

REGIONAL WATER QUALITY NEWSLETTER

DATE: Report for April 2018

**A Tempe, Glendale, Peoria, Chandler, Phoenix, ADEQ, CAP, SRP, Epcor
NSF Central Arizona-Phoenix Long-Term Ecological Research
ASU Regional Water Quality Partnership**



SUMMARY

1. No taste and odor data for April as our instrument is still not ready for completing analysis.
2. The DOC concentrations are beginning to increase with concentrations of 3.5-4.1 mg/l in the Arizona Canal and concentrations of 2.3-4.3 in the South Canal. Groundwater pumping in the South Canal resulted in lower DOC concentrations.
3. Reservoir releases were primarily from Saguaro at the time of sampling as the switch from Verde River Water to Salt River Water was made in March. The switch was made two months earlier as compared to 2017 as a consequence of the current drought.
4. Microbial concentrations for coliforms continued to be within historic norms for winter months with concentrations less than 50% of typical summer months. Mycobacterium samples for March were similar to the levels observed in February.

Microbial Water Quality Data

Over the years the regional water quality center has collected data on numerous different topics but very little data has been collected on basic microbial water quality. Therefore, we have initiated microbial sampling for E. Coli, total coliforms and mycobacterium in the canal system to determine potential impacts on both water quality and sources of possible contamination. Note that Mycobacterium samples require one month to process so they are from the previous month.

Coliform Data - April 2-3
All Values are CFU/100ml

<u>Sample</u>	<u>E. coli</u>	<u>Coliform</u>
Blank Average	0	0
AZ Canal at Highway 87 average	31	1032
South Canal below CAP Cross- connect average	16	976
Cap Canal at Cross-connect average	N/A	N/A
AZ Canal at 56th St. average	10	744
AZ Canal- Central Avenue average	14	552
Pima Average	2	760
AZ Canal above CAP Cross-connect average	26	600
Waddell Canal average	5	464
Verde River @ Beeline average	12	352
AZ Canal below CAP Cross-connect average	24	984
head of the Consolidated Canal average	19	872
Middle of Consolidated Canal average	16	992
Head of Tempe Canal average	23	856
<u>Mycobacterium (March)</u>	<u>colonies</u>	
Blank	0	
AZ Canal at Highway 87	18	
South Canal below CAP Cross- connect	45	
Cap Canal at Cross-connect	N/A	
AZ Canal at 56th St.	19	
AZ Canal- Central Avenue	21	
AZ Canal at Pima	2	
AZ Canal above CAP Cross-connect	1	
Waddell Canal	0	
Verde River @ Beeline	23	
AZ Canal below CAP Cross-connect	CONT	
head of the Consolidated Canal	17	
Middle of Consolidated Canal	31	
Head of Tempe Canal	0	

CONT – Contaminated with other bacteria

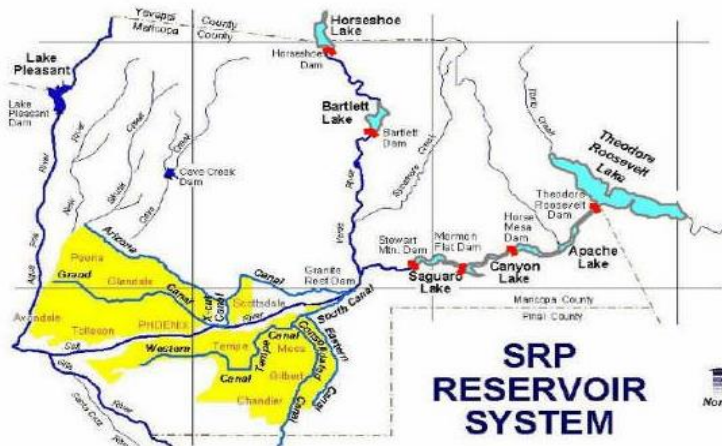
**Quick Update of Water Supplies for April 3rd, 2018
(during day of canal/WTP sampling – April 3rd, 2018)**

