

# Lake Taupo Near-Shore Water Quality Monitoring 2007-2009

Prepared by:  
Max Gibbs, National Institute of Water and Atmospheric Research Ltd. (NIWA)

For:  
Environment Waikato  
PO Box 4010  
HAMILTON EAST

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Peer reviewed by:  
Bill Vant

Date January 2010

Approved for release by:  
Dominique Noiton

Date January 2010

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**NIWA Client Report: HAM2009-160  
October 2009**

**NIWA Project: EVW08203/0809**

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**Max Gibbs**

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**Waikato Regional Council  
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National Institute of Water & Atmospheric Research Ltd  
Gate 10, Silverdale Road, Hamilton  
P O Box 11115, Hamilton, New Zealand  
Phone +64-7-856 7026, Fax +64-7-856 0151  
[www.niwa.co.nz](http://www.niwa.co.nz)

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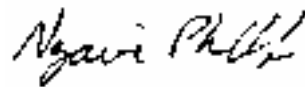
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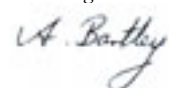
Dr Piet Verburg

*Approved for release by:*



Dr Ngaire Phillips

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## Executive Summary

Waikato Regional Council requires information on near-shore water quality as distinct from the mid-lake water quality obtained from the long-term routine monitoring at the mid-lake site (Site A) by NIWA to enable comparisons between open water and near-shore water quality. This report provides the cumulative water quality and algal enumeration data for the period from January 2007 up to June 2009, from site A (mid lake) and two near-shore sites, Whangamata Bay (Kinloch) and Whakaipo Bay. This report evaluates to what extent the water quality at these two near-shore sites is similar to that at Site A. Of specific interest are the differences, if any, between total nitrogen concentrations and water clarity (Secchi depth) at the near-shore sites compared with the mid-lake site, and the similarities between seasonal patterns in the data. Additional data from Acacia Bay over the same period are included for comparison as required.

The physical and chemical data were graphed as time-series over the 2-year monitoring period to show seasonal cycles and identify trends in the data. Differences between near-shore and mid-lake data were assessed by subtracting the mid-lake data from the near-shore data. The resultant difference values were then either greater or less than the mid-lake values and could be assessed for consistency and the presence of seasonal or other cyclicity and trends. These difference data were also used to assess any differences between the two near-shore sites.

**Temperature:** The seasonal surface temperature cycles were similar at the near-shore and mid-lake sites and ranged from a winter low of 10.7°C in August to a summer high of 22.1°C in January each year with an annual mean of 15.7°C. Annual mean near-shore temperatures were 0.2°C warmer than the mid-lake site and from February to September, inclusive, the average temperature difference was 0.1°C. From October to January the near-shore temperatures could be up to 1.5°C warmer than at the mid-lake site but could also be as much as 1°C colder during late spring rain storm events. This pattern was also seen in the Acacia Bay data.

**Clarity:** Changes in Secchi depth values followed a seasonal pattern of lowest clarity during winter (August to December) and highest clarity during summer (January and February). There was considerable variability in the Secchi depth values between sites. The near-shore water clarity was almost always less than at the mid-lake site by at least 1 m and often up to 4 m with a maximum difference of 6.5 m. Mean Secchi depth values over the whole monitoring period were 16.4 m, 15.1 m, and 14.7 m at the mid-lake (Site A), Whangamata Bay (Kinloch) and Whakaipo Bay sites, respectively. Acacia Bay data were similar to Whakaipo Bay values. The greatest difference in clarity between near-shore and the mid-lake site occurred during the summer clear water phase. Apart from the seasonal changes in algal biomass, the major influences reducing Secchi depth in the near-shore sites were associated with storm events either as high rainfall events after extended periods of no rain, or strong wind events with gusts exceeding 10 m s<sup>-1</sup> from the south west.



**Chlorophyll *a*:** There was a strong seasonal pattern to the chlorophyll *a* data with highest concentrations ( $3.0 \text{ mg m}^{-3}$ ) in winter, following whole lake mixing and the development of the winter algal bloom, and the lowest in summer ( $0.3 \text{ mg m}^{-3}$ ). There was relatively high variability in the chlorophyll *a* concentrations at all sites, but the concentrations were consistently higher in the near-shore waters by an average of  $0.16 \text{ mg m}^{-3}$  in Whangamata Bay, and  $0.08 \text{ mg m}^{-3}$  in Whakaipo Bay, and were often higher at both those near-shore sites by  $0.5 \text{ mg m}^{-3}$ . The variability and differences between the Acacia Bay and mid-lake site data followed similar patterns but the values at Acacia Bay were more similar to mid-lake data. The near-shore to mid-lake differences were lowest in autumn.

**Nutrients:** Nutrient concentrations were generally highly variable at each site and between sites. For nitrogen (N) species, there were no marked seasonal patterns except for particulate N (PN), which followed the chlorophyll *a* pattern. Differences between near-shore and mid-lake site data were not consistently higher or lower in the near-shore samples relative to the mid-lake site across the whole monitoring period, but there was a consistent pattern with the near-shore difference values being higher in summer and autumn (January to June) but lower in winter and spring (July to December). This pattern was strongest in the ammoniacal-N ( $\text{NH}_4\text{-N}$ ) data but less obvious for total N (TN) concentrations, which tended to be 6-10% lower in the near-shore waters than at the mid-lake site. Similar N-species patterns were seen in the Acacia Bay data.

For phosphorus (P) species, the particulate P (PP) also followed the chlorophyll *a* seasonal pattern. The other species were lowest in April 2008 following the summer drought of 2008. However, while the concentrations of dissolved reactive P (DRP), dissolved organic P (DOP) and total P (TP) all increased after April 2008, regression analysis of the differences in concentration between the mid-lake and the near-shore sites showed a consistent statistically significant ( $P < 0.01$ ;  $n = 46$ ) reduction in these parameters in the near-shore waters. However, while the changes in P species concentration at Acacia Bay were similar to the other near-shore sites, the trends of decline in the difference between Acacia bay and the mid-lake site were not significant.

Particulate carbon (PC) concentrations appeared to follow the PN and PP concentration pattern indicating a potential primary link with algal biomass as indicated by chlorophyll *a*.

#### **Algal data:**

Algal assemblage species composition where similar at the near-shore and mid-lake sites and succession of species occurred at around the same time at all sites and in each year. There was large inter-annual variability in individual species abundance with higher cell counts for all algal classes in 2007/08 than in 2008/09.

- Cyanobacteria cell counts were often twice as high in the near-shore waters than at the mid-lake site, with Whangamata Bay often having higher counts than Whakaipo Bay. When Cyanobacteria cell counts were highest at the mid-lake site in January 2008, this was followed by an extended

period (February to May) with three times higher cell counts (100-400 cells/ml) in the near-shore waters.

- Green algae (Chlorophyceae) only had significantly higher cell counts at the mid-lake site during winter mixing (July) each year and in January 2008. For the rest of the monitoring period, cell counts were much higher in the near-shore waters. *Botryococcus braunii*, although a major contributor to algal biovolume, was only present in very low numbers at all sites throughout the monitoring period.
- Diatoms cell counts were highest at the mid-lake site following winter mixing in 2007 (August) and were consistently higher in the near-shore waters at almost all other sampling times. This includes winter mixing in 2008, where diatom cell counts in the near-shore waters were almost double those at the mid-lake site.
- Chrysophyceae cell counts were higher in the near-shore waters than at the mid-lake site except in October each year.
- Dinoflagellates cell counts were only higher at the mid-lake site than the near-shore sites during their bloom in February 2008. This followed an initial build up of cell counts in the near-shore waters and the extended decline in cell counts in the near-shore waters after they bloomed at the mid-lake site.
- Small flagellates cell counts were substantially higher at the mid-lake site than in the near-shore waters in June and December 2007. At all other samplings, their cell counts were similar to or less than those in the near-shore waters.

#### **Overview:**

In general, the near-shore water quality was very similar to the mid-lake water quality. Within this similarity in the measured data was much variability which may be due to short period time lags between the near-shore and mid-lake sites with respect to nutrient sources, and the zones of algal growth. Notwithstanding this, there was lower water clarity, higher chlorophyll *a*, and often higher cell counts for the major algal classes in the near-shore waters than at the mid-lake site. These differences between sites are in apparent contrast to the 6-10% lower TN in the near-shore waters. The water quality data showed seasonal patterns and apparent trends in some parameters, which extended over the two year monitoring period. At 6-10%, the near-shore to mid-lake difference is small and, consequently, the apparent lower TN in the near-shore waters may be due to phase lags between near-shore and mid-lake sampling. A longer time-series of data would be required to confirm whether the difference was real and the beginning of a trend.

## 1. Introduction

Waikato Regional Council (WRC), also known as Environment Waikato, requires information on near-shore water quality, as distinct from the mid-lake water quality obtained from the long-term routine monitoring at the mid-lake site (Site A) by NIWA, to enable comparisons between open water and near-shore water quality. Following an initial study using two near-shore water quality monitoring sites - one in Whangamata Bay (Kinloch) and one in Whakaipo Bay - sampled concurrently with the mid-lake site on up to 8 regular sampling trips during summer and autumn from January to June 2007 (Gibbs 2008), WRC instructed NIWA to extend the study to provide a longer data record of water quality at these three sites to enable more robust comparisons between open water and near-shore water quality. Because some parameters were not recorded in the period from 2007 to 2008, the monitoring programme continued for a second year 2008 to 2009.

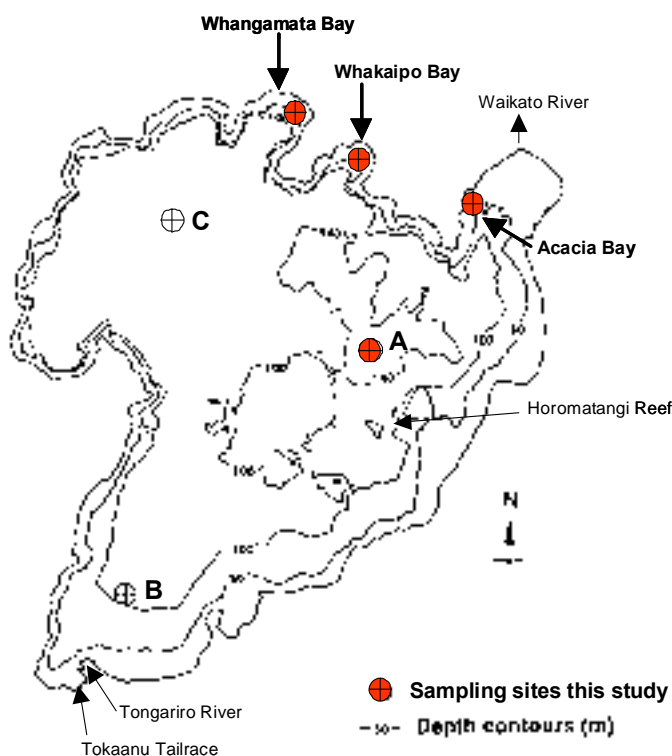
This report provides the cumulative water quality and algal enumeration data for the whole monitoring period from January 2007 up to June 2009, from the mid lake site at Site A and the two near-shore sites at Whangamata Bay and Whakaipo Bay. A specific focus of this report is an evaluation of the extent to which the water quality at these two near-shore sites is similar to that at Site A. Of specific interest are the differences between total nitrogen concentrations and water clarity (Secchi depth) at the near-shore sites compared with the mid-lake site, and the similarities between seasonal patterns in the data. Additional data from a NIWA monitoring site in Acacia Bay over the same period are included for comparison as required.

## 2. Methods

Near-shore monitoring sites were selected in Whangamata Bay at the 200-metre buoy adjacent to Kinloch settlement (depth 25-30 m), and in Whakaipo Bay Water (depth 30 m). Acacia Bay site was near the southern 200 m buoy in 30 m water depth (Fig. 1). These data were compared with data measured on the same sampling day from the mid-lake monitoring site, Site A (Fig. 1), which is used for the routine Lake Taupo Long Term Monitoring Programme (e.g., Gibbs 2009). Water clarity (Secchi disc depth) measurements and instrument profiles of temperature and chlorophyll fluorescence were taken at each site on each occasion.

### 2.1 Sampling

Sampling and analytical methods used during this study were based on those used for the Lake Taupo Long Term Monitoring Programme. At each site, several depth-integrated water samples were collected from the 0-to-10 metre depth layer using a tube-sampler, and combined to form a bulk single representative sample for analysis.



**Figure 1:** Sampling sites: Relative locations of the three near-shore sampling sites and Site A (marked in red) on Lake Taupo (bathymetric map).

The parameters measured routinely at 2-3 weekly intervals were:

- depth-related temperature, dissolved oxygen (DO), conductivity, and chlorophyll fluorescence, using an RBR XR620f conductivity-temperature-depth (CTD) fitted with an Oxyguard DO sensor, a Seapoint chlorophyll fluorescence sensor, and (since January 2008) a Li-Cor photosynthetically available radiance (PAR) sensor;
- water clarity by Secchi disc depth (20-cm black and white quartered).

Interim temperature and chlorophyll *a* fluorescence profile results and water clarity data, were provided within one working day of sampling. These data are available separately and have not been included in this report.

## 2.2 Analyses

A 500 ml aliquot of the composite water sample from each site was preserved with Lugols iodine. A 100 ml aliquot of this was settled in an Ütermol chamber and enumerated for algal species abundance (cells/ml) and biovolume on an inverted microscope. These data were provided within 5 days of sampling and are listed in this report.

The remaining water was processed for chlorophyll *a*, nitrate+nitrite-nitrogen ( $\text{NO}_3\text{-N}$ ), ammoniacal-nitrogen ( $\text{NH}_4\text{-N}$ ), dissolved organic nitrogen (DON), particulate-nitrogen (PN), total nitrogen (TN), dissolved reactive phosphorus (DRP), dissolved organic phosphorus (DOP), particulate phosphorus (PP), total phosphorus (TP), and particulate carbon (PC). Nutrients were analysed on a Lachat flow injection analyser (FIA) using the standard methods for low level nutrient analyses developed at NIWA. Chlorophyll *a* was determined fluorometrically after collection on a GF/C filter and acetone extraction. Results were corrected for phaeophytin after acidification. Particulate C and N were determined by combustion on a CHN elemental analyser and particulate N and P were determined colorimetrically following hot acid persulphate digestion. The PN from these two methods enables the PC, PN, and PP data to be normalised.

## 2.3 Interpretation

Data interpretation uses time-series graphs of the measured data to demonstrate seasonal patterns and similarities between the mid-lake and near-shore water quality. To further aid interpretation of the data and focus on the specific question “To what

extent is the water quality at the two near-shore sites similar to that at Site A?”, the mid-lake site data were subtracted from the near-shore data to provide a time-series of “difference-on-the-day” data, which can demonstrate the timing of differences relative to seasonal patterns or the biological response patterns to in-lake processes.

Meteorological data from the NIWA climate database have been used to aid interpretation where necessary.

### 3. Results and discussion

Water quality and algal enumeration data are listed in the Appendix “as measured” for the period from 21 February 2007 up to and including 27 May 2009. These data are listed as time-series by site. Graphical data reported at the time of sampling are available separately and have not been included in this report.

Data presentations and interpretations in this report include comparative graphs (by site) of the semi-continuous integrated tube sample time-series nutrient and physical parameters, both “as measured” and as “difference-on-the-day” data, and selected algal data as total biomass and cell counts by class (i.e., cyanobacteria, diatoms, greens, etc.). Cell count data were also graphed in the “difference-on-the-day” format. Because of the massive influence on biomass by even a low cell count, the colonial green, *Botryococcus braunii*, data are separated from other greens in the biomass comparison graphs.

#### 3.1 Physical parameters, nutrients, and chlorophyll *a*

##### 3.1.1 Temperature

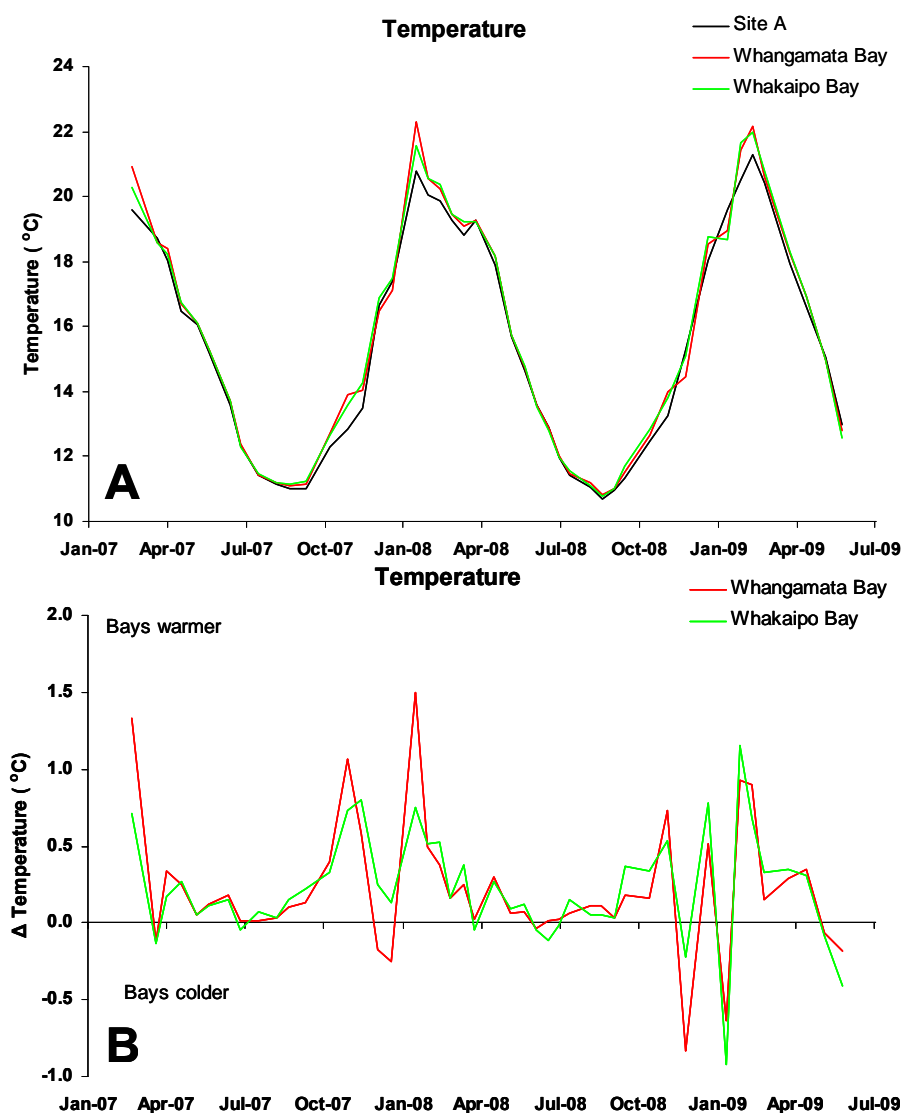
The seasonal surface water temperature cycles were similar at the near-shore and mid-lake sites and ranged from a winter low of 10.7°C in August to a summer high of 22.1°C in January each year with an annual mean of 15.7°C (Fig. 2A). Annual mean near-shore water temperatures were 0.2°C warmer than at the mid-lake site with a strong seasonal pattern to that difference (Fig. 2B). From February to September, inclusive, the average water temperature difference was 0.1°C. This difference increased during spring and, from October to January, the near-shore water temperatures could be up to 1.5°C warmer than at the mid-lake site.

This pattern was not consistent and the near-shore waters could also be as much as 1°C colder during late spring storm events (Fig. 2B). In December 2007, water temperatures at both near-shore sites dropped relative to the mid-lake site with the surface water in Whangamata Bay becoming colder than at the mid-lake site. This cooling event coincided with a cold south-easterly storm (wind-run 500 km d<sup>-1</sup>; maximum gust 17.5 m s<sup>-1</sup>; rain 18.2 mm) on 5 December and a further 40.6 mm rain over the 18<sup>th</sup> and 19<sup>th</sup> December.

Similar events in November 2008 and January 2009 also produced colder near-shore water temperatures than at the mid-lake site. The south-west rain storm event in November 2008 produced much colder water in Whangamata Bay which was

consistent with the event in December 2007, implying a link with the larger surface water inflow into Whangamata Bay. However, there was no rain in January 2009 and the cooling event was associated with a period of strong onshore south-westerly winds. This reduced the water temperature in both bays by the same amount (Fig. 2B).

The pattern of warmer near-shore waters was also seen in the Acacia Bay data, but the sheltered position of that bay and lack of surface runoff reduced the effect of the cooling events.

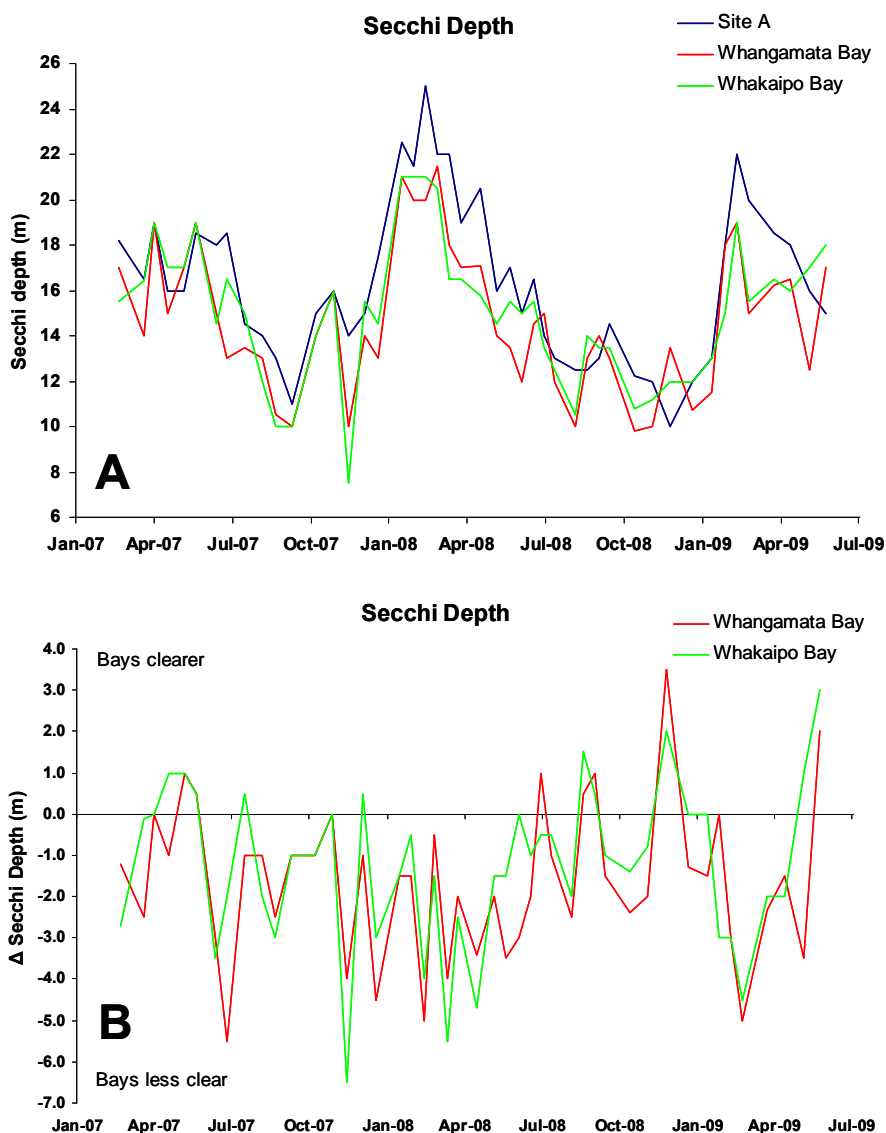


**Figure 2:** A) Time-series surface water temperature data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the strong seasonal pattern and similarity between these sites; B) time-series of the temperature differences ( $\Delta t^{\circ}\text{C}$ ) between the near-shore and mid-lake sites.



### 3.1.2 Clarity

Water clarity, as indicated by Secchi depth values, followed a seasonal pattern of lowest clarity during winter (August to December) and highest clarity during summer (January and February) (Fig. 3A). The exceptionally high clarity in summer 2007/2008 (Secchi depth 25 m) was associated with a drought with little or no rain to carry sediment into the lake.



