

The Source for Floating WWT Equipment Brush Rotors - Mixers - Polishing RBCs



AEROBIC DIGESTERS





ACTIVATED SLUDGE BASINS





been utilized in all types of wastewater applications including Activated Sludge Basins, Oxidation Ditches, Aerobic Digesters, EQ Basins, as well as Lagoons.





OXIDATION





COLD WEATHER
APPLICATIONS

QUESTION

What is a San Airuflu Floating Brush Rotor?





Quick & Simple Installation







From This:

To This:

To This:

All in a matter of hours, not days



Regulatory Approval



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES Bureau of Pollution Control P. O. Box 10315 Jackson, Missisppi 30209 [601] 961-5171



March 22, 1988

Mr. Buster Norris S & N Sprayer Company, Inc. P.O. Drawer 1994 Greenwood, Mississippi 38930

Dear Mr. Morris:

We have evaluated your submittal in support of our approval of the S & H Sprayer Electric Paddle Micel Acrator to be applied to waste-mater treatment. You have asked that the S & N Acrator be approved for treatment systems there secondary levels of treatment (i.e., not less than 30 mg/l BCD_c) is required. Our current criteria calls for 8 H.P. per million gallons under treatment to be supplied for oxygen dispersion. You have asked that we approve 4 to 5 H.P. per million gallons under treatment for the S & H Acrator.

The data supplied as a result of testing by Professor Claude Boyd at Auburn University provides us with the mixing characteristics of the S & N Acretor. The results appear impressive. Additionally, we called Professor Boyd and discussed the results of his testing. He sent us additional saterial presenting the results of other testing performed on aerators. While most of Professor Boyd's work was with aerators for catfish farming, the aeration and mixing abilities could be effective in wastewater treatment.

After review of all the data submitted, we feel we are in a position to approve the S & N Sprayer Electric Paddle Wheel Acrator at no less than 4 N.P./million gallons under treatment for secondary levels of treatment on a cuse by case basis as submitted by project design engineers. Other applications where more stringent limits are required will also be reviewed case by case.

Please be more that this merator has not been applied to vastewater treatment in this manner for meeting certain effluent limits. The permittee will be advised in all cases of this and will be held responsible for meeting required effluent limitations.

If you have any questions, do not hesitate to call me at 961-5171.

Sincerely,

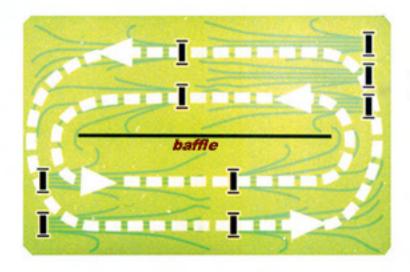
Hunn F. Odom Glenn L. Odom, P.E. Coordinator Permit Compliance Section

GLO/vevs

- In 1989, S&N Airoflo requested an approval for the use of its rotors at 4 HP/mg vs. the state standard of 8 HP/mg.
- S&N Airoflo supplied O2 transfer and mixing tests performed at Auburn University to the Mississippi Department of Natural Resources, who in turn forwarded the information to Region IV Department of Environmental Quality in Atlanta, Ga.
- S&N Airoflo units approved for 4 hp/mil gal partial mix – one half of the original 8 hp/mil gal.
- Ruleville, MS first WW installation. MDEQ suggested S&N equipment. Add 200 households to system.



Placement Effects on Treatment

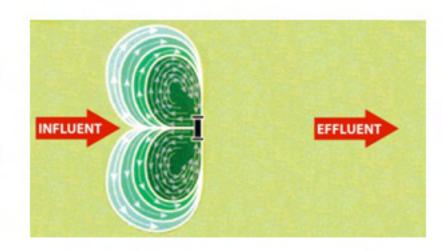


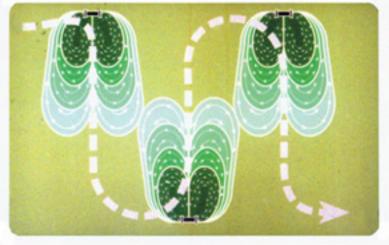
Modified Raceway -

7 acre facultative lagoon converted to raceway design

Influence of Placement -

- Eliminates Short-Circuiting
- Completely mixes the influent and exposes it to O2



