PROCESSING TECHNOLOGY, MANAGEMENT ISSUES
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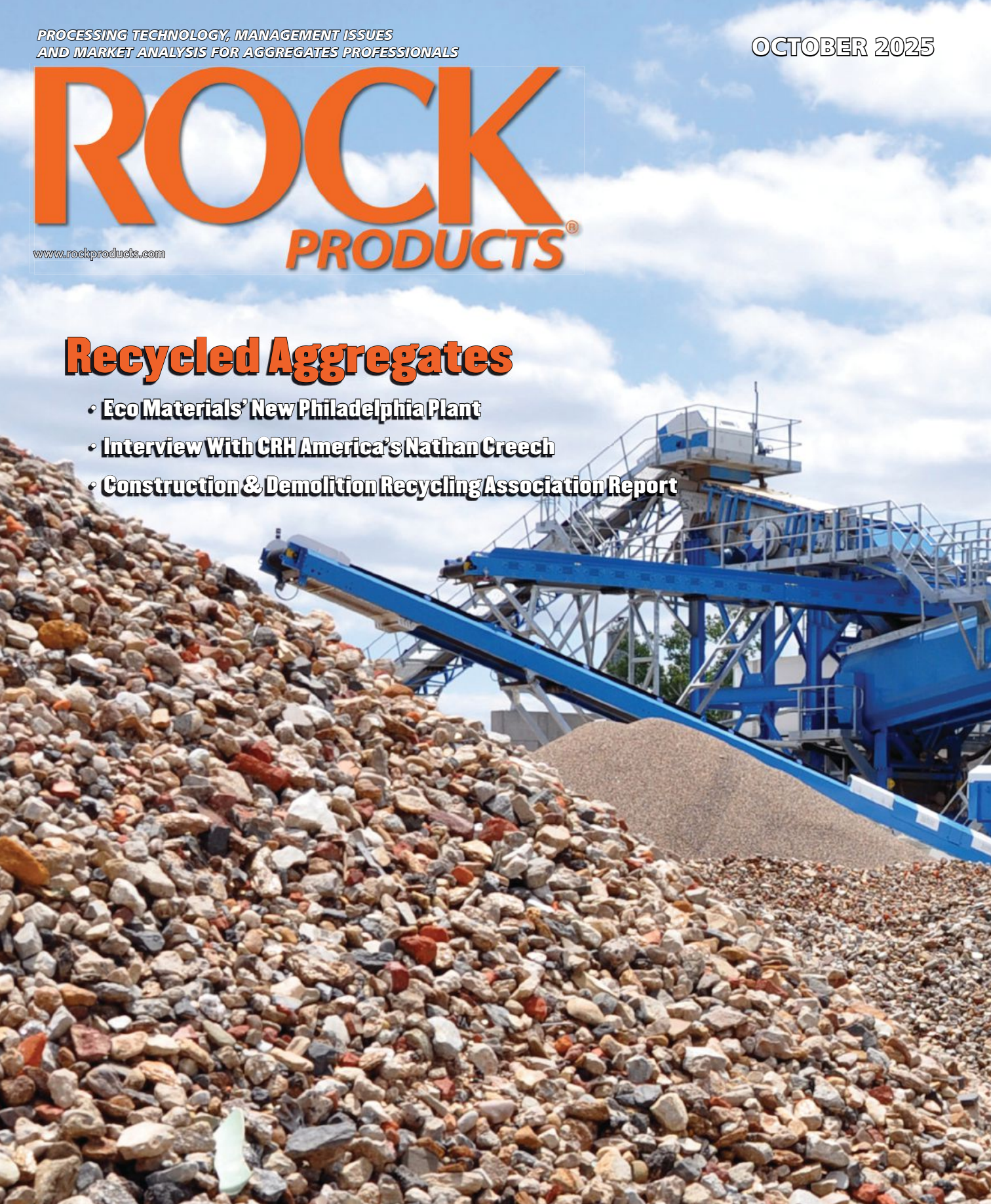
OCTOBER 2025

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Dirt Destination

Philadelphia's Eco Materials Adopts A Proven CDE Group Model For Recovering Contractor-Grade Aggregates From Formerly Landfill-Bound Soil.

By Don Marsh

Contractors in major population centers see deposit depletion driving a broader radius for aggregate production and delivery.

Armed with new washing technology that suits smaller urban or suburban sites, niche material processors are helping temper dump truck traffic volume by extracting specification-grade stone, sand and gravel from excavated soils. The result: significant volumes of soils testing at low or moderate contamination levels are no longer destined to landfills whose distance from waste sources is widening.

Eco Materials LLC is the fourth North American operator proving an aggregate recovery business model anchored on the CDE Group soil washing plant concept. Processing at the Passyunk Wash Plant, named for a South Philadelphia neighborhood thoroughfare, has ramped up to 90-100 trucks/day since May.





Wet processes for inbound material, coupled with sprinkling of sand stockpiles, contribute to a dust management plan enabling Eco Materials to operate in an urban industrial zone.



The Astec Mobile Jaw Crusher equips Eco Materials to process loads with brick and larger stone, concrete or asphalt pieces.