**Figure 3:** A) Time-series water clarity (Secchi depth) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the strong seasonal pattern and similarity between these sites; B) time-series of the Secchi depth differences ( $\Delta$  Secchi depth) between the near-shore and mid-lake sites.

While there was considerable variability in the Secchi depth values between sites and between sampling visits, the near-shore water clarity was almost always less than at the mid-lake site by at least 1 m and often up to 4 m (Fig. 3B). Mean Secchi depth values over the whole monitoring period were 16.4 m, 15.1 m, and 14.7 m at the mid-lake (Site A), Whangamata Bay (Kinloch) and Whakaipo Bay sites, respectively. Acacia Bay values were similar to Whakaipo Bay values. The lowest Secchi depth value (7.5 m) produced the maximum difference (6.5 m) and was probably associated with sediment resuspension in Whakaipo Bay following a strong south-westerly wind event (gusts to  $20 \text{ m s}^{-1}$ ).

Other substantial reductions in near-shore water clarity were associated with heavy rainfall as well as strong wind events e.g., in June 2007 the sampling was preceded by strong west-southwest winds gusting to  $22.6 \text{ m s}^{-1}$  and 23.6 mm rainfall in the 3 days prior to sampling. This resulted in lowest clarity in Whangamata Bay, probably associated with sediment resuspension and sediment from land runoff.

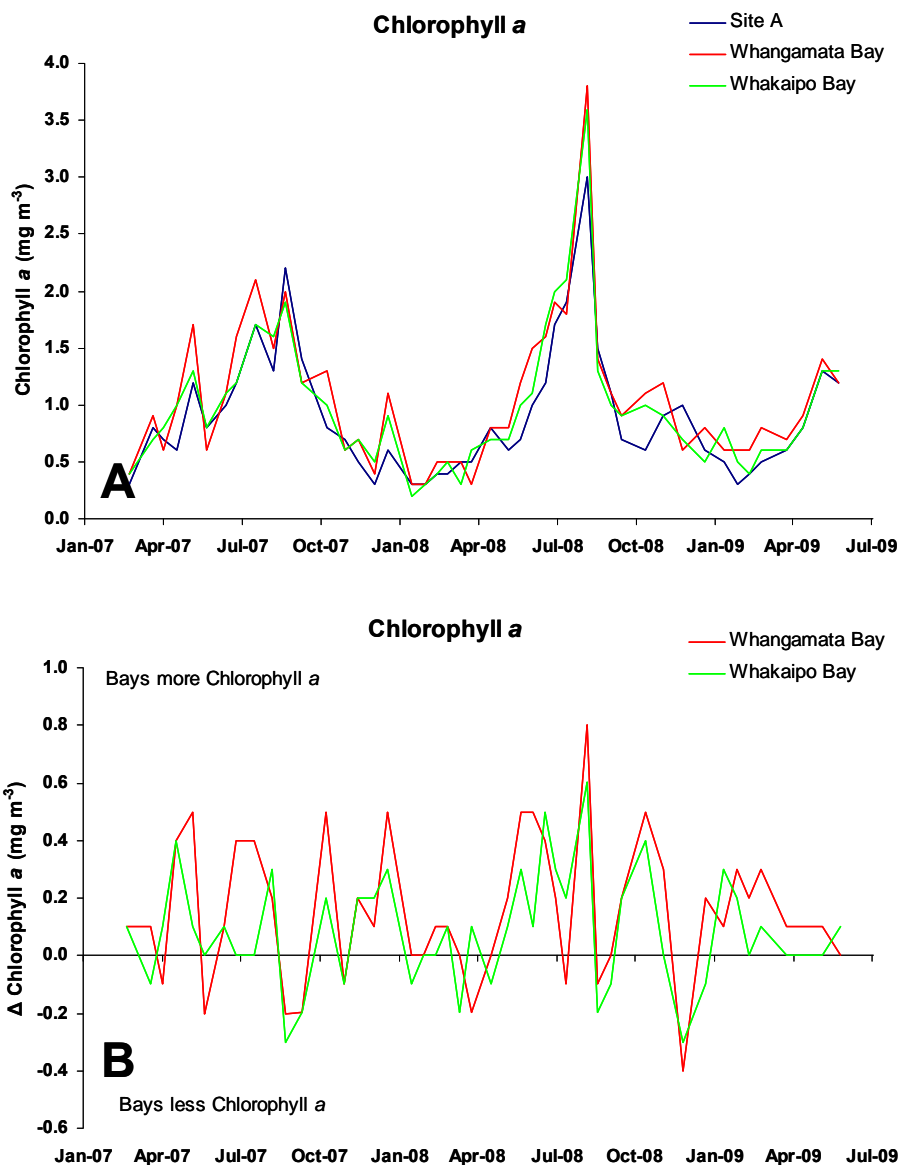
The differences between the near-shore sites appeared to be less than the differences between the mid-lake and the near-shore sites. There was also an apparent inverse relationship between the difference data and the measured data with greatest differences coinciding with periods of highest clarity at the mid-lake site (Fig. 3).

### 3.1.3 Chlorophyll *a*

There was a strong seasonal pattern to the chlorophyll *a* data with highest concentrations at the mid-lake site ( $3.0 \text{ mg m}^{-3}$ ) in winter 2008, following whole lake mixing and the development of the winter algal bloom (Fig. 4A). The maximum chlorophyll *a* concentration ( $3.8 \text{ mg m}^{-3}$ ) was measured in Whangamata Bay with  $3.6 \text{ mg m}^{-3}$  measured in Whakaipo Bay on the same day. The lowest chlorophyll *a* concentration ( $0.2 \text{ mg m}^{-3}$ ) was measured in January 2008 and coincided with the highest water clarity (Fig. 3A). Mean chlorophyll *a* concentrations were 0.9, 1.1 and  $1.0 \text{ mg m}^{-3}$  for the mid-lake, Whangamata Bay, and Whakaipo Bay sites, respectively.

There was relatively high variability in the chlorophyll *a* concentrations at all sites, but the concentrations were consistently higher in the near-shore waters by an average of  $0.16 \text{ mg m}^{-3}$  in Whangamata Bay, and  $0.08 \text{ mg m}^{-3}$  in Whakaipo Bay. Concentrations were often higher at both those near-shore sites by  $0.5 \text{ mg m}^{-3}$  (Fig. 4B). The variability and differences between the Acacia Bay and mid-lake site data followed similar patterns but the values at Acacia Bay were more similar to mid-lake data.

While there was an apparent inverse relationship between chlorophyll *a* concentrations and water clarity data, which held for the maximum clarity and minimum chlorophyll *a* data, maximum chlorophyll *a* concentrations in winter 2008 preceded minimum water clarity by 16 weeks, indicating that factors other than algal biomass were affecting water clarity.

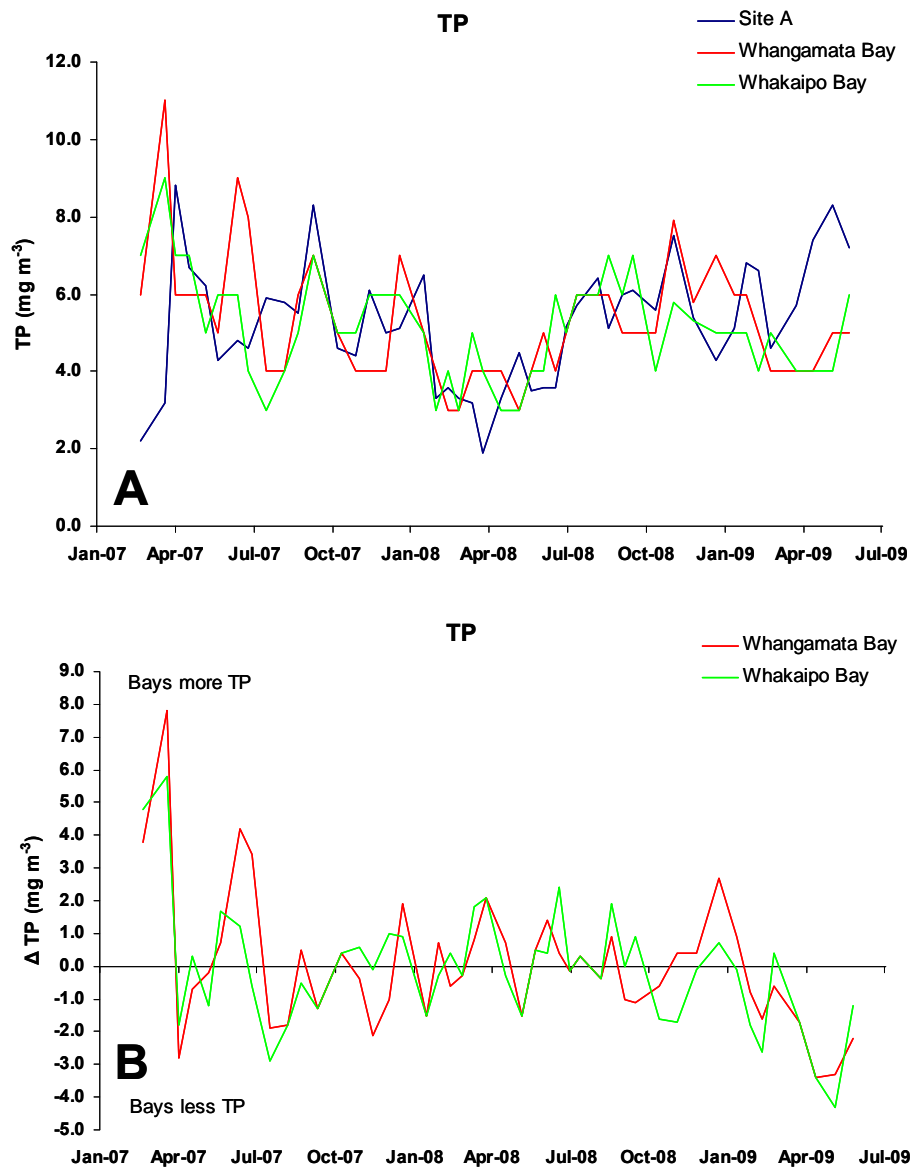


**Figure 4:** A) Time-series chlorophyll *a* data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the strong seasonal pattern and similarity between these sites; B) time-series of the chlorophyll *a* differences ( $\Delta$  Chlorophyll *a*) between the near-shore and mid-lake sites.

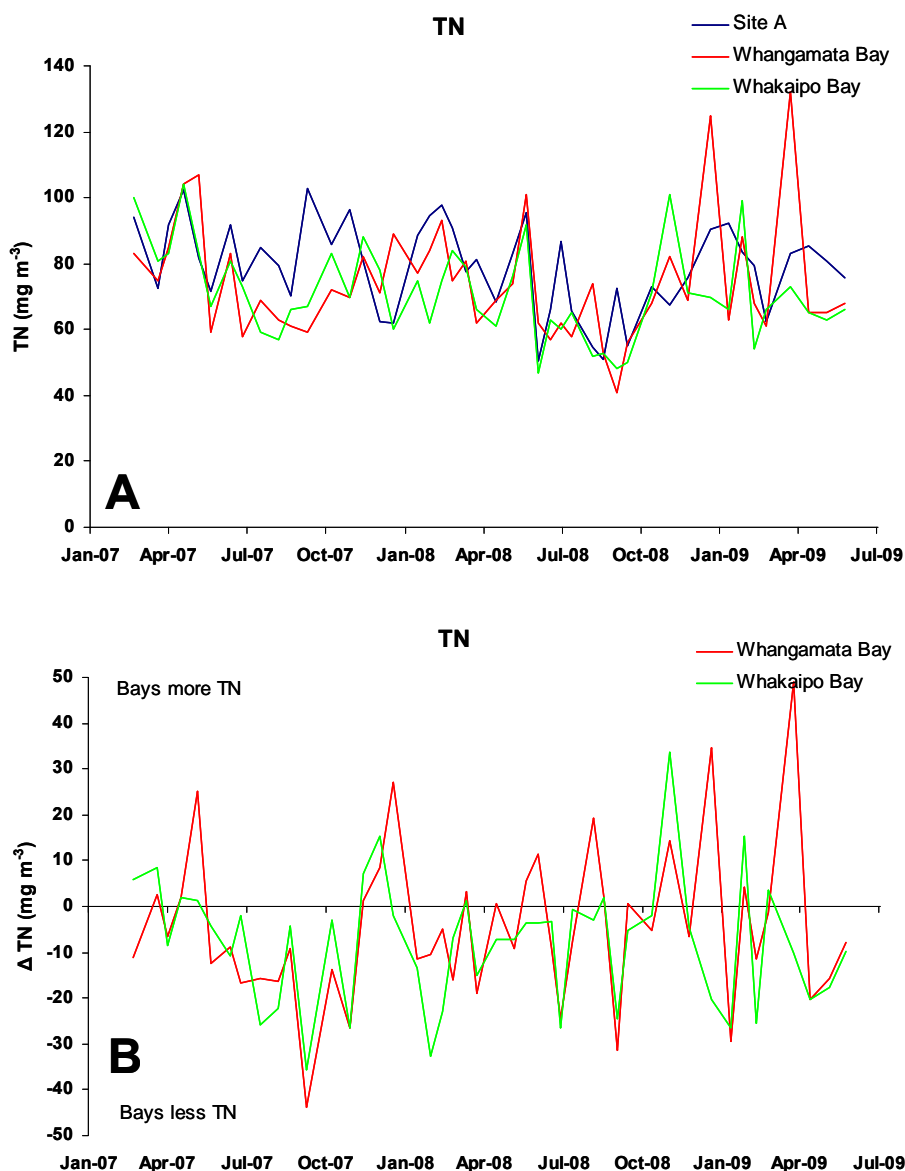
### 3.1.4 Nutrients

#### TP and TN

While there were no obvious seasonal patterns to the TP and TN data (Figs. 5A & 6A), there was a dip in the TP concentrations in April 2008 and a dip in the TN concentrations in August 2008. The near-shore site data followed the mid-lake pattern.



**Figure 5:** A) Time-series total phosphorus (TP) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the TP differences ( $\Delta$  TP) between the near-shore and mid-lake sites.



**Figure 6:** A) Time-series total nitrogen (TN) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the TN differences ( $\Delta$  TN) between the near-shore and mid-lake sites.

Mean TP concentrations were 5.2, 5.3, and 5.1  $\text{mg m}^{-3}$  for the mid-lake, Whangamata Bay, and Whakaipo Bay sites respectively, and mean TN concentrations were 79.0, 74.4, and 71.2  $\text{mg m}^{-3}$ , respectively, demonstrating the similarity between the water quality data at these three site.

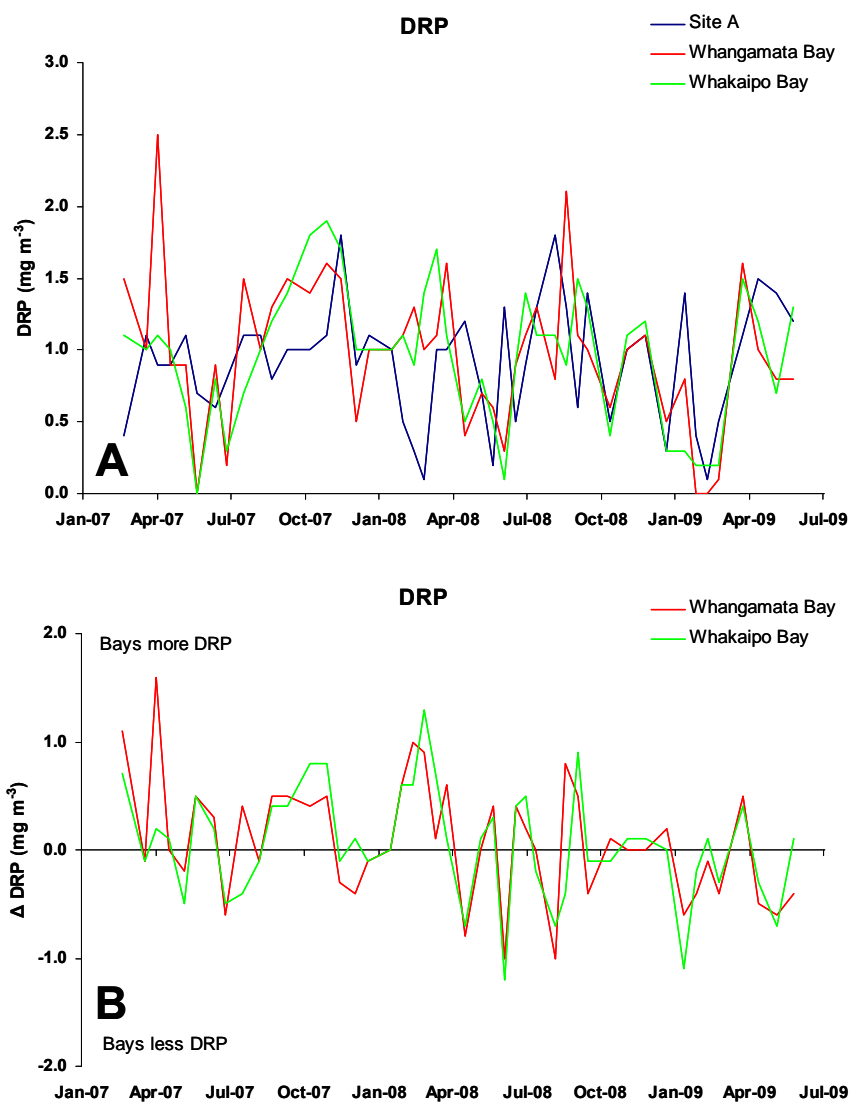
There was considerable variability in the data between samplings, but with the near-shore TP variability mostly around the mid-lake data. Consequently, the TP difference time-series data (Fig. 5B) show only minor differences for most of the monitoring period. However, major differences early in 2007 and from April 2009 onwards may be a more realistic indication of near-shore to mid-lake differences, if the lack of substantial difference from August 2007 to March 2009 is a reflection of the extended period of low runoff associated with the summer 2007/2008 drought and the almost equally dry summer of 2008/2009.

There was less similarity between the mid-lake and near-shore TN data than was indicated by the means. TN concentration in Whangamata Bay and Whakaipo Bays were about 6% and 10% lower, respectively, than the TN concentrations at the mid-lake site. Whereas the TP differences appeared to be minimal around the mid-lake site data, the TN differences appeared to have a slight seasonal pattern with more TN at the mid-lake site in winter (Fig. 6B). This is consistent with the pattern of primary production in the lake and the potential for the release of dissolved inorganic nitrogen (DIN) from the hypolimnion to be a more important source of DIN for algal growth than nutrients from land runoff at that time of year. A drought effect might also influence the interpretation of these results.

## DRP

Because of the very low concentrations, DRP data were highly variable but still showed a high level of similarity between the near-shore and mid-lake site (Fig. 7A). There was no obvious seasonal pattern to the data although DRP concentrations appeared to be lowest at the mid-lake site in late summer. The difference data (Fig. 7B) show a high degree of similarity between the two near-shore sites and appear to show a trend of declining DRP concentrations in the near-shore waters. While regression analysis on the difference data gave a statistically significant ( $P < 0.009$ ,  $n = 46$ ) decline at Whangamata Bay, the trend was only weakly significant ( $P = 0.1$ ,  $n = 46$ ) in Whakaipo Bay.

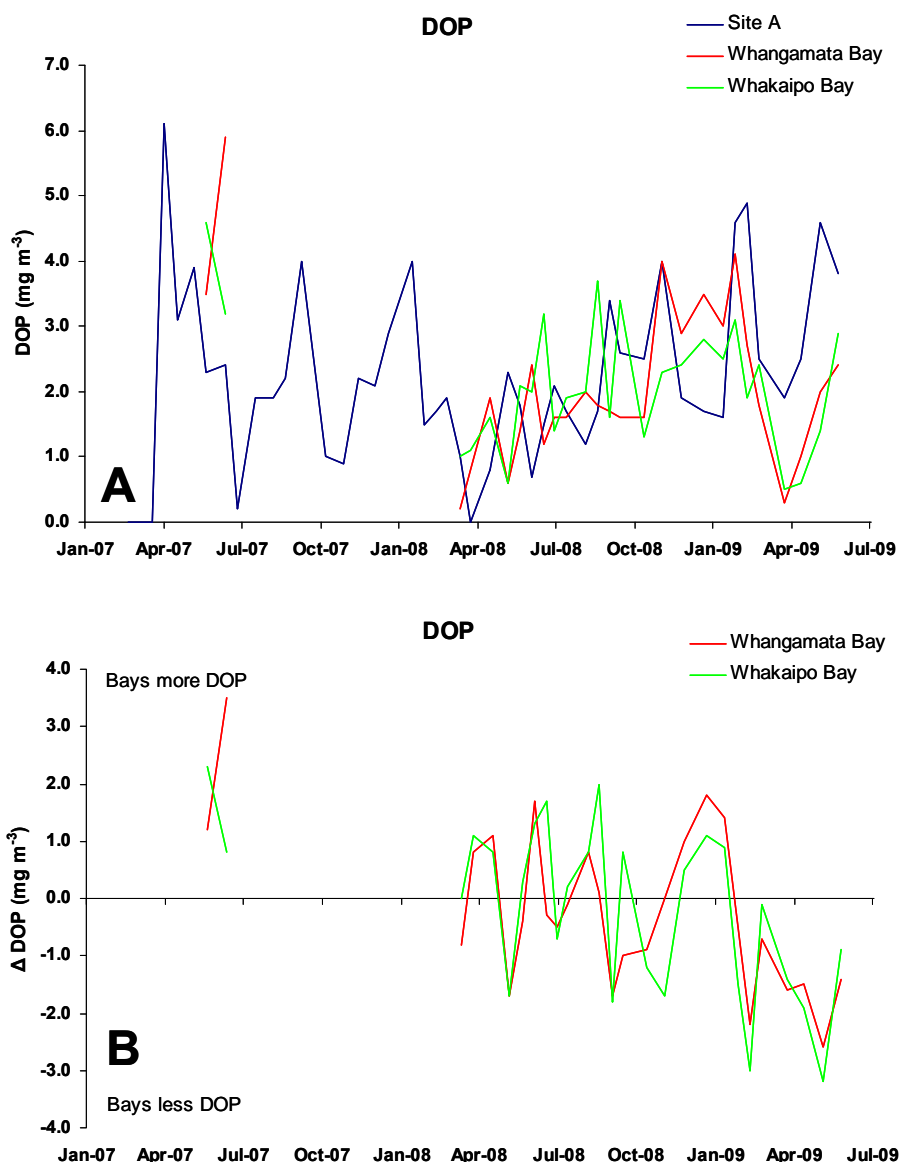
Overall, the change associated with the apparent trend of DRP decline was small at  $0.32 \pm 0.26 \text{ mg m}^{-3} \text{ y}^{-1}$  and may be an artefact of the very low concentrations in Lake Taupo. Conversely, there was a consistent increase in the mean chlorophyll *a* concentrations in Whangamata and Whakaipo Bays of  $0.16 \text{ mg m}^{-3}$  and  $0.08 \text{ mg m}^{-3}$  respectively, which could account for the apparent reduction in DRP at those sites.



**Figure 7:** A) Time-series dissolved reactive phosphorus (DRP) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the DRP differences ( $\Delta$  DRP) between the near-shore and mid-lake sites.

