



Wisconsin Wastewater Operators Association

Rags to Riches Pumps that handle Rags
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LW Allen, LLC.

Presentation by:
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Water & Wastewater Pumping Solutions



The Growing Problem #1:

- **Baby Wipes**
- **Cleaning Products**

**(This industry has grown
over 70% in the past
years!)**



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The Growing Problem #1



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The Growing Problem #1



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Where does the clogging begin?

- Sewage containing excessive fibrous material, long strands of debris, hair, clogging typically initiates at the leading edges of a impeller



1 1 The heavy cast iron motor frame houses the silicon steel laminations of the stator and a reliable die-cast rotor in a high efficiency motor design.

2 2 The high quality, one-piece, shaft is made of a heavy-duty 416-stainless steel.

3 3 Two separate tandem-mounted mechanical seals protect the motor from the pumped liquid in this critical area for added assurance of product reliability. The inner seal uses carbon against NI-resist faces. Carbon against ceramic faces are used in the outer seal. Protective stainless steel cup prevents stringy material from interfering with the seal spring.

4 4 For applications requiring the motor to run non-submerged, a water jacketed motor design can be utilized. A unique, self-cleaning, rotating flow-control disc prevents virtually any solids from entering and accumulating in the mechanical seal area and cooling water jacket. This results in longer mechanical seal life, as well as a clean cooling system, preventing service shutdown and greatly increasing pump life. A still tube located in the cooling water jacket allows air to escape as the cooling water enters.

5 5 Impellers are available in either enclosed radial flow, solids-handling two-vane, or bladeless design, having blunt well-rounded leading edges and thick hydrofoil shape. In order to pass large solids and stringy material, these one-piece cast impellers are designed and matched specifically to the equalizing-pressure, constant-velocity volute.

5 5 An alternate cupped vortex impeller with centerline volute design is available. This design utilizes a two piece volute construction, incorporates a fully developed suction bell inlet, and has a fully recessed, cupped design capable of handling discharge size solids

6 6 Optional stainless steel wearing rings are available for both the impeller and casing for the two-vane and bladeless designs.

7 7 Electric power and control cable assemblies are epoxy sealed at the motor's entry point. This prevents cable wicking and keeps moisture from entering the motor housing.

8 8 To protect from overheating, automatic-resetting thermostats are imbedded in the motor windings.

9 9 Moisture detectors detect moisture entering the seal cavity and transmit a signal to a compatible controller. (Also included on motors with cooling jacket but not shown in order to show clarity of cooling water entry and exit ports.)

10 10 Motors are constructed with Class F insulation and rated with a 1.15 service factor and continuous duty at 40°C ambient temperature. The motor enclosure is sealed using O-rings, and has rabbit fits with extra large overlaps.

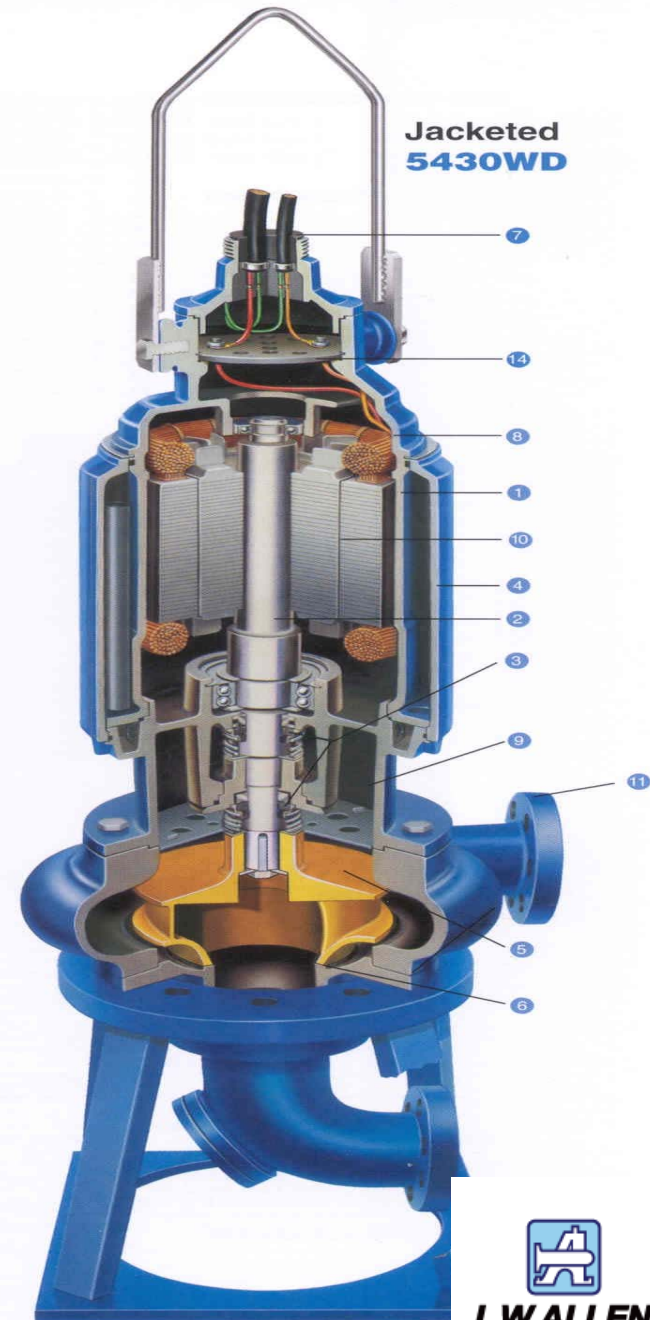
11 11 Centerline and tangential volute discharge designs are available, both incorporating two-vane or bladeless impellers to enhance solids-handling capabilities.

