**Erken Notes for QAQC Files**

**Most up-to-date files on GEISHA FTP site (as of 24 Jul 2020)**

Erken\_QAQC\_Notes\_24Jul2020.docx

LakeMetadata\_Erken\_QAQC\_07Jan2019.xlsx

RawSondeData\_Erken\_QAQC\_20Apr2019.csv

RawWeatherData\_Erken\_Malma\_QAQC\_09Jan2019.csv

DailyLakeHFData\_Erken\_QAQC\_15Mar2019.csv

DailyWeatherData\_Erken\_Malma\_QAQC\_01Apr2019.csv

RawNutrientData\_Erken\_QAQC\_10Jul2020.csv

Hypsometry\_Erken\_QAQC\_10Jan2019.xlsx

RawPhytoData\_Erken\_QAQC\_23Jul2020.csv

SpeciesList\_Erken\_QAQC\_23Jul2020.xlsx

See the “Log” of changes made to the files since first QAQC’d. These (if any) are located at bottom of this document.

**LakeMetadata\_Erken\_QAQC\_07Jan2019.xlsx**

**RawWeatherData\_Erken\_Malma\_QAQC\_09Jan2019.csv**

* Solar radiation: 6/10/1995 through 7/12/1995 the radiation values only went to ~400-500 J/sec/m2 (most were 100-200 J/sec/m2) when typically are >700 J/sec/m2 during this time period, these values were set to NaN.
* Average wind speed: drifting from 2/12/1998 18:00 through 3/23/1998 13:00 these were set to NaN (wind direction values were already NaN for this time period); 5/7/2003 15:00 through 5/22/2003 11:00 drifting values at 0 m s-1 set to NaN; 1/3/2003 22:00 through 1/8/2003 6:00 drifting values set to NaN at 0.2 m s-1.
* Air temperature: 4/20/1997 through 6/18/1997 2:00 drifting and really high temperatures for this time period (up to 35 °C), set these to NaN.
* Air pressure: 2/14/2017 15:00 through 2/14/2017 19:00, low values set to NaN.
* Relative humidity: 1/31/2002 23:00 through 2/13/2002 12:00, drifting and weird values set to NaN; 1/11/2006 13:00 through 1/17/2006 16:00 drifting values all around 57% set to NaN; 9/28/2011 11:00 through 11/16/2011 11:00 drifting values in the 40-50%’s set to NaN; 12/27/2011 3:00 through 1/19/2012 11:00 drifting low values around 20% set to NaN; 9/4/2012 10:00 through 10/16/2012 7:00 low drifting values around 50% set to NaN; 9/23/2014 12:00 through 9/30/2014 7:00 drifting values in the 50%’s set to NaN
* Wind direction degrees: drifting and high values (close to 360) from 1/1/2002 through 4/22/2002 9:00, set to NaN; 11/11/2002 14:00 through 3/24/2003 13:00 weird drifting values close to 0 set to NaN.
* 26 cases of a wind direction degrees of 360 changed to 0.
* 831 cases of there being a wind direction with 0 average wind speed changed to NaN.

**DailyWeatherData\_Erken\_Malma\_QAQC\_01Apr2019.csv**

* Used the R package “openair”, function “timeAverage” to generate daily averages, including the vector average for wind direction. Rain data were summed for each day. See Technical Note by Stuart K. Grange “Average wind speeds and directions”.
* Some observations from raw data set had fewer than the maximum possible per day so that daily average values could be skewed if too many were missing. For any daily average values based on less than 83% (40) of available observations in a given day, these values were switched to NaN.