#### DOP and PP

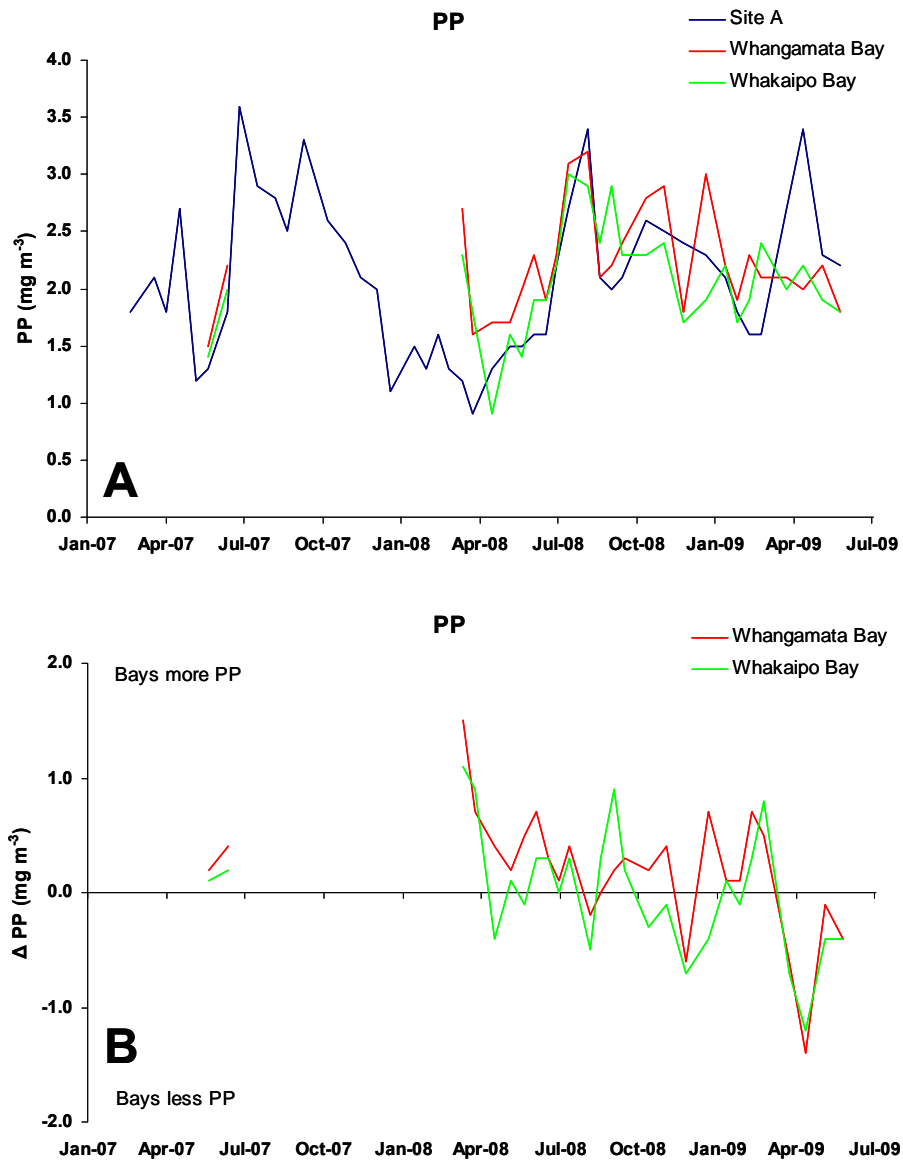
Although there were only one year of data from the near-shore sites for DOP and PP, the graphed data indicate the near-shore data were highly similar to the mid-lake data (Figs. 8 and 9). The mid-lake DOP data show no definite seasonal pattern but there was an apparent dip or decline in the DOP concentrations through 2007 to April 2008, before an increase in DOP concentrations through 2008 to 2009 (Fig. 8A). In contrast, there was a strong seasonal pattern to the PP data (Fig. 9A) which is consistent with the chlorophyll *a* seasonal pattern (Fig. 4).



**Figure 8:** A) Time-series dissolved organic phosphorus (DOP) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the DOP differences ( $\Delta$  DOP) between the near-shore and mid-lake sites.

From the difference data, both DOP and PP concentrations were more similar between the near-shore sites than with the mid-lake site (Figs. 8B and 9B). The single year of data for the differences indicate a strong decline in both DOP and PP in the near-shore water. However, comparing these with the 2-year dataset from Acacia Bay indicates that the true pattern is similar to the DRP and TP patterns. The Acacia Bay data was significantly time lagged relative to the mid-lake site.

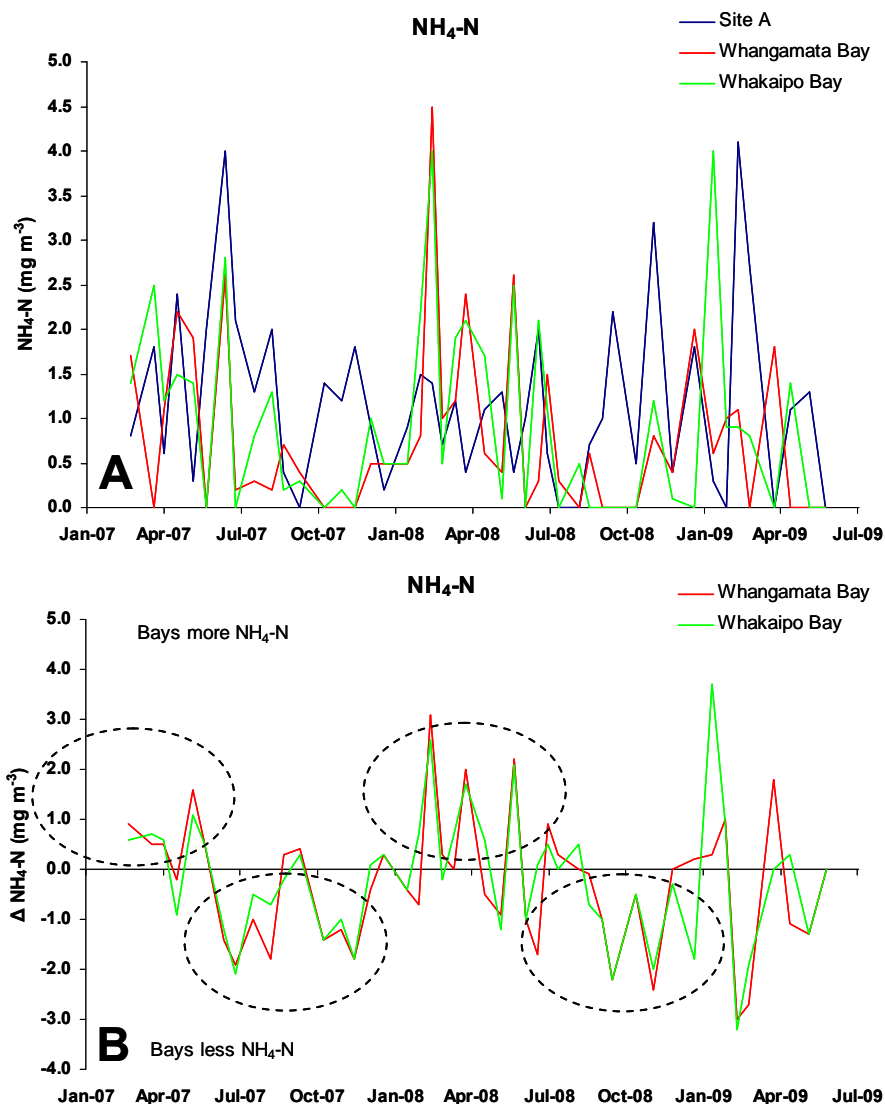




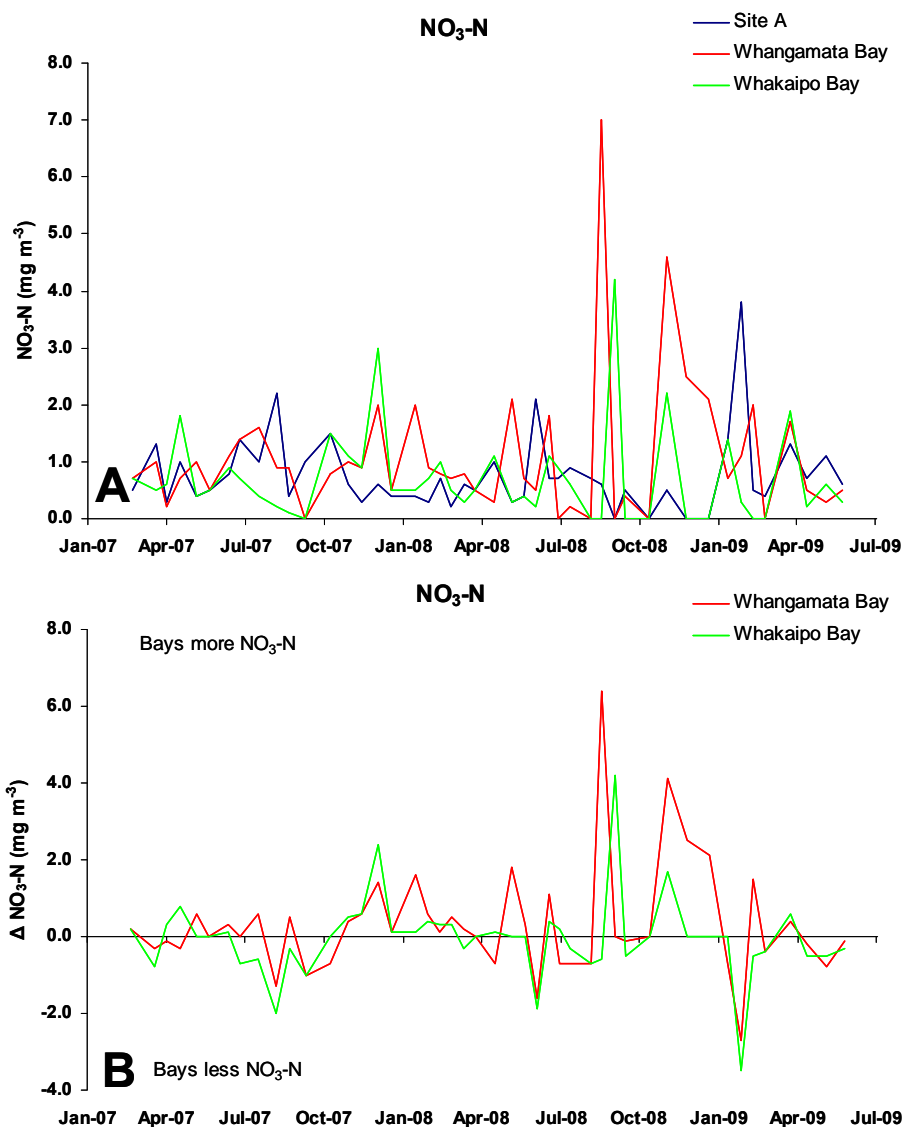
**Figure 9:** A) Time-series particulate phosphorus (PP) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the PP differences ( $\Delta \text{PP}$ ) between the near-shore and mid-lake sites.

NH<sub>4</sub>-N and NO<sub>3</sub>-N

As was seen with the DRP data, because of the very low concentrations, the NH<sub>4</sub>-N and NO<sub>3</sub>-N data were highly variable and only showed similarity between the near-shore and mid-lake site for part of the 2-year monitoring period (Fig. 10A and 11A). NH<sub>4</sub>-N concentrations were significantly higher in the near-shore waters during autumn 2008 (Fig. 10A) while NO<sub>3</sub>-N concentrations were significantly higher in the near-shore waters in spring 2008 (Fig. 11A).



**Figure 10** A) Time-series ammoniacal-nitrogen (NH<sub>4</sub>-N) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the NH<sub>4</sub>-N differences (Δ NH<sub>4</sub>-N) between the near-shore and mid-lake sites. Dashed ellipses indicate periods where NH<sub>4</sub>-N concentrations were markedly higher and lower in the near-shore waters relative to the mid-lake site.

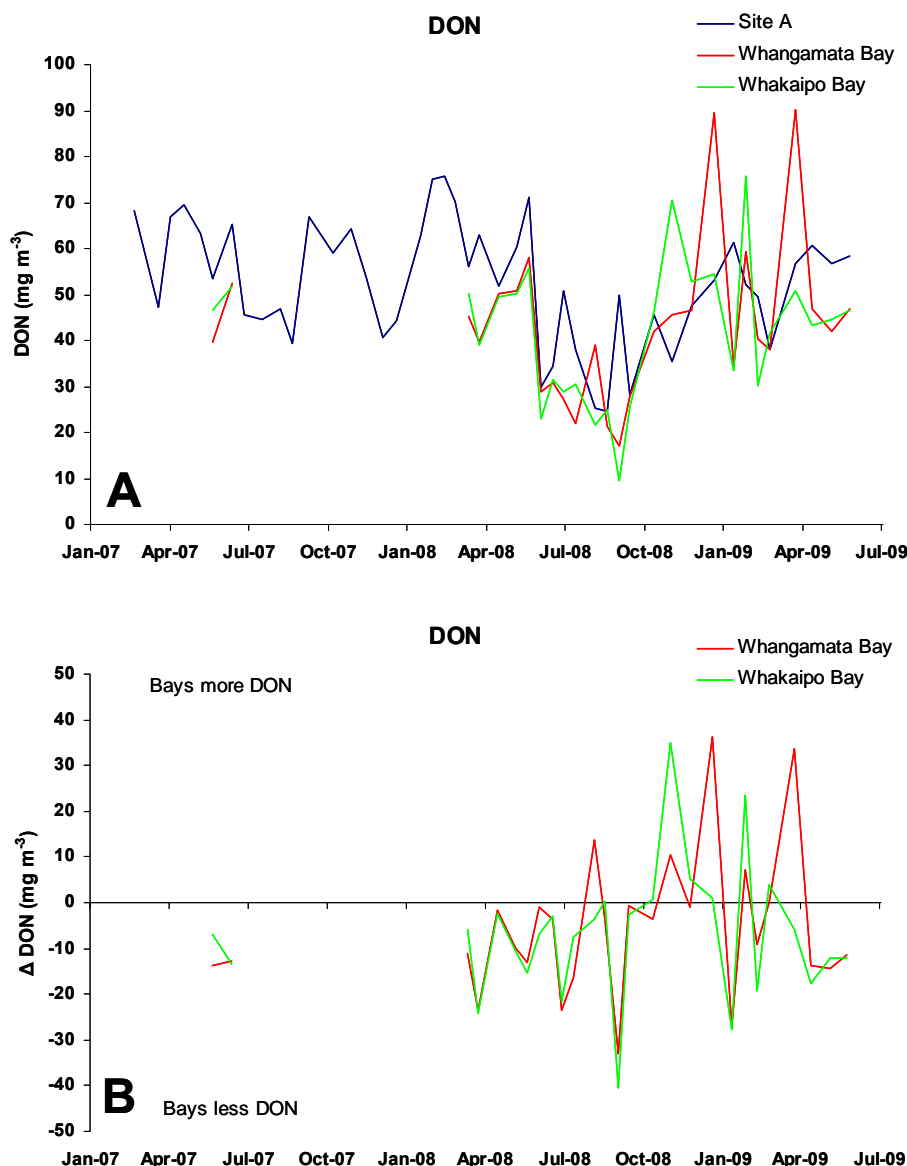


**Figure 11:** A) Time-series nitrate-nitrogen (NO<sub>3</sub>-N) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the NO<sub>3</sub>-N differences (Δ NO<sub>3</sub>-N) between the near-shore and mid-lake sites.

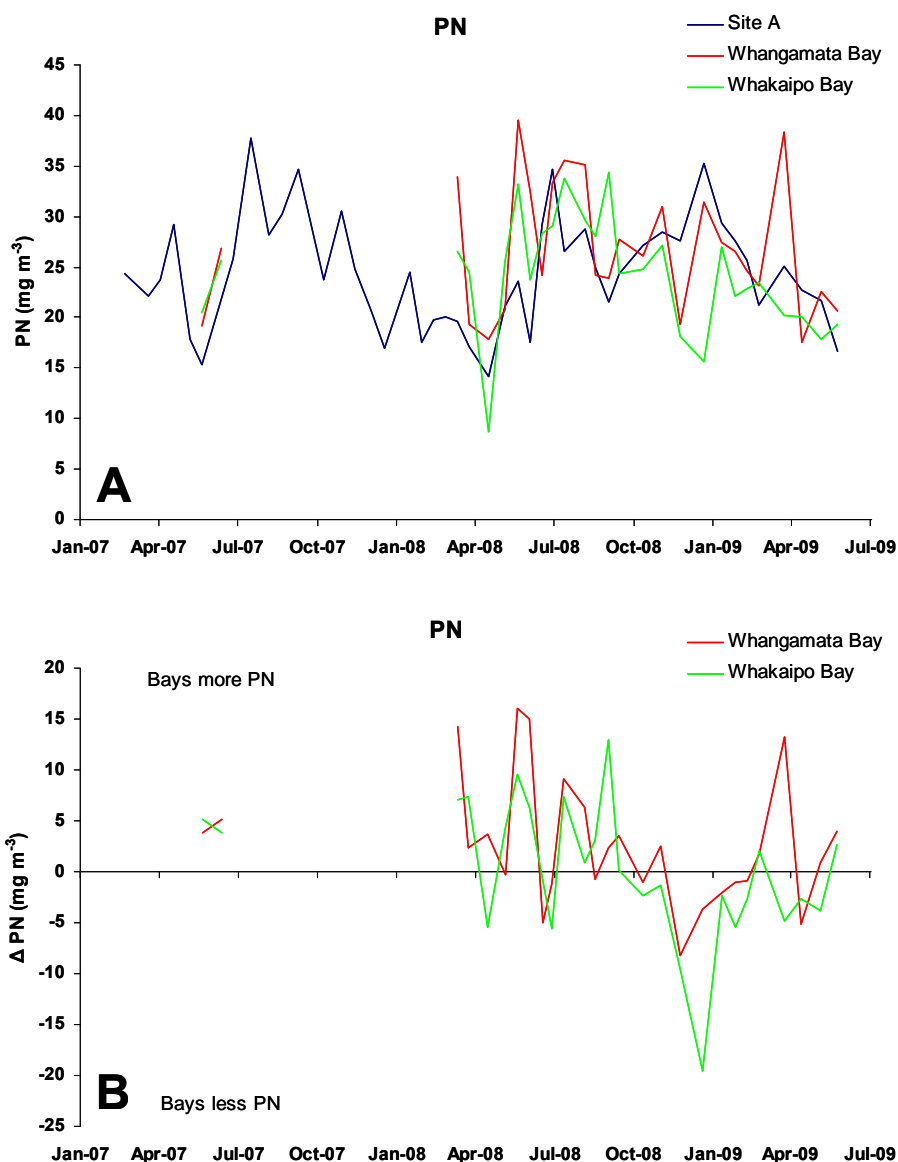
The difference data for NH<sub>4</sub>-N show a marked cycle with concentrations being higher in the near-shore waters from January to June then higher at the mid-lake site from July to December (Fig. 10B). This pattern was also present in the NO<sub>3</sub>-N data (Fig. 11B) but was not as distinct. NO<sub>3</sub>-N concentrations were substantially higher in the near-shore waters from August 2008 to January 2009 for no apparent reason.

## DON and PN

Although there were only one full year of data for DON and PN, the graphed data indicate the near-shore data were highly similar to the mid-lake data (Figs. 12A and 13A). The PN data appeared to follow the seasonal pattern of the chlorophyll *a* and PP data (Fig. 13A) but the DON data pattern appeared to be out of phase with that pattern, having lowest concentrations during the period of the winter bloom (Fig. 12A).



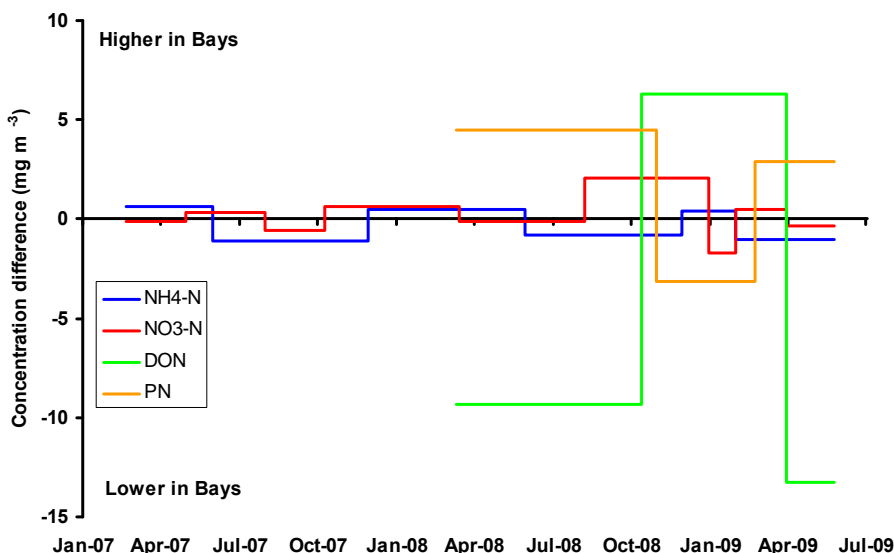
**Figure 12:** A) Time-series dissolved organic nitrogen (DON) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the DON differences ( $\Delta$  DON) between the near-shore and mid-lake sites



**Figure 13** A) Time-series particulate nitrogen (PN) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the PN differences ( $\Delta$  PN) between the near-shore and mid-lake sites.

The difference data also showed that the DON data pattern was out of phase with the PN data i.e., DON concentrations were higher at the mid-lake site when the PN concentrations were highest in the near-shore waters (Figs. 12B and 13B). While these difference patterns appear to be inversely related, the transitions from lower concentrations in the near-shore waters to higher concentrations in the near-shore waters and back were temporally displaced by several weeks (Fig. 14). Similarly, the transitions between lower and higher concentrations of  $\text{NH}_4\text{-N}$  and  $\text{NO}_3\text{-N}$  were also

temporally displaced relative to each other and to DON and PN. These differences may be a function of time lags for the water movement between the near-shore and mid-lake site.

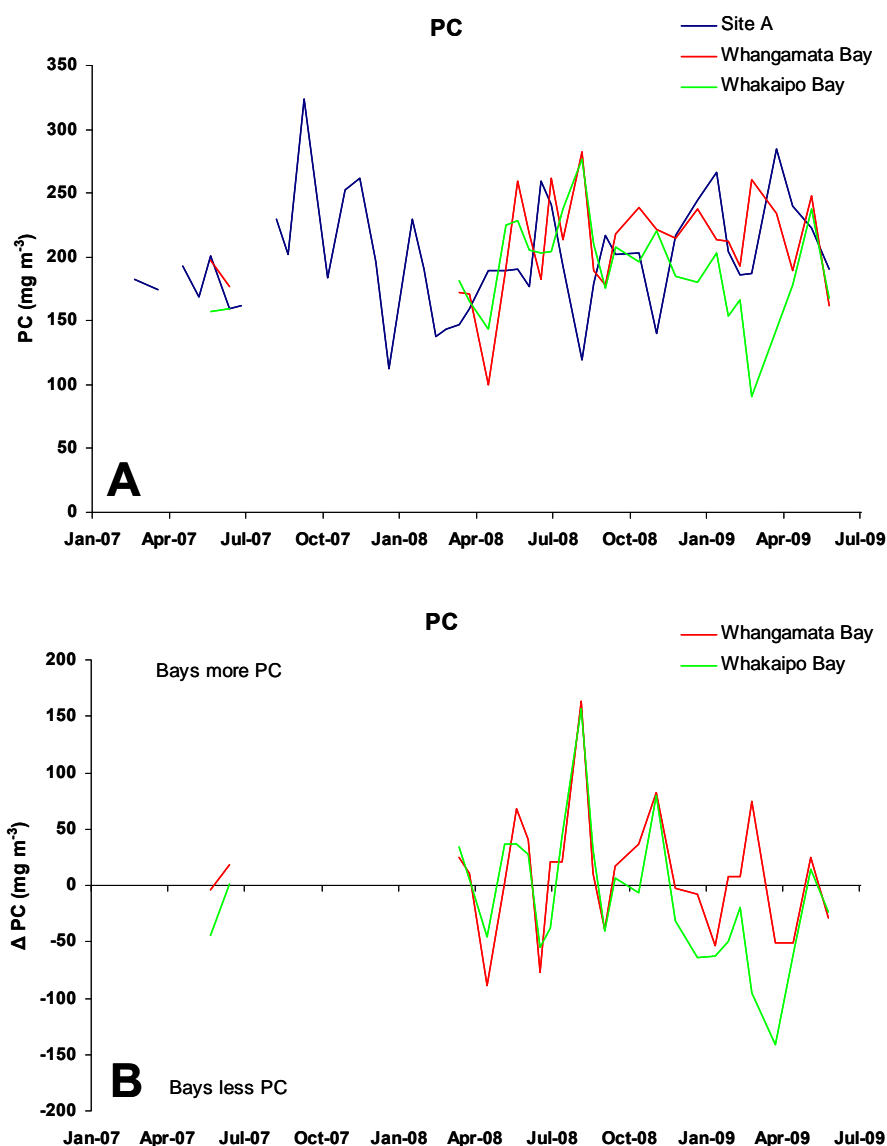


**Figure 14** Time-series of mean differences in nitrogen species concentration between near-shore and the mid-lake sites, showing the transitions between being higher and lower at the near-shore site relative to the mid-lake site.