12 12 The sliding bracket assembly, an integral part of the pumping unit, is constructed for easy installation and removal. When lowered onto the discharge base, the knifing action of the vertical non-sparking metal-to-metal seal provides a self-cleaning, UL Listed and CSA certified design. The separate discharge base-elbow, which is bolted directly to the floor, supports the total weight of the pumping unit and provides vertical discharge.

13 13 The pull-up submersible pumps are guided on rails as they are raised or lowered into the sump, eliminating the need to enter the wet well.

14 14 Power and control cable terminal board ensures positive wire connections and provides additional seal between hostile environment and motor windings.

15 15 Inspection/drain plug on mechanical seal chamber is standard on all units.



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Optional case and impeller wear rings (except Vortex)



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Bladeless and two-port impellers



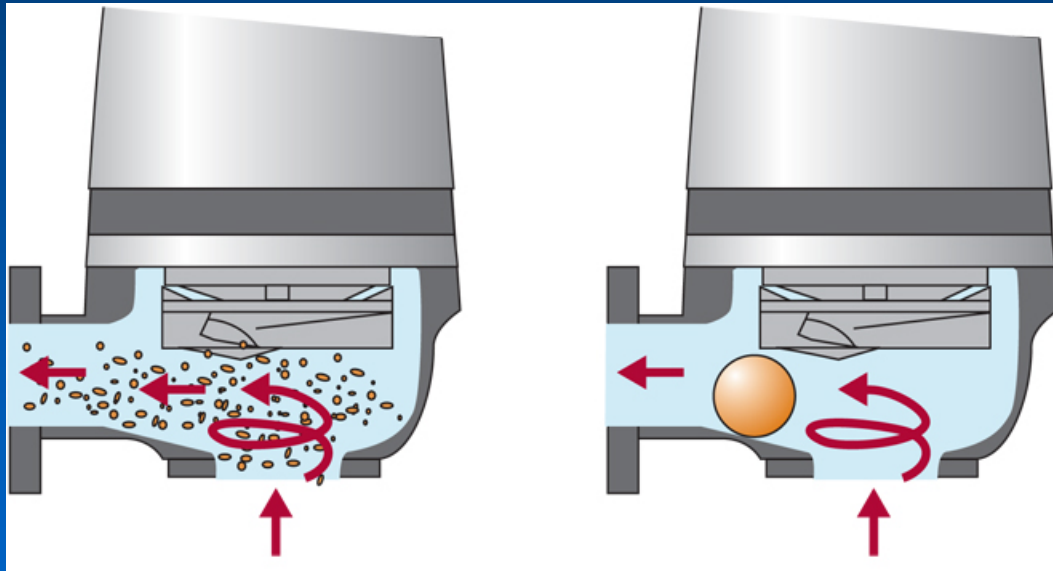
Vortex Impeller



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The Growing Problem #1

Why the Problem:

- **“Nuclear Strength”**
- **They tend to float**
- **They tend to clump & tangle**
 - (Mop Heads ?!?!)



