



BioReclaim, Inc.

Timber By-Products Management

BioReclaim Inc Waterbath Separator System

There have been many machines and systems manufactured over the years that claimed to generate clean separated products including Air Knife systems, Potato Separators, other water bath systems etc. None of these machines have worked, all produced bark contaminated with rock and rock contaminated with wood and bark. None could handle anything over 10" leaving a pile of logs and boulders to be sorted by hand or landfilled. Most were maintenance nightmares requiring a constant flow of new bearings, screens, belts and man-hours. All of these machines have ended up in bone yards, some systems costing over \$1,000,000.00.



Recycling log yard debris and other timber by-products has been our one and only focus since 1994. That is 17 years living and breathing log yard debris recycling. With that much time focused on one goal you get it right. Our system utilizes dynamic water flow to separate even the most water logged timber by-products from rock/soil/sand & metal and has almost no restrictions on what goes in the hopper, completely separating everything from dust to 10' long logs and 24" boulders.↓



Over these many years our system has evolved into an incredibly efficient one man operation capable of separating logyard debris and other rock/soil/sand/metal contaminated timber by-products in every stage and condition you could imagine.

The finished products on the next page were all generated from the Hemlock debris pictured to the right at an Oregon coast mill where we separated over 60,000 cubic yards.



Our system is the only one on this planet that can completely separate logyard debris and other rock/soil/sand/metal contaminated timber by-products while converting it into five clean, saleable products.

- 1- **Fines**, typically ½" minus consisting of composted bark, sand and rock is used primarily for mulch in bagged consumer products and bulk soil conditioner/amendments. Fine bark decomposes at a high rate and transforms from a nitrogen consumer to a nitrogen generator making it a great plant food.



- 2- **Rock**, ½" to 12" completely void of bark and wood can be reused or sold. It is critical that no wood or bark remains in the rock. Even small margins render the rock worthless. Rock used in road beds and especially log bays must compact into a nearly solid form to support 100,000 plus pounds of machine and logs. Any bark or wood in these road beds allows the rock to move, grinding itself down and pumping water through the roadbed at very high pressure destroying it, creating ruts which compound the problem.



- 3- **Bark and Wood**, void of rock can be ground into boiler fuel, animal bedding, soil amendments and landscape bark or used as-is for a ground cover.



- 4- **Wood Chunks and Logs** are typically ground into hog fuel.



- 5- **Boulders**, 12" and over are extracted for use as riff-raff, fill material, landscape rock or crushed.

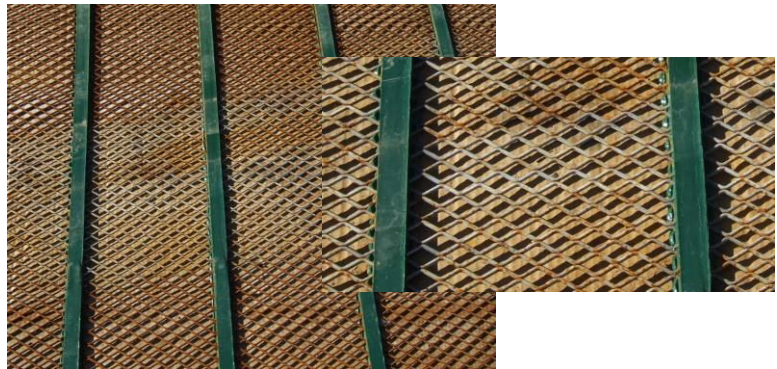
BioReclaim Inc Waterbath Separator System

In-feed System

Complete with landing gear and outriggers, folds for easy transport. Our feed Hopper is built to deal with anything you can get in a ten cubic yard bucket, including everything from dust to 10 foot long logs and two foot diameter boulders without bridging or plugging up.



Shaker Screen (part of the infeed system) by Performance Processing GR - Eugene, OR redesigned by BioReclaim, Inc. to deal with very wet material, boulders, sticks etc. Utilizing a step screen top deck and an end tensioned Poly-Z screen by Western Group, Portland, Ore.



Waterbath Separator

The only separator on this planet that can completely separate rock, concrete, asphalt, metal etc. from timber by-products including water logged Hemlock.

Wood Chunks and Logs are deposited into a steel box configured to hook up to a roll out bucket. The loader operator simply stops the incline belt, pulls up to the box, lifts and transports the box to the storage area. Then he/she rolls the bucket out dumping the logs, rolls the bucket back and sets the box back into place and restarts the conveyer. All without leaving his/her seat.



The entire system is automated to require only one operator and minimal maintenance.

Electronic Automation

Includes three video cameras, one connected to a time lapse video recorder used for invoicing and or production monitoring (could be connected to wireless internet and monitored from anywhere, one viewing the shaker screen and outfeed belt and the third is overlooking the Waterbath. All three cameras are transmitted wirelessly to a two monitor unit to be mounted in your front end loader with a range of over 500 feet.

