

ATTACHMENT 8

Total Phosphorus Effluent

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Nashua WWTP Permit, Total Phosphorus Limit Calculation			
Parameter	Value	Units	Notes or Formula
Upstream 7Q10, Qs	820	cfs	= Qs from Log Pearson Type III analysis using Merrimack River at Manchester gage data
Upstream 7Q10, Qs	529.7	mgd	
Lowest Monthly WWTP Discharge, Qd	8.1	mgd	Nashua information from DMR flows 2007 to 2012
Design Flow Discharge, Qdmax	16	mgd	NPDES Permit
Downstream Flow, Qr	545.7	mgd	=Qs + Qd (use design flow for Qd in accordance with NPDES Permit Writers' Manual)
Downstream Flow, Qr	844.8	cfs	=Qr [mgd]/ 0.646
Upstream River Concentration, Cs	0.027	mg/L	median concentration based on 2010-2012 data
Downstream Concentration, Cr	0.100	mg/L	EPA Gold Book Target
Mass Based Phosphorous Limit, Md	291	lb/day	= (QrCr(0.90)-QsCs)*8.345 (This includes a provision to maintain 10% of assimilative capacity)
Corresponding Concentration at Qd, Cd	4.3	mg/L	= Md / (8.345 * Qd)
Corresponding Concentration at Qdmax, Cdmax	2.2	mg/L	= Md / (8.345 * Qdmax)

Total Phosphorus Background Concentration, ug/l					
Station #	Location	Assessment Unit	sampling date - TP ug/l		
			7/27/2010	9/21/2010	5/17/2012
M070	u/s nashua	NHRIV700061206-24	36.00	67.00	30.00
M170	u/s nashua	NHRIV700061206-24			2
M270	u/s nashua	NHRIV700061206-24			24
M370	u/s nashua	NHRIV700061206-24			2
Min	2.00				
Max	67.00				
Ave	26.83				
Med	27.00				