Solutions:

1. Add a Mechanical Screen

- **Cons: very expensive \$\$**
- **Cons: lots of maintenance & disposal effort**
- **Cons: takes lots of room**
- **Pros: removes the debris from the system**

2. Change to Chopper/Shredder Pumps

- **Cons: keeps chopped debris in the system**
- **Pros: inexpensive**
- **Pros: very little maintenance**
- **Pros: great results**



Solution: EradiGator by Landia



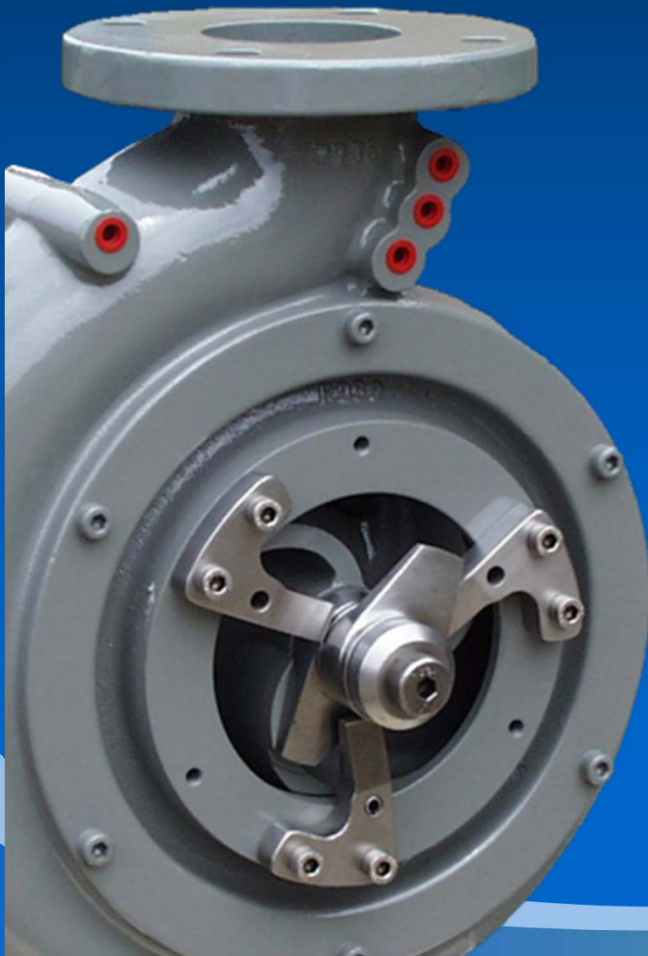
Landia


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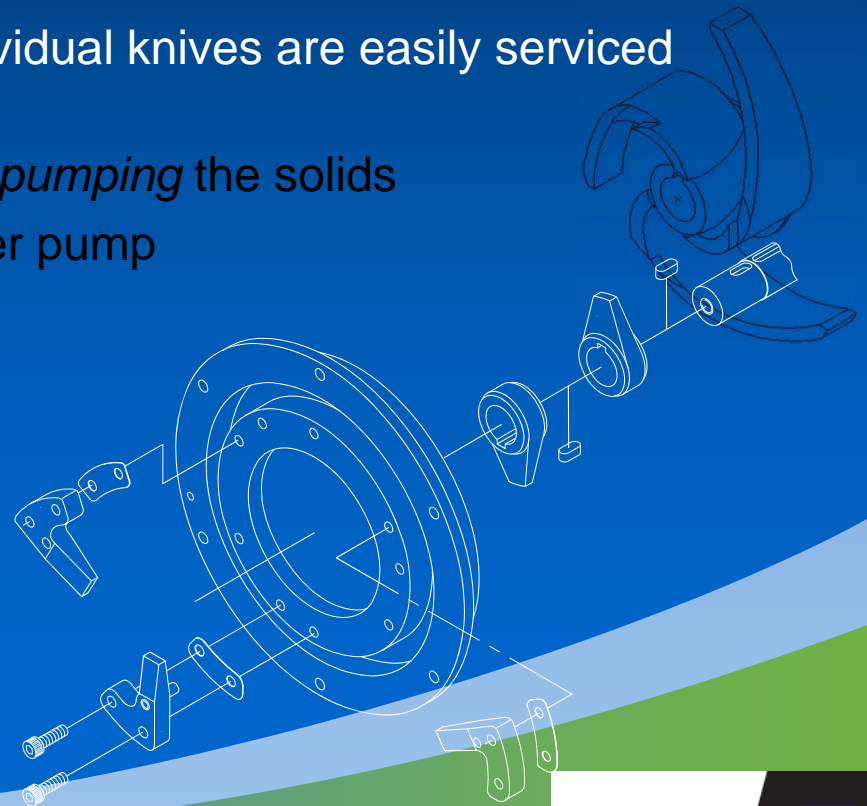
Solutions:

