

## Central Davis Sewer District Algal ID and Enumeration Report

Prepared: January 6, 2022

Prepared By: GreenWater Laboratories

Samples: 5

1. FB1 (Collected on 6/21/21)
2. FB4 (Collected on 6/21/21)
3. FB1 (Collected on 8/5/21)
4. FB4 (Collected on 8/5/21)
5. FB1 (Collected on 10/13/21)

### Sample 1: FB1

Total cell numbers in the FB1 sample collected on 6/21/21 were 64,192 cells/mL. Blue-green algae (Cyanobacteria; 51,746 cells/mL) were the most abundant algal group in the sample accounting for 80.6% of total cell numbers. Other algal groups in the sample were diatoms (Bacillariophyceae; 4,389 cells/mL), green algae (Chlorophyta; 7,113 cells/mL), dinoflagellates (Dinophyceae; 1 cell/mL) and unknown flagellates and unicells (Unknown; 942 cells/mL). The most abundant alga in the sample was the filamentous cyanophyte *Spirulina meneghiniana* (36,756 cells/mL; Fig. 1). A total of 55 species were observed in the sample with green algae the most diverse group with 22 taxa.

Total cell numbers of potentially toxigenic cyanobacteria (PTOX Cyano) were 14,851 cells/mL (23.1% of total cell numbers). PTOX Cyano species observed in the sample included *Phormidium* sp. (8,272 cells/mL; Fig. 2), *Oscillatoria* sp. (3,259 cells/mL; Fig. 3), *Pseudanabaena* sp. (1,629 cells/mL; Fig. 4), *Phormidium* sp. (1,386 cells/mL; Fig. 5), *Pseudanabaena* sp. (210 cells/mL; Fig. 6) and *Anabaenopsis arnoldii/knipowitschii* (95 cells/mL; Fig. 7).

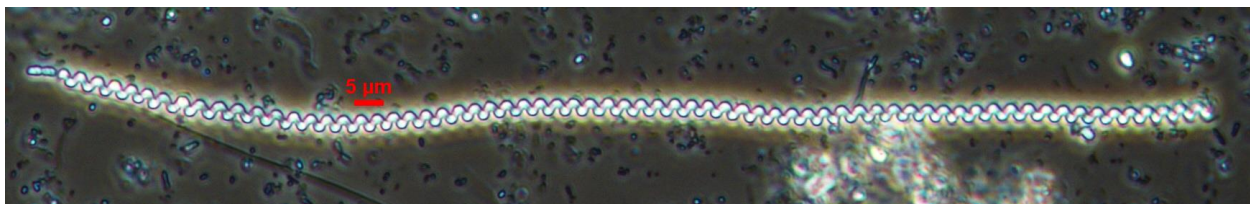


Fig. 1 *Spirulina meneghiniana* 400X (scale bar = 5 $\mu$ m)



Fig. 2 *Phormidium* sp. 400X (scale bar = 5 $\mu$ m)

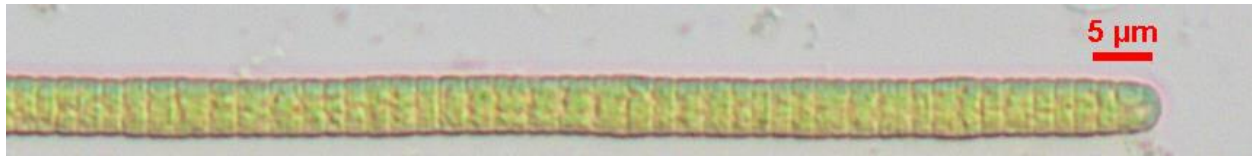


Fig. 3 *Oscillatoria* sp. 400X (scale bar = 5µm)

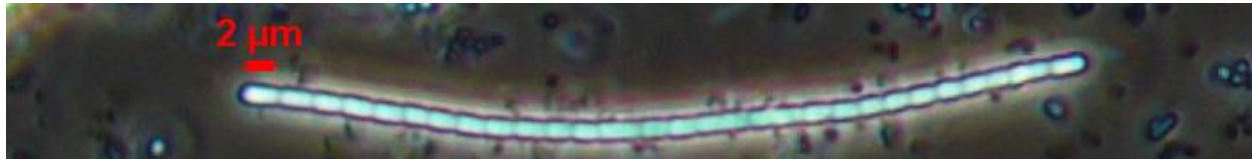


Fig. 4 *Pseudanabaena* sp. 400X (scale bar = 2µm)



Fig. 5 *Phormidium* sp. 400X (scale bar = 5µm)