A six function remote control (1" x 2" x 6") with a range of over 500 feet allows the operator start, stop, reverse conveyors and operate the rock grizzly from anywhere, on the ground or in the loader within 500 feet of the machine.



Condition Monitor & Warning System

A box containing indicator lights and a warning buzzer mounted in your loader that receives wireless signals from the Waterbath and infeed to keep the operator informed of current conditions including several conditions that will stop the infeed including;

- The VCR is not operating
- The outfeed belt is overloaded
- A boulder approximately 12" or larger is at the bottom of the outfeed belt
 - The operator can see the boulder in the monitor to determine if it needs to be ejected. If so he resets the conveyor and lowers the grizzly to eject the boulder using the remote control.
- Low oil pressure or high water temperature on water bath engine
- Hydraulic oil reservoir level is low has dropped 1" (adjustable)
 - The float in the water bath hydraulic tank is set just below the surface. If a hydraulic leak develops a light turns on nearby and the warning system in the loader is activated

Other conditions that are displayed with an indicator light and or a buzzer without stopping the infeed:

- The infeed conveyor is ready for another bucket of material
 - A pressure switch indicates when another bucketful of material can be put into the infeed hopper to ensure the system does not run empty and reduces the chance of the operator putting a bucket in too soon, potentially stalling the infeed conveyor
- The rock out conveyor is cycling to remove a hang up
 - Rocks are sometimes carried around to the return side of the conveyor. The chain enters back into the Waterbath through a slot to keep rocks from reentering and hanging up at the tail end of the conveyor (under water). A pressure switch and time delay relay allow the rock conveyor to reverse far enough to eject the rock and resume operation without operator intervention. Occasionally a rock is not dislodged and the conveyor continues to cycle until the operator clears it manually. The warning system alerts the operator allowing him/her to stop the infeed conveyor to avoid over filling the waterbath.

Rollout bucket

Included in the price is a custom made (to fit your loader) 8 to 10 cubic yard rollout bucket. This bucket is designed to rollout to a full vertical position, the interior is designed to eliminate buildup of wet material by 99 percent and configured to hook up to the wood box.

Processing Volume 40 to 120 cubic yards per hour

Worst case production – 40 cubic yards per hour (there is some material that you would not run, wet clay, whole trees etc.). Average workload is 60 cubic yards per hour. The current design is optimized for 120 cu yards per hour separating debris that is relatively dry (40% moisture content or less allows maximum production) and will generate the following percentages of separated products (approximately).

- a) 30 to 40% - ½" minus fines
- b) 10 to 15% - ½" to 12" rock
- c) 50 to 60% - ½" to 16" bark/wood
- d) Less than 2% - wood chunks and logs 16" to 96" long (10 feet maximum length)
- e) Less than 1% - boulders 12" and larger

More info is available on our website www.bioreclaim.com including a video of the system in operation <http://bioreclaim.com/Movie50mb.htm>.



The following prices are preliminary. Many variables exist that will impact the final price tag including annual production requirements, time constraints, etc.

- A. Complete portable system including a feed hopper capable of handling material from dust to 10 foot long logs and 2 foot diameter boulders, classifier screen to remove fine bark/sand/rock, waterbath separator that generates 100% clean rock, 100% clean bark/wood, automated to require only one operator as described above including the custom built rollout bucket to fit your loader. -
\$(please call) FOB Sheridan, Ore
- B. Portable Waterbath separator alone, as described on page 3 above, built to receive screened material from a customer owned screening system. Price includes a custom built rollout bucket to fit your loader.
\$(please call) FOB Sheridan, Ore.
- C. For a quote to build and install a stationary system designed to feed bark/wood and logs into existing by-products streams please call to setup an appointment to view and assess the installation environment and requirements.

Documentation included in the purchase price:

Preventive maintenance tasks
Parts list
Electrical and hydraulic schematics
Job descriptions and responsibilities
Safety training
New employee orientation

Training

120 hours are included in the purchase price then \$75 per hour plus \$120 per day as needed.

Additional Information:

Production and maintenance cost varies from \$1.00 to \$1.75 per cubic yard depending on the material, environmental conditions, fuel costs etc.

Maintenance

Man hours required to maintain the separator (includes daily preventive maintenance to the front end loader):
15 hours per week of preventive/predictive maintenance when operating the system two ten hour shifts, six days per week.

Personnel Requirements

One operator per shift to operate the entire system
One part time maintenance employee
The entire system is automated to require only one operator and minimal maintenance.

Terms;

60% down
20% on acceptance of machine when fabrication is completed (before paint, electrical and hydraulics)
10% on delivery of machine
10% performance acceptance (warranty)

Please call to set up a time for us to gather information regarding your needs and environment.

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