

Want to Start Recycling Glass?

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Questions - Considerations

- Sources of Glass
- Location
- Technology
- Funding
- Markets

Sources of Glass: - how much, what kind, and how will it get to your recycling location?

How much waste glass is available?

What recycling programs are in place now?

Set-up separation and collection programs for consumers, restaurants, businesses, etc.? Provide the service (at a fee) and bring them to the recycling center?

Types of glass that can be accepted:

- * Bottles, plate glass, mixed color glass, ceramics.
- * Glass may contain some non-glass residual.

Save Money by landfill diversion of glass

Sources of Glass

Unsorted glass
bottles

Whole or broken
bottles

Plate glass

Ceramics

Any frangible
material





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Location: Where can you locate the System? Any permits needed? Is it available and convenient for people and businesses to bring glass?

A bunker to drop-off the glass, and a loader to load the glass into and out of the system.

The small Andela GP-Mini and GP-MegaMini are hand fed or fed with a barrel or small box tipper.

The large Andela Systems include a surge hopper for loading the systems.

Power: 480 VAC, 3 Phase, 60 Hz Power.

Location:

Can be located outside, but good if there is a roof and windbreak.

Not very noisy. The glass being deposited in the bunker or surge hopper is the loudest intermittent noise.

Dust is controlled with a misting system. The glass dust is not crystalline silica or have any negative impact on your health.

Technology:



Andela Glass Pulverizer/Crusher Systems will process all types of glass, no sorting or pre-cleaning needed, glass sand and aggregates with rounded edges

Andela Products offer a full line of crushers, pulverizer, trommel screens, conveyors and hoppers. The individual components are put together to make a turn-key system for each customer to their operational parameters. The systems are designed to make a crushed glass **cullet, a glass “stone”, or glass sand.**

A Sustainable Business

- ▶ Glass recycling for every community
- ▶ Flexibility for different recycling programs
- ▶ Multiple local markets



Technology Options

Complete Systems
from 1 Ton per hour
to 20 Tons per hour.

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Andela GPT-1 Pulverizer System - 3-5 TPH



Funding:

Can you get community support and funding to make this possible? Private donations? Grants? Loans? Investors? Leasing options? Incorporate into the existing or new recycling system.

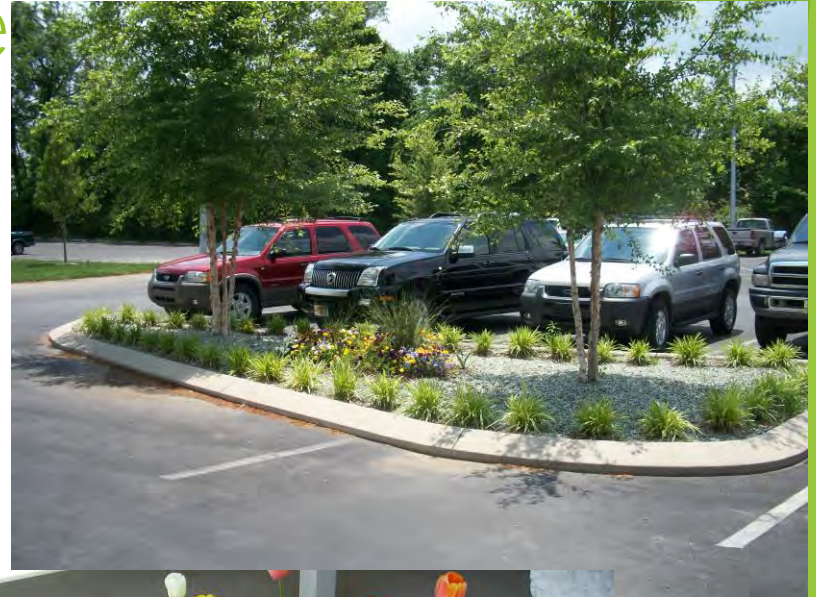
Markets:

Sell the pulverized glass as sand or aggregate in your community.

Implement a “scoop your own” program. The community will pay \$5.00 - \$10.00 a 5 gallon bucket and bring it back for their home projects (landscaping, glass mulch, play sand, etc.).

The Glass Landscaping Recycling Alternative

- ▶ Parks, parking lots, and roads
- ▶ Landscaping - road, shoulder, and medium enhancement



- Markets:

- Mulch for various landscaping applications. It is attractive and never rots or breaks down - long lasting.
- Glass sand retains moisture on the particle surfaces. It holds the moisture below the surface and is available of **the plant's roots.**
- Glass mulch keeps insects, slugs and other pests from coming up to the plants. It also never fades or rots. (long lasting)
- Glass is an insulator, so it creates an insulated layer of **mulch to protect the plant's roots from extreme** temperatures.
- Mix glass sand with compost to make a soil blend that includes organics nutrients from the compost and filtration and water retention rom the glass sand.

