

MicroC™ Performance Example

The Cove Resort



Facility Name: The Cove Resort

Facility Location: Yarmouth, Massachusetts (Cape Cod)

Facility Description: 229, one-bedroom time share condominiums plus racquet/health club and restaurant

Flow: Average flow* = 12,265 GPD. Design flow = 32,000 GPD

Denitrification technology: Anoxic tower – attached growth

Previous carbon source: Methanol (35% methanol/65% water)

Date MicroC™ started: September 27, 2004

Operations & Maintenance firm: Aquarion Operating Services
Jay Walsh

Discharge permit : Massachusetts DEP Permit Number 3-162

Permit limits : BOD – 30mg/L

TSS – 30 mg/L

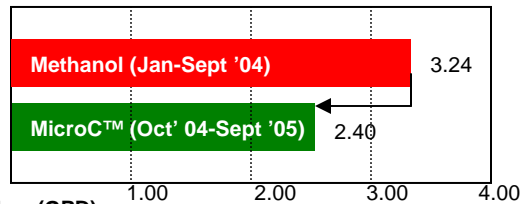
Nitrate-N – 10 mg/L

Total Nitrogen (NO₃+NO₂+TKN) – 10 mg/L

Oil & Grease – 15 mg/L

MicroC™ performance narrative: Plant switched from methanol to MicroC™ at the end of September in 2004 and demonstrated consistent performance in terms of Total Nitrogen removal vs. methanol. MicroC™ has been 26% less expensive than methanol per pound of Total Nitrogen removed.

Cost per pound of Total Nitrogen removed (dollars)



MicroC™ expenditure was 26% less than methanol per pound of Total Nitrogen removed

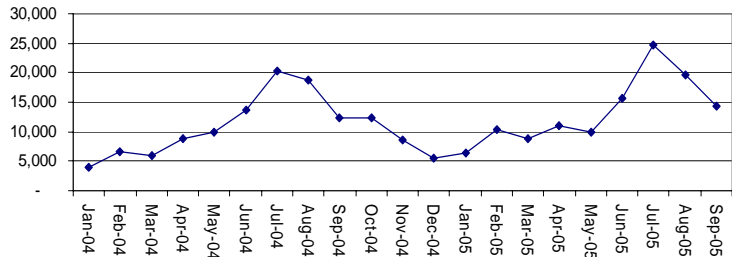


Typical time-share building in resort

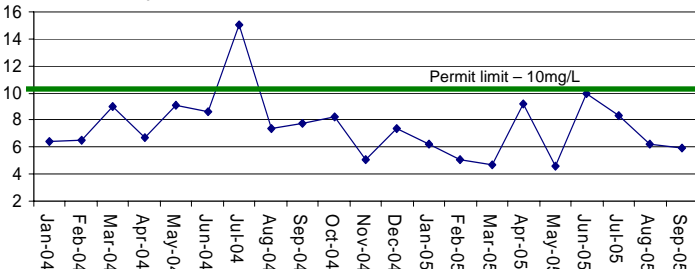


Wastewater treatment plant building

Flow (GPD)



Total Nitrogen - NO₃+NO₂+TKN (mg/L)



* Average GPD from Oct. '04 to Sept. '05

Methanol operation **MicroC™ operation**



MicroC™ Performance Example (continued)