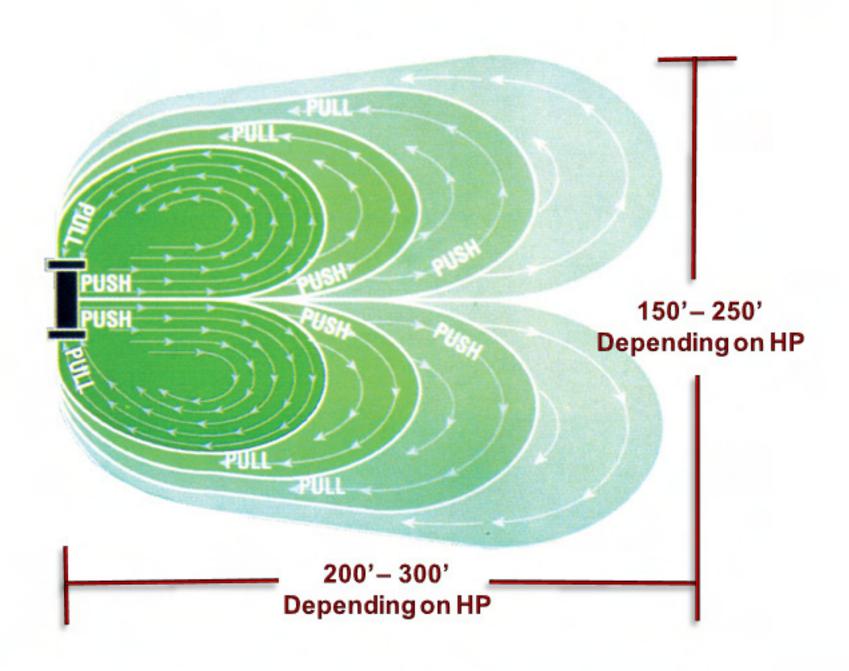


Serpentine Flow Pattern -

- Water moves from unit to unit
- Independent Mixing Zones
- Creates separate zones of mixing and treatment
- Prevents Short-Circuiting



Active Mixing Zone in Open Basis or Lagoon



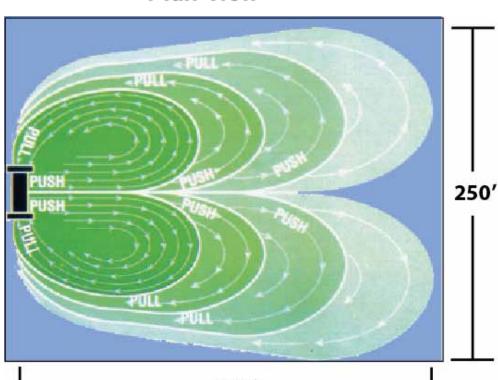


Verification of Increased DO Readings Establishes the Size of the Active Mixing Zone

15 HP Floating Brush Rotor @ 83 RPM

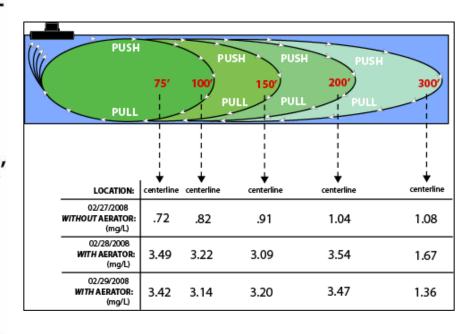
* Average Depth of Lagoon - 7 feet

Plan View



300'

Elevation View



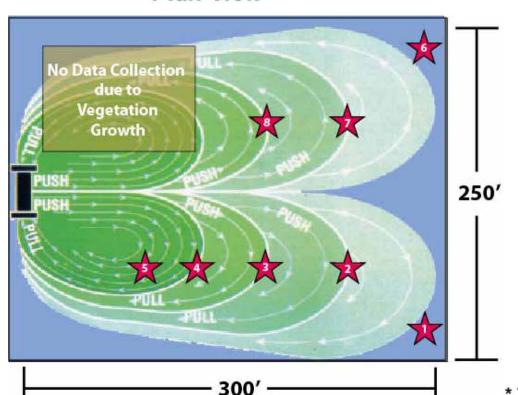
* Testing performed by AquAeTer, Brentwood, TN, at a large paper mill.