**RawSondeData\_Erken\_QAQC\_20Apr2019.csv**

* Water temperature: 6/29/1995 at 20 m depth had a temperature of 2.5 °C, which was about 7 °C lower than the temperature at 19 m – this was set to NaN; temperature at 19 and 20 m on 8/16/1995 were more than 2 °C higher than previous depths, these were set to NaN; 4/17/1996 temperature at 0 m much lower than others in profile (4-5 °C) lower, this was set to NaN; 8/19/1998 20 m has temperature of 1.6 °C whereas the temperature at 19 m is 13.8 °C, this was set to NaN; 7/31/2001 18 m has temperature of 4.6 °C when the value above and below is 14.6 °C, this value is probably 14.6 °C too but I set to NaN instead; 8/19/2014 at 12 m had a temperature of 1.1 °C, about 14 °C lower from point above and below, was set to NaN; 8/26/2014 depth 17 m had a temperature 2 °C higher than points above and below, this was set to NaN
* Dissolved oxygen (lots of cases where the bottom meter or two values are very low – possibly sonde was in the sediments or something, set many of these to NaN; 5/27/1998 20 m the oxygen value was quite low (1.5 mg L) compared to value at 19 m (6.9 mg L), this was set to NaN; 6/3/1998 20 m also had a much lower oxygen value (3.6 mg L) compared to at 19 m (9 mg L), this was set to NaN; 6/10/1998 20 m also with much lower oxygen value, which was set to NaN; 4/5/2000 oxygen values from 0.1 to 12 m were >20 – I changed these values to 20 so they could be used; 5/24/2000 bottom two values at 19 and 20 m very low compared to rest of hypolimnion (< 1 mg L-1) compared to 9 mg L-1, these were set to NaN; 6/12/2012 20 m oxygen reading much lower than rest of profile, set this to NaN; 11/13/2012 20 m oxygen reading too low compared to rest of hypolimnion, set this to NaN; 4/29/2013, 5/6/2013, 5/20/2013, and 5/27/2013 20 m depth value way lower than rest of profile, set these to NaN; 5/13/2013 and 5/16/2013 19 and 20 m depth way lower oxygen values, set these to NaN; 11/19/2013 through 2/25/2014 20 m depth oxygen value way lower than rest of profile – these were set to NaN; 3/4/2014 19 and 20 m depth way lower than rest of profile and were set to NaN; 3/19/2014 and 3/25/2014 20 m value again very low and set to NaN. One value on 8/29/2000 at 20 m depth had a -0.04 value, which was changed to NaN.
* Dissolved oxygen: 4/8/2014, 4/23/2014 through 5/5/2014, 5/13/2014, 5/20/2014, 5/27/2014, 6/3/2014, 6/2/2015, 6/10/2015, 12/14/2015, 4/19/2016, 5/17/2016, 5/24/2016, 5/31/2016, 11/23/2016, 4/3/2017, and 5/22/2017 20 m oxygen value much lower than rest of profile – these values were set to NaN.
* Dissolved oxygen on 5/7/2014, 5/9/2014, 4/5/2016, 4/7/2016, and 4/11/2016 at 19 and 20 m much lower than rest of profile and were set to NaN. DO on 3/21/2000, 3/23/2000, 4/5/2000, 4/18/2000, 4/26/2000, and 5/3/2000 were super high (almost 20 mg L-1), these were all set to NaN.
* Dissolved oxygen on 4/5/16 at 8m value of 43.73 was set to NaN.
* 6/29/2004 0.1m was erroneous labeled as 6/29/2004 20m, I fixed this.
* 4/18/2013 only had one depth value which was labeled as 0-2 m, I removed this date as the temperature and oxygen values were NA anyways.
* We received pH and conductivity data but they were largely from integrated depth bins (e.g., 6-20 m or 5-11 m, for example); therefore, these were not included with in this sonde file.
* All observations for variables in 1993 had 3 or fewer observations – these were all set to NaN. 6/7/1995 DO only had 1 observation at 20 m, was set to NaN. More dates to follow, any dates with 3 or fewer observations were set to NaN, or did not have a profile to at least 14 m depth.
* Double DO values per depth on July 6, 1992; the 2nd observation of each depth was removed.
* DO for April 24, 2012 looks quite different from all other dates, e.g., DO values almost reaching 20 mg L-1. DO values for this date were set to NaN.
* DO on 5/19/2015 at 1 m depth, the DO value much much lower than adjacent values (and most of water column). Changed to NaN.
* 5/3/1995 only a few DO readings, these were set to NaN.
* 4/5/1995 only had a few temperature values recorded, these were set to NaN.
* All non-buoy sites were removed (N = 3).

