



Inland Empire Utilities Agency

A MUNICIPAL WATER DISTRICT

Fine Screens at Wastewater Treatment Plant's Headworks

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Outline

- **Background**
- **Equipment**
 - Fine Screens
 - Screening Washer Monster
- **Questions**

Inland Empire Utilities Agency

Inland Empire Utilities Agency (IEUA) is a regional sewage treatment and water agency that provides sewage treatment, solids waste handling, and recycled water to the west end of San Bernardino county. Its 242-square mile service area includes the cities of Upland, Montclair, Ontario, Fontana, Chino, Chino Hills; Cucamonga County Water Agency which services the City of Rancho Cucamonga; State of California correctional facilities; and the unincorporated areas of San Bernardino County, including the Chino Agricultural Preserve. The Agency is governed by a five seat publicly elected Board of Directors. The Regional Technical and Policy Committees provide information on technical and policy issues, and there are representatives from each of the five divisions on these committees.

Five regional water reclamation plants are used to treat sewage from the Agency's service area. They are: Regional Plant No. 1 (RP-1); Regional Plant No. 2 (RP-2); Regional Plant No. 4 (RP-4); Carbon Canyon Water Reclamation Facility (CCWRF), and Regional Plant No. 5 (RP-5). Moreover, the Inland Empire Regional Composting Facility (IERCF) began daily operations in April 2007. The facility processes all of the biosolids produced by the IEUA into a soil amendment product called compost.

Background

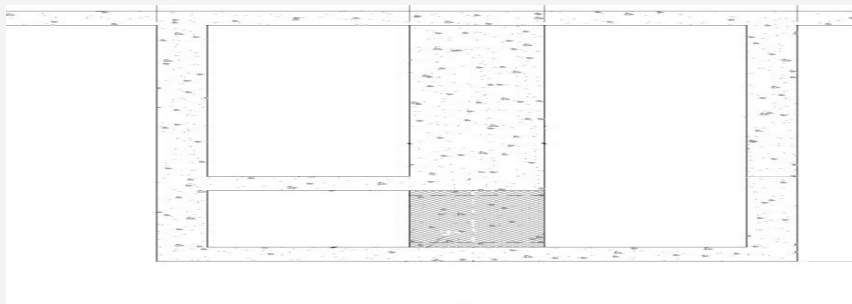
- IEUA's Regional Water Recycling Plant No.4 (RP-4) Headworks located in Rancho Cucamonga, CA consist of two mechanically cleaned climber-type bar screens and a screenings conveyor.
- **O&M Challenges:**
 - Solid accumulate inside the influent diversion channels upstream of the bar screens. This is due to the fact that the isolation gate opens downward.
 - Larger size materials pass through the 0.5" bar screens causing malfunctions of pumps downstream.
 - Mobility and access of the equipment are limited due to limited available space. The bar screens and associated equipment are enclosed in an RFP building.



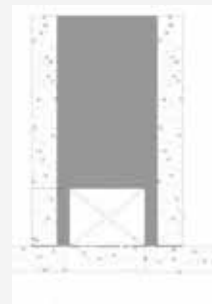
Background

- **IEUA's Proposed Solutions:**

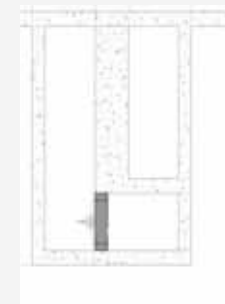
- Modify the dividing wall in the influent diversion channel to install a new isolation gate that opens upward (bottom elevation of the gate is flush with the finished surface of the channels.)
- Install two new self contained low profile fine screens, remove the FRP enclosures and the old bar screens. Fine Screens are rated at the same as the bar screens (36 MGD). A Monster Washer/Compactor is added as well.