Verification of Increased DO Readings Establishes the Size of the Active Mixing Zone

15 HP Floating Brush Rotor @ 83 RPM

Plan View



	LOCATION:	02/27/2008 WITHOUT AERATOR: (mg/L)	02/28/2008 WITH AERATOR: (mg/L)	02/29/2008 WITH AERATOR: (mg/L)
*	150' west of 300' centerline	1.02	1.62	1.75
*	75' west of 200' centerline	.86	3.26	3.18
*	75'west of 150' centerline	.80	3.43	3.33
\bigstar	75'west of 100' centerline	.68	3.23	3.26
\bigstar	75' west of 75' centerline	.64	3.18	2.82
	150' east of 300' centerline	.97	1.64	1.35
*	75' east of 200' centerline	1.13	2.31	2.96
	75'east of 150' centerline	1.06	2.57	3.02

^{*} Testing performed by AquAeTer, Brentwood, TN, at a large paper mill.

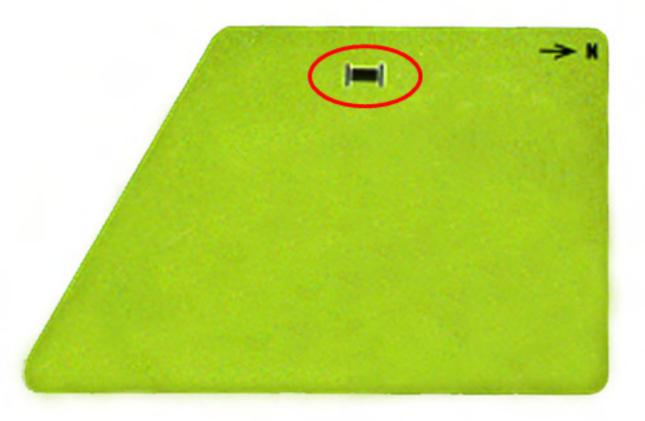


Multi-Cell Facility: Soft Drink Plant

Gulf State Canners, Inc. - Clinton, MS







Velocity Test

Performed by: Dennis D. Truax, PhD., P.E., D.E.E. Department of Civil Engineering Mississippi State University

- One 10 HP unit operating.
- Approx. 0.4 surface acres (0.7 mil gal @ 14HP/mg)
- Approx. 7 ft at deepest point.
- Velocity & sludge accumulation measured.
- Collected at 7 points by two people in a rope-stabilized boat using a digital velocity meter.

Test Results:



1

Water Depth: 5 feet Sludge Accumulation: None

Distance below surface	Velocity (fps
0.2 ft.	2.5
1.0 ft.	2.1
2.0 ft.	1.5
3.0 ft.	1.1
4.0 ft.	0.5

Average Velocity: 1.54 fps

2

Water Depth: 4 feet Sludge Accumulation: None

Distance below surface	Velocity (fps)	
0.2 ft.	0.5	
1.0 ft.	0.6	
2.0 ft.	0.4	
3.0 ft.	0.5	

Average Velocity: 0.50 fps

3

Water Depth: 5.3 feet Sludge Accumulation: None

Distance below surface	Velocity (fps)
0.2 ft.	0.6
1.0 ft.	0.5
2.0 ft.	0.6
3.0 ft.	0.5
4.0 ft.	0.6

Average Velocity: 0.50 fps

Test Results:



4

Water Depth: 4.5 feet Sludge Accumulation: 0.5 feet

Distance below surface	Velocity (fps)	
0.2 ft.	0.5	
1.0 ft.	0.5	
2.0 ft.	0.6	
3.0 ft.	0.4	

Average Velocity: 0.50 fps

5

Water Depth: 5.5 feet Sludge Accumulation: 0.25 feet

Distance below surface	Velocity (fps)	
0.2 ft.	0.7	
1.0 ft.	0.6	
2.0 ft.	0.5	
3.0 ft.	0.5	
4.0 ft.	0.5	

Average Velocity: 0.50 fps

6

Water Depth: 6.8 feet Sludge Accumulation: 0.75 feet

Distance below surface	Velocity (fps
0.2 ft.	0.5
1.0 ft.	0.5
2.0 ft.	0.5
3.0 ft.	0.4
4.0 ft.	0.5

Average Velocity: 0.48 fps

Test Results:



7

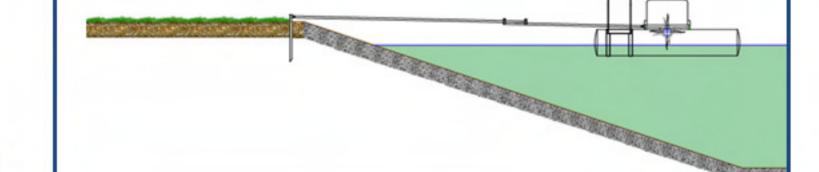
Water Depth: 6.8 feet Sludge Accumulation: 0.75 feet

Current direction constantly changing. Velocities above sludge varied between 0.1 and 0.5 fps, with higher values near surface.