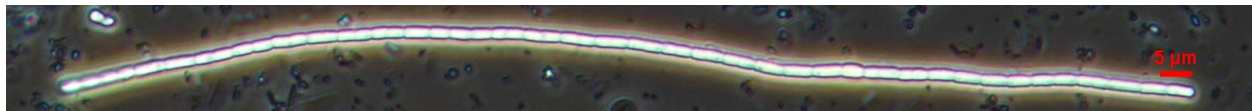


Fig. 6 *Pseudanabaena* sp. 400X (scale bar = 5µm)

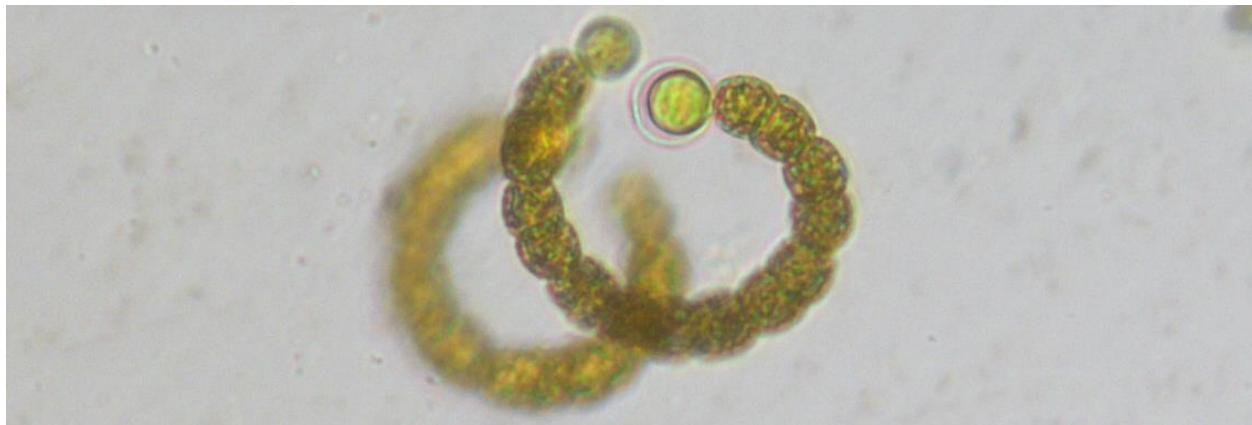


Fig. 7 *Anabaenopsis arnoldii/knipowitschi* 400X

### Sample 2: FB4

Total cell numbers in the FB4 sample collected on 6/21/21 were 1,641,186 cells/mL. Blue-green algae (Cyanobacteria; 1,084,698 cells/mL) were the most abundant algal group in the sample accounting for 66.1% of total cell numbers. Other algal groups in the sample were diatoms (Bacillariophyceae; 51,185 cells/mL), green algae (Chlorophyta; 398,270 cells/mL), golden-brown algae (Chrysophyceae; 37,487 cells/mL), euglenophytes (Euglenophyta; 6,714 cells/mL) and unknown flagellates (Unknown; 62,831 cells/mL). The most abundant algae in the sample were cyanophyte unicells and cell pairs (465,999 cells/mL; Fig. 8). A total of 59 species were observed in the sample with green algae the most diverse group with 22 taxa.

Total cell numbers of potentially toxigenic cyanobacteria (PTOX Cyano) were 158,158 cells/mL (9.6% of total cell numbers). PTOX Cyano species observed in the sample included *Pseudanabaena* sp. (157,078 cells/mL; Fig. 9) and *Oscillatoria* sp. (1,080 cells/mL; Fig. 10).



Fig. 8 cyanophyte unicell and cell pair 400X (scale bar = 2µm)

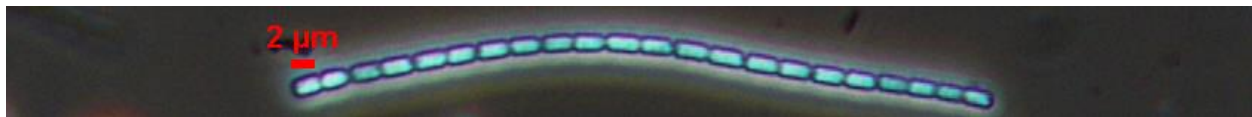


Fig. 9 *Pseudanabaena* sp. 400X (scale bar = 2µm)



Fig. 10 *Oscillatoria* sp. 400X (scale bar = 5µm)

### Sample 3: FB1

Total cell numbers in the FB1 sample collected on 8/5/21 were 27,857 cells/mL. Blue-green algae (Cyanobacteria; 11,310 cells/mL) were the most abundant algal group in the sample accounting for 40.6% of total cell numbers. Other algal groups in the sample were diatoms (Bacillariophyceae; 6,976 cells/mL), green algae (Chlorophyta; 8,743 cells/mL), cryptophytes (Cryptophyta; 314 cells/mL), dinoflagellates (Dinophyceae; 157 cells/mL), euglenophytes (Euglenophyta; 42 cells/mL) and unknown flagellates and unicells (Unknown; 314 cells/mL). The most abundant alga in the sample was the filamentous cyanophyte *Pseudanabaena* sp.