Dividing Wall (Before)



Dividing Wall (After)



New Gates (After)



Low Profile Fine Screens

Fine Screens

- Self-contained screenings system used to effectively capture and transport solids to a washer / compactor through via a conveyor.
- As the perforated panels ascend from the bottom, screenings are removed from the perforated panels by the spray wash and rotary brush systems and discharged from the back of the machine.



Fine Screen's Stainless Steel Perforated Panels



Las Vegas Fine Screen System

Fine Screen – Industry Standards

- **American Iron and Steel Institute**

- ✓ (AISI) Grade 304 Stainless Steel
- ✓ (AISI) Grade 316 Stainless Steel
- ✓ (AISI) 1015 Carbon Steel

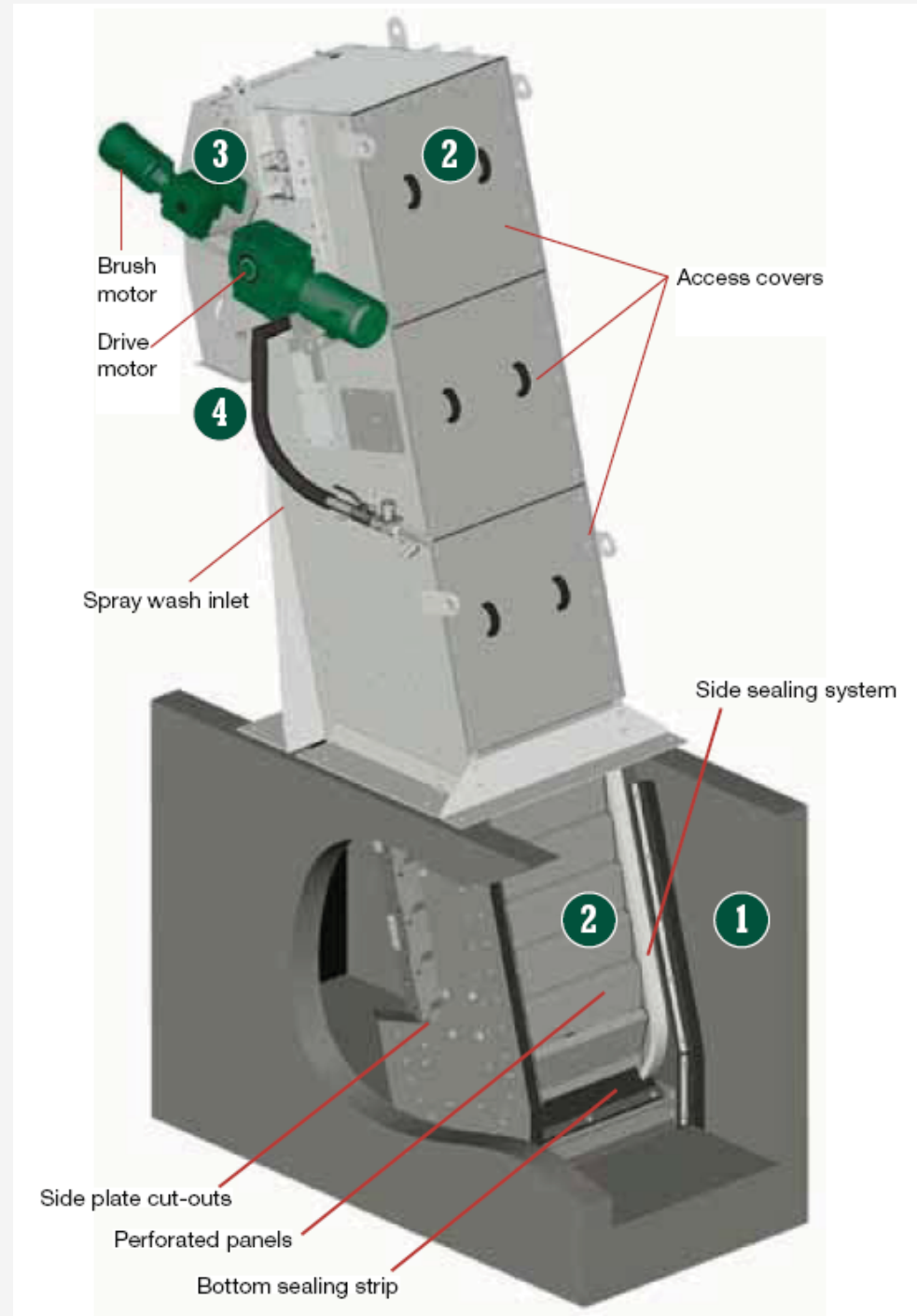
- **American Society for Testing and Materials**

