2007 Ammonium-nitrogen Data - Greenwich Bay Watershed - Tributaries and In Bay Sites

In most estuaries nitrogen is the primary nutrient that controls algal growth. Ammonium-nitrogen is the most reactive form of nitrogen present in aquatic systems, and is the preferred form for algae and plant growth. It can adhere to soils and sediment, but when dissolved oxygen (DO) is readily available, bacteria quickly oxidize ammonium-N to nitrate-N through a process known as nitrification. Other types of bacteria produce ammonia as they decompose dead plant and animal matter – indirectly reducing dissolved oxygen concentrations. At higher temperatures and pH (a measurement of "acidity") ammonium forms ammonium hydroxide, which is extremely toxic to fish and aquatic life. Waters with low DO and high ammonium hydroxide levels (typically hundreds of parts per billion (ppb) the units URI Watershed Watch reports measurements in) are more toxic than waters with low DO alone. While most sites monitored by URI Watershed Watch have low or no detectable levels of ammonium-nitrogen, many of our deep lakes had periods of quite ammonium-N levels from mid-summer until de-stratification in the fall, usually late September. In addition, high levels of ammonium-nitrogen in surface waters may indicate sewage outfalls, failed septic systems or eutrophication.

Watershed	LOCATION	Sample Depth (m)	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	MEAN
Code	TRIBUTARIES		- - (ug/l or ppb) - -						
GB	Greenwich Bay - 01 (Maskerchugg River)	0.2	ND	120	100	100	110	120	**94**
GB	Greenwich Bay - 02 (Gorton Pond outflow)	0.2	110	80	80	80	110	50	**85**
GB	Greenwich Bay - 03 (Hardig @ Rte 115)	0.2	ND	80	60	ND	90	40	**50**
GB	Greenwich Bay - 04 (Mill Creek)	0.2	ND	80	60	ND	50	50	**45**
GB	Greenwich Bay - 05 (Hardig @ Health Ctr)	0.2	-	40	40	-	-	-	**40**
GB	Greenwich Bay - 06 (Tuscatucket Brk)	0.2	120	330	180	170	-	170	**194**
GB	Greenwich Bay - 07 (Southern Creek)	0.2	120	100	110	100	-	130	**112**

ND = No Detect; Limit of Detection = 30 ppb; Mean calculated using half the limit of detection (15 ppb) for ND

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Code			- - (ug/l or ppb) - -						
NA	Greenwich Bay #1 - Middle Ground Buoy	1	180	220	350	190	260	230	**238**
NA	Greenwich Bay #1 - Middle Ground Buoy	DEEP	260	220	400	200	330	290	**283**
NA	Greenwich Bay #2 - Sally Rock	1	190	130	310	180	240	170	**203**
NA	Greenwich Bay #2 - Sally Rock	DEEP	250	200	310	430	400	250	**307**
NA	Greenwich Bay #3 - The Brothers	1	-	130	250	150	230	160	**184**
NA	Greenwich Bay #3 - The Brothers	DEEP	-	120	300	140	300	200	**212**
NA	Greenwich Bay #4 - Greenwich Bay Marina	0.5	140	130	270	350	300	190	**230**
NA	Greenwich Bay #4 - Greenwich Bay Marina	DEEP	140	150	360	420	430	220	**287**
NA	Greenwich Bay #6 - Ponaug Marina	0.5	140	120	190	430	270	210	**227**
NA	Greenwich Bay #8 - Little Rhody Boat Club	0.5	160	-	260	-	-	-	**210**
NA	Greenwich Bay #9 - Warwick Cove Marina	0.5	170	150	370	280	370	210	**258**
NA	Greenwich Bay #11 - Mouth Greenwich Cove	0.5	140	110	240	240	270	270	**212**
NA	Greenwich Bay #11 - Mouth Greenwich Cove	DEEP	190	110	380	230	260	430	**267**
NA	Greenwich Bay #12 - Harborside	0.5	140	100	230	260	300	300	**222**
NA	Greenwich Bay #13 - EG Town Dock	0.5	-	110	290	320	290	270	**256**