(11,310 cells/mL; Fig. 11). A total of 31 species were observed in the sample with green algae and diatoms the most diverse groups with 13 and 11 taxa respectively.

Total cell numbers of potentially toxigenic cyanobacteria (PTOX Cyano) were 11,310 cells/mL (40.6% of total cell numbers). PTOX Cyano species observed in the sample included *Pseudanabaena* sp. (11,310 cells/mL).



Fig. 11 *Pseudanabaena* sp. 400X (scale bar = 2µm)

## Sample 4: FB4

Total cell numbers in the FB4 sample collected on 8/5/21 were 105,886 cells/mL. Blue-green algae (Cyanobacteria; 77,854 cells/mL) were the most abundant algal group in the sample accounting for 73.5% of total cell numbers. Other algal groups in the sample were diatoms (Bacillariophyceae; 955 cells/mL), green algae (Chlorophyta; 24,286 cells/mL), golden-brown algae (Chrysophyceae; 785 cells/mL), cryptophytes (Cryptophyta; 238 cells/mL), dinoflagellates (Dinophyceae; 196 cells/mL), euglenophytes (Euglenophyta; 196 cells/mL) and unknown flagellates (Unknown; 1,374 cells/mL). The most abundant algae in the sample were cyanophyte unicells and cell pairs (41,233 cells/mL; Fig. 12). A total of 51 species were observed in the sample with green algae the most diverse group with 24 taxa.

Total cell numbers of potentially toxigenic cyanobacteria (PTOX Cyano) were 10,434 cells/mL (13.4% of total cell numbers). PTOX Cyano species observed in the sample included *Pseudanabaena* sp. (5,105 cells/mL; Fig. 13), *Anagnostidinema amphibium* (4,909 cells/mL; Fig. 14), *Anabaena* sp. (374 cells/mL; Fig. 15) and *Phormidium* sp. (46 cells/mL; Fig. 16).

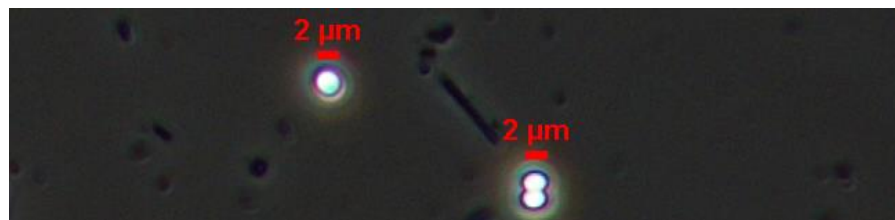


Fig. 12 cyanophyte unicell and cell pair 400X (scale bar = 2µm)

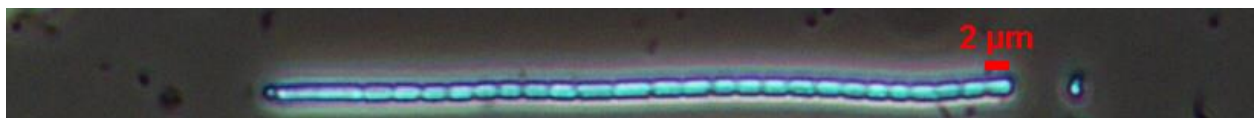


Fig. 13 *Pseudanabaena* sp. 400X (scale bar = 2µm)

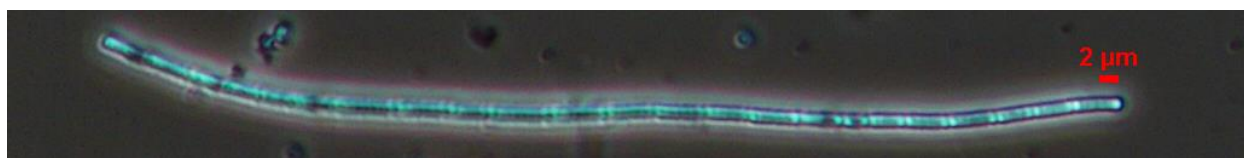


Fig. 14 *Anagnostidinema amphibium* 400X (scale bar = 2 $\mu$ m)



Fig. 15 *Anabaena* sp. 400X (scale bar = 5 $\mu$ m)

