



CAP System-Wide Water Quality Monitoring

Barbara Seago, CAWCD Board Member

Scott Bryan, Water Quality & Biology Administrator

CAP Expanded Water Quality Program

“The operation and maintenance of the facilities shall be performed in such manner as is practicable to maintain the quality of raw water ...”

Mission

- The Water Quality Program (Program) provides information and recommendations to CAP Operations and Maintenance to help maintain the quality of CAP water;
- The Program supports the overall goal of its Municipal Stakeholders to deliver high quality drinking water by providing a broad understanding of raw water quality conditions;
- The Program supports all other Stakeholder groups by providing valuable water quality information that helps to achieve their individual goals; and
- The Program ensures that Non-Project sources comply with established standards.



CAP System-Wide Water Quality Monitoring

2020-Current Sampling Program

- **Canal**
 - Monthly grab samples at 7 locations (~49 constituents)
 - Semi-annual grab samples at 3 locations (~265 constituents)
 - Continuous Monitoring (Real-Time) at 2 locations
 - Continuous Turbidity (Real-Time) at 5 locations
- **Lake Pleasant**
 - Monthly Grab Samples at 3 locations
 - Semi-annual Grab Samples at 1 location
 - Bi-weekly vertical profiles at 5 locations
- **Algae and Chlorophyll-a**
 - Monthly grab samples at all canal and lake sites
 - Monthly periphyton samples at all canal and lake sites
- **MIB/Geosmin (Taste and Odor)**
 - Weekly MIB/Geosmin sampling at 3 locations



CAP Priority Water Quality Constituents

General Constituents

Dissolved Oxygen
pH
Temperature

CAP Priority Constituents

Alkalinity (CaCO₃ Units)
Alpha, Gross
Aluminum, Dissolved
Aluminum, Total
Ammonia Nitrogen
Antimony
Arsenic
Barium, Total
Beryllium
Beta, Gross
Boron
Bromide
Cadmium
Calcium, Total
Chloride
Chromium
Cobalt, Total
Copper, Dissolved
Fluoride
Hexavalent Chromium

CAP Priority Constituents

Iron, Dissolved
Lead
Manganese, Total
Mercury
Molybdenum
Nickel
Nitrate
Nitrite
Perchlorate
Phosphorus, Total-P
Potassium, Total
Radium 226/228
Selenium
Silver, Total
Sodium, Total
Strontium
Sulfate
Thallium
Total Dissolved Solids (TDS)
Total Organic Carbon
Turbidity
Uranium
Vanadium
Zinc



CAP Additional Water Quality Constituents

Regulated EPA Constituents

1,1,1-Trichloroethane
 1,1,2-Trichloroethane
 1,1-Dichloroethylene
 1,2,4-Trichlorobenzene
 1,2-Dibromo-3-Chloropropane (DBCP)
 1,2-Dichlorobenzene (1,2 DCB)
 1,2-Dichloroethane
 1,2-Dichloropropane
 1,4 Dichlorobenzene (1,4 DCB)
 2,4,5-TP (Silvex)
 2,4-D
 Alachlor
 Atrazine
 Benzene
 Benzo(a)pyrene
 Carbofuran (Furadan)
 Carbon Tetrachloride
 Chlordane
 Chlorobenzene
 cis-1,2-Dichloroethylene
 Dalapon
 Di(2-Ethylhexyl) adipate
 Di(2-Ethylhexyl) phthalate
 Dichloromethane
 Dinoseb
 Diquat
 Endothall
 Endrin
 Ethyl benzene
 Ethylene Dibromide (EDB)
 Glyphosate
 Heptachlor
 Heptachlor Epoxide (isomer B)
 Hexachlorobenzene
 Hexachlorocyclopentadiene
 Lindane
 Methoxychlor
 Metolachlor
 Oxamyl
 Pentachlorophenol
 Picloram
 Simazine
 Styrene
 Tetrachloroethylene
 Toluene
 Total PCBs
 Total Trihalomethanes (TTHMs)

Toxaphene
 trans-1,2-Dichloroethylene
 Trichloroethylene
 Vinyl Chloride
 Xylenes (total)

