Plant completed construction of a cement storage dome. The storage dome provides our Davenport Plant significant additional storage, allowing Continental Cement to replace previously used winter storage barges. It results in a safer and more efficient operation at Davenport, IA and improves Continental Cement's ability to serve its customers.

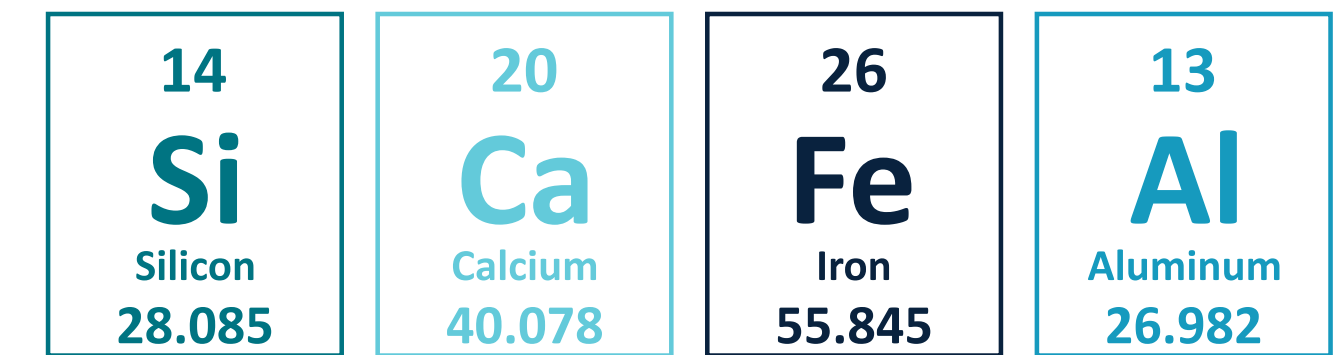
"The significant investment by Summit Materials in one of the largest cement storage domes in North America, represents a strong vote of confidence in Continental Cement and a commitment to sustained operations and investment in the State of Iowa," commented David Loomes, President of Continental Cement. "We are proud to have partnered with several of our customers in using our low carbon cement ("PLC") in the concrete mixes that form part of the dome. As a clear leader in our industry, Continental Cement became the first US cement producer to switch all production to PLC – this is consistent with our commitment to Sustainability and the path to Carbon neutrality."



CONTINENTAL CEMENT INITIATIVES

Alternative Raw Materials

Continental Cement utilizes alternative raw materials including silica, alumina, iron and calcium to replace natural raw materials that are mined. Materials such as fly ash, slag and catalyst provide a circular economy solution to beneficially reuse these materials instead of landfilling each as waste. Carbon emissions from mining and offsite disposal are also reduced through use of alternative raw materials in the cement process.



Decarbonizing of Electricity

Cement plants require large amounts of electricity to grind raw materials and clinker in the manufacturing process. Obtaining renewable electricity from the power provider results in significant reductions in CO₂ emissions for society. In 2022, MidAmerican Energy provided 100% of the power for the Davenport plant from renewable electricity and are currently working to supply their customers with updated values for 2023. MidAmerican Energy is further investing in renewable energy, such as wind and solar generation, forecasting to reach their goal of providing 100% renewable energy.

Greener and Cleaner

Employees at the Davenport Plant continued their efforts in creating more natural environments around their locale during the spring and summer of 2023.

To ensure our operations are safe and clean, the Davenport plant has “Adopted” the Highway in front of the plant and cleans up of the roadsides twice per year.

To improve the efficiency of our plants, we have upgraded several lighting systems in the plants to LED, which are both more energy efficient and cost saving.



Continental Cement WHC Gold Status

We are dedicated to conserving our environment by promoting biodiversity through the development of wildlife habitat and using restored habitats as educational tools in our communities. In 2023, Summit continued its partnership with the Wildlife Habitat Council (WHC). Summit has been partnered with the WHC since 2014 to advance our efforts in land and wildlife conservation.

For more than 30 years, WHC has promoted and certified habitat conservation and management on corporate lands. Their conservation certification was developed to be accessible, credible and to drive change through strict requirements and rigorous third-party evaluation. Our conservation efforts and certified habitat programs have expanded to include hundreds of managed acres, thousands of employee hours and a beautiful array of landscapes and educational programs.

The Continental Cement -Davenport Plant Wildlife Restoration Areas program has met the criteria for WHC Conservation Certification Gold Tier. The achievement recognizes the specific efforts of the Plant's program and its commitment to conservation.

