

LINPOR® biological nutrient removal for Westerly, R.I.

Plant Location

WESTERLY, RI
 Owner: TOWN of WESTERLY, R.I.
 Engineer: BETA Engineering Inc.
 Operator: Aquarion Services Inc.

Process

LINPOR®

Capacity

3.3 MGD

Scope of Work

m²t System Supply: Equipment & Engineering
 Equipment included: Media, screening system, IMLR pumps, anoxic mixers, media return system, field instrumentation, PLC control system, blowers, diffusers,

Commissioned

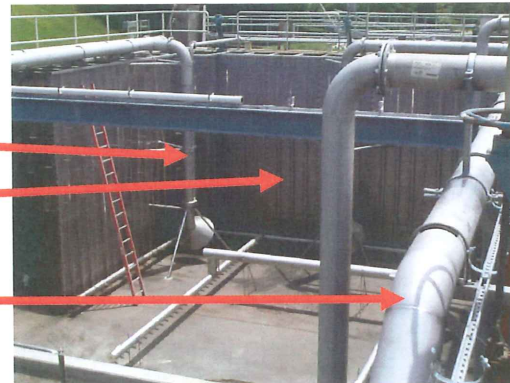
August 2003

Existing Basin Modifications

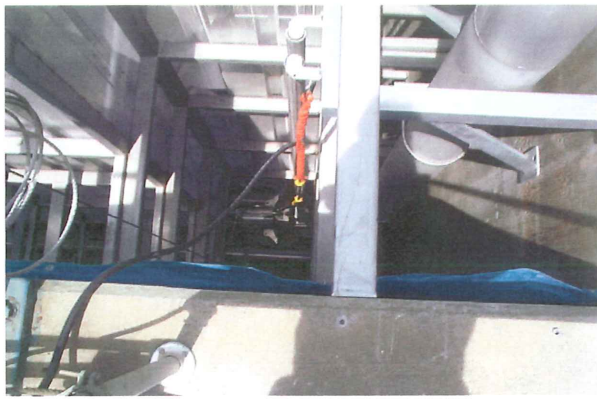
Media return

Screens

Air header



	PERFORMANCE	
	NH ₃ , mg/l	Total N, mg/l
Discharge Limit (June – Oct only)	5.5	15.0
Actual Performance (Winter 2003/2004)		
Oct. 03	0.5	4.9
Nov. 03	0.45	3.7
Dec. 03	0.65	3.5
Jan. 04	0.55	4.5
Feb. 04	0.45	2.8



Parameter		Oct. 03	Nov. 03	Dec. 03	Jan. 04	Feb. 04	Mar. 04	Apr. 04
Plant Influent								
Flow,	MGD	1.822	2.133	2.486	2.194	2.157	2.091	3.788
BOD5,	mg/l	236	290	223	191	202	227	132
TSS,	mg/l	250	338	179	152	156	170	123
NH3,	mg/l	13.8						
TKN,	mg/l	27						
Temp., ave.	°C	20.9	18.0	15.3	12.9	13.5	14.2	14.1
Temp., min.	°C	18.6	15.6	11.0	10.6	11.1	11.7	11.7
Plant Effluent								
BOD5,	mg/l	4.8	3.6	5.4	5.2	4.8	3.7	7.5
TSS,	mg/l	13.6	11.7	10.8	12.4	9.3	12.1	9.9
NH3,	mg/l	0.5	0.45	0.65	0.55	0.45	0.35	0.8
TKN,	mg/l	2.6	1.8	2.2	2.4	1.9	2.1	1.5
TN,	mg/l	4.9	4.1	3.5	4.5	2.8	8.9	3.8
Reactor								
Q-RAS,	MGD	1.673	1.764	1.657	1.635	1.659	1.672	1.356
Q-IMLR,	MGD	2.12	2.12	2.12	2.12	2.12	2.12	2.12
D.T. oxic, (Q),	hrs	6.4	5.4	4.7	5.3	5.4	5.6	3.1
D.T. oxic, (Q+R+IMLR),	hrs	2.1	1.9	1.9	2.0	2.0	2.0	1.6
D.T. anox, (Q)	hrs	3.2	2.7	2.3	2.6	2.7	2.8	1.5
D.T. anox, (Q+R+IMLR)	hrs	1.0	1.0	0.9	1.0	1.0	1.0	0.8
MLSS free,	mg/l	2666	3147	2785	2624	2770	2865	2710
MLSS fixed,	mg/l	5986	6830	6540	6448	7598	10468	10419
SVI,		75	89	80	76	76	78	77
WAS,	lbs/day	827	851	1645	1536	1465	1558	734
ESS,	lbs/day	207	206	213	224	165	214	273
SRT, free	days	10.4	12.0	6.1	6.0	6.9	6.5	10.9
SRT, free + fixed	days	15.1	17.2	8.9	9.0	10.6	11.3	19.2