Unregulated EPA Constituents

1,1,1,2-Tetrachloroethane
 1,1,2,2-Tetrachloroethane
 1,1-Dichloroethane
 1,1-Dichloropropene
 1,2,3-Trichlorobenzene
 1,2,3-Trichloropropane
 1,2,4-Trimethylbenzene
 1,3,5-Trimethylbenzene
 1,3-Dichlorobenzene (1,3 DCB)
 1,3-Dichloropropane
 1,3-Dichloropropene
 1,4-Dioxane
 2,2-Dichloropropane
 2,4,5-T
 2,4-DB
 2-Butanone (MEK)
 3,5-Dichlorobenzoic acid
 3-Hydroxycarbofuran
 4,4-DDD
 4,4-DDE
 4,4-DDT
 4-Methyl-2-Pentanone (MIBK)
 Acetaldehyde
 Acetochlor
 Acetochlor ethanesulfonic acid (ESA)
 Acetochlor oxanilic acid (OA)
 Acifluorfen
 Acrolein
 Alachlor ethanesulfonic acid (ESA)
 Alachlor oxanilic acid (OA)
 Aldicarb (Temik)
 Aldicarb sulfone
 Aldicarb sulfoxide
 Aldrin
 alpha-Chlordane
 Aniline
 Aroclor 1016
 Aroclor 1221
 Aroclor 1232
 Aroclor 1242
 Aroclor 1248

Aroclor 1254
 Aroclor 1260
 Baygon
 Bentazon
 Bromobenzene
 Bromochloromethane
 Bromodichloromethane
 Bromoethane
 Bromoform
 Bromomethane (Methyl Bromide)
 Carbaryl
 Carbon Disulfide
 Chlorodibromomethane
 Chloroethane
 Chloroform (Trichloromethane)
 Chloromethane (Methyl Chloride)
 Dibromomethane
 Dicamba
 Dichlorodifluoromethane
 Dichloroprop
 Dieldrin
 Di-isopropyl ether
 Equilin
 Estradiol (17-beta estradiol)
 Estriol
 Estrone
 Ethinyl estradiol (17-alpha ethinyl estradiol)
 Ethylene glycol
 Formaldehyde
 Gamma-Chlordane
 Hexachlorobutadiene
 Hexane
 Isopropylbenzene
 M/P-Xylenes
 Methanol
 Methiocarb
 Methomyl
 Methyl Tert-butyl ether (MTBE)
 Metolachlor ethanesulfonic acid (ESA)
 Metolachlor oxanilic acid (OA)
 Molinate
 Naphthalene
 N-Butylbenzene
 N-nitrosodiethylamine (NDEA)
 N-nitrosodimethylamine (NDMA)
 N-nitroso-di-n-propylamine (NDPA)
 N-nitrosopyrrolidine (NPYR)
 NEFOSAA

NMeFOSAA
 N-Propylbenzene
 o-Chlorotoluene
 o-Xylene
 Paraquat
 p-Chlorotoluene
 Perfluorobutanesulfonic acid (PFBS)
 Perfluorodecanoic acid (PFDA)
 Perfluorododecanoic acid (PFDoA)
 Perfluoroheptanoic acid (PFHpA)
 Perfluorohexanesulfonic acid (PFHxS)
 Perfluorohexanoic acid (PFHxA)
 Perfluorononanoic acid (PFNA)
 Perfluorooctanesulfonic acid (PFOS)
 Perfluorooctanoic acid (PFOA)
 Perfluorotetradecanoic acid (PFTA)
 Perfluorotridecanoic acid (PFTTrDA)
 Perfluoroundecanoic acid (PFUnA)
 p-Isopropyltoluene
 sec-Butylbenzene
 Tert-Butylbenzene
 Thiobencarb
 Total DCPA Mono- and Di-acid Degradate
 Total Kjeldahl Nitrogen
 trans-1,3-Dichloropropene
 trans-Nonachlor
 Trichlorofluoromethane-Freon 11

EPA Disinfection Byproducts

Bromochloroacetic Acid
 Bromodichloroacetic Acid
 Chlorodibromoacetic Acid
 Dibromoacetic Acid
 Dichloroacetic Acid
 Monobromoacetic Acid
 Monochloroacetic Acid
 Tribromoacetic Acid
 Trichloroacetic Acid
 Total Haloacetic Acids (HAA9)