- ✓ (ASTM) A 536-84: Standard Specification for Ferritic Ductile Iron Castings
- ✓ (ASTM) A 36: Standard Specification for Carbon Steel Plate



Operation of The Fine Screen

1. Wastewater in the channel flows through the continuous band of perforated panels of the system's screening zone.
2. The drive moves panels from the screening zone, to the cleaning mechanism (during operating cycle).
3. Debris is removed from the perforated panels by the two-stage brush and wash water system.
4. Screenings are conveyed to the integrated Screenings Washer Monster® for washing and compacting.



Perforated Panels

- Perforated panels are constructed of 3/8" (9.53mm) thick Ultra High Molecular Weight(UHMW)PE with standard perforations.
- Perforation size can be custom designed to meet the owner specific screening application. Stainless steel debris elevating combs are secured to intermittent panels as required.



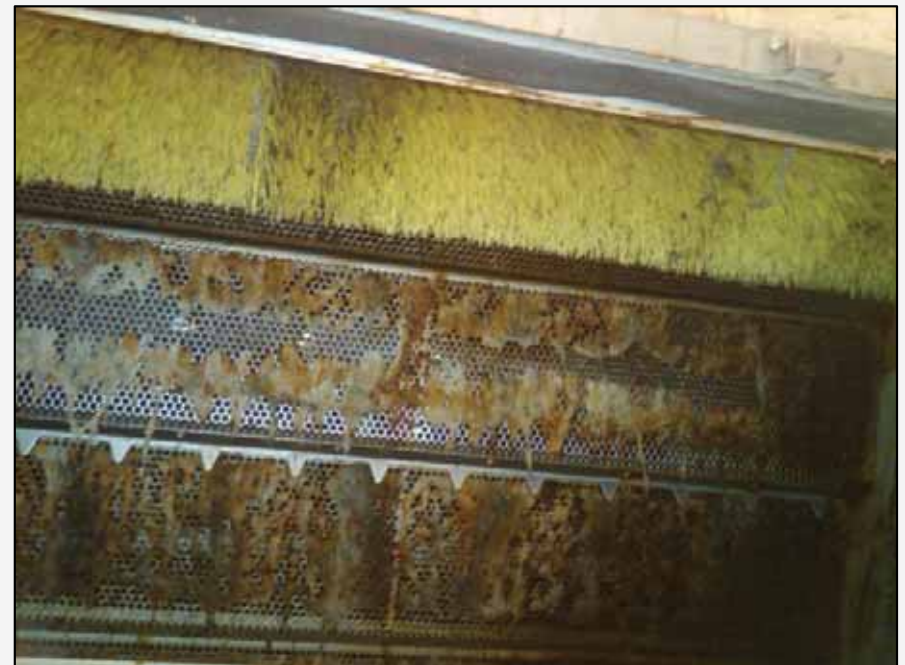
Screenings Removal

Spray Wash Assembly

- Consists of a spray wash manifold, solenoid operated valve, manually operated ball-valve, and Y-strainer.
- The solenoid valve is explosion proof and houses a 120 volt coil. The manual operated stainless steel ball valve is used to control the spray wash flow rate.