The Glass Recycling Alternative

- General Aggregate
- Fill or Soil Enhance
- Aggregate Base
- Road Construction
- Filtration Sand
- Asphalt Sub-Base

Piles of glass sand/aggregate



Benefits of pulverized glass aggregate as a filtration media:

- Chemically inert and does not leach minerals
- It does not break down, like natural aggregates, so it will perform at an optimal level for an extended period of time.

The Glass Filtration Recycling Alternative



**Bridge
Construction
Run-off**

Wastewater
Filter



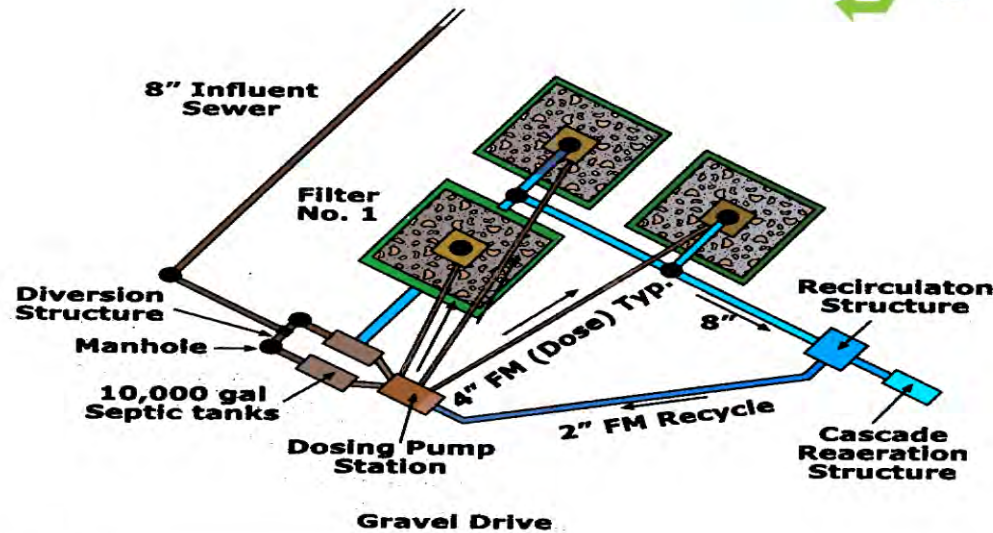


Figure 1

Sleepy Hollow WWTF Schematic Plan

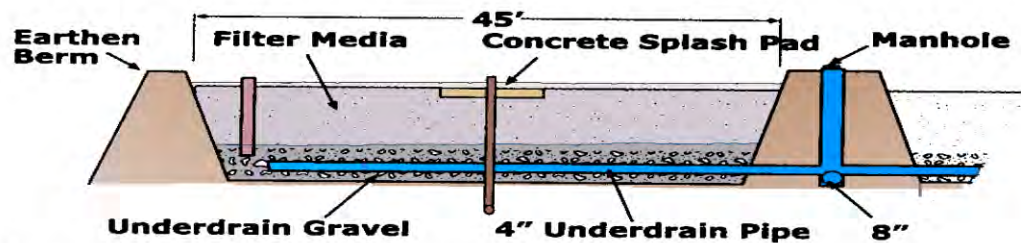


Figure 2

Filter Cross-Section

Septic Waste Water Treatment

The Glass Recycling Alternative



► Pipe Bedding - Backfill



- Markets:
- Filtration aggregate - it is angular sand, but not sharp. The water flows through it faster than natural aggregates. (Pipe bedding, septic filter sand etc.)
- Fine glass particles are a substitute for Diatomaceous Earth (DE) It has the same chemical structure as DE and is an organic pesticide. (The fines glass dust sucks the moisture out of insects)
- Concrete products - use only the sand size, and make a stronger concrete product
- Construction sand or aggregate replacement in any building or construction applications.

Environmental Benefits

- Enhancement of local glass recycling efforts
- Non-recyclable glass and ceramics are kept out of landfills
- Reduced carbon footprint associated with transporting waste glass out, and/or natural aggregates in. Local circular solution.
- No exposure to crystalline silica dust – glass is amorphous silica and safe for people and the environment.

Marketing Opportunities & Challenges

- Connect with the public
- Partner with private construction & landscaping companies
- Keep price competitive
- Project specs & requirements are necessary for its usage

The Glass Recycling Alternative

- Prices for Alternative Markets:
 - \$0 - \$10 Bulk Aggregate
 - \$20 - \$30 Specialty Aggregate (some marketing required)
 - \$150 - \$1,000 / ton Glass Abrasives, Water filtration, & Colored Landscaping (requires additional processing/marketing- i.e. cleaning, drying, bagging, screening, coloring)

Final Thoughts

Material Availability and Cost

Quality Product

Community Involvement

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