

# ENVIRONMENTAL / HEALTH PRODUCTS & SERVICE

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## Case Study: Small Flow *SMART-Treat™* Moving Media Bio-Reactor A Golf & Supper Club in Northern Wisconsin, USA Summary of Certified Laboratory & Field Tests from Start-Up

Moving Media treatment systems have been used worldwide to treat high-strength industrial and domestic wastes for small and large flows. The SMART-Treat™ system was designed by an experienced wastewater treatment system designer, site plans were prepared and approved, and the system was installed & started 10/28/01. After a successful acclimation period, the system had performed very well within one month of start-up. A 5 month sampling period was initiated. Advantages include: economical, a high biological surface area in a small footprint, therefore takes up less space than other systems, ease of installation & startup, & the ability to increase treatment capacity without additional tankage.

Design Wastewater Flow (DWF): 4500 gpd, Restaurant and two 2-bedroom cabins However, cabins were not connected for this data collection period, so only restaurant flow is aerobically treated (est. 1000-2000-gpd, 5 days per week). Raw BOD is therefore at a higher concentration. Organic load was about 75% of design; hydraulic load was about one-third of design. Unfortunately, *Westwood Restaurant was destroyed by fire in 2006. Steve Single, operating owner, may be reached for comment regarding 5 years of flawless service using the SMART-Treat™ moving media process.*

Design Parameters                      Raw Sample Collected 10/27/00.                      Certified Lab Results  
GT = Grease Trap Effl, ST = Septic Tank Eff

All results: mg/l	BOD	COD	TSS	pH (su)	FOG	TKN/TN	TP
GT Eff-Anticipated	600-1200	>1500	300-500	6-9	<150	40-60/<100	8-15
GT Eff- Sampled	577	1023	242		60	104.4 TKN	16.5
Design Final Eff	<25		<30			<3 / <15	

**Results:** Up to 30 samples were taken during the first 5 months, field and lab tests were conducted (state-certified labs: local WWT Plant & University Lab, Stevens Point, WI)

	BOD5, mg/l	TSS, mg/l	TKN, mg/l	NH3-N, mg/l	NO3-N, mg/l	Temp-C	pH	DO,mg/l
GT Eff	1619	530	80.3	44.5	--	14.6	5.3	0.5
ST Eff	164	125	--	--	--	9.8	6.9	0.4
Final	16.2	14.5	2.6	0.5	8.3-10.5	7.0	7.1	5.4
% Rem	99.0	97.3	96.8	98.9	--	--	--	--

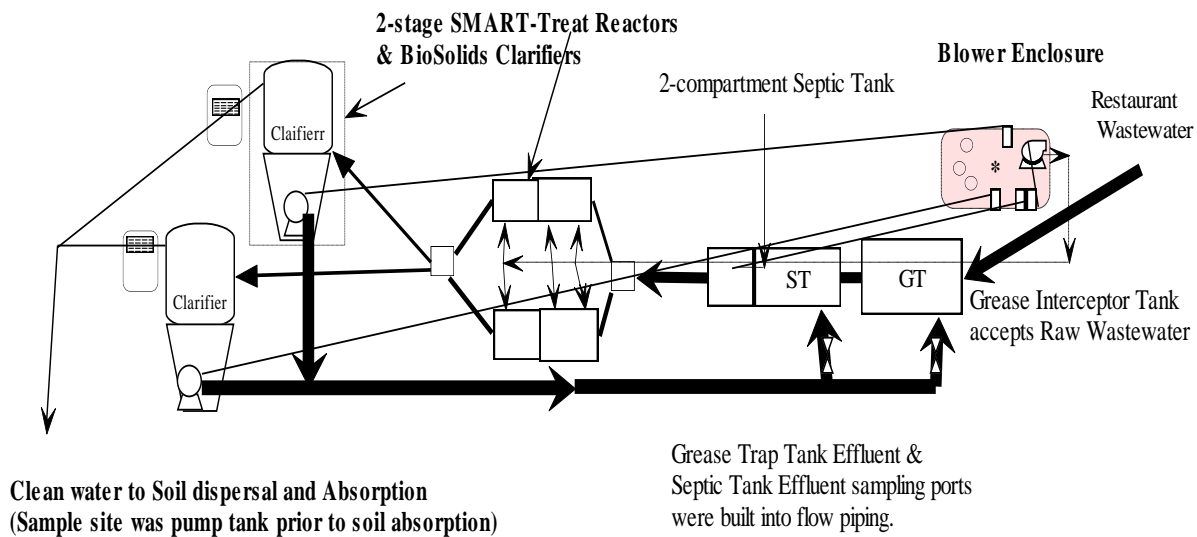
**Treatment achieved:**

- 99% and 97 % respective BOD and TSS reduction, Complete Nitrification
- 83 –86% Total Nitrogen reduction.
- Total Nitrogen reduction occurred within the system, assisted by internal recirculation from BioSolids Settler to Septic Tank
- No blower cycling or No additional biofilm carrier elements were needed

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## Westwood Golf and Supper Club Phillips, Wisconsin Flow Diagram- Supplement to Case Study Installation date: September, 2001



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August, 2001