Microbiology

Coliform, Total
 Cryptosporidium
 E. Coli
 Giardia
 HPC

CAP Water Quality Sampling

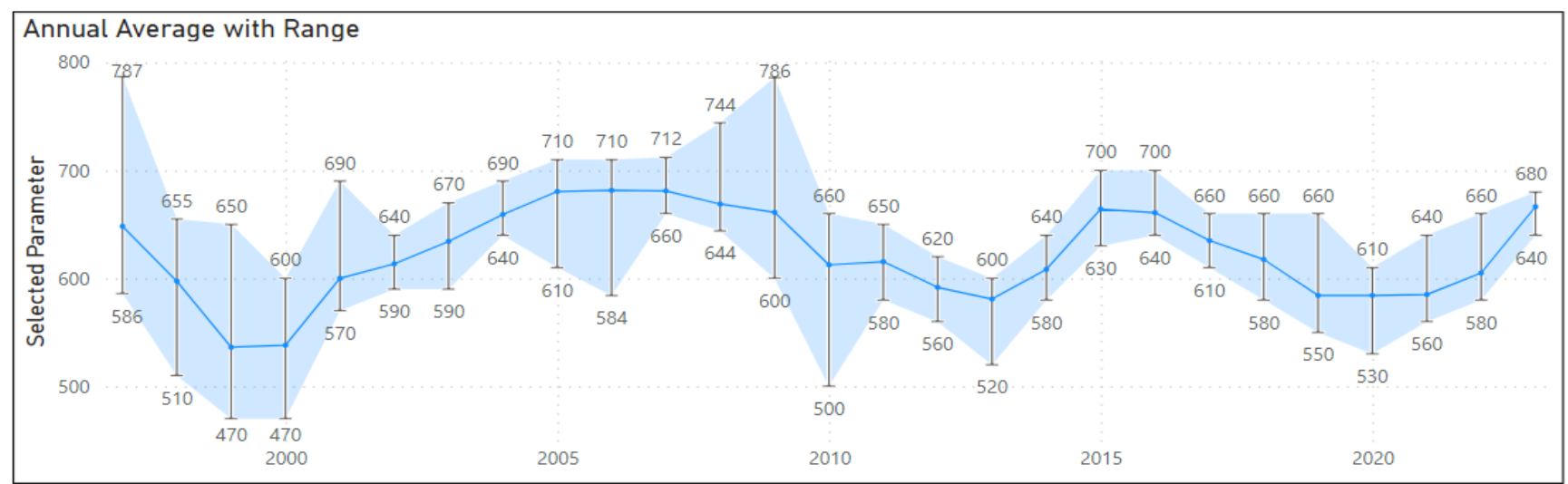
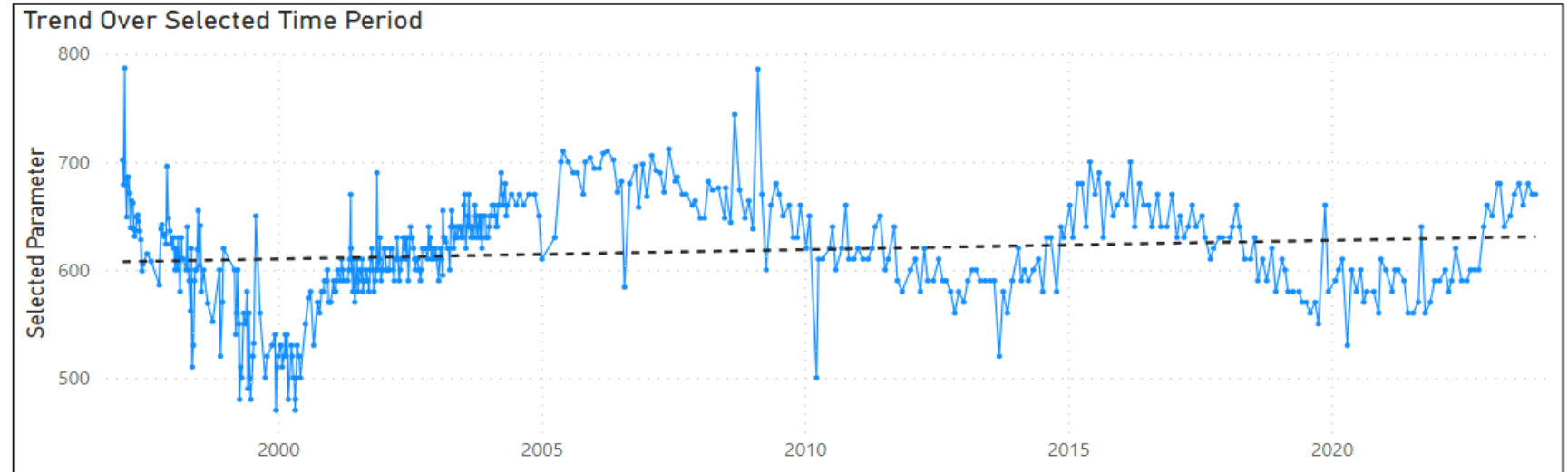