**DailyLakeHFData\_Erken\_QAQC\_15Mar2019.csv**

* Data were collected at 30-minute intervals from 1991 through 2017. Therefore, I calculated daily averages from the 30-minute data to save time in QAQC process.
* Some of the values look a bit odd, like doubled up for the value of temperature at adjacent depths. Seems to be a lot of these at least Sept 2, 1991 to Sept 30, 1991. See next plot at 13 and 13.5 m, and 14 and 14.5 m. Temperature from 9/2/1991 through 10/1/1991 were set to NaN. Temperature goes to NA after 10/1/1991, so possible some errors with the sensors during this timeframe listed.



* Long stretches of no data (e.g., Oct 30, 1991 to June 11, 1992). In fact, the number of observations in the file with temperature values is only 88,710 out of total rows of 247,350. So the file is 3x bigger than it needs to be. All missing data were set to NaN.

**RawNutrientData\_Erken\_QAQC\_15Mar2019.csv**

* Nutrients are typically collected in depth “bins”. For example, there are integrated samples from 16-20 m, 0-15 m, etc. Therefore, depth\_m is a category.
* tp\_ug\_l: 9/17/2002 16-20 m depth bin, high value of 430 µg L-1, but to me it is probably OK because probably contained some sediments.
* tn\_ug\_l: really low values in 1991 – most below 400 µg L-1 when most other values in the time series are above 400 µg L-1; also one point on 6/29/1992 with a much higher value of 2036 µg L-1, likely some sediment in that sample. These 1991 values and the 2036 value on 6/29/1992 were set to NaN.
* Silica: two really high values on 3/9/1993 and 5/10/1993, 6509 µg L-1and 6963 µg L-1, respectively. These are about 1.5x higher than next highest values and were set to NaN.
* po4\_ug\_l: 9/17/2002 16-20 m depth bin high value of 424 µg L-1, same date as for TP. These were set to NaN.
* All negative values were changed to 0.
* Only the station ID “buoy” was included. The other stations (Bastun, Båtbryggan, and Bryggan, Hasselhorn, and Kallvik) were removed, N = 150.

**Hypsometry\_Erken\_QAQC\_10Jan2019.xlsx**

* Added this file for Schmidt stability and lake number estimates.