Rotary Brush Assembly

- Used with the spray wash system for screenings removal. The brush assembly has a pivot adjustment with easy access. The brush is constructed of yellow polyester PBT to prevent static damage.




Advantages of Fine Screens

- With ¼” opening size, they Capture twice the amount of screenings compared to bar screens.
- Ultra High Molecular Weight(UHMW) polyethylene perforated panels prevent debris from passing around the screen.
- Easy to lift access covers and easy to reach assembly allows simple fine tuning.
- Low profile units with self enclosure and simply retrofitted for odor control purposes.

Advantages of Fine Screens (Cont.)

- The requirement for minimum approach velocity is the same for the climber-type bar screens.
- The capital cost and installations cost for the fine screens are very similar to those for the fine screens.
- With the higher capture rate of solids, the operation and maintenance efforts downstream are minimized.



Monster Screening Washer

Screenings Washer Monster[®]

- The Screenings Washer Monster (SWM) produces ultra-clean discharge using a patented system to grind, wash, compact and dewater debris captured by a screen. Typically paired with the fine screens.
- The self-contained, hopper fed system produces a cleaner, more compact end product.



JWC Screenings Washer Monster Installation

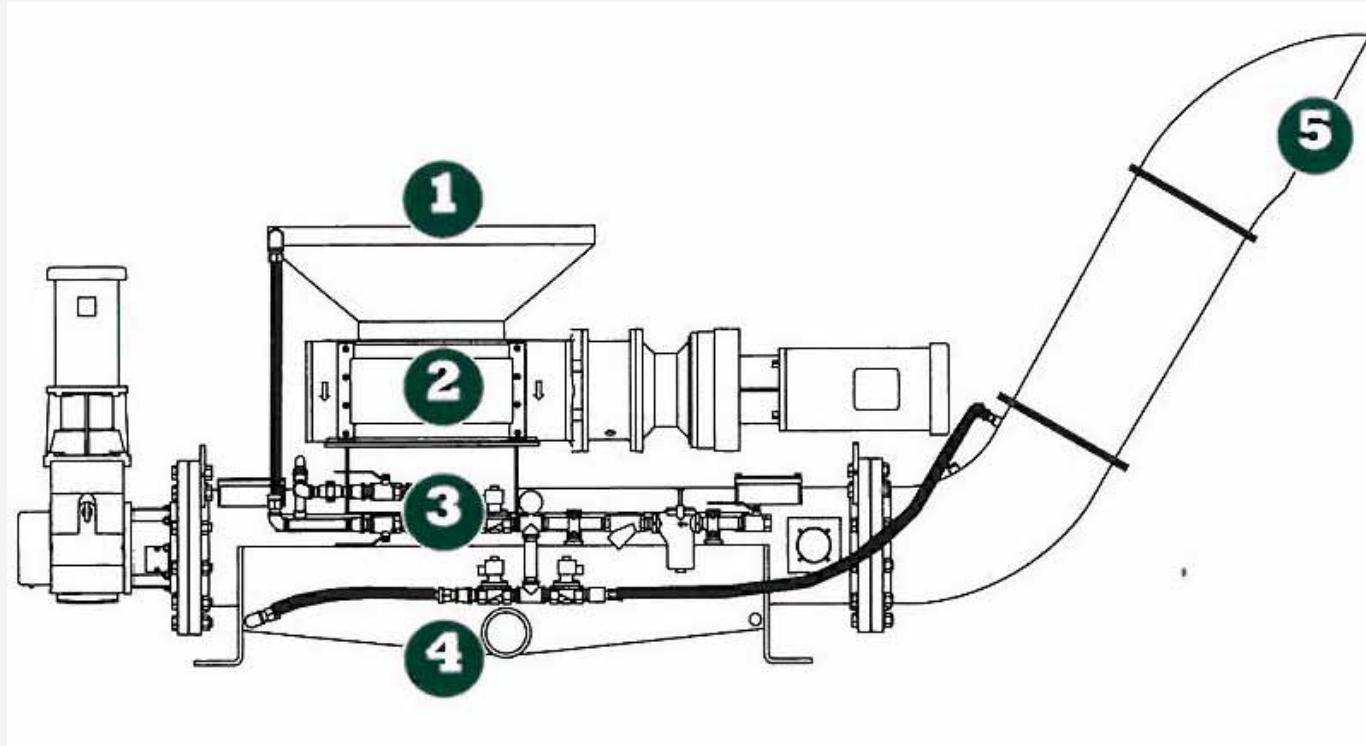


JWC Screenings Washer Monster



JWC Screenings Washer Monster Hopper View

Operation of Screening Washer Monster[®]



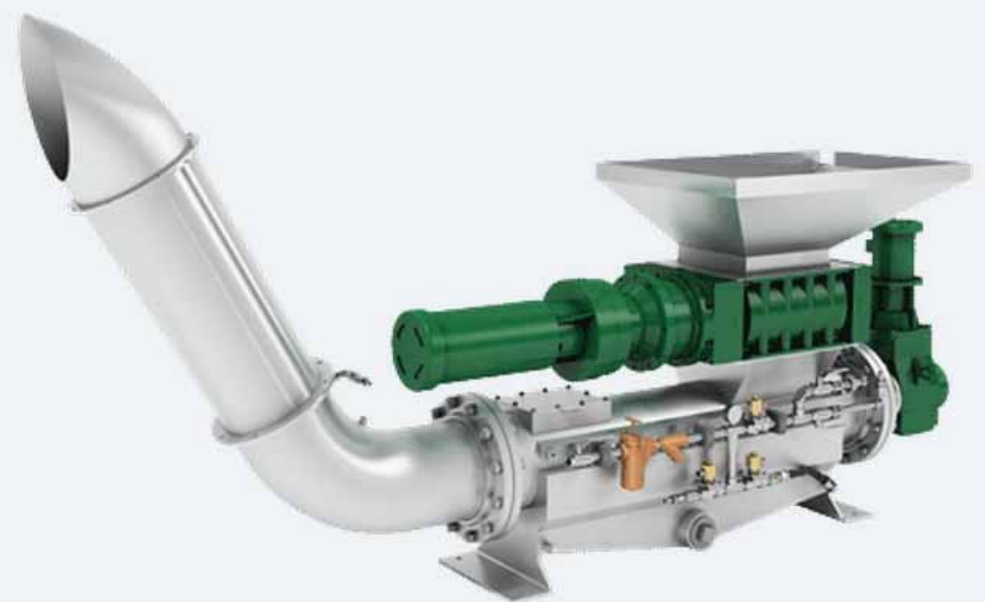
1. Hopper transports screenings from screen to SWM.
2. Grinder breaks up material
3. Screenings are washed, separated, dewatered and conveyed to compaction zone.
4. Soft organics (fecal) are liquefied, pass through and perforated screen and return to the waste stream.
5. Screenings are dewatered, compacted, and conveyed to the discharge point where they emerge as a dry, solid plug

Specifications of the Screenings Washer Monster

Feature	Rating
Capacity*	150 ft ³ /hr (4.3 m ³ /hr)
Wash Water Capacity**	330 GPM (21 l/s)
Solids Volume Reduction	Up to 95%
Dry Solids Content	Up to 50%
Perforations	6mm (standard) 2 or 3mm (optional)
Options	Discharge bagger Roller base Custom hoppers Custom discharge lengths

Advantages of Screenings Washer Monster

- Low Profile Tank Design – Large enough to deal with heavy solids loading
- Has a roller base makes moving the system fast and easy
- Brush attachment keeps screen clean and easy
- Smart Controller : Adjusts cleaning cycles for efficiency. Ethernet and SCADA capable
- Cleaner discharge reduce hazardous waste fees from haulers and landfills





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Questions?