HERON INNOVATORS

ENHANCED ALGAE REMOVAL WITH SUSPENDED AIR®

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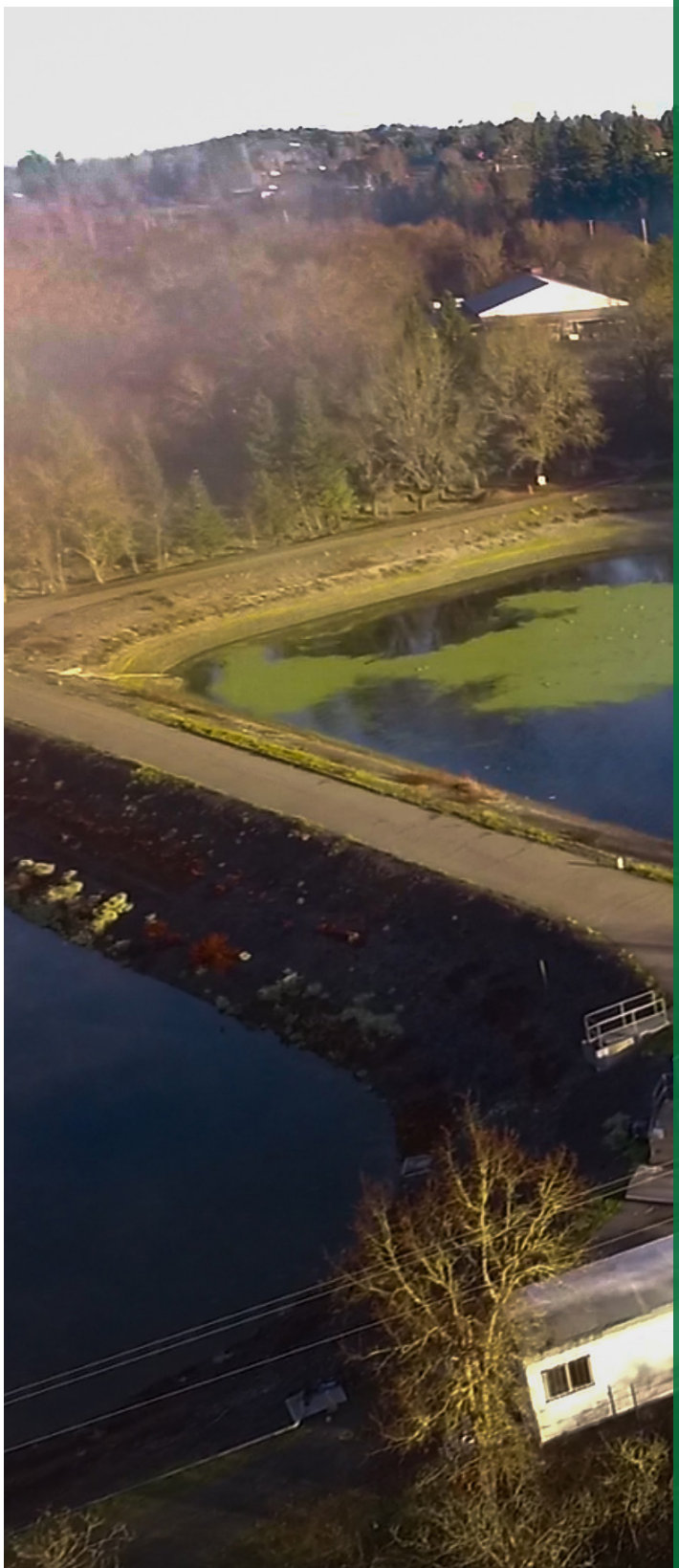
ALGAE REMOVAL



Reliable High-Quality Effluent Across Diverse Algal Profiles with the SAF® System

The Suspended Air® Flotation (SAF®) system is an advanced solution for achieving low-turbidity effluent, consistently delivering levels below 1 NTU across various algal profiles and wastewater compositions. Its unique design allows it to handle a wide range of algal blooms, meeting or exceeding regulatory standards such as California's Title 22 requirements for tertiary treatment. Proven through multiple installations in diverse settings, SAF® demonstrates both versatility and reliability.

Unlike conventional dissolved air flotation (DAF) systems, SAF® leverages microbubbles called "aphrons." These microbubbles, typically 7–25 microns in size and enhanced with optimized surface charge, efficiently separate and capture algae to form a stable, floatable layer that is easily removed. SAF® ensures effective floc formation and maintains effluent clarity that stays well within regulatory thresholds.