The eastern Pennsylvania market has ample outlets for the plant's five materials – masonry and C33 sand, clean-washed contractor grade stone, plus clean-washed #8 and #57 stone – led by pavement, slab on grade and drainage or other environmental infrastructure base.



Leo Addimando

"This facility represents the future of construction, where sustainability and profitability go hand in hand," said Leo Addimando, co-founder of Eco Materials majority partner Alterra Industrial Outdoor Storage (Alterra IOS). "We're transforming dirty soil into clean, reusable material on site and keeping the entire process local. This is a huge benefit for contractors, utilities, government agencies and developers looking to reduce costs and/or their carbon footprint. In one word, the Passyunk Wash Plant is progress. No other U.S. city has a single location where you can properly dispose of contaminated soil, then load aggregate."

Circularity Summons

The Eco Materials flagship follows CDE Group installations at Posillico Materials LLC of New York (2021), Repurpose Aggregates of Maryland (2022), and Calgary Aggregates Recycling, Alberta (2023).

With combined capital outlays exceeding $150 million, the four operations signal strong confidence in the circularity movement spurring recycling measures up and down the construction material value chain – from rebar or structural steel scrap, to salvageable clay brick, to gypsum board, to asphalt mix-, base- or bedding-grade aggregate.

Like Posillico, Repurpose Aggregates and CAR, Eco Materials runs machinery modeled on CDE offerings for virgin sand: R4500 primary feeding scalping screen, to organize and delineate usable raw aggregates; AggMax scrubbing and classification system, to support precise material recovery through stone, sand and clay separation; and EvoWash modular sand washing system.

Water storage, conveyance and treatment account for more than one-third of Passyunk Wash Plant production area and command nearly 2,000 ft. of pipe averaging 8- to 10-in. diameter. The AggMax and EvoWash operate in tandem with CDE's high-frequency dewatering screen and hydrocyclones; Counter Flow Classification Unit for aggregate density and sizing measurement, plus lightweight contaminant removal; and Aquacycle thickener water management system for settling clay or other contaminant particles.

The latter affords process-water recycling rates at up to 90%, while a fully enclosed filter press sludge dewatering system brings the site's overall water recycling rate toward 95%.

Coupled with plastic, glass and metal scraps collected through the R4500 and/or AggMax cycles, low moisture solids cakes deposited at the filter press base represent the bulk of waste hauled from the Passyunk Wash Plant. At present calibrations, the facility is recycling 85% of material off-loaded at main (dirt with small aggregate) and sheltered (dirt and debris with larger materials) stockpiles. An Astec Mobile Jaw Plant processes oversized asphalt, concrete and brick pieces ahead of R4500 feeds.

Front Row Seat

Eco Materials' five-acre, Passyunk Avenue parcel is strategic to interchanges with Interstate 76 and Interstate 95, Philadelphia's main east-west and north-south thoroughfares. A quarter mile away, developers are working with city officials to repurpose a 1,300-acre parcel formerly home to a refinery, now known as the Bellwether District.

Compared to waste transfer stations and most large-scale recycling operations, Eco Materials offers abundant visibility of the phases where brick, concrete, asphalt, stone, sand and gravel diverge from excavated soils. Customers, regulators, neighbors and environmentally curious observers can witness circularity at minimal dust levels, as the high volume 250-tph Passyunk Wash Plant converts loads of soil to stockpiles of sand, stone and quality dirt.

The purity of the site's C33 product has enabled Eco Materials to approach prospective concrete producer partners on replacing a certain portion of virgin fine aggregate in their mixes. Such substitution would allow producers to document savings of transportation-rooted carbon dioxide emissions in their mixes – adding to lower carbon metrics realized in replacing portland cement with supplementary cementitious materials.


Andrew Paluszkiewicz

"Our facility proves that sustainable resources, like reclaimed soil and aggregate, can be reused time and again, dramatically reducing landfill waste and helping to conserve our planet's limited natural resources," affirmed Eco Materials Managing Partner and Director of Operations Andrew Paluszkiewicz.

A veteran site prep contractor keen to the costs and complications of clean or contaminated soil handling and transfer, he teamed with concrete contractor Ken Griffin on the initial Eco Materials business plan. Three other individual partners joined them toward the financing phase and ahead of Alterra IOS, for whom the Passyunk Wash Plant sets a template adaptable to other markets. ▲

Don Marsh is editor of Rock Products' *sister publication* Concrete Products.



Process-water management at Eco Materials starts with CDE's circular AquaCycle thickener (background). Through flocculant treatment, the vessel settles solids in water and slurry conveyed from AggMax and EvoWash systems. Water measuring at low suspended solids levels is transferred to a 150,000-gal. process water tank (right) for recycling in washing and rinsing phases. When it reaches a certain viscosity level, the AquaCycle slurry is transferred to a companion 150,000-gal. sludge tank (left).



Agitators maintain sludge tank slurry fluidity ahead of transfer to the filter press, and recycled process water can be additionally treated and piped to the smallest of tanks, 100,000 gal., tapped for the Passyunk Wash Plant.