## PC

The one full year of PC data indicate that the Whangamata Bay data were generally similar to the mid-lake data over the whole year but the Whakaipo Bay data were only similar during 2008 and became highly dissimilar during 2009 (Fig. 15A). There were no strong seasonal patterns to the PC data, although PC concentrations appeared to follow the chlorophyll *a*, PN, and PP patterns. The difference data graphs (Fig. 15B) show the strong similarity between the two near-shore sites in 2008 and then the divergence of the data in 2009. The markedly lower PC concentrations in Whakaipo Bay from December 2008 to May 2009 appear to be linked to something happening in Whakaipo Bay rather than an increase in the PC concentrations at the other two sites.

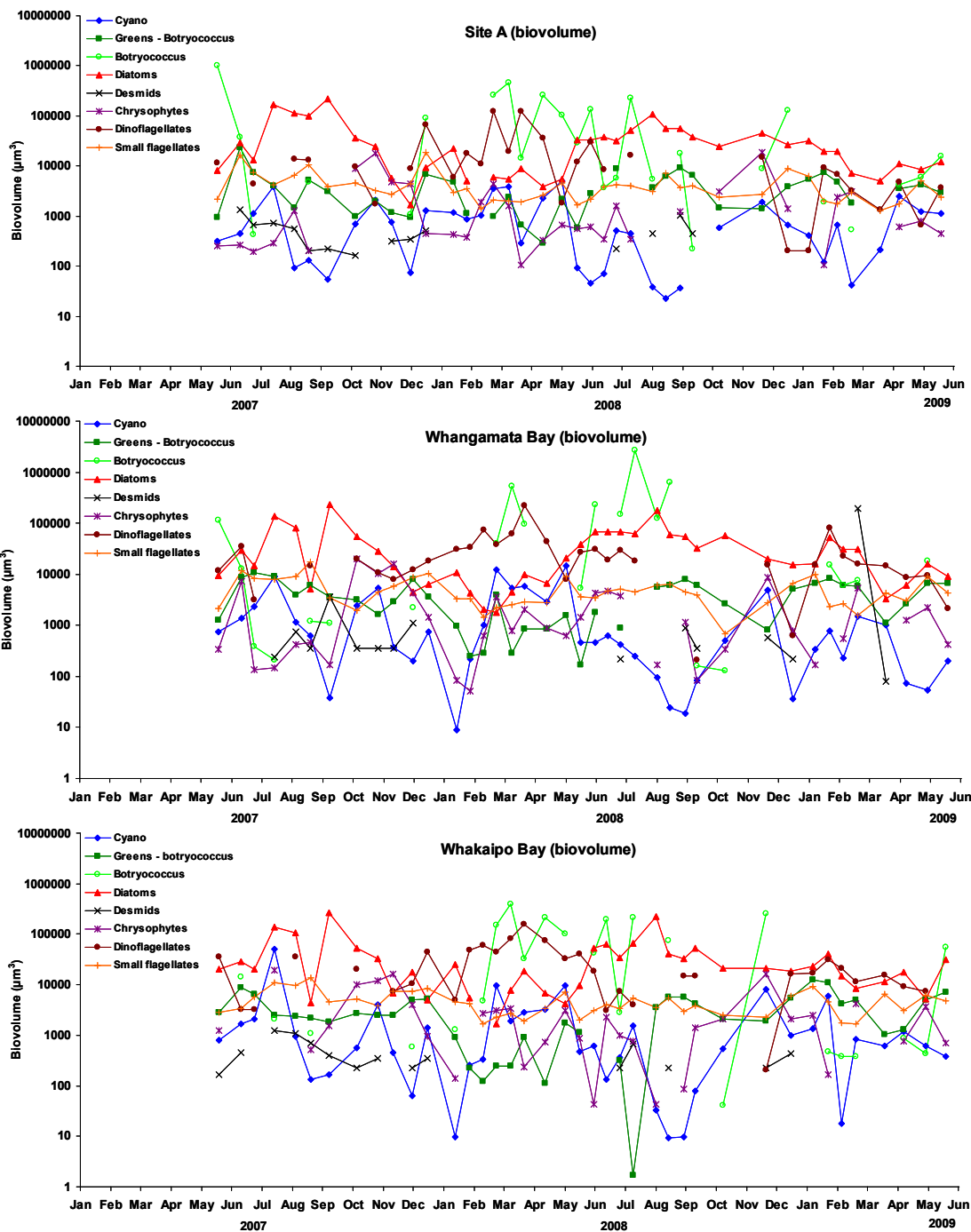
There were no PC data from Acacia Bay for comparison.



**Figure 15** A) Time-series particulate carbon (PC) data from the mid-lake site (Site A) and the two near-shore sites, Whangamata Bay and Whakaipo Bay, showing the similarity between these sites; B) time-series of the PC differences ( $\Delta$  PC) between the near-shore and mid-lake sites.

### 3.2 Algal biomass and cell counts

Algal biomass was dominated by the colonial green, *Botryococcus braunii*, despite it being present at very low numbers. Consequently, this species was plotted separately from the other greens in the biomass plots (Figs 16). Gaps indicate that *Botryococcus* was absent or not detected in that sample, although it was almost certainly present in the lake. Gaps in the other species indicate that species was not found in that sample.



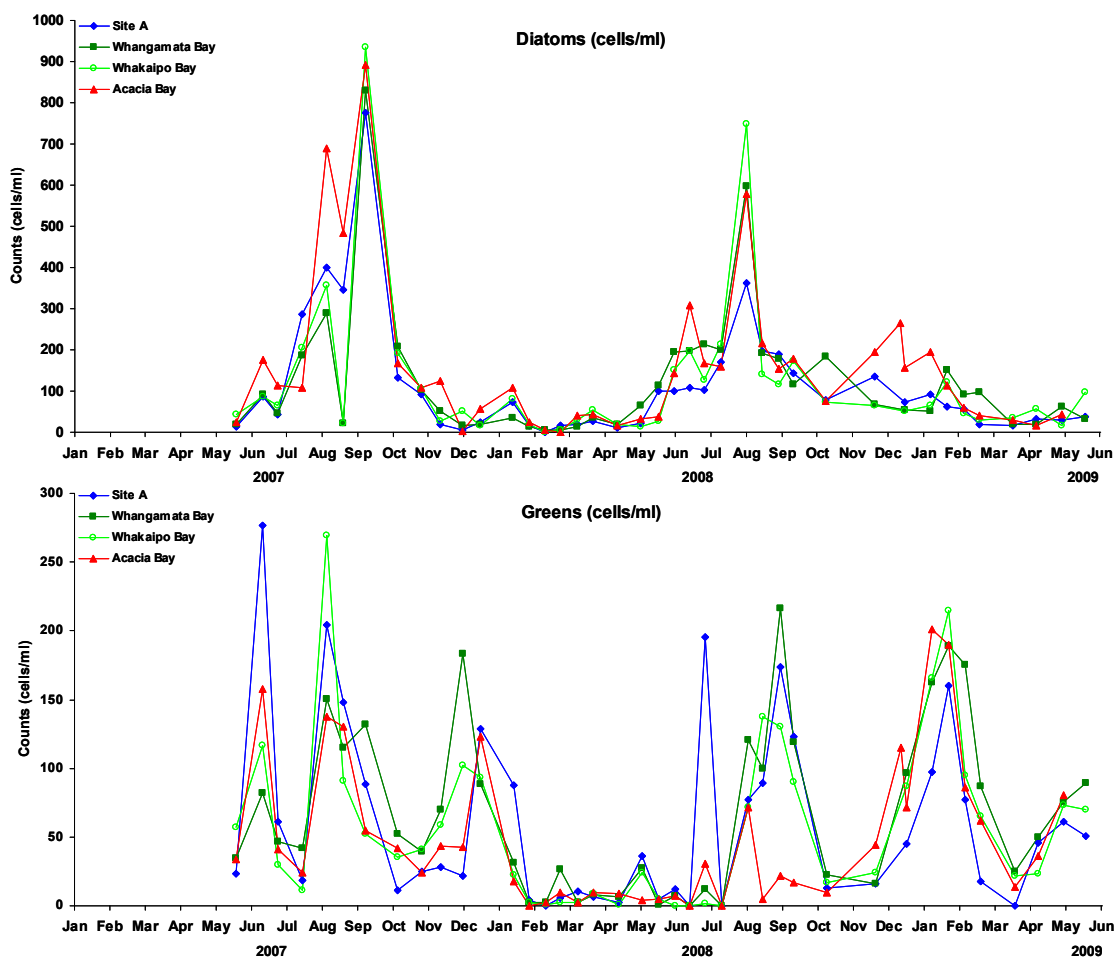
**Figure 16:** Algal biomass comparisons between algal classes at the mid-lake site, Site A, Whangamata Bay, and Whakaipo Bay. Note the log Y-axis scale.

Excluding *Botryococcus*, the algal biomass was typically dominated by diatoms followed by dinoflagellates with biovolumes of up to 280,000 µm<sup>3</sup> and 220,000 µm<sup>3</sup>, respectively. Biomass of cyanophytes, greens, and small flagellates, with biovolumes



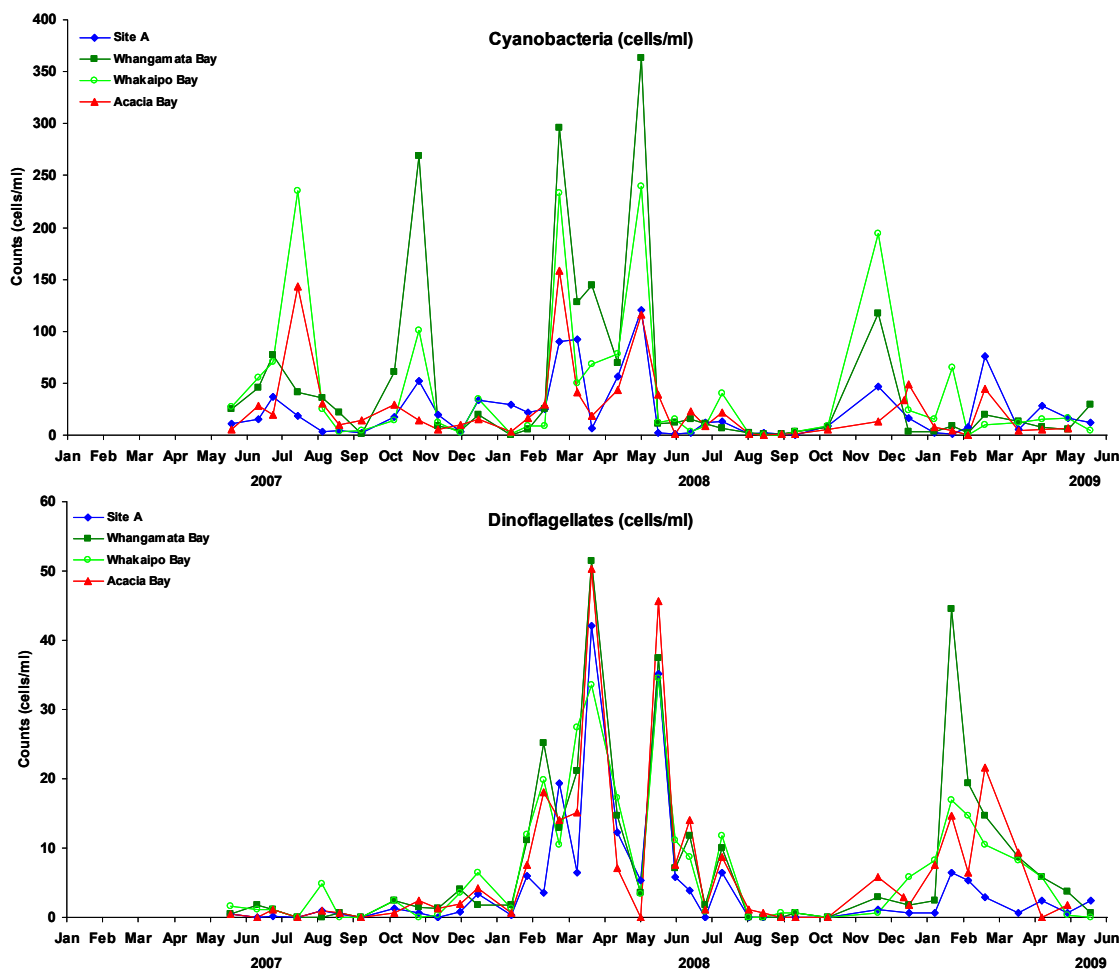
of up to 55,000  $\mu\text{m}^3$ , 25,000  $\mu\text{m}^3$  and 20,000  $\mu\text{m}^3$ , respectively, were an order of magnitude lower.

In terms of algal enumeration, the cell count data (Figs. 17 and 18) show that there were distinct patterns to the succession of algal species in the lake over the seasonal / annual cycle with different algal classes being numerically more important at different times of the year. For example, diatoms were most abundant in late winter while greens were also abundant in late summer and autumn (Fig. 17).



**Figure 17:** Algal cell count comparisons at all site for the algal classes of diatoms and greens.

Cyanobacteria and dinoflagellates were most abundant in autumn but cyanobacteria were also present in winter and spring 2007. Their highest abundances in autumn 2008 coincided with the lowest abundances of large dinoflagellates (Fig. 18).

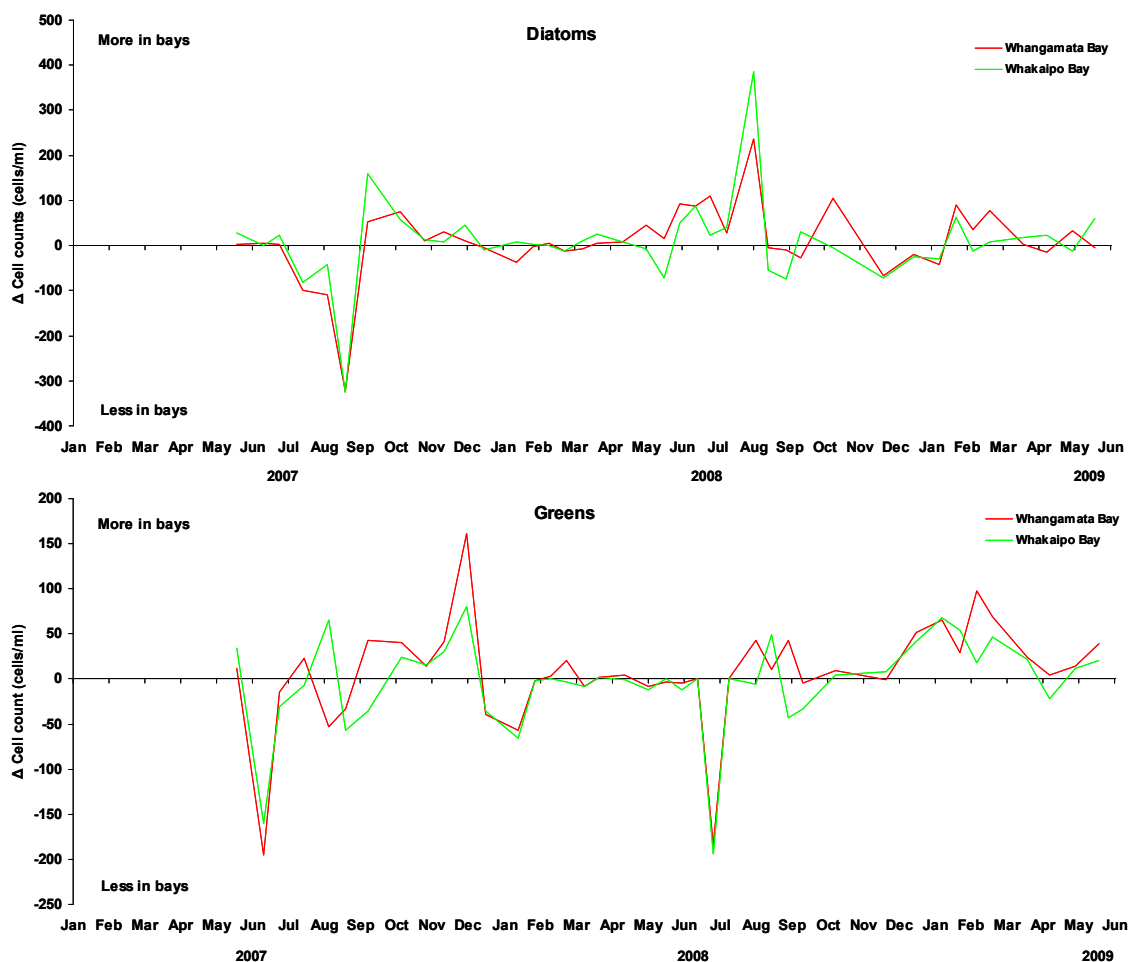


**Figure 18:** Algal cell count comparisons at all site for the algal classes of cyanobacteria and dinoflagellates.

Although the patterns of algal species succession were remarkably similar in the near-shore waters and at the mid-lake site, there were substantial differences in species abundance with the near-shore waters almost always having higher cell counts than at the mid-lake site (Figs. 19 and 20).

The difference data for diatoms show that diatom abundance was higher at the mid-lake site in winter 2007 (Fig. 19), consistent with the development of the winter bloom. However, that pattern was not repeated in 2008 and, although there was a seasonal increase in diatoms associated with the winter bloom, diatom abundance was

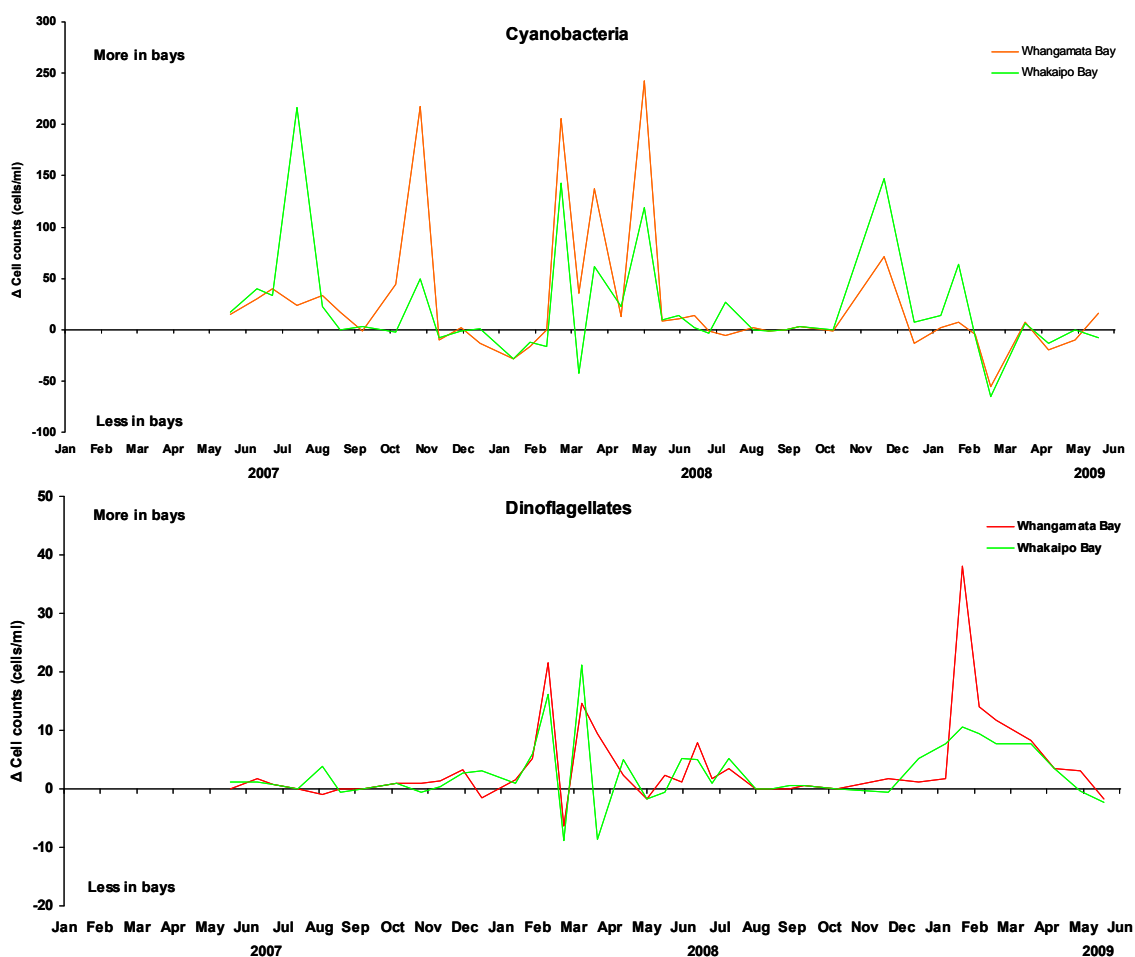
substantially higher in the near-shore waters than at the mid-lake site (Fig. 19). In contrast, the difference data for green algal species were more consistent and show that green algal abundance was higher at the mid-lake site in winter in both years (Fig. 19). The difference pattern for greens was consistent through each year although there was a higher abundance in Whangamata Bay than in Whakaipo Bay.



**Figure 19:** Differences between near-shore and the mid-lake cell counts for diatoms and green algae. Values below the X-axis indicate there were higher cell counts at the mid-lake site than in the near-shore waters.

The difference data for cyanobacteria showed large inter-annual differences with substantially more cyanobacteria in the near-shore waters than at the mid-lake site in autumn 2008 and almost no difference between the three sites in autumn 2009 (Fig. 20). Cyanobacteria abundance was higher in Whakaipo Bay in July 2007 and in summer 2008/2009.

Large dinoflagellates were more abundant in the near-shore waters during summer and autumn each year (Fig. 20). However, while there was strong similarity between the two near-shore sites in 2008, dinoflagellate abundance was substantially higher in Whangamata Bay than Whakaipo Bay in summer 2009 (Fig 20). Given the almost inverse relationship between cyanobacteria and large dinoflagellates through autumn 2008, it is possible that the dinoflagellates were grazing the cyanobacteria at that time.



**Figure 12:** Differences between near-shore and the mid-lake cell counts for cyanobacteria and large dinoflagellates. Values below the X-axis indicate there were higher cell counts at the mid-lake site than in the near-shore waters.

## 4. Summary

In general, the near-shore water quality was very similar to that at the mid-lake site. The exceptions were when physical events (e.g., south-westerly storms) either disturbed the near-shore sediments or heavy rainfall cause runoff from the catchment. Wind events may also be responsible for the frequently higher algal cell counts and thus biomass in the bays. Nutrient concentrations at near detection level showed high variability. However, there were obvious seasonal cycles in some of the data which matched the expected winter mixing cycle in the lake. In apparent contrast to the higher algal biomass in the bays relative to the mid-lake site, TN concentrations were 6-10% lower in the bays than at the mid-lake site. A possible explanation for this and some of the other differences found is that there may be significant phase lags between aspects of the near-shore and mid-lake water quality i.e., the concentrations were not that different but they occurred at slightly different time possibly due to the time it takes for water from the middle of the lake to move inshore and vice versa. A longer time-series of data would be required to determine whether the patterns observed were real and the beginning of a trend.

## 5. References

- Gibbs, M. (2008). Lake Taupo Near-shore Water Quality Monitoring: Summer 2007. NIWA Report HAM2008-026 to Waikato Regional Council. Project EVW07215. p 24.
- Gibbs, M. (2009). Lake Taupo long term monitoring programme 2007-2008. NIWA Client Report HAM2009-044 to Environment Waikato. 91 p. Environment Waikato Technical report series TR0909.  
<http://www.ew.govt.nz/PageFiles/13117/TR0909.pdf>

## 6. Appendix

This appendix contains the compiled and summarised data collected at the Mid-lake site (Site A), Whangamata Bay, Whakaipo Bay, and Acacia Bay for the parameters measured during this monitoring period plus the data from the initial monitoring.