CAP Water Quality Data

MWP	WAD	RWCD
LHQ	LPT	BRD
HSY	LPP	SXV

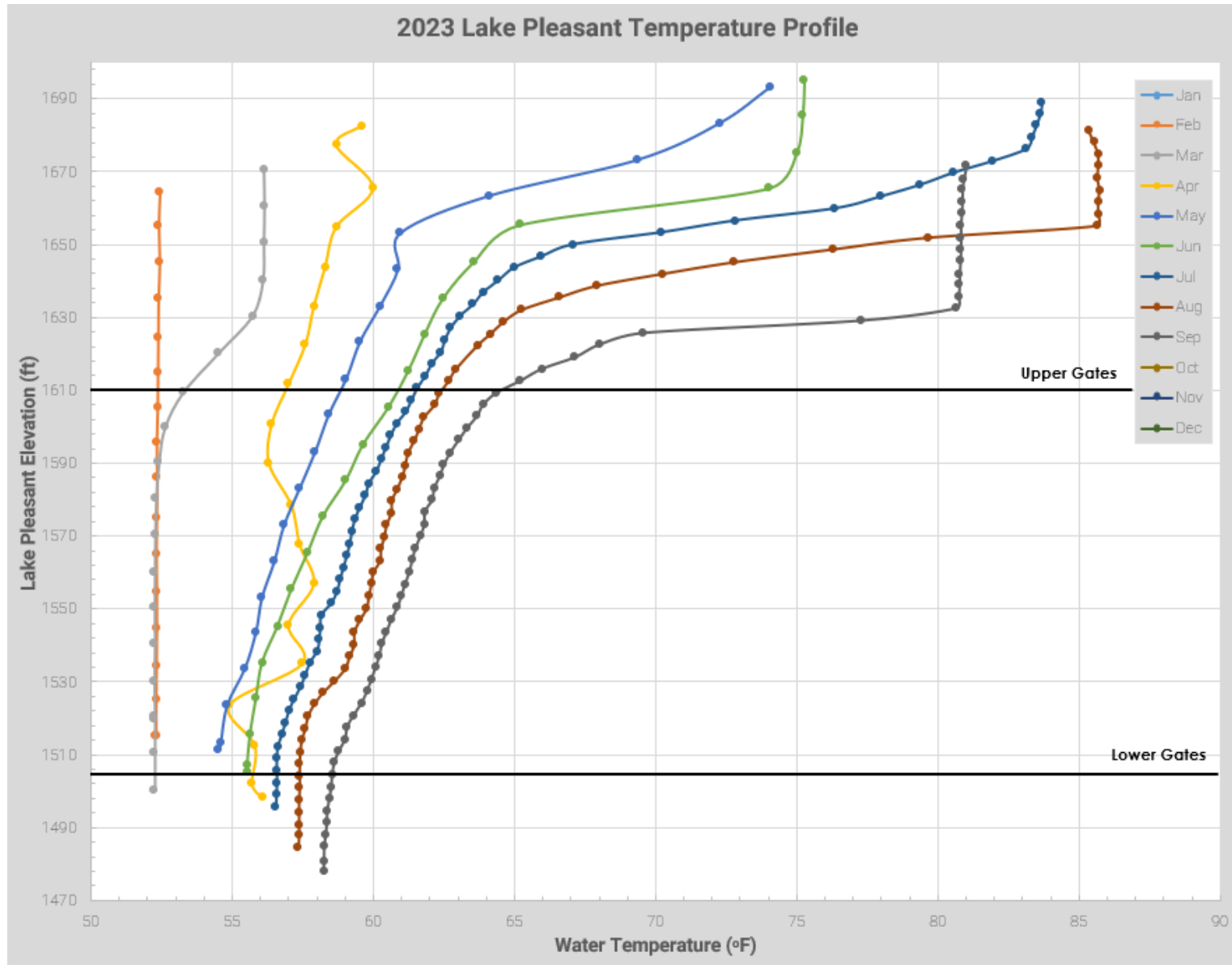


- Parameter**
- Phosphorus_Total (mg/L)
 - Potassium_Total (mg/L)
 - Radium 226/228 (pCi/L)
 - Selenium (ug/L)
 - Silver_Total (ug/L)
 - Sodium_Total (mg/L)
 - Strontium_Total (mg/L)
 - Sulfate (mg/L)
 - TDS (mg/L)
 - Thallium (mg/L)
 - TOC (mg/L)
 - TSS (mg/L)
 - Uranium (ug/L)
 - Vanadium (ug/L)
 - Zinc (ug/L)



470.00 Time Period Min	787.00 Time Period Max	616.11 Time Period Mean	620.00 Time Period Median	1/20/1997 Earliest Date	11/15/2023 Latest Date
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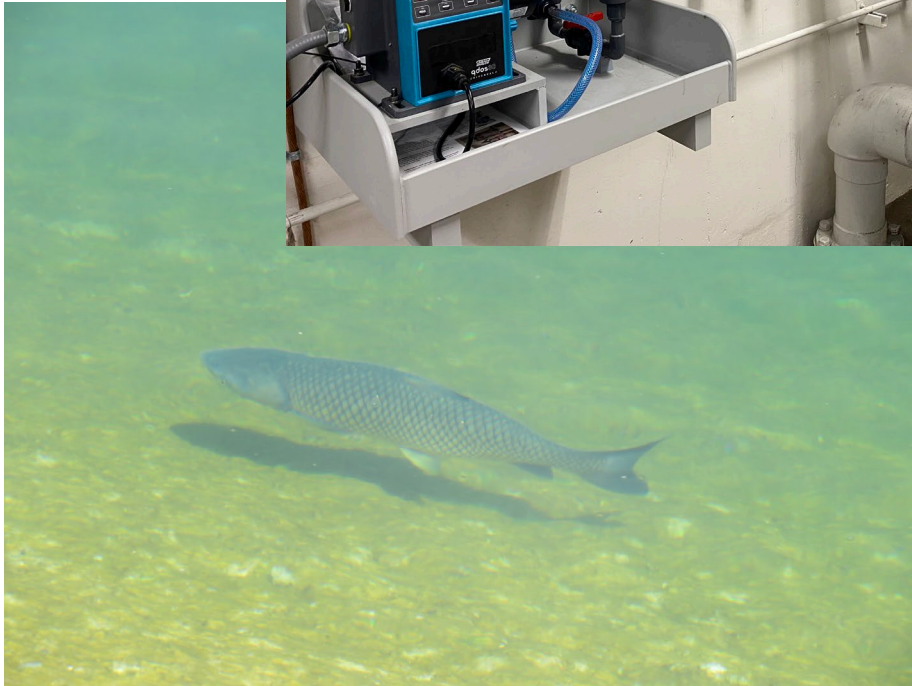
CAP Water Quality Data



CAP Biology



CAP Biology



Key Takeaways

- CAP's current water quality program puts increased emphasis on monitoring constituents that are important to our stakeholders
- Data collected in the monitoring program sets a baseline for CAP Water Quality that will help to ensure that non-project introductions comply with established standards
- Advanced software allows for CAP to monitor, analyze, and report trends in water quality
- Water quality in the canal effects, and is affected, by the aquatic organisms found throughout the System.