

2005 Parameter Data: Greenwich Bay Ammonium-nitrogen

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 code	LOCATION	Sample Depth (m)	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	MEAN
			-- (ug/l or ppb) --						
NA	Greenwich Bay #1 - Middle Ground Buoy	1	-	-	150	180	100	460	223
NA	Greenwich Bay #1 - Middle Ground Buoy	DEEP	-	-	150	110	90	480	208
NA	Greenwich Bay #2 - Sally Rock	1	-	-	-	-	-	470	-
NA	Greenwich Bay #2 - Sally Rock	DEEP	-	-	-	-	-	490	-
NA	Greenwich Bay #3 - The Brothers	1	-	-	220	60	120	450	213
NA	Greenwich Bay #3 - The Brothers	DEEP	-	-	240	40	110	530	230
NA	Greenwich Bay #4 - Greenwich Bay Marina	0.5	-	-	110	60	210	680	265
NA	Greenwich Bay #4 - Greenwich Bay Marina	DEEP	-	-	-	50	190	480	240
NA	Greenwich Bay #6 - Ponaug Marina	0.5	-	-	140	-	-	-	-
NA	Greenwich Bay #6 - Ponaug Marina	DEEP	-	-	190	-	-	-	-
NA	Greenwich Bay #8 - Little Rhody Boat Club	0.5	-	-	350	70	430	310	290
NA	Greenwich Bay #8 - Little Rhody Boat Club	DEEP	-	-	240	100	410	170	230
NA	Greenwich Bay #9 - Warwick Cove Marina	0.5	-	-	240	90	330	390	263
NA	Greenwich Bay #9 - Warwick Cove Marina	DEEP	-	-	230	70	330	480	278
NA	Greenwich Bay #10 - Greenwich Bay North Marina	0.5	-	-	280	210	280	510	320
NA	Greenwich Bay #10 - Greenwich Bay North Marina	DEEP	-	-	240	160	300	600	325
NA	Greenwich Bay #13 - EG Town Dock	0.5	-	-	140	390	320	680	383
NA	Greenwich Bay #13 - EG Town Dock	DEEP	-	-	210	460	350	760	445
NA	Greenwich Bay #14 - Wharf Marina	0.5	-	-	-	90	180	460	243
NA	Greenwich Bay #14 - Wharf Marina	DEEP	-	-	-	110	150	440	233

ND = No Detect; Limit of Detection = 30 ug/L