**RawPhytoData\_Erken\_QAQC\_23Jul2020.csv**

* All variations of “cf”, “cf.”, “sp”, “spp”, “sp.”, etc were removed
* Acanthoceros zachanriasii was mis-spelled and should be Acanthoceras zachariasii
* Acanthoceros zachariasii was mis-spelled and should be Acanthoceras zachariasii
* Achnanthes lanceolata var. minutissima has the commonly accepted name in Algaebase of Planothidium minutissimum <https://www.algaebase.org/search/species/detail/?species_id=65258&-session=abv4:AC1F22F01156c20B1EIKFFE7693A>
* Amphora ovalis var. pediculus has the commonly accepted name in Algaebase of Amphora pediculus <https://www.algaebase.org/search/species/detail/?species_id=31141&sk=0&from=results>
* Amphora perpusilla has the commonly accepted name in Algaebase of Amphora pediculus <https://www.algaebase.org/search/species/detail/?species_id=145385&sk=0&from=results>
* Anabaena cf. variabilis was changed to Anabaena variabilis, which has the commonly accepted name in Algaebase of Trichormus variabilis <https://www.algaebase.org/search/species/detail/?species_id=24464&sk=0&from=results>
* Anabeana variabilis is mis-spelled and should be Anabaena variabilis, which is commonly accepted name in Algaebase of Trichormus variabilis <https://www.algaebase.org/search/species/detail/?species_id=24464&sk=0&from=results>
* I could not find Anabaena longicellula in Algaebase, but did find *Anabaena longicellularis (*<https://www.algaebase.org/search/species/detail/?species_id=40450&sk=0&from=results>) which is now commonly accepted in Algaebase as Dolichospermum longicellulare (<https://www.algaebase.org/search/species/detail/?species_id=40450&sk=0&from=results>
* Anabeana circinalis and Anabena circinalis should both be spelled Anabaena circinalis, and is now commonly accepted in Algaebase as Dolichospermum circinale <https://www.algaebase.org/search/species/detail/?species_id=24910&sk=0&from=results>
* Anabeana cylindrical is mis-spelled and should be Anabaena cylindrica
* Anabeana lemmermannii is now commonly accepted in Algaebase as Dolichospermum lemmermannii <https://www.algaebase.org/search/species/detail/?species_id=71710&sk=0&from=results>
* Ankistrodesmus minutissimus - This name is currently regarded as a synonym of [Monoraphidium minutum (Nägeli) Komárková-Legnerová](https://www.algaebase.org/search/species/detail/?species_id=58561)
* Ankyra cf lanceolata was changed to Ankyra lanceolata - This name is currently regarded as a synonym of [Lanceola spatulifera (Korshikov) Hindák](https://www.algaebase.org/search/species/detail/?species_id=65725)
* Apanothece cf was mis-spelled and changed to Aphanothece
* Apanothece sp was mis-spelled and changed to Aphanothece
* Aphanizomenon flos-aque was mis-spelled and should be Aphanizomenon flos-aquae
* Aphanizomenon sp. (cf. klebahnii) was changed to Aphanizomenon klebahnii
* Attheya zachariasii - This name is currently regarded as a synonym of [Acanthoceras zachariasii (Brun) Simonsen](https://www.algaebase.org/search/species/detail/?species_id=30857)
* Aulacoseia sp. was mis-spelled and should be Aulacoseira
* Aulacoseira auxospora is not used because we are not counting spore cells
* Aulacoseira cyst, Aulacoseira cysta and Aulacoseria cysta were not included because we do not include cysts (also note the last one is spelled incorrectly for the genus)
* Bacillariophyta was changed to Bacillariophyceae
* big centrics was changed to Centric Diatom Large
* Birtrichia chodatti was mis-spelled and should be Bitrichia chodatii
* Ceratium hirundinella cyst is not included because we do not include cysts.
* Ceratuim hirundinella is mis-spelled and was changed to Ceratium hirundinella
* Dictyosphaerium elegans - This name is currently regarded as a synonym of [Mychonastes elegans (Bachmann) Krienitz, C.Bock, Dadheech & Proschold](https://www.algaebase.org/search/species/detail/?species_id=138836)
* cf. Woronichiniana was mis-spelled and changed to Woronichinia
* Cgrysoflagellates big was mis-spelled and changed to Chrysoflagellates (large)
* Chlamydomonas sp. very small was changed to Chlamydomonas (small)
* Chrsochromulina parva was mis-spelled and changed to Chrysochromulina parva
* Chrysococcus cf. ovoides - Chrysococcus ovoides was not found in Algaebase or WoRMS, so was just changed to the genus