CEMENT USE OF ALTERNATIVE FUELS

Our Hannibal Cement Plant co-processes both liquid and solid hazardous waste as a fuel source. Our Davenport Cement Plant uses alternative fuels from surrounding industrial facilities, including items like off-spec seeds, used tires, used oil, by-products from nearby manufacturing, and materials that would

45.7% of the plants fossil fuel consumption was replaced with non-hazardous waste.

otherwise be landfilled. Our subsidiary, Green America Recycling, is a key component to sourcing, securing and implementing our alternative fuel usage. On average, 45.7% thermal substitution rate (TSR) at our cement plants in 2023. Equating to the amount of power that an estimated 10,000 American homes use in one year.

Summit's cement alternative fuel rate is distinguishing in comparison to the average U.S. industry rate of 25%*. We have made advancements in recent years to accept more diverse materials, increase our alternative fuel percentages use and divert thousands of pounds of waste from landfills. In 2022, Summit embarked upon a further expansion of its Green America Recycling Facility to increase our future proportion of alternative fuels. In 2023 GAR operations continued to be expanded, allowing the plant to replace approximately 55% of its fossil fuel consumption with non-hazardous waste. This expansion is a crucial element of Continental Cement's Sustainability objectives and aligns with its Carbon Reduction Commitment and roadmap.



Our subsidiary, Green America Recycling, is a key component to sourcing, securing, and implementing our alternative fuel usage. For more than three decades, Green America Recycling (GAR) has been sustainably reusing waste materials for fuel in the cement manufacturing process. GAR is owned by Summit's Continental Cement Company and operates a Part B permitted RCRA Treatment, Storage and Disposal (TSD) facility adjacent to the cement plants 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's hazardous waste facility in Hannibal, Missouri can accept a wide variety of waste materials. This includes, but is not limited to: refinery still bottoms, paint solids, tars, solvents, degreasers, off-spec 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, rail intermodals and rail tankers. Processing systems center around totally enclosed blending and processing buildings that vent organic vapors to the burning zone of the kiln.

GAR's non-hazardous waste facility in Davenport, Iowa can accept a wide variety of waste materials. This includes, but is not limited to: paper, wood, plastic organic liquids and rolled film material. Acceptable waste methods include: roll-offs, van bales, bulk trucks and belt trailers.

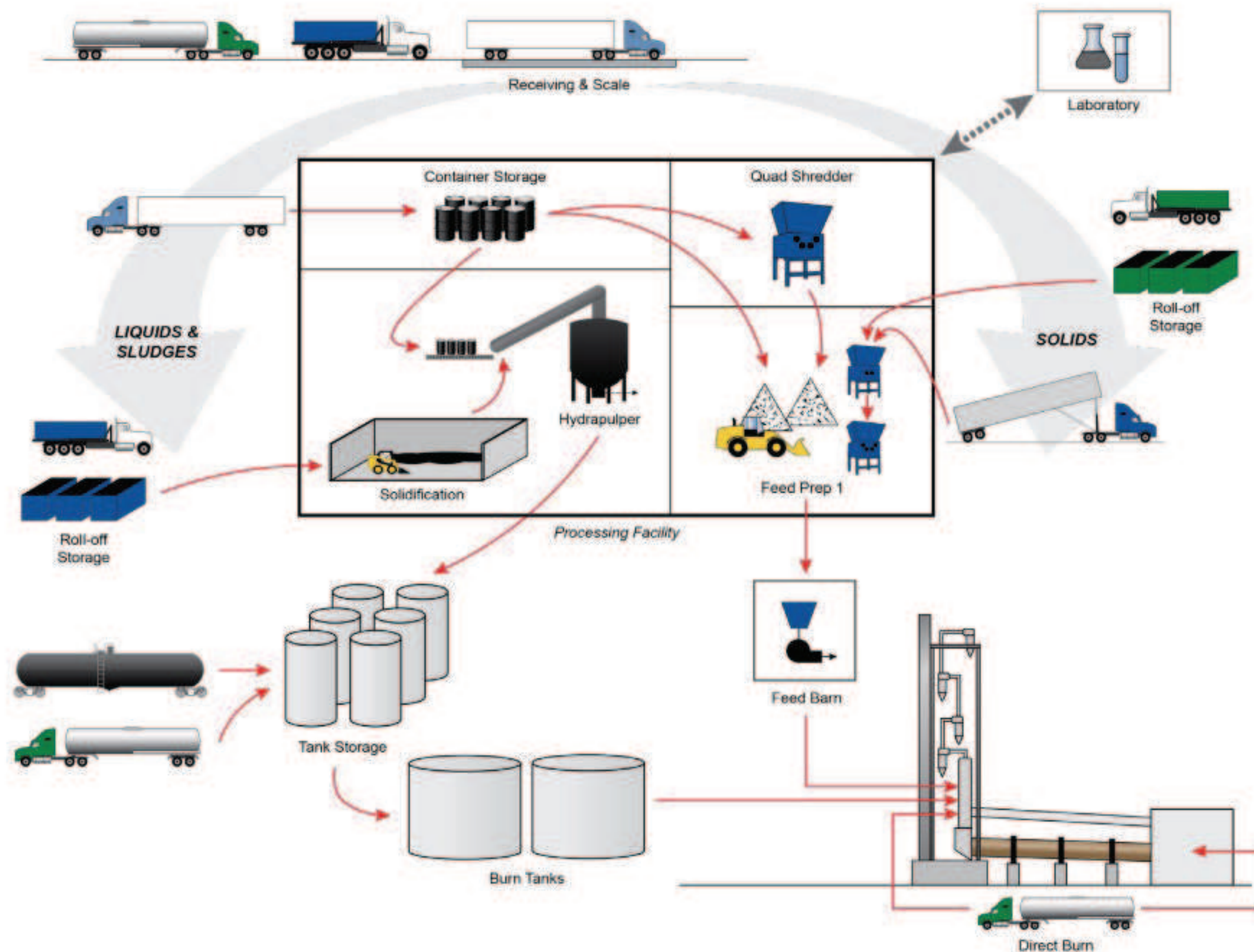
Our processing facilities operate 24 hours a day, seven days a week. Deliveries are typically accepted Monday through Friday and delivery times are established in accordance with a prearranged scheduling, including the flexibility of "drop and swap." GAR operates a fully capable waste fuel laboratory, offering on-site analytical services to meet facility processing and regulatory analytical requirements.