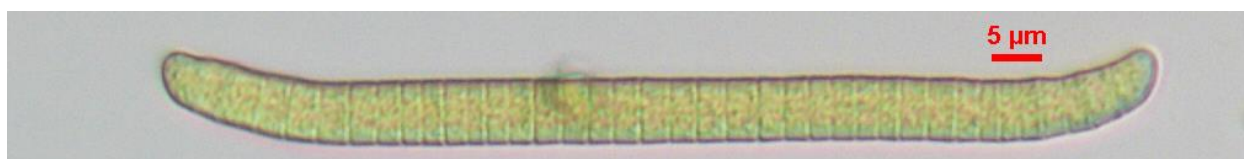


Fig. 16 *Phormidium* sp. 400X (scale bar = 5 $\mu$ m)

### Sample 5: FB1

Total cell numbers in the FB1 sample collected on 10/13/21 were 193,877 cells/mL. Green algae (Chlorophyta; 115,492 cells/mL) were the most abundant algal group in the sample accounting for 59.6% of total cell numbers. Other algal groups in the sample were diatoms (Bacillariophyceae; 53,500 cells/mL), blue-green algae (Cyanobacteria; 21,315 cells/mL), euglenophytes (Euglenophyta; 10 cells/mL), yellow-green algae (Eustigmatophyceae; 418 cells/mL) and unknown unicells and flagellates (Unknown; 3,142 cells/mL). The most abundant alga in the sample were a species of centric diatom (18,849 cells/mL; Fig. 17) and the diatom *Chaetoceros* sp. (17,279 cells/mL; Fig. 18). A total of 51 species were observed in the sample with green algae and diatoms the most diverse groups with 29 and 14 taxa respectively.

Total cell numbers of potentially toxigenic cyanobacteria (PTOX Cyano) were 10,554 cells/mL (5.4% of total cell numbers). PTOX Cyano species observed in the sample included *Pseudanabaena* sp. (7,854 cells/mL; Fig. 19) and *Phormidium* sp. (2,700 cells/mL; Fig. 20).

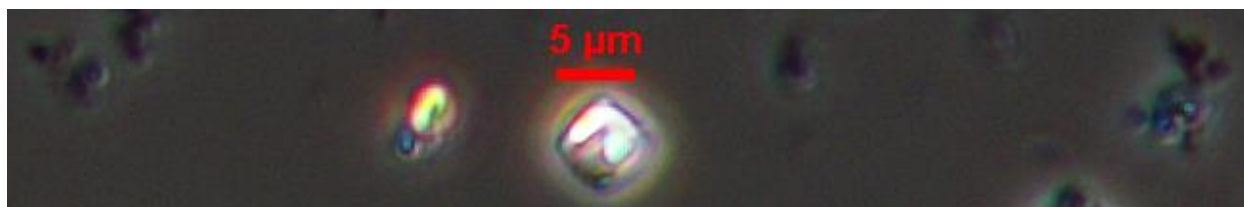


Fig. 17 *Phormidium* sp. 400X (scale bar = 5 $\mu$ m)

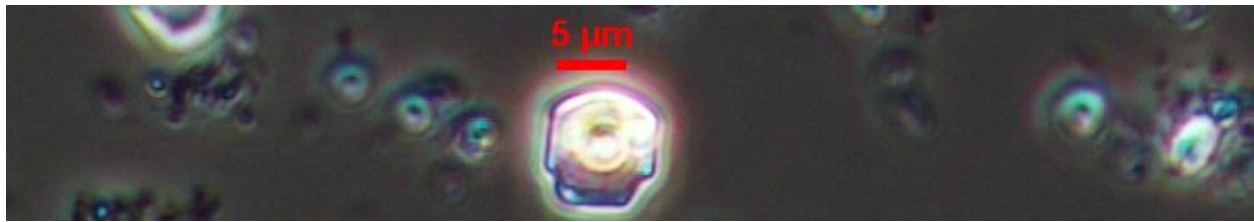


Fig. 18 *Chaetoceros* sp. 400X (scale bar = 5μm)



Fig. 19 *Pseudanabaena* sp. 400X (scale bar = 2μm)

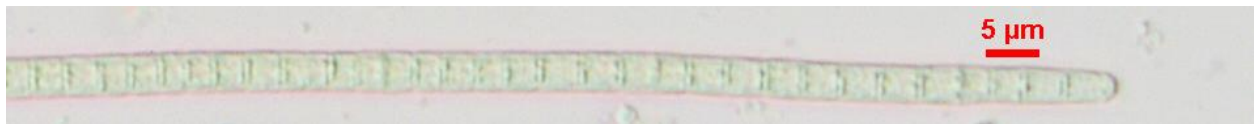


Fig. 20 *Phormidium* sp. 400X (scale bar = 5μm)