

ATTACHMENT 9

Copper and Lead Effluent Limitations Calculation

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Table 2: Metals Data for the Merrimack River – Upstream of Nashua (2007 – 2014)

Date	Al	Cd	Cr	Cu	Pb	Ni	Zn	Hardness
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
3/30/2007	0.095	0	0	0.002	0	0	0.02	20
6/30/2007								
9/30/2007	0	0	0	0	0	0	0.016	18
12/31/2007	0.14	0	0	0	0	0	0.0067	13.3
3/31/2008	0.038	NA	NA	0	0	0	0.02	14
6/30/2008	0.051	NA	NA	0	0	0	0.052	17
9/30/2008	0.15	0	0	0	0.001	0	0.011	14
12/31/2008	0.07	0	NA	0.002	0	0	0.019	17
3/31/2009	0.14	0	NA	0.003	0.0007	0	0.015	13
6/30/2009	0.11	0	0	0.002	0.0006	0	0.017	14
9/30/2009	0.06	0	0	0.003	0	0	0.009	15
12/31/2009	0.075	0	0	0.006	0.0008	0	0.005	14
3/31/2010	0	0	0	0.006	0.0005	0	0.009	15
6/30/2010	0.082	0	0	0.011	0.0007	0	0.006	15
9/30/2010	0.043	0	0	0.003	0.0005	0	0.004	18
12/31/2010	0.49	0	0	0.004	0.001	0	0.008	8.8
3/31/2011	0.082	0	0	0	0	0	0.005	17
6/30/2011	0.4	0	0	0	0.0008	0	0.004	8.3
9/30/2011	0							
12/31/2011	0.085	0	0	0	0	0	0.004	13
3/31/2012	0.08	0	0	0	0.0005	0	0.004	14
5/1/2012	0.13	0	0	0.005	0	0	0.004	11
8/1/2012	0.09	0	0	0	0	0	0.005	17
11/14/2012	0.09	0	0	0.005	0	0	0.004	14
3/5/2013	0.15	0.0005	0.002	0.013	0.0007	0.002	0.008	17
4/17/2013	0.14	0	0	0.015	0.0007	0	0.005	9.5
9/4/2013	0.13	0	0	0.002	0.0008	0	0.012	14
11/6/2013	0.05	0	0	0	0	0	0.003	14
3/9/2014	0.06	0	0	0	0	0	0.006	17
6/1/2014	0.1	0	0	0.003	0	0	0.006	14
8/25/2014	0.09	0	0	0	0	0	0.007	15
10/28/2014	0.2	0	0	0	0	0	0.005	11
Min	0	0	0	0	0	0	0.003	8.3
Max	0.49	0.0005	0.002	0.015	0.001	0.002	0.052	20
Avg	0.11035	1.79E-05	7.69E-05	0.00283	0.00031	6.67E-05	0.0100	14.40

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Date	Al	Cd	Cr	Cu	Pb	Ni	Zn	Hardness
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Median	0.09	0	0	0.002	0	0	0.00635	14

Table 3: Nashua WWTF Effluent Metals Data (2007 – 2014)

Date	Al	Cd	Cr	Cu	Pb	Ni	Zn
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
3/31/2007	0.06	0.001	0.003	0.027	0	0.006	0.18
4/30/2007				0.02			
5/31/2007				0.02			
6/30/2007	0.02	0.001	0.002	0.017	0.005	0.003	0.063
7/31/2007				0.01			
8/31/2007				0.01			
9/30/2007	0	0	0	0.007	0	0.008	0.068
10/31/2007				0.02			
11/30/2007				0.02			
12/31/2007	0.026	0	0	0.015	0	0.007	0.087
1/31/2008				0.01			
2/29/2008				0.01			
3/31/2008	0	0	0	0.021	0	0.005	0.086
4/30/2008				0.01			
5/31/2008				0.01			
6/30/2008	0	0	0	0.017	0.0008 2	0.003	0.096
7/31/2008				0.03			
8/31/2008				0.01			
9/30/2008	0.03	0	0	0.012	0.001	0.005	0.048
10/31/2008				0.01			
11/30/2008				0.02			
12/31/2008	0.02	0	0.003	0.011	0	0	0
1/31/2009				0.006			
2/28/2009				0.013			
3/31/2009	0	0	0	0.011	0.001	0.002	0.063
4/30/2009				0.01			
5/31/2009				0.01			
6/30/2009	0.02	0	0	0.009	0.002	0.004	0.066
7/31/2009				0.01			
8/31/2009				0.01			
9/30/2009	0	0	0.003	0.01	0.001	0.006	0.051
10/31/2009				0.019			
11/30/2009				0.01			
12/31/2009	0.031	0	0	0.019	0.0012	0.004	0.052
1/31/2010				0.013			
2/28/2010				0.007			
3/31/2010	0	0	0	0.013	0.001	0.005	0.053

Table 3: Nashua WWTF Effluent Metals Data (2007 – 2014)

Date	Al	Cd	Cr	Cu	Pb	Ni	Zn
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/30/2010				0.02			
5/31/2010				0.029			
6/30/2010	0.047	0	0	0.029	0.002	0.007	0.079
7/31/2010				0.03			
8/31/2010				0.02			
9/30/2010	0.038	0	0.003	0.019	0.001	0.009	0.084
10/31/2010				0.03			
11/30/2010				0.02			
12/31/2010	0.04	0	0	0.024	0.001	0.006	0.096
1/31/2011				0.02			
2/28/2011				0.03			
3/31/2011	0.047	0	0.002	0.019	0.002	0.006	0.12
4/30/2011				0.02			
5/31/2011				0.02			
6/30/2011	0.029	0	0	0.01	0.001	0.004	0.06
7/31/2011				0.02			
8/31/2011				0.025			
9/30/2011	0.038	0.0005	0.002	0.025	0.001	0.005	0.072
10/31/2011				0.02			
11/30/2011				0.011			
12/31/2011	0.032	0	0	0.011	0.0006	0.004	0.057
1/31/2012				0.02			
2/29/2012				0.02			
3/31/2012	0.021	0	0	0.018	0.0009	0.004	0.087
5/1/2012	0.05	0	0	0.017	0.001	0.004	0.061
8/1/2012	0.03	0	0	0.019	0	0.007	0.05
11/14/2012	0	0	0	0.021	0.0006	0.006	0.055
3/5/2013	0.04	0.0005	0.002	0.034	0.0005	0.006	0.095
4/17/2013	0.08	0	0	0.027	0.015	0.007	0.059
9/4/2013	0.03	0	0	0.034	0.0006	0.004	0.08
11/6/2013	0.03	0	0	0.014	0.0006	0.005	0.057
3/9/2014	0	0	0	0.059	0.001	0.004	0.19
6/1/2014	0	0	0	0.014	0	0.004	0.099
8/25/2014	0.03	0	0	0.007	0	0.018	0.04
10/28/2014	0.00	0.00	0.00	0.006	0	0.005	0.031
Min	0	0	0	0.006	0	0	0
Max	0.08	0.001	0.003	0.059	0.015	0.018	0.19
Avg	0.0246	9.38E-	0.00062	0.0176	0.0013	0.0054	0.0745

Table 3: Nashua WWTF Effluent Metals Data (2007 – 2014)							
Date	Al	Cd	Cr	Cu	Pb	Ni	Zn
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	56	05	5	25	07	06	31
Median	0.0295	0	0	0.0185	0.0009 5	0.005	0.0645
95th Percentile (µg/L)	52.14	0.878	3.026	34.11	2.54	8.77	125.7