Nutrient and algal data are presented by site. Algal data include cell counts (cells/ml) and biovolume calculated from the cell counts for each sampling date. Consequently, there are multiple sheets for each site for the algal data. The species sequence is the same for each site and the value of “0” in both cell count and biovolume columns or left blank indicates that species was either not present or not detected in that sample on that date.

Note that cells per ml numbers may be affected by rounding (e.g., *Botryococcus braunii* cell counts typically <0.1), and that biovolume values for the large colonial green, *Botryococcus braunii*, were estimated directly for colonies.

From August 2008, algal abundance was measured in a van Dorne bottle water sample from a depth of 50 m at Site A. These data are included in this report for completeness.

## Water clarity (Secchi Depth) data on Lake Taupo

Sampling Date	Mid-lake (Site A) m	Whangamata Bay m	Whakaipo Bay m	Acacia Bay m
21/02/2007	18.2	17	15.5	16
21/03/2007	16.5	14	16.4	13.2
3/04/2007	19	19	19	17
19/04/2007	16	15	17	17.5
8/05/2007	16	17	17	18
22/05/2007	18.5	19	19	15.5
14/06/2007	18	15	14.5	14
27/06/2007	18.5	13	16.5	15
18/07/2007	14.5	13.5	15	14
8/08/2007	14	13	12	13
23/08/2007	13	10.5	10	10
11/09/2007	11	10	10	9
9/10/2007	15	14	14	13
30/10/2007	16	16	16	17
15/11/2007	14	10	7.5	12.5
4/12/2007	15	14	15.5	13
20/12/2007	17.5	13	14.5	15
17/01/2008	22.5	21	21	18
31/01/2008	21.5	20	21	21.5
14/02/2008	25*	20	21	20
27/02/2008	22	21.5	20.5	22
13/03/2008	22	18	16.5	19
26/03/2008	19	17	16.5	17.5
17/04/2008	20.5	17.1	15.8	16
7/05/2008	16	14	14.5	13
22/05/2008	17	13.5	15.5	13.1
5/06/2008	15	12	15	15
19/06/2008	16.5	14.5	15.5	14.5
1/07/2008	14	15	13.5	12.5
14/07/2008	13	12	12.5	12.5
7/08/2008	12.5	10	10.5	11.5
20/08/2008	12.5	13	14	14
4/09/2008	13	14	13.5	14.5
16/09/2008	14.5	13	13.5	13.5
14/10/2008	12.2	9.8	10.8	11.5
4/11/2008	12	10	11.2	10.5
26/11/2008	10	13.5	12	10.5
22/12/2008	12	10.7	12	10
13/01/2009	13	11.5	13	13
28/01/2009	18	18	15	14
11/02/2009	22	19	19	19
25/02/2009	20	15	15.5	15.5
26/03/2009	18.5	16.2	16.5	17
15/04/2009	18	16.5	16	17.5
7/05/2009	16	12.5	17	15
27/05/2009	15	17	18	14

\* Secchi disc lost, depth at Site A measured on 18/02/2008

### Mid-lake (Site A) nutrient data

10-m integrated tube sample data

Date Collected	Temp. °C	Secchi m	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	C:N
21/02/2007	19.6	18.2	0.4	0	1.8	2.2	0.8	0.5	68.3	24.4	94	0.3	182	7.46
21/03/2007	18.7	16.5	1.1	0	2.1	3.2	1.8	1.3	47.2	22.1	72.4	0.8	175	7.92
3/04/2007	18.0	19	0.9	6.1	1.8	8.8	0.6	0.3	66.9	23.8	91.6	0.7		
19/04/2007	16.5	16	0.9	3.1	2.7	6.7	2.4	1.0	69.6	29.2	102.2	0.6	193	6.61
8/05/2007	16.1	16	1.1	3.9	1.2	6.2	0.3	0.4	63.3	17.8	81.8	1.2	169	9.49
22/05/2007	15.2	18.5	0.7	2.3	1.3	4.3	2.0	0.5	53.5	15.4	71.4	0.8	201	13.05
14/06/2007	13.6	18	0.6	2.4	1.8	4.8	4.0	0.8	65.2	21.8	91.8	1	159	7.29
27/06/2007	12.4	18.5	0.8	0.2	3.6	4.6	2.1	1.4	45.5	25.8	74.8	1.2	162	6.28
18/07/2007	11.4	14.5	1.1	1.9	2.9	5.9	1.3	1.0	44.7	37.8	84.8	1.7		
8/08/2007	11.2	14	1.1	1.9	2.8	5.8	2.0	2.2	46.8	28.2	79.2	1.3	229	8.12
23/08/2007	11.0	13	0.8	2.2	2.5	5.5	0.4	0.4	39.2	30.3	70.3	2.2	202	6.67
11/09/2007	11.0	11	1	4	3.3	8.3	0	1	67	34.7	102.7	1.4	324	9.34
9/10/2007	12.3	15	1	1	2.6	4.6	1.4	1.5	59.1	23.8	85.8	0.8	184	7.73
30/10/2007	12.8	16	1.1	0.9	2.4	4.4	1.2	0.6	64.2	30.5	96.5	0.7	253	8.30
15/11/2007	13.5	14	1.8	2.2	2.1	6.1	1.8	0.3	53.9	24.8	80.8	0.5	262	10.56
4/12/2007	16.6	15	0.9	2.1	2	5	0.9	0.6	40.5	20.6	62.6	0.3	196	9.51
20/12/2007	17.4	17.5	1.1	2.9	1.1	5.1	0.2	0.4	44.4	17	62	0.6	112	6.59
17/01/2008	20.8	22.5	1	4	1.5	6.5	0.9	0.4	62.7	24.5	88.5	0.3	230	9.39
31/01/2008	20.1	21.5	0.5	1.5	1.3	3.3	1.5	0.3	75.2	17.6	94.6	0.3	190	10.80
14/02/2008	19.9	25	0.3	1.7	1.6	3.6	1.4	0.7	75.9	19.8	97.8	0.4	138	6.97
27/02/2008	19.3	22	0.1	1.9	1.3	3.3	0.7	0.2	70.1	20	91	0.4	143	7.15
13/03/2008	18.8	22	1	1	1.2	3.2	1.2	0.6	56.2	19.6	77.6	0.5	147	7.50
26/03/2008	19.3	19	1	0	0.9	1.9	0.4	0.5	63.1	17.1	81.1	0.5	160	9.36
17/04/2008	17.9	20.5	1.2	0.8	1.3	3.3	1.1	1	51.9	14.2	68.2	0.8	189	13.31
7/05/2008	15.7	16	0.7	2.3	1.5	4.5	1.3	0.3	60.4	21.1	83.1	0.6	189	8.96
22/05/2008	14.7	17	0.2	1.8	1.5	3.5	0.4	0.4	71.2	23.6	95.6	0.7	191	8.09
5/06/2008	13.6	15	1.3	0.7	1.6	3.6	1.0	2.1	29.9	17.5	50.5	1.0	177	10.11
19/06/2008	12.9	16.5	0.5	1.5	1.6	3.6	2.0	0.7	34.3	29.2	66.2	1.2	259	8.87
1/07/2008	12.0	14	0.9	2.1	2.15	5.15	0.6	0.7	50.7	34.6	86.6	1.7	241.5	6.98
14/07/2008	11.4	13	1.3	1.7	2.7	5.7	0.0	0.9	38.1	26.5	65.5	1.9	193	7.28
7/08/2008	11.1	12.5	1.8	1.2	3.4	6.4	0.0	0.7	25.3	28.8	54.8	3.0	119	4.13
20/08/2008	10.7	12.5	1.3	1.7	2.1	5.1	0.7	0.6	24.7	25	51	1.5	179	7.16
4/09/2008	11.0	13	0.6	3.4	2	6	1.0	0.0	50	21.5	72.5	1.1	217	10.09
16/09/2008	11.3	14.5	1.4	2.6	2.1	6.1	2.2	0.5	28.3	24.3	55.3	0.7	202	8.31
14/10/2008	12.5	12.2	0.5	2.5	2.6	5.6	0.5	0.0	45.5	27.1	73.1	0.6	203	7.49
4/11/2008	13.3	12	1.0	4	2.5	7.5	3.2	0.5	35.3	28.5	67.5	0.9	140	4.91
26/11/2008	15.3	10	1.1	1.9	2.4	5.4	0.4	0.0	47.6	27.6	75.6	1	217	7.86
22/12/2008	18.0	12	0.3	1.7	2.3	4.3	1.8	0.0	53.2	35.2	90.2	0.6	245	6.96
13/01/2009	19.6	13	1.4	1.6	2.1	5.1	0.3	1.4	61.3	29.4	92.4	0.5	266	9.05
28/01/2009	20.5	18	0.4	4.6	1.8	6.8	0.0	3.8	52.2	27.6	83.6	0.3	204	7.39
11/02/2009	21.3	22	0.1	4.9	1.6	6.6	4.1	0.5	49.4	25.6	79.6	0.4	185.5	7.25
25/02/2009	20.4	20	0.5	2.5	1.6	4.6	2.7	0.4	37.9	21.3	62.3	0.5	186.5	8.76
26/03/2009	18.0	18.5	1.1	1.9	2.7	5.7	0.0	1.3	56.7	25.1	83.1	0.6	285	11.35
15/04/2009	16.6	18	1.5	2.5	3.4	7.4	1.1	0.7	60.8	22.7	85.3	0.8	240	10.57
7/05/2009	15.0	16	1.4	4.6	2.3	8.3	1.3	1.1	56.6	21.7	80.7	1.3	223	10.28
27/05/2009	13.0	15	1.2	3.8			0.0	0.6	58.4	16.7	75.7	1.2	190	11.38



### Whangamata Bay (Near-shore Kinloch)

10-m integrated tube sample data

Date Collected	Temp. °C	Secchi m	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	PC mg m <sup>-3</sup>
21/02/2007	20.9	17	1.5			6	1.7	0.7			83	0.4		
21/03/2007	18.6	14	1			11	<1	1			75	0.9		
3/04/2007	18.4	19	2.5			6	1.1	0.2			85	0.6		
19/04/2007	16.7	15	0.9			6	2.2	0.7			104	1.0		
8/05/2007	16.1	17	0.9			6	1.9	1.0			107	1.7		
22/05/2007	15.3	19	<1	3.5	1.5	5	<1	<1	39.8	19.2	59	0.6	25	197
14/06/2007	13.7	15	0.9	5.9	2.2	9	2.6	1.1	52.4	26.9	83	1.1	22.8	177
27/06/2007	12.4	13	0.2			8	0.2	1.4			58	1.6		
18/07/2007	11.4	13.5	1.5			4	0.3	1.6			69	2.1		
8/08/2007	11.2	13	1.0			4	0.2	0.9			63	1.5		
23/08/2007	11.1	10.5	1.3			6	0.7	0.9			61	2.0		
11/09/2007	11.1	10	1.5			7	0.4	0.0			59	1.2		
9/10/2007	12.7	14	1.4			5	0.0	0.8			72	1.3		
30/10/2007	13.9	16	1.6			4	0.0	1.0			70	0.6		
15/11/2007	14.1	10	1.5			4	0.0	0.9			82	0.7		
4/12/2007	16.5	14	<1			4	<1	2			71	0.4		
20/12/2007	17.1	13	1			7	<1	<1			89	1.1		
17/01/2008	22.3	21	1			5	<1	2			77	0.3		
31/01/2008	20.6	20	1.1			4	0.8	0.9			84	0.3		
14/02/2008	20.3	20	1.3			3	4.5	0.8			93	0.5		
27/02/2008	19.4	21.5	1.0			3	1.0	0.7			75	0.5		
13/03/2008	19.1	18	1.1	0.2	2.7	4	1.2	0.8	45.1	33.9	81	0.5	18.8	172
26/03/2008	19.3	17	1.6	0.8	1.6	4	2.4	0.5	39.7	19.4	62	0.3	16.6	171
17/04/2008	18.2	17.1	0.4	1.9	1.7	4	0.6	0.3	50.2	17.9	69	0.8	6.8	99.9
7/05/2008	15.7	14	0.7	0.6	1.7	3	0.4	2.1	50.7	20.8	74	0.8	20.1	191.5
22/05/2008	14.7	13.5	0.6	1.4	2.0	4	2.6	0.7	58.1	39.6	101	1.2	34.5	259
5/06/2008	13.6	12	0.3	2.4	2.3	5	0.0	0.5	29.0	32.5	62	1.5	26.9	218
19/06/2008	12.9	14.5	0.9	1.2	1.9	4	0.3	1.8	30.7	24.2	57	1.6	21.3	182.5
1/07/2008	12.0	15	1.1	1.6	2.3	5	1.5	0.0	27.1	33.4	62	1.9	29.6	262
15/07/2008	11.5	12	1.3	1.6	3.1	6	0.3	0.2	21.9	35.6	58	1.8	28	214
7/08/2008	11.2	10	0.8	2	3.2	6	0.0	0.0	38.9	35.1	74	3.8	35.1	282
20/08/2008	10.8	13	2.1	1.8	2.1	6	0.6	7.0	21.2	24.2	53	1.4	22.8	189
4/09/2008	11.0	14	1.1	1.7	2.2	5	0.0	0.0	17.1	23.9	41	1.1	57.1	178
16/09/2008	11.5	13	1.0	1.6	2.4	5	0.0	0.4	27.8	27.8	56	0.9	63.2	218.5
14/10/2008	12.7	9.8	0.6	1.6	2.8	5	0.0	0.0	41.9	26.1	68	1.1	25.9	239
4/11/2008	14.0	10	1.0	4	2.9	8	0.8	4.6	45.6	31	82	1.2	27.1	222
26/11/2008	14.5	13.5	1.1	2.9	1.8	6	0.4	2.5	46.7	19.4	69	0.6	*	215
22/12/2008	18.5	10.7	0.5	3.5	3	7	2.0	2.1	83.7	37.2	125	0.8	31.5	237
13/01/2009	19.0	11.5	0.8	3	2.2	6	0.6	0.7	34.3	27.4	63	0.6	27.7	213
28/01/2009	21.4	18	0.0	4.1	1.9	6	1.0	1.1	59.3	26.6	88	0.6	25.7	212
11/02/2009	22.2	19	0.0	2.7	2.3	5	1.1	2.0	40.2	24.7	68	0.6	18.8	193
25/02/2009	20.6	15	0.1	1.8	2.1	4	0.0	0.0	37.9	23.1	61	0.8	21	261
26/03/2009	18.2	16.2	1.6	0.3	2.1	4	1.8	1.7	90.2	38.3	132	0.7	32.7	234
15/04/2009	17.0	16.5	1.0	1	2.0	4	0.0	0.5	47.0	17.5	65	0.9	19.8	189
7/05/2009	15.0	12.5	0.8	2	2.2	5	0.0	0.3	42.1	22.6	65	1.4	25.5	248
27/05/2009	12.8	17	0.8	2.4	1.8	5	0.0	0.5	46.9	20.6	68	1.2	16.8	161.5

### Whakaipo Bay (Near-shore)

10-m integrated tube sample data

Date Collected	Temp. °C	Secchi m	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	PC mg m <sup>-3</sup>
21/02/2007	20.3	15.5	1.1			7	1.4	0.7			100	0.4		
21/03/2007	18.6	16.4	1			9	2.5	<1			81	0.7		
3/04/2007	18.2	19	1.1			7	1.2	0.6			83	0.8		
19/04/2007	16.7	17	1.0			7	1.5	1.8			104	1.0		
8/05/2007	16.1	17	0.6			5	1.4	0.4			83	1.3		
22/05/2007	15.3	19	<1	4.6	1.4	6	<1	<1	46.5	20.5	67	0.8	25	157
14/06/2007	13.7	14.5	0.8	3.2	2	6	2.8	0.9	51.7	25.6	81	1.1	20.4	160
27/06/2007	12.3	16.5	0.3			4	0	0.7			73	1.2		
18/07/2007	11.5	15	0.7			3	0.8	0.4			59	1.7		
8/08/2007	11.2	12	1.0			4	1.3	0.2			57	1.6		
23/08/2007	11.2	10	1.2			5	0.2	0.1			66	1.9		
11/09/2007	11.2	10	1.4			7	0.3	0.0			67	1.2		
9/10/2007	12.6	14	1.8			5	0.0	1.5			83	1.0		
30/10/2007	13.6	16	1.9			5	0.2	1.1			70	0.6		
15/11/2007	14.3	7.5	1.7			6	0.0	0.9			88	0.7		
4/12/2007	16.9	15.5	1			6	1	3			78	0.5		
20/12/2007	17.5	14.5	1			6	<1	<1			60	0.9		
17/01/2008	21.6	21	1			5	<1	<1			75	0.2		
31/01/2008	20.6	21	1.1			3	2.2	0.7			62	0.3		
14/02/2008	20.4	21	0.9			4	4.0	1.0			75	0.4		
27/02/2008	19.4	20.5	1.4			3	0.5	0.5			84	0.5		
13/03/2008	19.2	16.5	1.7	1	2.3	5	1.9	0.3	50.2	26.6	79	0.3	18.7	181
26/03/2008	19.2	16.5	1.1	1.1	1.8	4	2.1	0.5	38.9	24.5	66	0.6	16.1	165
17/04/2008	18.2	15.8	0.5	1.6	0.9	3	1.7	1.1	49.5	8.7	61	0.7	11.1	143
7/05/2008	15.8	14.5	0.8	0.6	1.6	3	0.1	0.3	50.1	25.5	76	0.7	27.1	225
22/05/2008	14.8	15.5	0.5	2.1	1.4	4	2.5	0.4	55.9	33.2	92	1.0	32.4	228
5/06/2008	13.6	15	0.1	2	1.9	4	0.0	0.2	23.0	23.8	47	1.1	23.8	205
19/06/2008	12.8	15.5	0.9	3.2	1.9	6	2.1	1.1	31.5	28.3	63	1.7	23.6	203.5
1/07/2008	12.0	13.5	1.4	1.4	2.2	5	1.1	0.9	29.0	29	60	2.0	23.5	204
15/07/2008	11.6	12.5	1.1	1.9	3	6	0.0	0.6	30.6	33.8	65	2.1	26.8	237
7/08/2008	11.1	10.5	1.1	2	2.9	6	0.5	0.0	21.8	29.7	52	3.6	32.9	276
20/08/2008	10.8	14	0.9	3.7	2.4	7	0.0	0.0	24.9	28.1	53	1.3	29	210
4/09/2008	11.0	13.5	1.5	1.6	2.9	6	0.0	4.2	9.4	34.4	48	1.0	46.5	176
16/09/2008	11.7	13.5	1.3	3.4	2.3	7	0.0	0.0	25.6	24.4	50	0.9	23.9	208
14/10/2008	12.8	10.8	0.4	1.3	2.3	4	0.0	0.0	46.2	24.8	71	1.0	24.4	196
4/11/2008	13.8	11.2	1.1	2.3	2.4	6	1.2	2.2	70.4	27.2	101	0.9	24.3	220
26/11/2008	15.1	12	1.2	2.4	1.7	5	0.1	0.0	52.8	18.1	71	0.7	*	185
22/12/2008	18.8	12	0.3	2.8	1.9	5	0	0.0	49.6	20.4	70	0.5	15.7	180.5
13/01/2009	18.7	13	0.3	2.5	2.2	5	4.0	1.4	33.6	27	66	0.8	24.9	203.5
28/01/2009	21.6	15	0.2	3.1	1.7	5	0.9	0.3	75.7	22.1	99	0.5	22.1	154
11/02/2009	22.0	19	0.2	1.9	1.9	4	0.9	0.0	30.2	22.9	54	0.4	14.1	166.5
25/02/2009	20.8	15.5	0.2	2.4	2.4	5	0.8	0.0	41.8	23.4	66	0.6	16.2	90.5
26/03/2009	18.3	16.5	1.5	0.5	2.0	4	0.0	1.9	50.9	20.2	73	0.6	23.9	144
15/04/2009	16.9	16	1.2	0.6	2.2	4	1.4	0.2	43.3	20.1	65	0.8	23.1	178
7/05/2009	15.0	17	0.7	1.4	1.9	4	0.0	0.6	44.5	17.9	63	1.3	20.2	238
27/05/2009	12.6	18	1.3	2.9	1.8	6	0.0	0.3	46.4	19.3	66	1.3	17.3	167

### Acacia Bay (Near-shore)

10-m integrated tube sample data

Date Collected	Temp. °C	Secchi m	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>
21/02/2007	19.8	16	<1	2.3	1.7	4	<1	<1	53.4	18.6	72	0.4
21/03/2007	19.0	13.2	2	0.2	1.8	4	<1	2	53.1	18.9	72	0.8
3/04/2007	18.4	17	1.2	0.9	1.9	4	0.8	0.2	54.8	19.2	75	0.8
19/04/2007	16.9	17.5	0.9	1.6	2.5	5	1.4	0.4	61.9	25.3	89	0.9
8/05/2007	16.2	18	0.4	6.3	1.3	8	0.0	0.0	74.6	16.4	91	1.3
22/05/2007	15.3	15.5	0.3	3.2	1.5	5	0.2	0.0	64.6	18.2	83	0.8
14/06/2007	13.7	14	0.7	2.1	2.2	5	1.1	0.6	55.6	25.7	83	1.1
27/06/2007	12.4	15	0.8	1.3	1.9	4	1.1	0.6	27.9	21.4	51	1.2
18/07/2007	11.5	14	0.9	0.6	2.5	4	0.6	0.1	19.3	27	47	1.5
8/08/2007	11.2	13	1.1	0.3	3.6	5	0.2	0.2	33.8	22.8	57	1.3
23/08/2007	11.2	10	1.1	0.9	3	5	0.0	0.1	23.6	34.3	58	1.8
11/09/2007	11.3	9	1.4	1.6	3.0	6	0.3	0.1	39.9	32.7	73	0.8
9/10/2007	12.4	13	1.8	0.6	2.6	5	0.1	0.5	49.7	25.7	76	0.8
30/10/2007	13.7	17	1.4	1.4	2.2	5	0.1	0.2	46.7	25.0	72	0.5
15/11/2007	14.3	12.5	1	2.6	2.4	6	<1	<1	44.5	23.5	68	0.6
4/12/2007	17.2	13	1.0	0.1	1.9	3	0.0	0.1	43.5	19.4	63	0.4
20/12/2007	17.7	15	1.1	0.8	1.1	3	0.0	0.1	52.7	10.2	63	0.6
17/01/2008	22.2	18	0.6	2.8	1.6	5	2.2	0.7	80.5	18.6	102	0.3
31/01/2008	20.4	21.5	0.0	1.5	0.5	2	1.3	0.1	59.5	7.1	68	0.3
14/02/2008	20.1	20	0.0	3.3	0.7	4	2.0	0.4	83.7	6.9	93	0.6
27/02/2008	19.5	22	0.2	1.5	1.3	3	1.3	0.5	49.3	16.9	68	0.5
13/03/2008	19.1	19	1.1	0.5	1.4	3	0.7	0.3	40.1	18.9	60	0.5
26/03/2008	19.4	17.5	0.9	0.1	1	2	0.7	0.4	55.2	16.7	73	0.5
17/04/2008	17.8	16	0.1	3.3	1.6	5	2.6	0.9	88.1	17.4	109	0.7
7/05/2008	15.7	13	0.4	0.8	1.8	3	0.1	0.6	44.9	28.4	74	0.7
22/05/2008	14.9	13.1	0.3	1	1.7	3	0.0	0.0	59.3	34.7	94	1.0
5/06/2008	13.7	15	0.3	0.1	1.8	2.2	0.0	0.2	28.4	17.4	46	0.9
19/06/2008	12.9	14.5	0.6	0.1	2.2	2.9	0.4	0.2	25.2	25.2	51	1.5
1/07/2008	12.0	12.5	0.5	1.3	2.2	4	0.0	0.2	31.6	25.2	57	1.8
15/07/2008	11.6	12.5	0.8	2	2.2	5	0.0	0.4	29.6	20	50	1.4
7/08/2008	11.1	11.5	0.6	1.6	2.8	5	0.0	0.8	20.6	27.6	49	3.1
20/08/2008	10.8	14	0.6	2.2	2.2	5	0.0	0.0	23.5	22.5	46	1.3
4/09/2008	10.8	14.5	1.1	2.1	1.8	5	1.2	5.5	19.8	20.5	47	1.0
16/09/2008	11.9	13.5	0.9	2.2	1.9	5	0.7	0.1	19.7	22.5	43	0.8
14/10/2008	12.7	11.5	0.7	1	2.3	4	0.3	0.0	77.7	24	102	0.8
4/11/2008	13.8	10.5	0.5	5.3	2.1	8	0.7	0.0	40.4	23.9	65	0.9
26/11/2008	15.6	10.5	1.8	4	2.2	8	0.1	0.1	40.4	23.4	64	0.7
22/12/2008	18.8	10	0.2	4.4	2.4	7	0.0	0.0	42.9	29.1	72	0.7
13/01/2009	20.3	13	0.1	2.8	2.2	5	4.5	0.0	44.0	26.5	75	0.7
28/01/2009	21.5	14	0.4	2.5	1.9	5	1.5	0.0	42.8	22.7	67	0.5
11/02/2009	21.6	19	0.6	2.7	1.7	5	1.1	0.0	63.7	22.2	87	0.4
25/02/2009	21.0	15.5	1.0	1.3	1.7	4	0.0	1.3	37.2	20.5	59	0.6
26/03/2009	18.6	17	1.6	5	1.4	8	0.0	0.6	56.2	17.2	74	0.6
15/04/2009	17.1	17.5	1.4	0.8	1.8	4	0.5	1.1	38.1	17.3	57	0.8
7/05/2009	15.2	15	0.8	1.2	2	4	<1	<0.5	242.8	20.2	263	1.3
27/05/2009	13.0	14	1.2	2.7	2.1	6	<1	<0.5	47.2	19.8	67	1.2