REGULATIONS

Operations and technical employees receive frequent training as required by RCRA (Resource Conservation and Recovery Act) and [MSHA](#) (Mine Safety and Health Administration). They also receive intensive emergency response training. As an extra precaution, vapor and particulate recovery systems are installed throughout the facility to control emissions.

GREEN AMERICA RECYCLING FLOW DIAGRAM

We are expanding our Green America Recycling facility to increase our use of alternative fuels in cement production to further reduce greenhouse gas emissions. Here's how our process works:



Waste Fuel Programs

✓ Liquid Fuel Program

Liquid fuels are unloaded directly into one of six waste fuel blend tanks. A vapor balancing system is utilized between tanks and trucks during off-loading.

✓ Dispersible Fuel Program

Acceptable materials for this program include, but are not limited to: sludge, tank bottom waste, centrifuge solids and waste water in roll-offs. These solids are blended with liquid fuels in the liquid receiver tank and are then pumped back to the fuel farm.

✓ Solid Fuel Program

The dry solids program consists of off-loading, storage, material preparation for debris-like solids and monolithic drums, originating from both received bulk shipments and containerized debris in drums and boxes. Examples of acceptable materials include: rags, wood and off-specification products with limited free liquids.



HANNIBAL PLANT SPOTLIGHT



The plant replaces an average of **38% of its coal usage with alternative fuels**, reducing CO₂ emissions around 13%.



Each type of material **requires individual approval** from the State of Iowa's Department of Natural Resources.



Solid waste materials represent approximately **70% of total annual volume** of alternative fuels.



The Hannibal plant acquires electricity from Ameren, which has invested in hydro, solar and wind power generation.



DAVENPORT PLANT SPOTLIGHT



The plant replaces an average of **38% of its coal usage with alternative fuels**, reducing CO₂ emissions around 13%.



Each type of material **requires individual approval** from the State of Iowa's Department of Natural Resources.



Solid waste materials represent approximately **70% of total annual volume** of alternative fuels.



The Davenport plant is also using **several sources of biogenic materials** for fuel, like seed corn, wheat and rice, these are considered carbon neutral.

INVESTING IN CARBON REDUCTION

Continental is investing \$30M to expand the Davenport Green America Recycling facility, adding the FLSmidth FUELFLEX® Pyrolyzer. This new innovative technology is the first pre-commercial installation in the world. This allows for the increased processing of waste material into fuel, pushing the replacement rate from 38% to over 50%. This expansion creates an opportunity for the Davenport plant to eventually further divert more materials from landfills –adding value to discarded materials that are not being used. The expansion will increase local economic activity and has strong support from the community.

2023 Alternative Fuel Totals

Hannibal

91,869

TONS OF
ALTERNATIVE FUEL

Davenport

63,623

TONS OF
ALTERNATIVE FUEL



IN 2023, WE RECYCLED

3,956
TONS

OF WINDMILL BLADES
TO USE AS FUEL

WIND MILL BLADES AS AN ALTERNATIVE FUEL/ RAW MATERIAL

Not only does Continental Cement provide cement for the base of a wind blade tower, but through Green America Recycling, the end-of-life wind blades are circularly reused as raw material and fuel in the cement production process. Beneficially reusing the old windmill blades as an alternative fuel avoids greenhouse gas emissions at landfills and incinerators as well as decreasing the amount of land required to landfill the windmill blades.



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