> SAF® excels for its capacity to achieve & maintain exceptional clarity across a variety of algal profiles, supporting facilities to reliably meet stringent water quality requirements.

Case Studies Demonstrating SAF® Performance Across Diverse Conditions

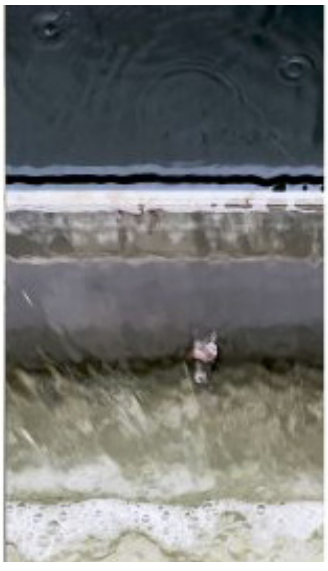
Graton Community Services District, CA

In Graton, a SAF® system was integrated into the local treatment plant, which serves a small rural community. Here, the system faced varied algae profiles due to seasonal shifts and nutrient fluctuations in the oxidation and settling ponds. SAF® effectively handled these variations, consistently achieving effluent turbidity well below the Title 22 requirement of 2 NTU. Paired with a downstream filter, the SAF® setup allowed for a nearly maintenance-free tertiary treatment process with effluent turbidities as low as 0.5 NTU. The community reported >98% removal of total suspended solids (TSS) and an impressive 92% reduction in biological oxygen demand.

Parameter (mg/L)	Lagoon Wastewater	Post SAF®	Removal (%)
BOD_5	8.2 - 57	<5.0	92.3
TURBIDITY (NTU)	60 - 80	0.5 - 1.6	>98

Pleasant Valley State Prison, CA

An installation at the Pleasant Valley State Prison in Coalinga, highlights SAF®'s robustness in environments with high algal loads. The prison's 0.65 mgd aerated lagoon system previously experienced significant algal bloom concentrations—sometimes exceeding 60 ppm—posing a challenge for downstream filtration systems. The SAF® unit consistently produced effluent turbidity levels averaging 0.45 NTU even under these conditions. This result not only met Title 22 standards but also significantly reduced the strain on subsequent filtration systems, enabling extended operational cycles with less required maintenance.



Primary Water Treatment

Colfax, CA

Suspended Air® Flotation (SAF®) wastewater treatment process is used for algae and silt removal at the City of Colfax. The SAF® system exceeded the city's target for turbidity reduction from day one.

Date	Time	pH	GPM	Polymer Dosage (Pump Max - 0.5GPH)				Coagulant Dosage (Pump Max - 4.0 GPH)			Froth Output			Turbidity (NTU)	
				Stroke %	Freq. %	GPH	PPM	% Pump	GPH	PPM	Froth GPM	GPH - FA	PPM	Influent	Effluent
19-Jun	9:45 AM	8.7	225	18	52	0.05	3.5	10	0.4	30	3.8	0.04	3.1	7.37	0.85
19-Jun	10:00 AM	8.7	225	18	52	0.05	3.5	10	0.4	30	3.8	0.04	3.1	13.5	0.88
19-Jun	11:00 AM	8.7	225	15	18	0.01	1.0	5	0.2	15	2	0.02	1.6	8.47	0.86
19-Jun	12:00 PM	8.7	225	15	18	0.01	1.0	5	0.2	15	2	0.02	1.6	23.5	0.84
19-Jun	1:00 PM	8.7	225	15	18	0.01	1.0	5	0.2	15	2	0.02	1.6	24.8	1.03
19-Jun	2:00 PM	8.7	225	15	18	0.01	1.0	5	0.2	15	2	0.02	1.6	32.6	0.86

SAF® is the Sustainable Solution for Algae Removal:

Advantages of SAF® for Algae-Impacted Effluent

1. Enhanced Solids Removal: SAF® has proven to remove up to 100% of algae and suspended solids, reducing backwashing, extending filter life, and lowering operational costs.
2. Operational Stability: The SAF® system requires minimal downtime and supports continuous flow, perfect for facilities with limited storage or fluctuating algae levels.
3. SAF® achieves superior algae removal without the high-capacity pumps required by DAF systems, making it an energy-efficient option.
4. With effluent turbidities <1 NTU, SAF® provides reliable results for facilities aiming to meet strict standards, ensuring compliance and user satisfaction.