Chopper/Shredder Pumps



Chopper Pumps

- Unique Hardened Steel Knife System
- The externally-mounted knife system performs the chopping *before* the solids enter the impeller area.
- The complete knife system or individual knives are easily serviced using only an Allen wrench
- The open impeller is designed for *pumping* the solids
- This is the design of a *true* chopper pump



Chopper Pump in ACTION! (Eradicator – Jet Chopper)



Cutter Pumps



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Dual Cutter Action

The RAD



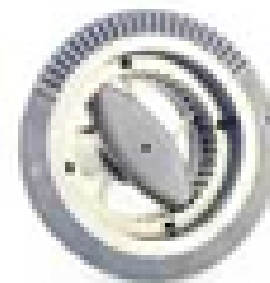
Radial Shredding

The AX



Axial Cutting

RAD-AX[®]



Radial/Axial Shredding

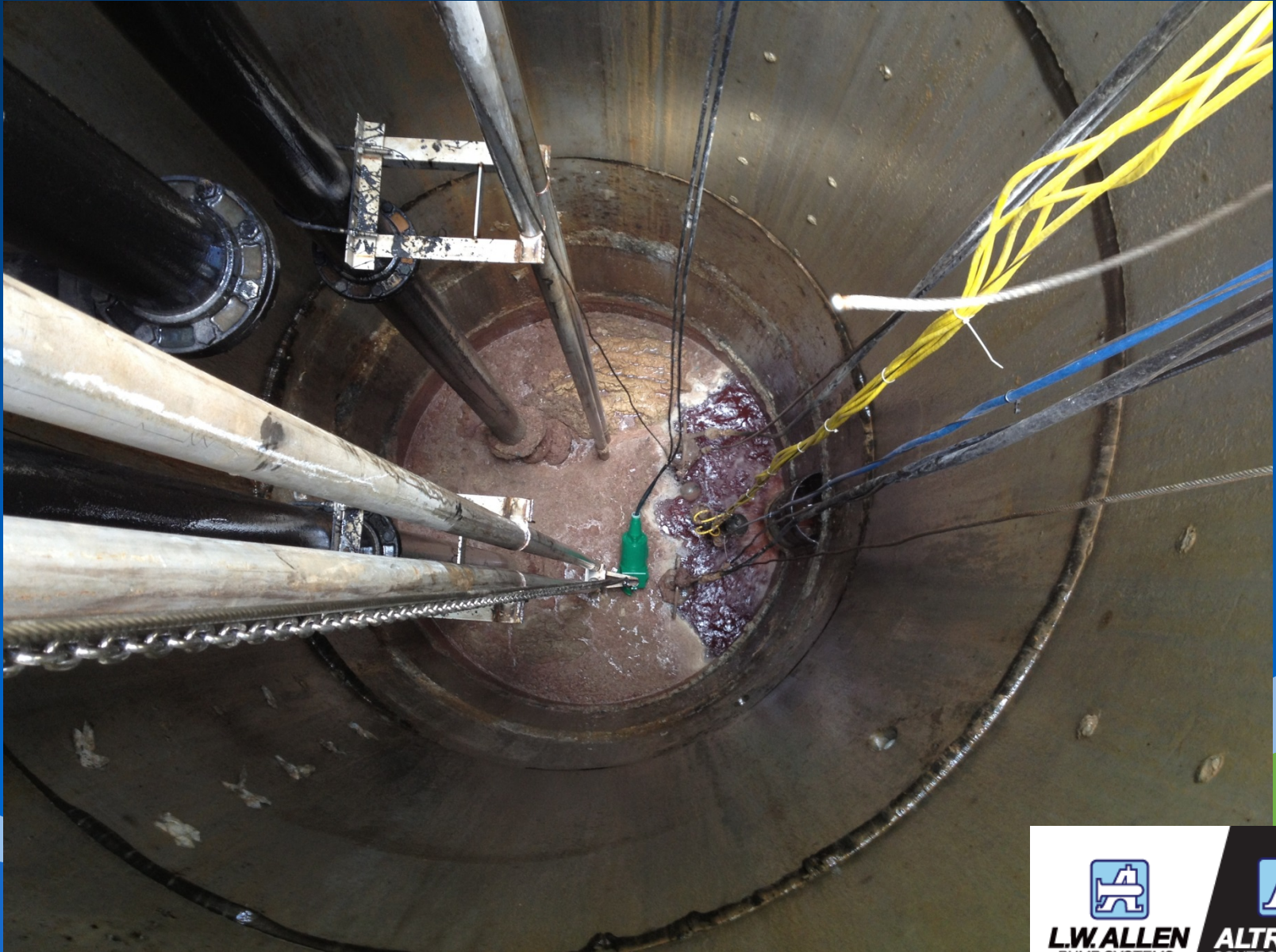


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Problem #2 – Grease Build-up