The Cove Resort

	Flow GPD	Carbon GPD	Source	Influent characteristics						Effluent characteristics						
				BOD	TSS	Total Solids	NH3	TN*	Total P	BOD	TSS	Total Solids	NH3	NO3	TN*	Total P
Jan-04	4,020	1.95	methanol	25	32	320	1.7	14		8	BRL	250	4.2	0.2	6.4	6.1
Feb-04	6,669	1.79	methanol	10	BRL	250	1.3	15		7	BRL	230	0.3	3.3	6.5	3.7
Mar-04	6,036	no data	methanol	25	27	290	2	18		11	10	250	0.3	4.2	9.0	4.8
Apr-04	8,894	1.23	methanol	31	21	300	1.5	22		11	BRL	250		BRL	6.7	6.1
May-04	9,863	1.65	methanol	17	29	300	2.9	18		BRL	BRL	270	2.9	3.5	9.1	4.3
Jun-04	13,780	2.63	methanol	26	30	310	9.4	26	5.1	13	13	250	4.3	0.5	8.6	5.3
Jul-04	20,378	1.89	methanol	21	45	340	19	33	6.0	6	BRL	280	11.0	0.2	15.0	5.3
Aug-04	18,644	3.64	methanol	23	20	280	13	25	6.0	4	BRL	340	BRL	5.9	7.4	8.1
Sep-04	12,410	2.38	methanol	11	28	320	6.9	23	5.8	17	16	290	0.8	1.7	7.8	5.6
Oct-04	12,252	0.76	MicroC	24	26	310	6.7	22	5.3	22	17	290	0.8	1.1	8.2	5.0
Nov-04	8,527	0.39	MicroC	15	36	300	5	12	5.6	7	BRL	240	5.3	1.9	5.1	5.3
Dec-04	5,583	0.40	MicroC	29	31	350	5.6	27	5.1	10	BRL	300	2.9	0.2	7.4	6.0
Jan-05	6,327	0.41	MicroC	18	41	290	0.6	20	5.0	7	BRL	280	6.7	4.1	6.2	4.9
Feb-05	10,432	0.81	MicroC	12	15	230	3.3	19	3.9	22	BRL	200	2.4	0.1	5.1	4.2
Mar-05	8,753	0.72	MicroC	9	21	290	1.2	16	5.1	28	28	270	BRL	BRL	4.7	4.9
Apr-05	11,023	0.74	MicroC	18	37	330	2.1	22	6.0	15	BRL	260	7.6	0.0	9.2	
May-05	9,853	0.92	MicroC	25	31	310	1.5	19	4.9	12	32	280	BRL	0.1	4.6	4.6
Jun-05	15,653	0.94	MicroC	25	18	350	11	26	6.5	16	BRL	310	6.6	BRL	10.0	6.0
Jul-05	24,744	1.52	MicroC	18	54	390	8.7	22	5.8	8	BRL	370	6.2	0.1	8.3	5.8
Aug-05	19,699	1.59	MicroC	29	40	300	14	25	5.3	12	BRL	260	3.7	0.2	6.2	5.9
Sep-05	14,334	1.14	MicroC	16	17	350	6.9	19	6.0	6	BRL	280	4.1	BRL	5.9	6.1

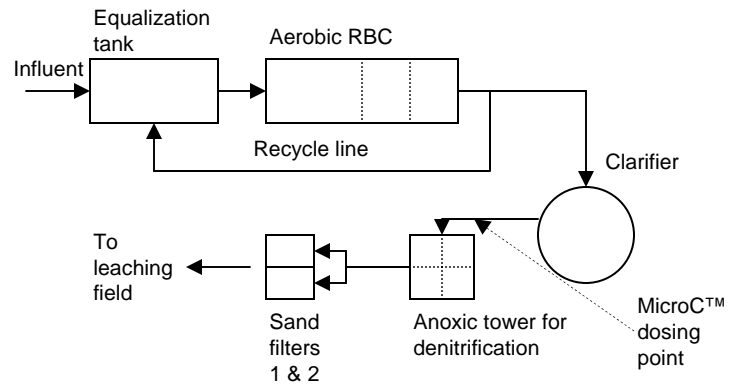
Source data from Massachusetts Department of Environmental Protection Groundwater Permit Discharge Monitoring Report (DMR). Data on carbon usage obtained from operator process control sheets.

*TN = Total Nitrogen (NO₃+NO₂+TKN)

Satellite image of The Cove Resort



Wastewater treatment process schematic



Complex entrance
Wastewater treatment plant building

MicroC™ in 55-gallon drum online at the Cove Resort



For more information, contact: Environmental Operating Solutions, Inc.
(508) 495-3300 ~ www.eosenvironmental.com ~ info@eosenvironmental.com