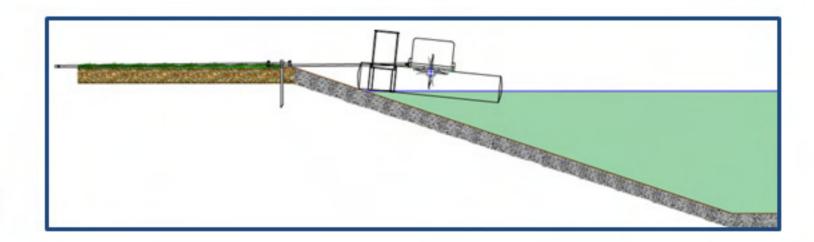


Sen AIRUFLU Levee Anchoring System





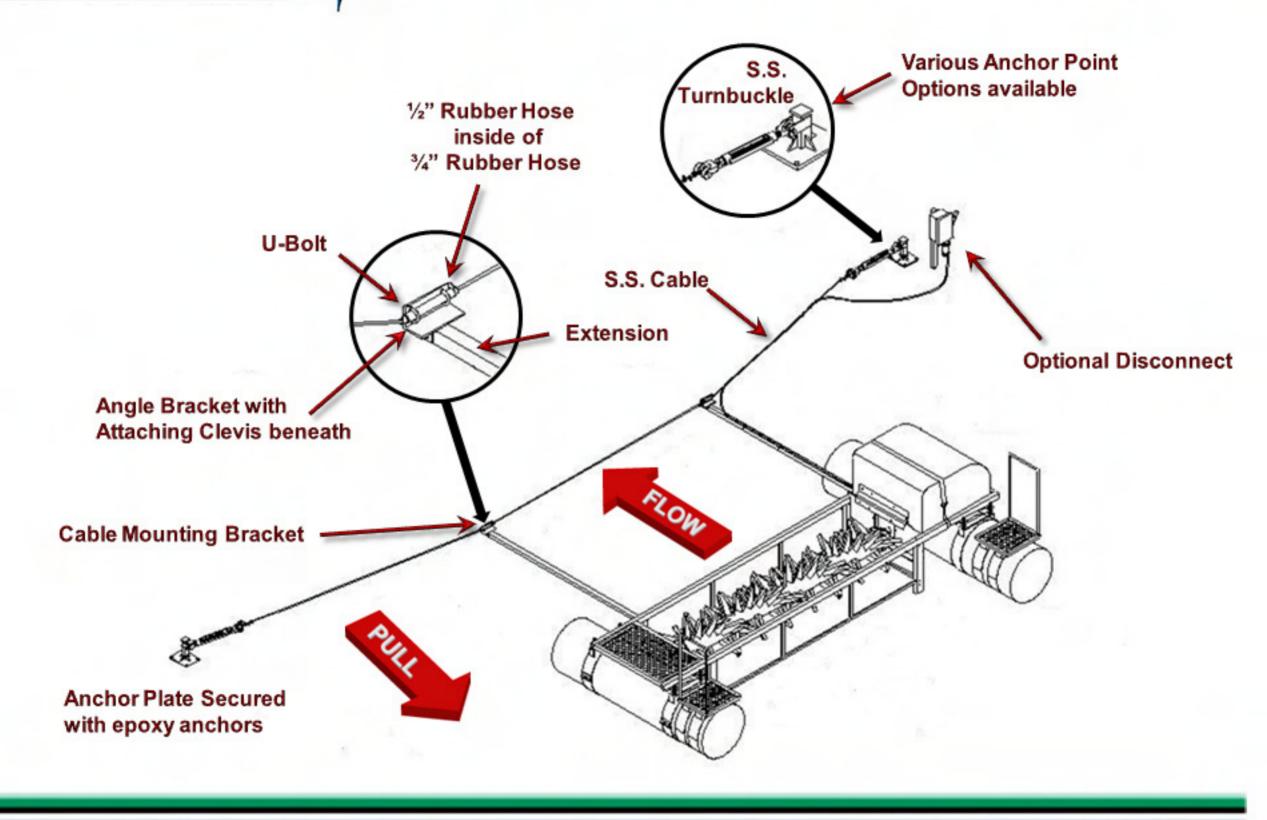
operating position



maintenance position



Cable Anchoring System





Sen AIRUFLU Levee Anchoring System