* Chrysoflagellat <7 and Chrysoflagellat <7 (note one vs two spaces before < sign) were changed to Chrysoflagellates < 7 um
* Chrysoflagellate big, Chrysoflagellates big, Chrysoflagellate medium, Chrysoflagellates medium, Chrysoflagellate small, Chrysoflagellates small, and Chrysoflgellate small were changed to Chrysoflagellates (large), Chrysoflagellates (medium), and Chrysoflagellates (small) (all accordingly)
* Chrysoflagellater <7 was changed to Chrysoflagellates < 7 um
* Chrysoflagellater >7 was changed to Chrysoflagellates > 7 um
* chrysomon. big, chrysomon. medium, chrysomon. small, Chrysomonadian big, Chrysomonadina medium, and Chrysomonadina small were all changed accordingly to common terminology of Chrysomonadina (large), Chrysomonadina (medium), and Chrysomonadina (small)
* chrysophyte cysts was not included because we do not include cysts
* Chyrsoflagellate medium was mis-spelled and changed to Chrysoflagellates (medium)
* Closterium acutum var. varibile was mis-spelled and changed to Closterium acutum var. variabile (also instances where it was correctly spelled)
* Closterium big was changed to Closterium (large)
* Closterium parvulum var. tortum - This name is currently regarded as a synonym of [Closterium tortum B.M.Griffiths](https://www.algaebase.org/search/species/detail/?species_id=28271)
* Closterium sp >250 changed to Closterium > 250 um
* Coconeis sp. was mis-spelled and changed to Cocconeis
* Coelospharrium kuetzingianum was mis-spelled and changed to Coelosphaerium kuetzingianum
* Cryptomonas bigger was changed to Cryptomonas (large)
* Cryptomonas mini was changed to Cryptomonas (small)
* Cryptomonas minutus was not found in Algaebase or WoRMS. Changed to Cryptomonas minuta
* Cyclotella comta - This name is currently regarded as a synonym of [Lindavia comta (Kützing) Nakov, Gullory, Julius, Theriot & Alverson](https://www.algaebase.org/search/species/detail/?species_id=157188)
* Cyclotella kb. ocellata - This name is currently regarded as a synonym of [Pantocsekiella ocellata (Pantocsek) K.T.Kiss & Ács](https://www.algaebase.org/search/species/detail/?species_id=161389)
* Cymbella sp. big was changed to Cymbella (large)
* Dictyosphareium pulchellum was mis-spelled and changed to Dictyosphaerium pulchellum, however, This name is currently regarded as a synonym of [Mucidosphaerium pulchellum (H.C.Wood) C.Bock, Proschold & Krienitz](https://www.algaebase.org/search/species/detail/?species_id=139643)
* D. pulchellum was assumed to be Dictyosphaerium pulchellum, and This name is currently regarded as a synonym of [Mucidosphaerium pulchellum (H.C.Wood) C.Bock, Proschold & Krienitz](https://www.algaebase.org/search/species/detail/?species_id=139643)
* D. vulgare was assumed to be Diatoma vulgare, but according to WoRMS this is not accepted name anymore, and should be Diatoma vulgaris <http://www.marinespecies.org/aphia.php?p=taxdetails&id=149347>
* Diatoma elngatum was mis-spelled and should be Diatoma elongatum
* Dictyosphaerium sphagnale - This name is currently regarded as a synonym of [Mucidosphaerium sphagnale (Hindak) C.Bock, Proschold & Krienitz](https://www.algaebase.org/search/species/detail/?species_id=139642)
* Dictyosphaerium elegens (spelled incorrectly) and Dictyosphaerium elegans - This name is currently regarded as a synonym of [Mychonastes elegans (Bachmann) Krienitz, C.Bock, Dadheech & Proschold](https://www.algaebase.org/search/species/detail/?species_id=138836)
* Dinobryon cysta was not included because we do not include cysts
* Dinobryon spp.(cells) changed to Dinobryon (cells)
* Dinobryon spp.(sociale) changed to Dinobryon (colony)
* G. echinulata was changed to Gloeotrichia echinulate
* Gonatozygon kinahai was mis-spelled and changed to Gonatozygon kinahanii
* Gymnodinium cf. lacustris – could not find any species named Gymnodinium lacustris so changed to just the genus
* Gymnodinium helveticum - This name is currently regarded as a synonym of [Gyrodinium helveticum (Penard) Y.Takano & T.Horiguchi](https://www.algaebase.org/search/species/detail/?species_id=96234)
* Gymnodinium helveicum was mis-spelled and changed to Gymnodinium helveticum, but this name is currently regarded as a synonym of [Gyrodinium helveticum (Penard) Y.Takano & T.Horiguchi](https://www.algaebase.org/search/species/detail/?species_id=96234)