### Site A Algal Species enumeration

	22/05/07 (Cells/ml)	22/05/07 (Biovol $\mu\text{m}^3$ )	14/06/07 (Cells/ml)	14/06/07 (Biovol $\mu\text{m}^3$ )	27/06/07 (Cells/ml)	27/06/07 (Biovol $\mu\text{m}^3$ )	18/07/2007 (Cells/ml)	18/07/2007 (Biovol $\mu\text{m}^3$ )	8/08/07 (Cells/ml)	8/08/07 (Biovol $\mu\text{m}^3$ )	23/08/2007 (Cells/ml)	23/08/2007 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	10	303	15	450	36	1091	17	3652	2	64	3	108
<i>Pseudanabaena limnetica</i>	0	0	0	0	0	0	0	106	0	0	0	0
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	29	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	1	6
<i>Aphanocapsa</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Phormidium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	1	15
<i>Aphanizomenon</i> sp.	0	5	0	0	0	0	1	27	2	30		
<i>Leptolyngbya</i> sp.												
<i>Lynghya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	19	561	259	20456	46	5061	12	2574	20	839	17	695
<i>Stichococcus contortus</i>	0	0	0	0	4	534	5	1073	175	0	97	1749
<i>Kirchneriella contorta</i>	0	0	7	157	0	0	1	21	0	0	0	0
<i>Botryococcus braunii</i>	0	1014600	1	38448	0	438	0	0	0	0	0	4800
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotrix gelatinosa</i>	4	342	0	0	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	1	43	11	3210	5	1605	1	293	0	0	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	5	788
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	10	634	29	1909
<i>Apiocystis</i> sp.					5	120	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.					0							
<i>Dicyosphaerium</i> sp.									0	0		
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	0	0	10	3173	14	4414	81	25087	275	77123	292	81787
<i>Aulacoseira granulata</i>	0	0	22	6760	25	7863	94	29167	0	0	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	8	5590	0	0	0	0	0	0	52	13436	11	2777
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	0	3	427	0	71	3	468	14	2184	11	1709
<i>Fragilaria crotonensis</i>	6	2294	37	13382	0	33	107	109152	57	20419	27	9750
<i>Nitzschia</i> sp.	1	155	14	5559	3	1042	2	952	0	0	5	2083
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	1	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	3	1335	1	668	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	1	731	1	551	1	201
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicorns</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	1	256	0	0	0	0	0	0	21	1266	2	126
<i>Cryptomonas</i> sp.	0	0	1	267	1	196	1	293	0	0	1	77
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	1	11748	0	0	0	0	0	0	0	1463	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	4450	0	0	0	12188	1	13350
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	50	2138	381	16227	177	7521	97	4133	153	6582	296	10354







**Site A Algal Species enumeration**

	15/07/2008 (Cells/ml)	15/07/2008 (Biovol $\mu\text{m}^3$ )	7/08/2008 (Cells/ml)	7/08/2008 (Biovol $\mu\text{m}^3$ )	20/08/2008 (Cells/ml)	20/08/2008 (Biovol $\mu\text{m}^3$ )	4/09/2008 (Cells/ml)	4/09/2008 (Biovol $\mu\text{m}^3$ )	16/09/2008 (Cells/ml)	16/09/2008 (Biovol $\mu\text{m}^3$ )	14/10/2008 (Cells/ml)	14/10/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	9.8	403	0.8	32	0.2	7	0.9	37	0.0	0	0.0	0
<i>Pseudanabaena limnetica</i>	2.8	53	0.3	5	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.1	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	8.9	581
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf									0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolingbya</i> sp.									0.0	0	0.0	0
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	1.4	16	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>			0.0	0								
<i>Actinastrum hantschii</i>	0	0	0.0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0	0	73	3047	73	3071	130	5479	94	3956	4	172
<i>Stichococcus contortus</i>	0	0	0.0	0	0	0	26	474	12	211	0	0
<i>Kirchneriella contorta</i>	0	0	0.0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.1	226456	0.0	5413	0	0	0.0	17746	0.0	218	0.0	0
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	1	123
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakothrix gelatinosa</i>	0	0	0	0	0	0	0	4	369	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	9	2246	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	7	1797	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	5	665	7	997	0	0	14	1994	8	1163
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	10	1412	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Paulschultzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.									0	0	0	0
<i>Crucigeniella</i> sp.									0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>			0	0								
<i>Asterionella formosa</i>	102	28501	191	53399	79	22113	94	26208	64	18018	42	11794
<i>Aulacoseira granulata</i>	35	10700	151	46788	0	0	18	5622	15	4534	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	57	14754	0	0	0	0	1	304
<i>Aulacoseira</i> sp.	0	0	0	0	0	0	0	0	12	0	0	0
<i>Cyclotella stelligera</i>	1	94	1	187	12	1872	18	2902	15	2340	2	374
<i>Fragilaria crotonensis</i>	30	10890	18	6283	49	17592	59	20943	37	13194	33	11728
<i>Nitzschia</i> sp.	4	1597	1	456	0	0	2	684	0	0	0	0
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	1	230	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>									1	306	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>			0	0								
<i>Closterium aciculare</i>	0	0	0	0	0	0	2	1051	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	1	441	0	0	0	0	1	441	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>			0	0								
<i>Dinobryon</i> sp.	0	0	0	0	0	0	20	1208	0	0	53	3106
<i>Cryptomonas</i> sp.	2	337	0	0	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>			0	0								
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp.1	6	2048	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp.2	1	14625	0	0	0	0	0	0	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>			0	0								
Flagellates < 5 $\mu\text{m}$ /unicells	115	4013	87	3030	207	7228	104	3645	113	3972	68	2375





### Site A Algal Species enumeration

	26/03/2009 (Cells/ml)	26/03/2009 (Biovol $\mu\text{m}^3$ )	15/04/2009 (Cells/ml)	15/04/2009 (Biovol $\mu\text{m}^3$ )	7/05/2009 (Cells/ml)	7/05/2009 (Biovol $\mu\text{m}^3$ )	27/05/2009 (Cells/ml)	27/05/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>								
<i>Anabaena lemmermannii</i>	1.4	126	27.7	2495	13.6	1226	9.4	849
<i>Pseudanabaena limnetica</i>	4.4	83	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.2	88
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	2.1	188
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.3	4	0.1	1
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0	0.0	0	0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.								
c.f <i>Rivularia</i> sp.								
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	2.1	23	0.6	6
<i>Lynghya</i> sp.								
<i>Snowella</i> sp.	0.0	0	0.0	0	0.0	0	0.1	3
<b>Greens (Chlorophyceae)</b>								
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./								
<i>Ankistrodesmus falcatus</i>	0	0	1	49	5	221	14	590
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	0.0	4213	0.0	6058	0.0	15954
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0
<i>Gloocystis planctonica</i>	0	0	0	0	0	0	0	0
<i>Elakotrix gelatinosa</i>	0	0	1	114	0	0	0	0
<i>Eudorina elegans</i>	0	0	3	674	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	5	748	4	498	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>	0	0	0	0	0	0	0	0
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.	0	0	5	0	0	0	0	0
<i>Crucigeniella</i> sp	0	0	30	1969	53	3422	36	2358
<b>Diatoms (Bacillariophyceae)</b>								
<i>Asterionella formosa</i>	4	1147	11	3112	19	5242	10	2785
<i>Aulacoseira granulata</i>	8	2539	0	0	0	0	7	2176
<i>Aulacoseira granulata</i> var.								
<i>angustissima</i>	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	187	1	187	4	655	1	187
<i>Fragilaria crotonensis</i>	2	838	21	7539	8	2723	18	6492
<i>Nitzschia</i> sp.	0	0	0	0	0	0	1	456
<i>Synedra</i> sp.	1	230	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.								
<i>Cocconeis</i>	0	0	0	0	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>								
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.								
<i>variable</i>	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0
<i>Spirogyra</i> sp.	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.								
<i>gracilis</i>	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>								
<i>Dinobryon</i> sp.	0	0	11	621	13	794	8	449
<i>Cryptomonas</i> sp.	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.								
<b>Dinoflagellates (Dinophyceae)</b>								
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	1	1287	1	644	1	1287
<i>Gymnodinium</i> sp. 2	0	150	0	50	0	25	0	0
<i>Peridinium</i> sp.	0	0	1	2340	0	0	0	0
<i>Gonyaulax</i> sp.	1	1170	1	1170	0	0	1	2340
<b>Flagellates 5<math>\mu\text{m}</math></b>								
Flagellates < 5 $\mu\text{m}$ /unicells	37	1290	51	1781	145	5078	67	2334

**Site A (50 m) Algal Species enumeration**

	7/08/2008 (Cells/ml)	7/08/2008 (Biovol $\mu\text{m}^3$ )	20/08/2008 (Cells/ml)	20/08/2008 (Biovol $\mu\text{m}^3$ )	4/09/2008 (Cells/ml)	4/09/2008 (Biovol $\mu\text{m}^3$ )	16/09/2008 (Cells/ml)	16/09/2008 (Biovol $\mu\text{m}^3$ )	14/10/2008 (Cells/ml)	14/10/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>										
<i>Anabaena lemmermannii</i>	2.1	87	1.6	64	0.0	0	0.0	0	0.0	0
<i>Pseudanabaena limnetica</i>	0.2	3	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.3	18	0.2	10
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf							0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.										
c.f <i>Rivularia</i> sp.										
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.										
<b>Greens (Chlorophyceae)</b>										
<i>Actinastrum hantschii</i>	0	0	0	0	0.0	0	0.0	0	0.0	0
<i>Monoraphidium</i> sp./										
<i>Ankistrodesmus falcatus</i>	105	4423	161	6771	1.2	51	0.7	31	0.1	5
<i>Stichococcus contortus</i>	0	0	0	0	1.2	21	0.3	6	0.1	1
<i>Kirchneriella contorta</i>	0	0	0	9	0.0	0	0.0	0	0.0	0
<i>Botryococcus braunii</i>	0.0	2887	2	76508	0.0	3	0.0	205	0.0	0
<i>Chlamydomonas</i> sp.	0	0	2	454	1	227	2	341	3	568
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0
<i>Elakothrix gelatinosa</i>	0	0	0	0	0	0	0	0	4	454
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	4	498	0	0	15	2160	4	498
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	11	1578	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>										
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.							0	0	0	0
<i>Crucigeniella</i> sp							0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>										
<i>Asterionella formosa</i>	245	68468	75	21130	44	12449	31	8681	11	2948
<i>Aulacoseira granulata</i>	206	63835	0	0	15	4715	11	3264	0	0
<i>Aulacoseira granulata</i> var.										
<i>angustissima</i>	0	0	42	10799	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	4	562	15	2340	16	2527	12	1966	0	0
<i>Fragilaria crotonensis</i>	105	37697	27	9634	52	18639	53	19058	21	7539
<i>Nitzschia</i> sp.	5	1825	0	0	1	456	0	0	0	0
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	1	230
<i>Amphora</i> sp.	0	0	0	0	2	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	1	129	1	129	1	64
<i>Cymbella</i> sp.										
<i>Cocconeis</i>										
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>										
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var. <i>variable</i>										
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	1	441	1	441
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	1	80	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.										
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>										
<i>Dinobryon</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Cryptomonas</i> sp.	0	0	0	0	1	168	2	337	1	84
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.	0	0	0	0						
<b>Dinoflagellates (Dinophyceae)</b>										
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	0	0	1	205	0	0	0	0
<i>Gymnodinium</i> sp. 2	1	14625	0	0	0	0	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>										
Flagellates < 5 $\mu\text{m}$ /unicells	156	5446	105	3665	130	4566	49	1699	106	3706



**Site A (50 m) Algal Species enumeration**

	26/03/2009 (Cells/ml)	26/03/2009 (Biovol $\mu\text{m}^3$ )	15/04/2009 (Cells/ml)	15/04/2009 (Biovol $\mu\text{m}^3$ )	7/05/2009 (Cells/ml)	7/05/2009 (Biovol $\mu\text{m}^3$ )	27/05/2009 (Cells/ml)	27/05/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>								
<i>Anabaena lemmermannii</i>	31.5	2837	0.4	37	0.2	18	0.3	25
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.1	2	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	1.0	379	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.7	62
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0			0.0	0		
<i>Microcystis</i> sp.	0.0	0	0.0	0			0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.								
c.f <i>Rivularia</i> sp.								
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.								
<i>Snowella</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<b>Greens (Chlorophyceae)</b>								
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./								
<i>Ankistrodesmus falcatus</i>	5	221	4	172	8	344	9	393
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	1	226172	0	9305	0	773
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	2	0	0	0	0	0
<i>Oocystis</i> sp.	4	581	4	581	2	249	2	332
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	1	64	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0
<i>Apicocystis</i> sp.	0	0			0	0	0	0
<i>Chlorosarcinopsis</i>	0	0						
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.	0	0	0	0	0	0	0	0
<i>Crucigeniella</i> sp	0	0	2	114	4	228	16	1027
<b>Diatoms (Bacillariophyceae)</b>								
<i>Asterionella formosa</i>	9	2621	3	819	13	3767	16	4586
<i>Aulacoseira granulata</i>	5	1632	11	3264	4	1269	8	2539
<i>Aulacoseira granulata</i> var.								
<i>angustissima</i>	0	0	0	0	3	761	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	187	2	374	1	187	2	281
<i>Fragilaria crotonensis</i>	0	0	4	1257	2	628	0	0
<i>Nitzschia</i> sp.	1	456	1	228	2	684	0	0
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	1	306
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.								
<i>Cocconeis</i>	0	0	0	0	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>								
<i>Closterium aciculare</i>	1	350	0	0	1	350	0	0
<i>Closterium acutum</i> var. <i>variable</i>								
	0	0	1	221	0	0	1	441
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0
<i>Spirogyra</i> sp.			0	0				
<i>Staurastrum</i> sp.	1	80	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0
<i>Staurodesmus unicolors</i> var.								
<i>gracilis</i>	0	0			0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>								
<i>Dinobryon</i> sp.	5	311	0	0	0	0	0	0
<i>Cryptomonas</i> sp.	0	0	1	84	0	0	1	84
<i>Synura</i> sp.	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.								
<b>Dinoflagellates (Dinophyceae)</b>								
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 2	0	150	0	0	0	275	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0
<i>Gonyaulax</i> sp.	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>								
Flagellates < 5 $\mu\text{m}$ /unicells	100	3501	35	1229	91	3174	60	2109

### Whangamata Bay (near shore) Algal Species enumeration

	22/05/07 (Cells/ml)	22/05/07 (Biovol µm <sup>3</sup> )	14/06/07 (Cells/ml)	14/06/07 (Biovol µm <sup>3</sup> )	27/06/07 (Cells/ml)	27/06/07 (Biovol µm <sup>3</sup> )	18/07/2007 (Cells/ml)	18/07/2007 (Biovol µm <sup>3</sup> )	8/08/07 (Cells/ml)	8/08/07 (Biovol µm <sup>3</sup> )	23/08/2007 (Cells/ml)	23/08/2007 (Biovol µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	25	746	45	1350	77	2305	42	9134	28	1158	12	512
<i>Pseudanabaena limnetica</i>	0	0	0	0	0	0	0	0	7	0	0	0
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	7	65
<i>Aphanocapsa</i> sp.	0	0	0	0	0	0	0	0	1	7	1	19
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Phormidium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	1	18
<i>Aphanizomenon</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Leptolyngbya</i> sp.												
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	30	913	60	4734	33	7297	29	6328	27	1147	15	614
<i>Stichococcus contortus</i>	0	0	0	0	0	0	3	644	88	0	57	1021
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	2	56	27	907	
<i>Botryococcus braunii</i>	0	115344	0	12905	0	394	0	205	0	0	0	1200
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	3	256	2	456	3	684	2	499	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	1	228	6	1498	2	499	9	2396
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	1	85	11	3210	5	1605	0	2	277	3	415	
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	4	1175	0	0	0	0	0	4	672
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis Schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	10	219	0	0	0	0	29	1901	0	0
<i>Apiocystis</i> sp.					0	0	2	55	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.												
<i>Dictyosphaerium</i> sp.								0	0			
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	1	414	24	7311	15	4690	24	7556	228	63882	459	128583
<i>Aulacoseira granulata</i>	0	0	15	4690	12	3587	49	15264	2	605	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	10	6940	3	828	0	0	0	0	18	4563	8	2129
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	43	6	997	4	570	2	312	11	1716	11	1685
<i>Fragilaria crotonensis</i>	6	2103	39	14019	10	3505	109	111145	27	9599	2	838
<i>Nitzschia</i> sp.	1	155	4	1737	6	2258	3	1142	5	1901	1	456
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	1	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	1	98	0	49	0	0	0	0	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	1	350
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	244	2	735	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	1	342	0	0	0	0	0	0	5	288	6	380
<i>Cryptomonas</i> sp.	0	0	0	0	0	134	0	146	1	140	1	84
<i>Synura</i> sp.	0	0	28	7173	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp.1	1	11748	0	0	1	3210	0	0	0	0	0	0
<i>Gymnodinium</i> sp.2	0	0	2	35600	0	0	0	0	0	0	1	14625
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5µm</b>												
Flagellates < 5µm/unicells	49	2093	276	11760	197	8387	186	7912	215	9224	490	17138

**Whangamata Bay (near shore) Algal Species enumeration**

	11/09/2007 (Cells/ml)	11/09/2007 (Biovol $\mu\text{m}^3$ )	9/10/07 (Cells/ml)	9/10/07 (Biovol $\mu\text{m}^3$ )	30/10/07 (Cells/ml)	30/10/07 (Biovol $\mu\text{m}^3$ )	15/11/2007 (Cells/ml)	15/11/2007 (Biovol $\mu\text{m}^3$ )	4/12/2007 (Cells/ml)	4/12/2007 (Biovol $\mu\text{m}^3$ )	20/12/2007 (Cells/ml)	20/12/2007 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	1	34	58	2391	48	1949	9	363	5	196	18	719
<i>Pseudanabaena limnetica</i>												
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanocapsa</i> sp.	0	0	0	0	2	15	0	0	0	0	0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Phormidium</i> sp.	0	0	0	0	1	23	0	0	0	0	0	7
<i>Planktolyngbya</i> sp.	0	3										
<i>c.f Rivularia</i> sp.	0	0										
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanizomenon</i> sp.	0	0	3	48	0	6	0	0	0	0	2	36
<i>Leptolyngbya</i> sp.					211	2956					0	0
<i>Lyngbya</i> sp.					7	388						
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatulus</i>	13	565	11	442	29	1204	59	2482	177	7445	73	3071
<i>Stichococcus contortus</i>	69	1243	2	32	0	6	116	3	53	0	0	0
<i>Kirchneriella contorta</i>	47	1564	28	927	10	328	0	1	19	0	0	0
<i>Botryococcus braunii</i>	0	1120	0	0	0	0	0	0	2240	0	0	0
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotrix gelatinosa</i>	1	123	0	0	0	0	0	0	0	0	2	246
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	1	83	5	665	0	1	166	2	332	2	249	
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	7	1151	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	11	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0			1	80	3	161	0	0		
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	782	218837	183	51269	69	19328	36	9992	10	2785	0	0
<i>Aulacoseira granulata</i>	22	6710	1	181	0	0	6	1814	2	544	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	12	1966	24	3838	14	2246	5	749	1	187	6	1030
<i>Fragilaria crotonensis</i>	13	4607	0	0	15	5236	2	838	0	0	0	0
<i>Nitzschia</i> sp.	0	0	0	0	3	1141	2	684	2	913	13	5247
<i>Synedra</i> sp.	1	819	0	0	1	0	1	0	0	104	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	1	129	0	0	0	0	0	0
<i>Cymbella</i> sp.	0	0										
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	70	1	350	1	350	1	350	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	1	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	1129	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	1	3463	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	0	0	326	19259	171	10113	274	16153	73	4280	25	1450
<i>Cryptomonas</i> sp.	1	168	2	253	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	2	5265	1	3510	1	3510	4	12285	1	3510
<i>Gymnodinium</i> sp. 2	0	0	1	14625	0	7313	0	4388	0	0	1	14625
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu</math>m</b>												
Flagellates < 5 $\mu$ m/unicells	97	3378	57	1986	129	4525	168	5876	246	8620	299	10463

**Whangamata Bay (near shore) Algal Species enumeration**

	17/01/2008	17/01/2008	31/01/2008	31/01/2008	14/02/2008	14/02/2008	27/02/2008	27/02/2008	13/03/2008	13/03/2008	26/03/2008	26/03/2008
	(Cells/ml)	(Biovol µm <sup>3</sup> )	(Cells/ml)	(Biovol µm <sup>3</sup> )	(Cells/ml)	(Biovol µm <sup>3</sup> )	(Cells/ml)	(Biovol µm <sup>3</sup> )	(Cells/ml)	(Biovol µm <sup>3</sup> )	(Cells/ml)	(Biovol µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	0.2	9	5.3	216	24.4	1000	295.4	12112	127.4	5224	143.9	5900
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.5	10	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.												
<i>c.f Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.2	4	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lynghya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	17	713	0	0	0	0	0	0	0	0	0	0
<i>Stichococcus contortus</i>	14	253	0	0	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	0	0	0	0	0.0	39303	0.0	541328	0.0	97439
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	2	246	3	284	19	1966	3	284	8	860
<i>Eudorina elegans</i>	0	0	0	0	0	0	8	1947	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	27	7699	7	1966	2	504	3	901	2	606	30	8354
<i>Aulacoseira granulata</i>	1	363	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Fragilaria crotonensis</i>	0	0	5	1885	3	967	0	0	8	3002	0	0
<i>Nitzschia</i> sp.	6	2510	1	456	1	527	2	913	2	844	4	1597
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	1	64	0	0	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cerastriaria staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	0	0	1	52	11	621	60	3555	11	638	35	2036
<i>Cryptomonas</i> sp. 1	1	84	0	0	0	0	0	0	1	156	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	1	1755	11	33345	25	75600	13	38610	21	63297	49	145665
<i>Gymnodinium</i> sp. 2	1	29250	0	0	0	0	0	0	0	0	3	73125
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5µm</b>												
Flagellates < 5µm/unicells	92	3235	95	3337	41	1418	65	2273	72	2537	81	2846