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Solutions:

1. Add Chemical

- **Cons: expensive \$\$**
- **Cons: lots of effort**

2. Add a Submersible Basin Mixer

- **Pros: inexpensive**
- **Pros: very little maintenance**
- **Pros: great results**



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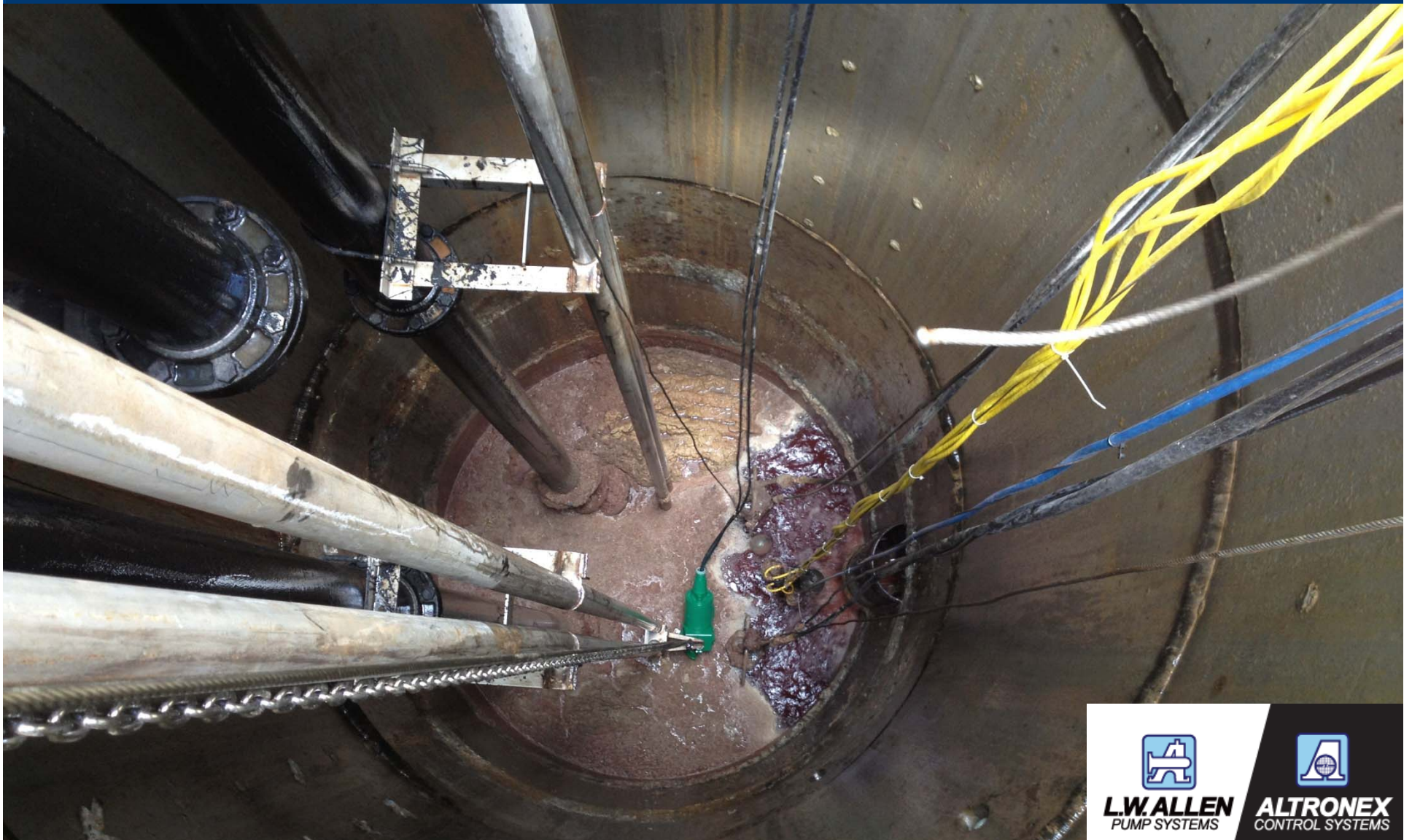
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Solutions:

Submersible Basin Mixer



Problem #2 – Grease Build-up **BEFORE**



Solution— Grease Build-up
AFTER (3 min of running!)



Cedarburg, WI



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Waterford, WI



Solution— *Grease Build-up*



Thank You

Questions?

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