* Gymnodinium tenuissimum - This name is currently regarded as a synonym of [Borghiella tenuissima (Lauterborn) Moestrup, Gert Hansen & Daugberg](https://www.algaebase.org/search/species/detail/?species_id=133827)
* Katableopharis ovalis and Katablepharys ovalis were mis-spelled and changed to Katablepharis ovalis
* Katablephrys sp. was mis-spelled and changed to Katablepharis sp.
* Kephyrion rubri-claustii was mis-spelled and changed to Kephyrion rubri-claustri
* Kirschneriella lunaris was mis-spelled and changed to Kirchneriella lunaris
* Korschneriella lunaris was likely mis-printed by original taxonomist and should be Kirschneriella lunaris (from data provider)
* Two forms of same thing – Koliella sp. and Koliella sp - both were changed to just Koliella
* “Koliella sp., Ankyra sp.” was changed to Koliella
* Korshikoviella limentica was mis-spelled and changed to Korshikoviella limnetica
* Limnothrix plancotnica was mis-spelled and changed to Limnothrix planctonica
* M. pseudobraunii was changed to Monoraphidium pseudobraunii
* medium centrics was changed to Centric Diatom (medium)
* Microcystis cf. pulvera was mis-spelled and changed to Microcystis pulverea
* Microcystis virdis was mis-spelled and changed to Microcystis viridis
* Minoraphidium contortum was mis-spelled and changed to Monoraphidium contortum
* Navicula scutelloides - This name is currently regarded as a synonym of [Cavinula scutelloides (W.Smith) Lange-Bertalot](https://www.algaebase.org/search/species/detail/?species_id=50151)
* NItzschia sigmoidea was changed to Nitzschia sigmoidea
* other Chlorococcales was changed to Unidentified Chlorococcales
* other chrysophyta was changed to Unidentified Chrysophyta
* Pediastrum duplex was changed to Pediastrum duplex (only 1 space between genus and species names)
* Pennales spp. was changed to Pennate diatoms
* Peridinum aciculiferum - The type species (holotype) of the genus [*Peridinium*](https://www.algaebase.org/search/genus/detail/?genus_id=43636) is [*Peridinium* *cinctum* (O.F.Müller) Ehrenberg](https://www.algaebase.org/search/species/detail/?species_id=30413).
* Peridinum sp. was mis-spelled and should be Peridinium
* Peridium cf. umbonatum is mis-spelled and should be Peridinium cf. umbonatum, however, This name is currently regarded as a synonym of [Parvodinium umbonatum (F.Stein) Carty](https://www.algaebase.org/search/species/detail/?species_id=144864)
* Phoridinium sp. and Phormidinium were mis-spelled and changed to Phormidium
* Phormdium mucicola was mis-spelled and changed to Phormidium mucicola (which was also spelled correctly in some cases). However, This name is currently regarded as a synonym of [Pseudanabaena mucicola (Naumann & Huber-Pestalozzi) Schwabe](https://www.algaebase.org/search/species/detail/?species_id=30325)
* Planctomena lauterbornii was mis-spelled (at least once) and was changed to Planctonema lauterbornii. However, This name is currently regarded as a synonym of [Binuclearia lauterbornii (Schmidle) Proschkina-Lavrenko](https://www.algaebase.org/search/species/detail/?species_id=101378)
* Planctosphaeria gelatinosa was mis-spelled according to Algaebase and changed to Planktosphaeria gelatinosa
* Planktolyngbia limnetica was mis-spelled and changed to Planktolyngbya limnetica
* planktolyngbia sp. was mis-spelled and changed to Planktolyngbya
* Planktothrix agardii was mis-spelled and changed to Planktothrix agardhii
* Pyramnimnonas sp. was mis-spelled and changed to Pyramimonas
* Rhodomonas lacustis was mis-spelled and changed to Rhodomonas lacustris
* Scenedesmus cf. acutus - This name is currently regarded as a synonym of [Tetradesmus obliquus (Turpin) M.J.Wynne](https://www.algaebase.org/search/species/detail/?species_id=158061)
* small centrics was changed to Centric Diatom (small)
* Sphaerocystis planktonica was mis-spelled according to Algaebase and changed to Sphaerocystis planctonica
* Sphaerocystis schroeterii was mis-spelled and changed to Sphaerocystis schroeteri
* Stenopterobia pelagica - This name is currently regarded as a synonym of [Iconella pelagica (Hustedt) D.Kapustin & Kulikovskiy](https://www.algaebase.org/search/species/detail/?species_id=171264)