**Whangamata Bay (near shore) Algal Species enumeration**

	17/04/2008 (Cells/ml)	17/04/2008 (Biovol µm <sup>3</sup> )	7/05/2008 (Cells/ml)	7/05/2008 (Biovol µm <sup>3</sup> )	22/05/2008 (Cells/ml)	22/05/2008 (Biovol µm <sup>3</sup> )	5/06/2008 (Cells/ml)	5/06/2008 (Biovol µm <sup>3</sup> )	18/06/2008 (Cells/ml)	18/06/2008 (Biovol µm <sup>3</sup> )	1/07/2008 (Cells/ml)	1/07/2008 (Biovol µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	69.7	2857	362.1	14845	11.0	453	10.5	429	15.1	621	9.0	368
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.6	12
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	1.4	29	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	1.2	24	0.0	0	0.0	0	0.0	0	1.7	32
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	17	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0	0	0	0	0	0	0	0	0	0	1	38
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.00	0	0.0	0	0.0	5413	0.0	235297	0.0	0	0	146159
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakototrix gelatinosa</i>	2	227	0	0	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	1	277	0	0	7	1797	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	4	615	9	1306	1	166	0	0	0	0	2	249
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	9	608
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	6	1818	18	5150	26	7207	8	2129	20	5569	47	13268
<i>Aulacoseira granulata</i>	0	0	3	839	6	1814	6	1814	12	3808	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	34	8822
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	0	3	433	0	0	1	94	2	281	11	1778
<i>Fragilaria crotonensis</i>	10	3486	38	13557	82	29320	180	64504	163	58222	118	42095
<i>Nitzschia</i> sp.	3	1266	2	633	1	456	0	0	1	228	3	1141
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	3	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	1	129
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	1	221
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	1	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	12	734	11	638	24	1432	70	4142	74	4349	60	3521
<i>Cryptomonas</i> sp.	1	156	0	0	0	0	1	84	3	421	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.											1	211
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	420	0	0
<i>Gymnodinium</i> sp. 1	15	43821	3	1136	37	12899	6	2048	11	3890	1	205
<i>Gymnodinium</i> sp. 2	0	0	0	6763	1	14625	1	29250	1	14625	1	29250
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5µm</b>												
Flagellates < 5µm/unicells	78	2746	259	9070	102	3563	100	3501	137	4791	144	5037

**Whangamata Bay (near shore) Algal Species enumeration**

	15/07/2008 (Cells/ml)	15/07/2008 (Biovol $\mu\text{m}^3$ )	7/08/2008 (Cells/ml)	7/08/2008 (Biovol $\mu\text{m}^3$ )	20/08/2008 (Cells/ml)	20/08/2008 (Biovol $\mu\text{m}^3$ )	4/09/2008 (Cells/ml)	4/09/2008 (Biovol $\mu\text{m}^3$ )	16/09/2008 (Cells/ml)	16/09/2008 (Biovol $\mu\text{m}^3$ )	14/10/2008 (Cells/ml)	14/10/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	5.9	242	2.2	90	1	24	0.3	11	0.0	0	0.0	0
<i>Pseudanabaena limnetica</i>	0.6	11	0.3	5	0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.6	37	7.6	491
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.8	7	0.6	5	0.0	0
<i>Heteroleibleinia</i> sp.cf									2.2	40	0.5	9
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0.0	0	0.0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0.0	0	116	4865	70	2924	126	5272	85	3590	4	159
<i>Stichococcus contortus</i>	0.0	0	0	0	17	305	80	1441	17	312	0	0
<i>Kirchneriella contorta</i>	0.0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.1	2744533	0.0	122701	0	622798	0.0	0	0.0	159	0.0	128
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	1	227	1	114
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	6	422	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	0	0	0	0	0	0	1	114	3	341
<i>Eudorina elegans</i>	0	0	0	0	8	2097	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	5	665	5	665	0	0	12	1661	15	2077
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	2	332	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	2	384	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.									0	0	0	0
<i>Crucigeniella</i> sp.									2	141	0	0
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	84	23587	350	97952	43	11957	51	14251	73	20475	52	14578
<i>Aulacoseira granulata</i>	69	21399	124	38446	0	0	16	4896	0	0	13	3990
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	59	15210	0	0	0	0	11	2890
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	187	5	749	9	1404	22	3463	15	2340	7	1123
<i>Fragilaria crotonensis</i>	41	14660	112	40211	82	29320	91	32671	25	9005	94	33718
<i>Nitzschia</i> sp.	4	1597	7	2738	1	456	0	0	0	0	1	456
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	2	918	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	1	129	6	644
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	1	350	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	2	882	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cryptomonas</i> sp.	0	0	1	168	0	0	2	253	1	84	2	337
<i>Synura</i> sp.	0	0	0	0	0	0	13	888	0	0	0	0
<i>Mallomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	9	3276	0	0	0	0	0	0	1	205	0	0
<i>Gymnodinium</i> sp. 2	1	14625	0	0	0	0	0	0	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	127	4443	171	5979	178	6245	126	4402	113	3952	19	676

**Whangamata Bay (near shore) Algal Species enumeration**

	26/11/2008 (Cells/ml)	26/11/2008 (Biovol $\mu\text{m}^3$ )	22/12/2008 (Cells/ml)	22/12/2008 (Biovol $\mu\text{m}^3$ )	13/01/2009 (Cells/ml)	13/01/2009 (Biovol $\mu\text{m}^3$ )	28/01/2009 (Cells/ml)	28/01/2009 (Biovol $\mu\text{m}^3$ )	11/02/2009 (Cells/ml)	11/02/2009 (Biovol $\mu\text{m}^3$ )	25/02/2009 (Cells/ml)	25/02/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	117.5	4817	0.9	36	2.0	176	8.8	788	2.4	217	0.0	0
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	1.9	36
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	2.1	0	1.8	161	0.0	0	0.1	8	15.3	1381
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0	0	0	0	0	0.0	0	0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	2.8	59
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.	0.0	0	0	0	0	0	0	0	0	0	0	0
c.f <i>Rivularia</i> sp.	0.0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.	0.0	0	0	0	0	0	0	0	0	0	0	0
<i>Snowella</i> sp.	0.0	0	0	0	0	0	0	0	0	0	0	0
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	8	319	70	2924	112	4717	181	7592	74	3096	33	1400
<i>Stichococcus contortus</i>	0	0	9	168	0	0	0	0	75	1358	13	232
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	5	154	0	0
<i>Botryococcus braunii</i>	0.0	0	0.0	0	0.0	0	0.0	15332	0.0	6058	0.0	7668
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakothrix gelatinosa</i>	0	0	2	246	14	1474	2	246	7	737	40	4177
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agarthianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	2	249	0	0	0	0	1	166	4	498	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	15	1673	4	450	2	257	2	193	1	64
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	3	0	0	0	32	0	2	0	9	0	0	0
<i>Dicyosphaerium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Crucigeniella</i> sp	4	228	0	0	0	0	0	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	22	6224	4	983	24	6716	33	9173	12	3440	17	4750
<i>Aulacoseira granulata</i>	0	0	1	363	0	0	0	0	0	0	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	12	1966	21	3370	1	94	0	0	1	94	1	187
<i>Fragilaria crotonensis</i>	32	11309	20	7121	26	9215	116	41677	70	25132	63	22409
<i>Nitzschia</i> sp.	2	684	6	2510	0	0	1	228	3	1141	5	1825
<i>Synedra</i> sp.	0	0	2	691	0	0	1	230	1	230	1	461
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	1	306	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	1	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	1	64	2	257	8	901
<i>Cymbella</i> sp.												
<i>Cocconeis</i>	0	0	0	0	0	0	0	0	1	612	2	918
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	1	350	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	1	221	1	221	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Spirogyra</i> sp.											9	193050
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaiti</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicorns</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	143	8422	11	621	0	0	0	0	6	380	90	5281
<i>Cryptomonas</i> sp.	1	84	1	84	1	168	0	0	1	168	1	84
<i>Synura</i> sp.	0	0	1	81	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	2	819	2	614	2	614	10	10940	18	19305	15	16088
<i>Gymnodinium</i> sp. 2	1	14625	0	0	1	14625	0	0	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	35	69030	2	3510	0	0
<i>Gonyaulax</i> sp.												
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	78	2723	192	6736	283	9910	67	2334	76	2662	44	1536

**Whangamata Bay (near shore) Algal Species enumeration**

	26/03/2009 (Cells/ml)	26/03/2009 (Biovol $\mu\text{m}^3$ )	15/04/2009 (Cells/ml)	15/04/2009 (Biovol $\mu\text{m}^3$ )	7/05/2009 (Cells/ml)	7/05/2009 (Biovol $\mu\text{m}^3$ )	27/05/2009 (Cells/ml)	27/05/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>								
<i>Anabaena lemmermannii</i>	10.4	936	5.9	41	5.0	41	15.6	41
<i>Pseudanabaena limnetica</i>	1.9	36	0.0	0	0.1	2	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.4	40	0.0	0	0.0	0	0.2	20
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.1	1	0.2	2	0.1	2
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0			0.0	0		
<i>Microcystis</i> sp.	0.0	0	0.0	0			0.0	0
<i>Phormidium</i> sp.	0.0	0	1.1	23	0.0	0	0.0	0
<i>Planktolyngbya</i> sp. c.f <i>Rivularia</i> sp.								
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.2	2	0.0	0	12.8	141
<i>Lyngbya</i> sp.								
<i>Snowella</i> sp.	0.1	3	0.2	6	0.4	9	0.0	0
<b>Greens (Chlorophyceae)</b>								
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./								
<i>Ankistrodesmus falcatus</i>	22	934	9	393	5	197	18	762
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.0	0	0.0	0	0.0	17951	0.0	0
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0
<i>Elakothrix gelatinosa</i>	0	0	1	123	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	1	300	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0
<i>Nephroclytium agardhianum</i>	0	0	0	0	0	0	0	0
<i>Nephroclytium lunatum</i>	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	2	332	20	2824	14	1994
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	2	257
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0			0	0	0	0
<i>Chlorosarcinopsis</i>	0	0						
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.			9	0	0	0	0	0
<i>Crucigeniella</i> sp.	2	152	27	1787	50	3232	55	3574
<b>Diatoms (Bacillariophyceae)</b>								
<i>Asterionella formosa</i>	0	0	6	1556	23	6388	4	1147
<i>Aulacoseira granulata</i>	2	725	2	725	1	363	5	1632
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	2	281	2	374	8	1217	3	468
<i>Fragilaria crotonensis</i>	4	1257	8	2723	20	7121	16	5655
<i>Nitzschia</i> sp.	2	684	1	456	2	913	1	228
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	1	306	0	0	0	0	0	0
<i>Eunotia</i> sp.	10	0	0	0	9	0	4	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.								
<i>Cocconeis</i>	0	0	1	306	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>								
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var. <i>variable</i>	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0
<i>Spirogyra</i> sp.	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	1	80	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var. <i>gracilis</i>	0	0			0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>								
<i>Dinobryon</i> sp.	0	0	20	1174	38	2243	7	414
<i>Cryptomonas</i> sp.	0	0	1	84	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.								
<b>Dinoflagellates (Dinophyceae)</b>								
<i>Ceratium hirundinella</i>	0	42	0	42	0	0	0	0
<i>Gymnodinium</i> sp. 1	3	3218	4	3861	3	3218	1	644
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	4875	0	1463
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0
<i>Gonyaulax</i> sp.	6	11700	2	4680	1	1170	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>								
Flagellates < 5 $\mu\text{m}$ /unicells	122	4279	85	2989	257	9009	123	4320

**Whakaipo Bay (near shore) Algal Species enumeration**

	22/05/07 (Cells/ml)	22/05/07 (Biovol $\mu\text{m}^3$ )	14/06/07 (Cells/ml)	14/06/07 (Biovol $\mu\text{m}^3$ )	27/06/07 (Cells/ml)	27/06/07 (Biovol $\mu\text{m}^3$ )	18/07/2007 (Cells/ml)	18/07/2007 (Biovol $\mu\text{m}^3$ )	8/08/07 (Cells/ml)	8/08/07 (Biovol $\mu\text{m}^3$ )	23/08/2007 (Cells/ml)	23/08/2007 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	27	803	55	1649	66	1979	232	51132	23	954	3	122
<i>Pseudanabaena limnetica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanocapsa</i> sp.	0	0	0	0	0	0	0	0	2	18	0	5
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	7
<i>Phormidium</i> sp.	0	0	0	0	4	88	0	0	0	0	0	0
<i>Planktolyngbya</i> sp.												
<i>c.f Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanizomenon</i> sp.	0	4	0	0	0	0	2	46	0	0		
<i>Leptolyngbya</i> sp.												
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantzschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	44	1330	100	7861	30	6591	11	2467	41	1720	11	442
<i>Stichococcus contortus</i>	3	587	2	490	0	0	0	0	224	0	80	1432
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	0	14240	0	0	0	2053	0	0	0	1100
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	8	641	0	0	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	1	167	0	0	0	0	0	0	0	0	1	300
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	1	85	0	0	0	0	0	0	5	692	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrifida lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	15	367	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apicocystis</i> sp.					0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.					0							
<i>Dictyosphaerium</i> sp.									0	0		
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	0	0	20	6208	24	7449	59	18437	291	81354	390	109255
<i>Aulacoseira granulata</i>	0	0	29	8967	5	1517	34	10428	0	0	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	19	13880	0	0	28	8553	0	0	0	0	4	1065
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	3	427	3	498	2	285	0	4	702	15	2434	
<i>Fragilaria crotonensis</i>	15	5257	27	9718	3	956	105	107158	56	20070	2	628
<i>Nitzschia</i> sp.	1	310	8	2953	4	1563	6	2474	6	2282	1	228
<i>Synedra</i> sp.	0	0	0	10	0	0	0	0	1	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	6	646	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	223	0	0	0	0	0	0	1	701
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	223	0	0	2	1219	3	1103	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	164	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicorns</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	3	1025	0	0	0	0	16	19305	0	0	9	518
<i>Cryptomonas</i> sp.	2	235	0	0	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	2	35244	1	3210	1	3210	0	0	4	11700	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	0	0	0	1	24375	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	65	2787	79	3373	134	5698	257	10965	228	9810	383	13411

### Whakaipo Bay (near shore) Algal Species enumeration

	11/09/2007 (Cells/ml)	11/09/2007 (Biovol $\mu\text{m}^3$ )	9/10/07 (Cells/ml)	9/10/07 (Biovol $\mu\text{m}^3$ )	30/10/07 (Cells/ml)	30/10/07 (Biovol $\mu\text{m}^3$ )	15/11/2007 (Cells/ml)	15/11/2007 (Biovol $\mu\text{m}^3$ )	4/12/2007 (Cells/ml)	4/12/2007 (Biovol $\mu\text{m}^3$ )	20/12/2007 (Cells/ml)	20/12/2007 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	4	161	13	545	100	4098	11	438	1	46	34	1409
<i>Pseudanabaena limnetica</i>												
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanocapsa</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Phormidium</i> sp.	0	0	1	19	0	0	1	15	0	0	0	0
<i>Planktolyngbya</i> sp.	0	3										
c.f <i>Rivularia</i> sp.	0	0										
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanizomenon</i> sp.	0	0	0	0	0	8	0	0	1	17	0	0
<i>Leptolyngbya</i> sp.					0	0					0	0
<i>Lyngbya</i> sp.					0	0						
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	10	418	24	1007	31	1302	59	2482	89	3735	78	3268
<i>Stichococcus contortus</i>	23	411	5	84	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	16	541	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	0	0	0	0	0	0	0	600	0	0
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	5	491
<i>Eudorina elegans</i>	0	0	6	1647	1	300	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium lunatum</i>	0	0	0	0	2	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	4	498	0	0	6	914	0	5	665	11	1495	
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	8	532	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0			0	0	0	0	0	0		
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	906	253726	168	47174	57	15889	16	4423	12	3440	0	0
<i>Aulacoseira granulata</i>	11	3446	5	1632	2	544	3	907	1	181	4	1088
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	1	304	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	9	1404	10	1591	4	655	2	281	0	0	3	468
<i>Fragilaria crotonensis</i>	6	2304	8	2932	42	15079	0	32	11519	0	0	0
<i>Nitzschia</i> sp.	2	913	0	0	0	0	1	456	6	2510	9	3422
<i>Synedra</i> sp.	1	1229	0	0	0	0	2	0	0	0	1	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	3	322	0	0	0	0
<i>Cymbella</i> sp.	0	0										
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	175	0	0	1	350	0	0	0	0	1	350
<i>Closterium acutum</i> var.												
<i>variable</i>	1	221	1	221	0	0	0	0	1	221	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	1	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	1	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicoloris</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	1	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	26	1519	173	10216	202	11942	273	16084	67	3935	16	932
<i>Cryptomonas</i> sp.	0	42	0	0	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	2	5265	0	0	0	4	10530	5	15795	
<i>Gymnodinium</i> sp. 2	0	0	1	14625	0	0	0	7313	0	1	29250	
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	129	4525	149	5221	111	3890	213	7453	215	7514	239	8354

### Whakaipo Bay (near shore) Algal Species enumeration

	17/01/2008 (Cells/ml)	17/01/2008 (Biovol $\mu\text{m}^3$ )	31/01/2008 (Cells/ml)	31/01/2008 (Biovol $\mu\text{m}^3$ )	14/02/2008 (Cells/ml)	14/02/2008 (Biovol $\mu\text{m}^3$ )	27/02/2008 (Cells/ml)	27/02/2008 (Biovol $\mu\text{m}^3$ )	13/03/2008 (Cells/ml)	13/03/2008 (Biovol $\mu\text{m}^3$ )	26/03/2008 (Cells/ml)	26/03/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	0.0	0	5.7	233	8.3	338	230.5	9450	45.0	1847	68.4	2806
<i>Pseudanabaena limnetica</i>	0.2	4	0.0	0	0.0	0	0.8	14	0.5	9	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	3.2	29	0.0	0	0.0	0	3.8	34	0.0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.2	4	0.3	5	0.0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.2	4	0.0	0	0.0	0	0.5	9	0.2	3	0.0	0
<i>Leptolyngbya</i> sp.	0.1	2	0.0	0	0.0	0	1.4	15	0.3	3	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	15	639	0	0	0	0	0	0	0	0	0	0
<i>Stichococcus contortus</i>	6	116	0	0	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	1280	0	0	0.0	4812	0.0	153015	0.0	398417	0.0	32480
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	2	227	1	123	2	246	2	246	9	909
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	1	166	0	0	0	0	0	0	0	0	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apicocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	54	15070	19	5302	0	0	4	983	23	6388	12	3333
<i>Aulacoseira granulata</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	1	304	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	94	0	0	0	0	0	0	0	0	0	0
<i>Fragilaria crotonensis</i>	18	6492	0	0	0	0	0	0	0	0	41	14526
<i>Nitzschia</i> sp.	7	2738	1	211	0	0	2	684	2	913	2	633
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	5	515	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicoloris</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	2	138	0	0	46	2708	46	2692	53	3141	3	160
<i>Cryptomonas</i> sp.	0	0	0	0	0	0	2	337	1	168	1	78
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	1	3510	11	34083	20	59400	10	29835	27	82485	31	92511
<i>Gymnodinium</i> sp. 2	0	1463	1	13525	0	0	1	14625	0	0	3	67625
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	132	4627	118	4128	48	1685	66	2293	78	2744	55	1931

**Whakaipo Bay (near shore) Algal Species enumeration**

	17/04/2008 (Cells/ml)	17/04/2008 (Biovol $\mu\text{m}^3$ )	7/05/2008 (Cells/ml)	7/05/2008 (Biovol $\mu\text{m}^3$ )	22/05/2008 (Cells/ml)	22/05/2008 (Biovol $\mu\text{m}^3$ )	5/06/2008 (Cells/ml)	5/06/2008 (Biovol $\mu\text{m}^3$ )	18/06/2008 (Cells/ml)	18/06/2008 (Biovol $\mu\text{m}^3$ )	1/07/2008 (Cells/ml)	1/07/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	78.6	3221	239.3	9809	11.4	467	14.8	608	3.2	131	8.7	358
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.2	3	0.0	0	0.0	0	0.0	0	0.4	7
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	2	0	0	0	0	0	0.0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0	0	0	0	0	0	0	0	0.0	0	1	21
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0	0.0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0.0	0	0	0
<i>Botryococcus braunii</i>	0.03	211118	0.0	100745	0.0	0	0.0	43306	0.0	194878	0	2887
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	1	114	3	341	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	4	973	0	0	0	0	1	300
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	4	615	1	166	0	0	0	0	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	12	774	0	0	0	0	0	0	0	0
<i>Apicocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	2	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	4	985	0	0	6	1638	4	1147	35	9828	26	7371
<i>Aulacoseira granulata</i>	2	503	0	0	0	0	6	1995	2	725	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	50	13081
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	0	2	346	1	94	0	47	0	0	22	3463
<i>Fragilaria crotonensis</i>	11	4067	7	2518	21	7539	139	49635	146	52148	27	9634
<i>Nitzschia</i> sp.	3	1266	3	1266	1	228	1	456	1	228	2	684
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	12	1351	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	1	221
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicoloris</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	12	734	48	2841	13	794	0	0	28	1657	17	1001
<i>Cryptomonas</i> sp.	0	0	2	312	1	84	0	42	4	590	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	16	48690	2	757	33	11671	11	3686	9	3071	1	205
<i>Gymnodinium</i> sp. 2	1	27050	1	32460	1	29250	1	14625	0	0	0	7313
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	95	3314	199	6949	56	1966	90	3153	116	4054	95	3337



**Whakaipo Bay (near shore) Algal Species enumeration**

	15/07/2008 (Cells/ml)	15/07/2008 (Biovol $\mu\text{m}^3$ )	7/08/2008 (Cells/ml)	7/08/2008 (Biovol $\mu\text{m}^3$ )	20/08/2008 (Cells/ml)	20/08/2008 (Biovol $\mu\text{m}^3$ )	4/09/2008 (Cells/ml)	4/09/2008 (Biovol $\mu\text{m}^3$ )	16/09/2008 (Cells/ml)	16/09/2008 (Biovol $\mu\text{m}^3$ )	14/10/2008 (Cells/ml)	14/10/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	35	1439	0.6	26	0.2	9	0.2	10	1.5	63	0.0	0
<i>Pseudanabaena limnetica</i>	5	89	0.4	8	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	8.4	547
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	1.7	15	0.0	0
<i>Heteroleibleinia</i> sp.cf									0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.									0.0	0	0.0	0
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0.0	0	0.0	0	0	0	2	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0.0	2	67	2801	120	5044	89	3726	60	2499	1	45
<i>Stichococcus contortus</i>	0.0	0	0	0	13	234	27	487	23	409	0	0
<i>Kirchneriella contorta</i>	0.0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.0	212922	0	0	0	76508	0.0	0	0.0	0	0.0	42
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	2	341	2	454	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	3	211	0	0	0	0
<i>Elakothrix gelatinosa</i>	0	0	0	0	0	0	0	0	1	114	6	682
<i>Eudorina elegans</i>	0	0	0	0	0	0	1	114	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	5	665	0	0	0	0	5	665	9	1329
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	6	914	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	5	304	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.									0	0	0	0
<i>Crucigeniella</i> sp.									0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	70	19492	502	140540	59	16544	56	15725	59	16544	52	14578
<i>Aulacoseira granulata</i>	91	28109	171	52954	0	0	11	3446	14	4352	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	51	13385	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	187	6	936	3	468	19	3089	19	2995	2	374
<i>Fragilaria crotonensis</i>	45	16126	61	21781	28	10053	25	8796	75	26807	16	5655
<i>Nitzschia</i> sp.	6	2282	8	3194	0	0	1	228	1	228	0	0
<i>Synedra</i> sp.	0	0	0	0	0	0	1	461	1	461	1	230
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	3	322	4	450	1	129
<i>Cymbella</i> sp.												
<i>Cocconeis</i>											1	306
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	2	662	0	0	1	221	0	0	0	0	0	0
<i>Cerasterius staurustroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	9	518	0	0	0	0	0	0	21	1243	35	2071
<i>Cryptomonas</i> sp.	2	253	0	42	0	0	1	84	1	168	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	12	4095	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	0	1	14625	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	1	14625	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	156	5446	103	3604	154	5385	84	2928	110	3849	73	2539

