

MicroC™ Case Study

Medford Lakes

Borough of
Medford Lakes



Project Narrative:

Plant personnel were interested in using an alternative electron donor due to **safety issues** associated with methanol storage and handling. Other areas of interest were reducing electron donor **cost** and improving **performance in colder temperature**.

Transition from methanol to MicroC™ occurred in late October 2005. The system began to exceed historical performance with methanol in January 2006. The plant is currently still using MicroC™ for denitrification and has realized the following benefits:

- Removal of hazardous methanol from facility
- Achievement of lower overall TN (1.85 mg/L vs. 2.60 mg/L)
- Electron donor cost savings

Facility Name: Medford Lakes POTW

Facility Location: Medford Lakes, New Jersey

Facility Description: Municipal wastewater treatment plant

Flow: Average Flow = 0.37 MGD

Treatment Technology: 5-stage Bardenpho

Previous carbon source: Methanol

Date MicroC™ started: October 14, 2005

Operations & Maintenance firm: Borough of Medford Lakes

Discharge permit : NPDES Permit: NJ0021326

Target effluent levels: Total Nitrogen (TN) – ~3 mg/L
Total Phosphorous – ~0.3 mg/L

Schematic of Medford Lakes 5-Stage Bardenpho and Operating Parameters for Both Test Periods



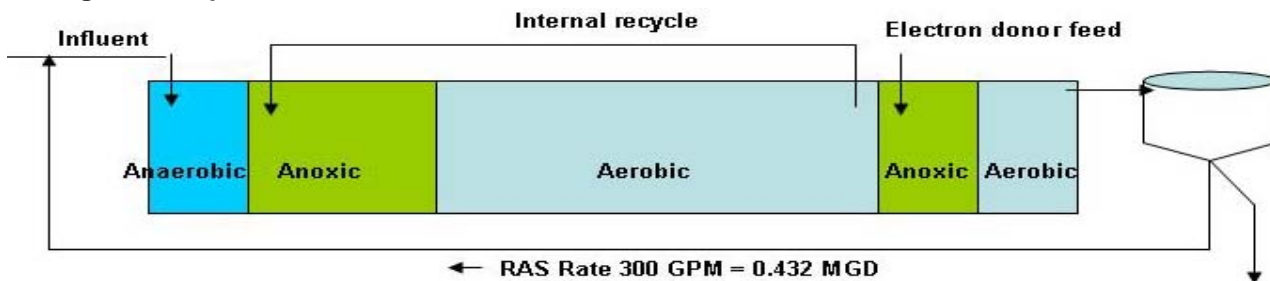
Satellite Image of Plant

Parameter	Methanol Period Jan-Jul 2005	MicroC™ Period Jan-Jul 2006
Flow (Q), MGD	0.369	0.366
Internal Recycle	8.20Q	4.33Q
RAS Rate	1.17Q	1.18Q
Influent Temperature (C)	15.4	16.2

Additional Benefits:

- Energy savings of \$25/day realized by cutting back internal recycle
- Improved sludge settling in digester
- Less foam in aeration zone
- Reduction of odors

5-Stage Bardenpho



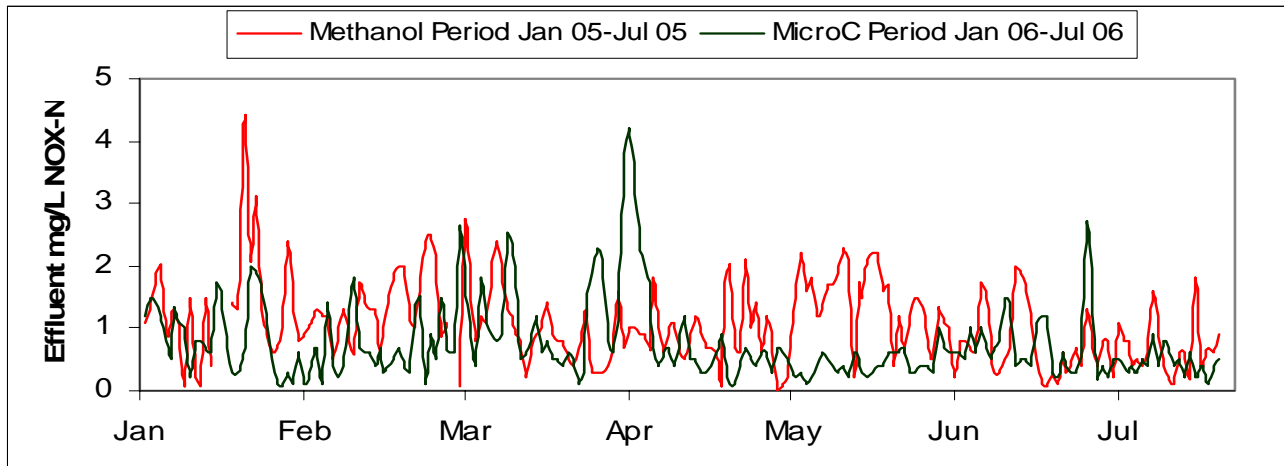
Performance Summary and Nitrogen Removal Performance Data

Certified Lab Data

Parameter	Methanol Period Jan-July 2005	MicroC™ Period Jan-July 2006
Influent Flow	0.369 MGD	0.366 MGD
Influent BOD ₅	212.7 mg/L	204.8 mg/L
Influent TSS	156.4 mg/L	191.1 mg/L
Effluent Total Phosphorus	0.05 mg/L	0.05 mg/L
Analysis Of Nitrogen Removal For Both Periods		
Influent Total Nitrogen	43.25 mg/L	42.14 mg/L
Effluent NOX-N	1.41 mg/L	0.86 mg/L
Effluent TKN	1.19 mg/L	0.99 mg/L
Effluent Total Nitrogen	2.60 mg/L	1.85 mg/L
Total Nitrogen Removed	93.9%	95.7%
Electron donor dose	9.37 GPD	10.70 GPD
NOX-N, lbs removed	18.42 lbs NOX-N	20.30 lbs NOX-N
Lbs NOX-N removed per gallon electron donor	1.97	1.90

•Effluent Total Nitrogen discharge decreased by 29% providing greater flexibility with a very stringent TN discharge permit

Comparison of In-house NOX-N Analysis for Methanol and MicroC™Periods



In-house sample data

	Methanol Period	MicroC™Period
Effluent NOX-N (mg/L)	1.07	0.76
Std Dev	0.68	0.64
# of Samples	207	212