* Stephanodiscus astraea var. intermedia - This name is currently regarded as a synonym of [Cyclostephanos mansfeldensis Houk, Kleen & H.Tanaka](https://www.algaebase.org/search/species/detail/?species_id=167056)
* Surirella elliptica - This name is currently regarded as a synonym of [Cymatopleura elliptica (Brébisson) W.Smith](https://www.algaebase.org/search/species/detail/?species_id=33312)
* Surirella robusta var. splendida - This name is currently regarded as a synonym of [Surirella splendida (Ehrenberg) Kützing](https://www.algaebase.org/search/species/detail/?species_id=32223)
* Synchococcus sp. was mis-spelled and changed to Synechococcus
* Synechystis sp. was mis-spelled and changed to Synechocystis
* Synedra acus var. angustissima - This name is currently regarded as a synonym of [Ulnaria delicatissima var. angustissima (Grunow) Aboal & P.C.Silva](https://www.algaebase.org/search/species/detail/?species_id=87514)
* Synedra acus var. variabile was not found in Algaebase or anywhere else. Changed to Ulnaria acus
* Synedra ulna avar. danica was mis-spelled and changed to Synedra ulna avar. danica. However, This name is currently regarded as a synonym of [Ulnaria danica (Kützing) Compère & Bukhtiyarova](https://www.algaebase.org/search/species/detail/?species_id=139045)
* Synedra ulna var. spatulifera was mis-spelled and changed to Synedra ulna var. spathulifera. However, This name is currently regarded as a synonym of [Ulnaria ulna var. spathulifera (Grunow) Aboal](https://www.algaebase.org/search/species/detail/?species_id=125864)
* Erkenia subaequiciliata - This name is currently regarded as a synonym of [Chrysochromulina parva Lackey](https://www.algaebase.org/search/species/detail/?species_id=32777)
* Melosira granulata – now recognized as Aulacoseira granulata
* Anabaena circinalis - This name is currently regarded as a synonym of [Dolichospermum circinale (Rabenhorst ex Bornet & Flahault) P.Wacklin, L.Hoffmann & J.Komárek](https://www.algaebase.org/search/species/detail/?species_id=140946)
* Neocystis policocca is mis-spelled according Nico Salmaso and should be Neocystis polycocca. Also from Nico “**Neocystis polycocca** (policocca includes a typo...) (MFG 11b) is part of the confused story that has characterized taxonomy of Chlorococcales and specifically Radiococcaceae in the past 30 years (and the story is not concluded). Many clarifications were provided in the work by Krienitz et al. 2012 (DOI 10.1007/s10750-012-1079-z), where however N. polycocca was never mentioned.”
* Tabellaria fenestrata var. actinastroides was not found in Algaebase or anywhere else, so shorted to Tabellaria fenestrata
* Trachhelomonas sp. was mis-spelled and changed to Trachelomonas
* Trachidiscus sp. was mis-spelled and changed to Trachydiscus
* The species name of Trachydiscus sp. (sexangularis) was not found in Algaebase, but was likely Trachydiscus sexangulatus so was changed.
* Uroglena sp. (americana?) was changed to Uroglena americana, however, This name is currently regarded as a synonym of [Uroglenopsis americana (G.N.Calkins) Lemmermann](https://www.algaebase.org/search/species/detail/?species_id=35776)
* Xantophyta sp. was mis-spelled changed to Xanthophyta
* Anabaena flos-aquae - This name is currently regarded as a synonym of [Dolichospermum flos-aquae (Brébisson ex Bornet & Flahault) P.Wacklin, L.Hoffmann & J.Komárek](https://www.algaebase.org/search/species/detail/?species_id=136792)
* Anabaena lemmermannii - This name is currently regarded as a synonym of [Dolichospermum lemmermannii (Richter) P.Wacklin, L.Hoffmann & J.Komárek](https://www.algaebase.org/search/species/detail/?species_id=140955)
* Anabaena is now Dolichospermum
* Aphanothece clathrata - This name is currently regarded as a synonym of [Anathece clathrata (West & G.S.West) Komárek, Kastovsky & Jezberová](https://www.algaebase.org/search/species/detail/?species_id=140419)
* Chroococcus limneticus - This name is currently regarded as a synonym of [Limnococcus limneticus (Lemmermann) Komárková, Jezberová, O.Komárek & Zapomelová](https://www.algaebase.org/search/species/detail/?species_id=138670)
* Crucigenia truncata - This name is currently regarded as a synonym of [Willea truncata (G.M.Smith) D.M.John, M.J.Wynne & P.M.Tsarenko](https://www.algaebase.org/search/species/detail/?species_id=149472)
* Cryptomonas erosa/ovata was changed to Cryptomonas