**Whakaipo Bay (near shore) Algal Species enumeration**

	26/11/2008 (Cells/ml)	26/11/2008 (Biovol $\mu\text{m}^3$ )	22/12/2008 (Cells/ml)	22/12/2008 (Biovol $\mu\text{m}^3$ )	13/01/2009 (Cells/ml)	13/01/2009 (Biovol $\mu\text{m}^3$ )	28/01/2009 (Cells/ml)	28/01/2009 (Biovol $\mu\text{m}^3$ )	11/02/2009 (Cells/ml)	11/02/2009 (Biovol $\mu\text{m}^3$ )	25/02/2009 (Cells/ml)	25/02/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	193.7	7943	23.7	973	15.3	1374	63.1	5681	0.0	0	0.0	0
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.3	6	0.5	10
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	2.2	196	0.1	12	9.3	836
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0					0.0	0	0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.	0.0	0										
c.f <i>Rivularia</i> sp.	0.0	0										
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.1	1	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.	0.0	0										
<i>Snowella</i> sp.	0.0	0										
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	11	467	53	2236	104	4349	167	7027	51	2138	26	1081
<i>Stichococcus contortus</i>	0	0	0	0	4	63	0	0	31	558	5	84
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.0	252396	0.0	0	0.0	0	0.0	477	0.0	388	0.0	388
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	2	246	15	1536	18	1931	12	1250	31	3238
<i>Eudorina elegans</i>	0	0	0	0	22	5691	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agarthianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	8	1080	9	1329	5	748	5	665	1	166	4	498
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	9	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	15	1673	2	193	11	1158	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apicocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	7	0	15	0	5	0	0	0	0	0
<i>Dityosphaerium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Crucigeniella</i> sp	5	342	0	0	0	0	0	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	9	2621	0	0	4	983	30	8518	8	2293	0	0
<i>Aulacoseira granulata</i>	0	0	2	544	0	0	1	181	5	1451	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	10	2586	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	187	1	187	0	0	4	562	1	94	2	374
<i>Fragilaria crotonensis</i>	44	15917	26	9215	59	20943	87	31205	21	7539	13	4607
<i>Nitzschia</i> sp.	0	0	20	7985	2	684	1	456	6	2282	3	1141
<i>Synedra</i> sp.	0	0	2	691	1	230	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	1	612	1	612
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	4	386	8	837
<i>Cymbella</i> sp.												
<i>Cocconeis</i>	0	0	0	0	0	0					2	918
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	1	221	1	441	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Spirogyra</i> sp.												
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	268	15808	36	2105	43	2520	0	0	0	0	70	4142
<i>Cryptomonas</i> sp.	1	168	0	0	0	0	1	168	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	21	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	1	205	5	1843	8	2662	4	3861	9	9653	11	11583
<i>Gymnodinium</i> sp. 2	0	0	1	14625	1	14625	0	0	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	13	26910	6	11700	0	0
<i>Gonyaulax</i> sp.												
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	65	2273	172	6020	261	9152	129	4525	50	1740	49	1699

**Whakaipo Bay (near shore) Algal Species enumeration**

	26/03/2009 (Cells/ml)	26/03/2009 (Biovol $\mu\text{m}^3$ )	15/04/2009 (Cells/ml)	15/04/2009 (Biovol $\mu\text{m}^3$ )	7/05/2009 (Cells/ml)	7/05/2009 (Biovol $\mu\text{m}^3$ )	27/05/2009 (Cells/ml)	27/05/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>								
<i>Anabaena lemmermannii</i>	6.2	560	12.7	1143	5.5	491	3.7	329
<i>Pseudanabaena limnetica</i>	0.0	0	0.2	4	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.5	45
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.1	1	0.1	1	0.0	0
<i>Aphanocapsa</i> sp.	4.2	38	1.1	10	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0			0.0	0		
<i>Microcystis</i> sp.	0.0	0	0.0	0			0.0	0
<i>Phormidium</i> sp.	0.9	20	0.2	5	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.								
c.f <i>Rivularia</i> sp.								
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.7	7	0.0	0	10.5	116	0.0	0
<i>Lyngbya</i> sp.								
<i>Snowella</i> sp.	0.0	0	0.6	15	0.0	0	0.0	0
<b>Greens (Chlorophyceae)</b>								
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./								
<i>Ankistrodesmus falcatus</i>	11	442	6	246	6	246	19	786
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.0	0	0.0	880	0.0	440	0.0	55139
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	0	0	13	3295
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	3	415	9	1329	7	997
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	5	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	2	152	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>	0	0	0	0	0	0	0	0
<i>Paulschulzia</i> sp.	2	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.			5	0	0	0	0	0
<i>Crucigeniella</i> sp	6	422	10	646	53	3460	32	2053
<b>Diatoms (Bacillariophyceae)</b>								
<i>Asterionella formosa</i>	9	2621	18	5078	13	3767	18	5078
<i>Aulacoseira granulata</i>	0	0	7	2176	0	0	0	0
<i>Aulacoseira granulata</i> var.								
<i>angustissima</i>	0	0	0	0	1	304	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	2	281	4	562	0	3	3	468
<i>Fragilaria crotonensis</i>	19	6702	27	9634	2	628	71	25341
<i>Nitzschia</i> sp.	4	1597	1	228	1	456	2	913
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0
<i>Eumotia</i> sp.	0	0	0	0	0	0	4	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.								
<i>Cocconeis</i>	1	306	0	0	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>								
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.								
<i>variable</i>	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	2	0	0	0	0	0
<i>Spirogyra</i> sp.			0	0	0	0		
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.								
<i>gracilis</i>	0	0			0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>								
<i>Dinobryon</i> sp.	0	0	13	759	63	3728	12	690
<i>Cryptomonas</i> sp.	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.								
<b>Dinoflagellates (Dinophyceae)</b>								
<i>Ceratium hirundinella</i>	0	105	0	0	0	0	0	0
<i>Gymnodinium</i> sp.1	1	1287	3	3218	0	0	0	0
<i>Gymnodinium</i> sp.2	0	125	0	0	0	7313	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0
<i>Gonyaulax</i> sp.	7	14040	3	5850	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>								
Flagellates < 5 $\mu\text{m}$ /unicells	187	6552	90	3133	174	6102	135	4709

### Acacia Bay (near shore) Algal Species enumeration

	22/05/07 (Cells/ml)	22/05/07 (Biovol $\mu\text{m}^3$ )	14/06/07 (Cells/ml)	14/06/07 (Biovol $\mu\text{m}^3$ )	27/06/07 (Cells/ml)	27/06/07 (Biovol $\mu\text{m}^3$ )	18/07/2007 (Cells/ml)	18/07/2007 (Biovol $\mu\text{m}^3$ )	8/08/07 (Cells/ml)	8/08/07 (Biovol $\mu\text{m}^3$ )	23/08/2007 (Cells/ml)	23/08/2007 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	2	69	29	856	19	578	104	22779	19	785	9	379
<i>Pseudanabaena limnetica</i>	0	0	0	0	0	0	39	9470	5	0	0	0
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanocapsa</i> sp.	0	0	0	0	0	0	0	0	6	51	1	14
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Phormidium</i> sp.	3	136	0	0	0	0	0	0	0	0	0	0
<i>Planktolyngbya</i> sp.												
cf <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanizomenon</i> sp.	0	10	0	0	0	0	0	0	0	0	0	0
<i>Leptolyngbya</i> sp.												
<i>Lynghya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	28	833	152	12003	29	6356	14	3110	28	1188	6	270
<i>Stichococcus contortus</i>	5	1057	0	0	0	0	5	1180	98	0	74	1327
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	1	32	1	22	43	1429
<i>Botryococcus braunii</i>	0	0	0	0	0	0	0	3920	0	394	0	1120
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	2	0
<i>Elakotrix gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	3	684	0	0	1	250	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	1	85	3	963	6	1926	2	585	4	554	5	665
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	6	380	0	0
<i>Apicocystis</i> sp.					5	120	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.					0							
<i>Dictyosphaerium</i> sp.									0	0		
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	1	414	64	19865	14	4276	36	11032	564	157794	470	131695
<i>Aulacoseira granulata</i>	0	0	24	7449	29	9105	15	4685	0	0	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	12	8868	0	0	0	0	0	0	6	1521	1	304
<i>Aulacoseira</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	1	85	8	1210	2	285	0	0	31	4914	11	1778
<i>Fragilaria crotonensis</i>	8	2868	1	319	18	6532	57	58314	37	13089	0	0
<i>Nitzschia</i> sp.	1	310	6	2432	6	2258	1	571	10	3803	0	0
<i>Synedra</i> sp.	0	0	0	0	0	10	0	0	1	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	2	235	73	4352	44	2643	0	0	41	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	1	64
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	1	668	1	334	0	0	0	0	1	701
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	3	1335	0	0	1	731	0	0	1	221
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	0	0	0	0	2	2136	0	0	0	0	5	276
<i>Cryptomonas</i> sp.	0	29	0	0	1	196	0	0	3	421	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	1	11748	0	0	1	3210	0	0	1	2925	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	0	0	0	0	0	1	14625
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	57	2411	326	13903	215	9162	190	8079	255	10984	367	12858

**Acacia Bay (near shore) Algal Species enumeration**

	11/09/2007 (Cells/ml)	11/09/2007 (Biovol $\mu\text{m}^3$ )	9/10/07 (Cells/ml)	9/10/07 (Biovol $\mu\text{m}^3$ )	30/10/07 (Cells/ml)	30/10/07 (Biovol $\mu\text{m}^3$ )	15/11/2007 (Cells/ml)	15/11/2007 (Biovol $\mu\text{m}^3$ )	4/12/2007 (Cells/ml)	4/12/2007 (Biovol $\mu\text{m}^3$ )	20/12/2007 (Cells/ml)	20/12/2007 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	11	449	29	1181	13	521	5	219	4	173	9	372
<i>Pseudanabaena limnetica</i>												
<i>Anabaena planktonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena flos-aquae</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Anabaena circinalis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chroococcus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanocapsa</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Phormidium</i> sp.	0	0	0	0	0	6	0	0	0	0	0	0
<i>Planktolyngbya</i> sp.	0	0										
c.f <i>Rivularia</i> sp.	0	0										
<i>Aphanothece</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanizomenon</i> sp.	3	54	1	11	0	0	0	0	6	113	3	48
<i>Leptolyngbya</i> sp.					0	0					3	34
<i>Lyngbya</i> sp.					0	0						
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	1	61	24	1007	20	860	28	1189	34	1448	105	4396
<i>Stichococcus contortus</i>	8	144	0	0	0	0	0	0	2	44	0	0
<i>Kirchneriella contorta</i>	30	1004	0	0	0	0	13	425	0	0	0	0
<i>Botryococcus braunii</i>	0	2400	0	0	0	0	0	0	0	0	0	0
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	1	112	0	0	1	123	0	0	0	0	0	0
<i>Eudorina elegans</i>	9	2187	11	2845	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	2	227	7	997	2	332	2	332	2	345	10	1438
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	3	478	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	8	0
<i>Westella botryoides</i>	4	243	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0			0	0	0	0	0	0		
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	846	236989	129	36036	85	23751	32	9009	0	0	2	473
<i>Aulacoseira granulata</i>	17	5132	5	1451	7	2176	16	4896	0	0	3	1047
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	2	608	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	16	2563	11	1685	8	1217	2	281	0	78	0	0
<i>Fragilaria crotonensis</i>	0	0	23	8168	0	0	32	11519	0	0	26	9367
<i>Nitzschia</i> sp.	0	0	0	0	0	0	0	0	1	568	25	9875
<i>Synedra</i> sp.	1	1495	1	0	1	0	0	0	0	216	0	0
<i>Amphora</i> sp.	0	0	0	0	1	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	9	0	0	0	6	0	40	10542	0	0	0	0
Small unknown diatom sp.	2	176	0	0	0	0	0	0	0	0	0	0
<i>Cymbella</i> sp.	0	0										
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	1	640	0	0	0	0	1	350	0	0	1	506
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	2	662	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	1	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	1	1335	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	21	1260	204	12046	283	16671	195	11528	35	2062	17	996
<i>Cryptomonas</i> sp.	0	0	2	253	0	0	0	0	0	0	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	1	1755	1	2633	1	3510	0	0	3	10128
<i>Gymnodinium</i> sp. 2	0	0	0	0	1	36563	0	2925	2	48545	1	21100
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	205	7177	136	4750	133	4648	204	7146	225	7867	495	17310

**Acacia Bay (near shore) Algal Species enumeration**

	17/01/2008 (Cells/ml)	17/01/2008 (Biovol $\mu\text{m}^3$ )	31/01/2008 (Cells/ml)	31/01/2008 (Biovol $\mu\text{m}^3$ )	14/02/2008 (Cells/ml)	14/02/2008 (Biovol $\mu\text{m}^3$ )	27/02/2008 (Cells/ml)	27/02/2008 (Biovol $\mu\text{m}^3$ )	13/03/2008 (Cells/ml)	13/03/2008 (Biovol $\mu\text{m}^3$ )	26/03/2008 (Cells/ml)	26/03/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	0.3	11	15.8	648	28.4	1164	158.5	6500	41.1	1686	18.0	737
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.1	3	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.												
<i>c.f Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	2.7	51	0.3	6	0.4	7	0.2	3	0.0	0	0.3	6
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	13	565	0	0	0	0	0	0	0	0	0	0
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	0	0	0.0	16240	0	0	0.0	0	0.0	330210
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakototrix gelatinosa</i>	2	246	0	0	2	223	1	123	2	256	9	983
<i>Eudorina elegans</i>	0	0	0	0	0	0	9	2246	0	0	0.3	79
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephroclytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	2	249	0	0	0	0	0	0	0	0	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp.												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	97	27027	17	4847	3	745	0	0	6	1818	26	7371
<i>Aulacoseira granulata</i>	0	0	0	0	0	0	0	0	2	671	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	2	374	1	87	0	0	0	0	0	0	0	0
<i>Fragilaria crotonensis</i>	0	0	8	2711	3	1152	0	0	24	8716	13	4817
<i>Nitzschia</i> sp.	4	1369	0	0	1	207	1	228	1	211	2	913
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	6	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	0	0	6	655	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	19	1139	5	287	20	1156	2	111	12	702	12	690
<i>Cryptomonas</i> sp.	0	0	0	0	0	0	0	0	1	78	1	84
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	878	8	22722	18	54245	12	36855	15	43821	49	147420
<i>Gymnodinium</i> sp. 2	0	7313	0	0	0	0	2	43875	1	13525	1	29250
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	165	5774	114	3976	40	1415	46	1618	45	1572	85	2989

**Acacia Bay (near shore) Algal Species enumeration**

	17/04/2008 (Cells/ml)	17/04/2008 (Biovol $\mu\text{m}^3$ )	7/05/2008 (Cells/ml)	7/05/2008 (Biovol $\mu\text{m}^3$ )	22/05/2008 (Cells/ml)	22/05/2008 (Biovol $\mu\text{m}^3$ )	5/06/2008 (Cells/ml)	5/06/2008 (Biovol $\mu\text{m}^3$ )	18/06/2008 (Cells/ml)	18/06/2008 (Biovol $\mu\text{m}^3$ )	1/07/2008 (Cells/ml)	1/07/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	43.5	1784	112.8	4625	39.4	1617	0.6	25	21.9	897	8.7	355
<i>Pseudanabaena limnetica</i>	0.0	0	2.7	51	0.0	0	0.0	0	0.8	16	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.3	2
<i>Heteroleibleinia</i> sp.cf												
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.4	8	0.0	0	0.0	0	0.8	17	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.												
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0	0	0	0	0	0	1	49	0	0	4	172
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0	0	0	6	105
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.02	43306	0.0	43306	0.0	0	0.0	20570	0.0	132625	0	44208
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakototrix gelatinosa</i>	1	61	2	184	5	491	0	0	0	0	1	123
<i>Eudorina elegans</i>	8	2097	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocystium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	2	332	0	0	6	831	0	0	12	1744
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetradon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	7	456
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>												
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.												
<i>Crucigeniella</i> sp												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	9	2457	1	164	13	3767	18	5078	24	6716	37	10483
<i>Aulacoseira granulata</i>	0	0	4	1269	0	0	0	0	2	544	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0	50	12929
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	0	2	374	0	0	0	0	0	0	7	1123
<i>Fragilaria crotonensis</i>	7	2618	11	3770	21	7539	115	41258	261	93406	53	18849
<i>Nitzschia</i> sp.	1	228	2	684	1	342	0	0	2	913	5	1825
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Ennoia</i> sp.	0	0	13	0	2	0	0	0	0	0	16	0
Small unknown diatom sp.	0	0	1	64	0	0	11	1158	20	2188	0	0
<i>Cymbella</i> sp.												
<i>Cocconeis</i>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicorns</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	10	587	8	483	15	880	42	2485	30	1760	59	3486
<i>Cryptomonas</i> sp.	4	505	0	0	0	0	1	84	1	168	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.											2	632
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	7	21060	0	0	45	15766	6	2048	14	4914	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	1	14625	2	43875	0	0	1	29250
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	68	2375	157	5508	86	3010	96	3358	101	3542	94	3276

### Acacia Bay (near shore) Algal Species enumeration

	15/07/2008 (Cells/ml)	15/07/2008 (Biovol $\mu\text{m}^3$ )	7/08/2008 (Cells/ml)	7/08/2008 (Biovol $\mu\text{m}^3$ )	20/08/2008 (Cells/ml)	20/08/2008 (Biovol $\mu\text{m}^3$ )	4/09/2008 (Cells/ml)	4/09/2008 (Biovol $\mu\text{m}^3$ )	16/09/2008 (Cells/ml)	16/09/2008 (Biovol $\mu\text{m}^3$ )	14/10/2008 (Cells/ml)	14/10/2008 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	19.8	812	1.2	47	0.3	12	0.3	10	0.1	3	0.0	0
<i>Pseudanabaena limnetica</i>	2.4	45	0.3	5	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.4	25	5.7	372
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.3	3	0.6	5	0.0	0
<i>Heteroleibleinia</i> sp.cf									0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Planktolyngbya</i> sp.									0.0	0	0.0	0
c.f <i>Rivularia</i> sp.												
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.2	3	0.0	0
<i>Lyngbya</i> sp.												
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Monoraphidium</i> sp./												
<i>Ankistrodesmus falcatus</i>	0	0	66.7	2801	1.4	60	1.4	59	1.4	58	0.2	7
<i>Stichococcus contortus</i>	0	0	0.0	0	0.2	3	1.2	22	0.1	2	0.1	2
<i>Kirchneriella contorta</i>	0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0
<i>Botryococcus braunii</i>	0.0	140745	0.0	184773	0	1097813	0.0	0	0.0	116	0.0	0
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	1	123	0	0	0	0
<i>Gloeocystis planctonica</i>	0	0	0	0	0	0	2	152	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	0	0	0	0	0	0	1	123	1	123
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	8	2097	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	5	665	4	498	0	0	14	1994	8	1163
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	8	1080	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Apocystis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.									0	0	0	0
<i>Crucigeniella</i> sp.									0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	69	19328	330	92383	68	19001	67	18673	70	19656	57	16052
<i>Aulacoseira granulata</i>	35	10881	146	45338	0	0	9	2720	18	5622	0	0
<i>Aulacoseira granulata</i> var.												
<i>angustissima</i>	0	0	19	4867	53	13841	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	0	0	9	1404	14	2246	19	3089	21	3370	4	655
<i>Fragilaria crotonensis</i>	51	18220	71	25550	80	28482	59	21152	68	24294	11	3979
<i>Nitzschia</i> sp.	5	2053	4	1369	1	228	0	0	0	0	1	228
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
Small unknown diatom sp.	0	0	0	0	0	0	1	64	0	0	2	193
<i>Cymbella</i> sp.												
<i>Cocconeis</i>											0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.												
<i>variable</i>	0	0	0	0	0	0	2	882	2	882	1	441
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicoloris</i> var.												
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon</i> sp.	22	1312	0	0	0	0	0	0	16	932	8	483
<i>Cryptomonas</i> sp.	1	84	6	842	0	0	1	168	1	84	1	168
<i>Synura</i> sp.	0	0	0	0	0	0	8	525	0	0	0	0
<i>Mallomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	9	3071	1	410	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	1	14625	0	0	0	0	0	0
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
Flagellates < 5 $\mu\text{m}$ /unicells	115	4034	99	3481	182	6368	101	3542	106	3726	129	4505





**Acacia Bay (near shore) Algal Species enumeration**

	25/02/2009 (Cells/ml)	25/02/2009 (Biovol $\mu\text{m}^3$ )	26/03/2009 (Cells/ml)	26/03/2009 (Biovol $\mu\text{m}^3$ )	15/04/2009 (Cells/ml)	15/04/2009 (Biovol $\mu\text{m}^3$ )	7/05/2009 (Cells/ml)	7/05/2009 (Biovol $\mu\text{m}^3$ )	27/05/2009 (Cells/ml)	27/05/2009 (Biovol $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>										
<i>Anabaena lemmermannii</i>	44.9	4041	3.4	41	4.3	388	1.2	41	9.7	873
<i>Pseudanabaena limnetica</i>	0.0	0	0.4	8	0.7	14	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.1	24
<i>Anabaena flos-aquae</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.5	41
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	3.1	643	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.1	1
<i>Aphanocapsa</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Heteroleibleinia</i> sp.cf	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.6	12	0.0	0	0.1	2
<i>Planktolyngbya</i> sp.										
c.f <i>Rivularia</i> sp.										
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.8	8	0.0	0
<i>Lyngbya</i> sp.										
<i>Snowella</i> sp.			0.0	0	0.0	0	1.5	32	0.0	0
<b>Greens (Chlorophyceae)</b>										
<i>Actinastrum hantschii</i>	0	0	0	0	0	0	0	0	0	0
<i>Monoraphidium</i> sp./										
<i>Ankistrodesmus falcatus</i>	4	147	8	344	6	246	11	467	0	0
<i>Stichococcus contortus</i>	0	0	3	53	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0	0	0.0	6411	0.0	0	0.0	19530	0.1	6859
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Gloeoecystis planctonica</i>	0	0	0	0	0	0	0	0	0	0
<i>Elakothrix gelatinosa</i>	48	5037	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	2	599
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	2	332	5	665	8	1163	5	665
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0
<i>Scenedesmus</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Sphaerocystis schroeteri</i>	0	0	0	0	0	0	0	0	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	11	684	0	0	0	0	0	0	0	0
<i>Apiocystis</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Chlorosarcinopsis</i>										
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	6	0
<i>Dictyosphaerium</i> sp.	0	0	0	0	0	0	22	0	0	0
<i>Crucigeniella</i> sp	0	0	0	0	26	1673	40	2586	34	2180
<b>Diatoms (Bacillariophyceae)</b>										
<i>Asterionella formosa</i>	0	0	4	1147	0	0	9	2621	14	3931
<i>Aulacoseira granulata</i>	0	0	0	0	0	0	0	0	5	1451
<i>Aulacoseira granulata</i> var.										
<i>angustissima</i>	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseria</i> sp.	0	0	0	0	0	0	11	0	0	0
<i>Cyclotella stelligera</i>	0	0	1	94	2	281	4	562	1	94
<i>Fragilaria crotonensis</i>	37	13404	22	7958	10	3456	18	6492	19	6911
<i>Nitzschia</i> sp.	2	913	1	228	0	0	0	0	3	1141
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Eunotia</i> sp.	0	0	2	0	4	0	0	0	44	0
Small unknown diatom sp.	1	129	1	64	0	0	1	64	0	0
<i>Cymbella</i> sp.										
<i>Cocconeis</i>	0	0	0	0	0	0	1	612	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>										
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var.										
<i>variable</i>	0	0	0	0	0	0	0	0	0	0
<i>Cerasterias staurastroides</i>	0	0	0	0	0	0	0	0	0	0
<i>Mougeotia</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Spirogyra</i> sp.										
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	0	0	0	0	0	0	0	0	0
<i>Staurodesmus unicornis</i> var.										
<i>gracilis</i>	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>										
<i>Dinobryon</i> sp.	142	8353	15	863	41	2416	35	2036	9	552
<i>Cryptomonas</i> sp.	0	0	0	0	0	0	2	253	0	0
<i>Synura</i> sp.	0	0	0	0	0	0	0	0	0	0
<i>Mallomonas</i> sp.										
<b>Dinoflagellates (Dinophyceae)</b>										
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	13	14157	2	1931	0	0	2	1931	1	644
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	75	0	0	0	25
<i>Peridinium</i> sp.	9	17550	1	2340	0	0	0	0	0	0
<i>Gonyaulax</i> sp.			7	14040	0	0	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>										
Flagellates < 5 $\mu\text{m}$ /unicells	121	4218	92	3235	37	1310	97	3399	119	4156