* Cymatopleura solea - This name is currently regarded as a synonym of [Surirella librile (Ehrenberg) Ehrenberg](https://www.algaebase.org/search/species/detail/?species_id=50562)
* Erkenia subaequiciliata - This name is currently regarded as a synonym of [Chrysochromulina parva Lackey](https://www.algaebase.org/search/species/detail/?species_id=32777)
* Gomphosphaeria lacustris - This name is currently regarded as a synonym of [Snowella lacustris (Chodat) Komárek & Hindák](https://www.algaebase.org/search/species/detail/?species_id=30036)
* Lyngbya limnetica - This name is currently regarded as a synonym of [Planktolyngbya limnetica (Lemmermann) Komárková-Legnerová & Cronberg](https://www.algaebase.org/search/species/detail/?species_id=46671)
* Oscillatoria agardhii var. isothrix - This name is currently regarded as a synonym of [Planktothrix isothrix (Skuja) Komárek & Komárková](https://www.algaebase.org/search/species/detail/?species_id=133714)
* Pediastrum boryanum – This name is currently regarded as a synonym of [Pseudopediastrum boryanum (Turpin) E.Hegewald](https://www.algaebase.org/search/species/detail/?species_id=129247)
* Rhoicosphenia curvata - This name is currently regarded as a synonym of [Rhoicosphenia abbreviata (C.Agardh) Lange-Bertalot](https://www.algaebase.org/search/species/detail/?species_id=32061)
* Scenedesmus acuminatus - This name is currently regarded as a synonym of [Tetradesmus lagerheimii M.J.Wynne & Guiry](https://www.algaebase.org/search/species/detail/?species_id=161449)
* Scenedesmus acutus - This name is currently regarded as a synonym of [Tetradesmus obliquus (Turpin) M.J.Wynne](https://www.algaebase.org/search/species/detail/?species_id=158061)
* Scenedesmus costatogranulatus - This name is currently regarded as a synonym of [Desmodesmus costatogranulatus (Skuja) E.Hegewald](https://www.algaebase.org/search/species/detail/?species_id=42401)
* Scenedesmus opoliensis - This name is currently regarded as a synonym of [Desmodesmus opoliensis (P.G.Richter) E.Hegewald](https://www.algaebase.org/search/species/detail/?species_id=42427)
* Schroederia robusta - This name is currently regarded as a synonym of [Pseudoschroederia robusta (Korshikov) E.Hegewald & E.Schnepf](https://www.algaebase.org/search/species/detail/?species_id=63293)
* Synedra acus - This name is currently regarded as a synonym of [Ulnaria acus (Kützing) Aboal](https://www.algaebase.org/search/species/detail/?species_id=74735)
* Synedra ulna - This name is currently regarded as a synonym of [Ulnaria ulna (Nitzsch) Compère](https://www.algaebase.org/search/species/detail/?species_id=125867)
* Tetraedron regulare - This name is currently regarded as a synonym of [Tetraëdriella regularis (Kützing) Fott](https://www.algaebase.org/search/species/detail/?species_id=32380)
* Monoraphidium minutissimum should be Monoraphidium minutum (per data provider)
* NI spp. means non-indentified species (per data provider). This was changed to Unidentified species
* P. cf. umbonatum – the P is for Peridinium umbonatum - This name is currently regarded as a synonym of [Parvodinium umbonatum (F.Stein) Carty](https://www.algaebase.org/search/species/detail/?species_id=144864)
* Phytomonadeles was present in data and so was removed (per data provider)
* Anabaena longicellula should now be Dolichospermum longicellulare (per data provider)
* Anabaena varians – From data provider – “This taxa was from the samples in 1991, and it is a typo. My guess is that this is Anabaena variabilis, but I am afraid that it will not be possible to know this for sure. A suggestion is to name it as Anabaena sp.” Name was changed to Dolichospermum
* “ce” means centrales, or centric diatoms. These were changed to Centric Diatom plus the length indicators. Note there were several variations in the original taxa naming such as “ce 10-15” and “ce10-15” that were all converted to the same common name, in this case, “Centric Diatom (10-15 um)”
* “Centrales” was converted to “Centric Diatom” plus the length indicators, to be consistent.

**Log of Changes**

10 July 2020

**RawNutrientData\_Erken\_QAQC\_10Jul2020.csv**

* Depth bins got converted to dates at some point in the file transfer (probably opening the file with Excel) so converted everything back to depth bins and saved as text