Source	Trend in supply	Discharge to water supply system	Flow into SRP Canal System	Dissolved organic carbon Concentration (mg/L) **
Salt River	Reservoirs at 64% full	558 cfs	503 cfs into Arizona Canal	4.0 mg/L
Verde River	Reservoirs At 31% full	117 cfs	297 cfs into South Canal 171 cfs of CAP water into Arizona Canal	2.4 mg/L
Colorado River	Lake Pleasant is 87% full (Lake Powell is 52.2% full)	Lake Pleasant is* releasing 0 cfs	396 cfs Groundwater Pumping into SRP Canals	3.1 mg/L
Groundwater	Pumping ***	395 cfs pumping by SRP		0.5 to 1 mg/L

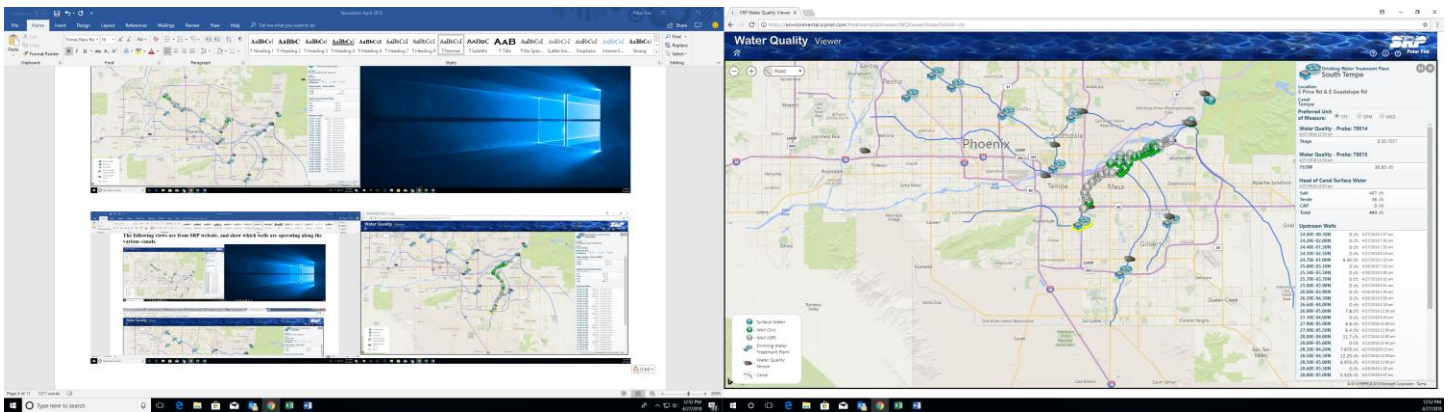
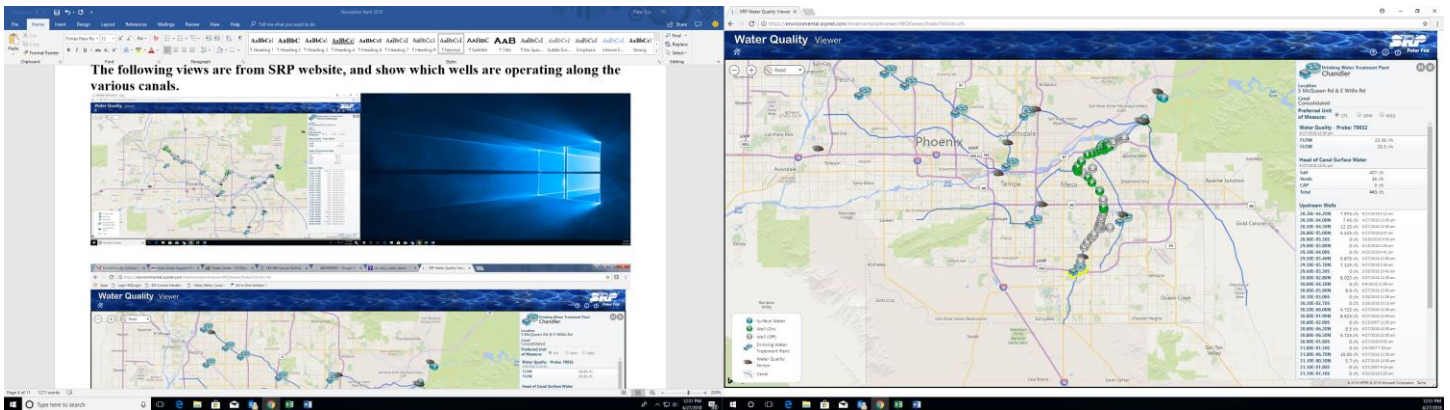
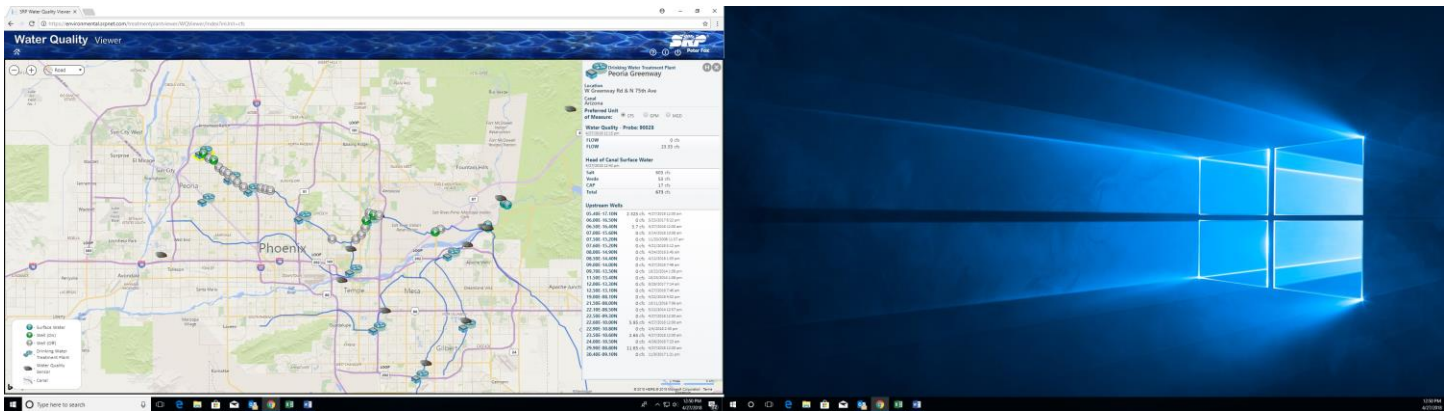
- *CAP is not releasing from Lake Pleasant
- **Concentration of DOC in the terminal reservoir
- ***CAP water is being delivered to the Arizona Canal.

Data from the following websites:

- <http://www.srpwater.com/dwr/>
- <http://www.cap-az.com/departments/water-operations/lake-pleasant>
- <http://lakepowell.water-data.com/>



The following views are from SRP website, and show which wells are operating along the various canals.



Dissolved Organic Carbon in Reservoirs and Treatment Plants

DOC = Dissolved organic carbon

UV254 = ultraviolet absorbance at 254 nm (an indicator of aromatic carbon content)

SUVA = UV254/DOC

TDN = Total dissolved nitrogen (mostly nitrate from groundwater)

Water Treatment Plants- April 2rd- 3rd, 2018

Sample Description	DOC (mg/L)	UV254 (l/cm)	SUVA (L/mg-m)	TDN (mg/L)
Union Hills Inlet	3.2	0.06	1.8	N/A
Union Hills Treated	3.1	0.03	1.1	N/A
Tempe North Inlet	4.0	0.078	2.0	N/A
Tempe North Plant Treated	2.9	0.043	1.5	N/A
Tempe South Inlet	2.4	0.053	2.2	N/A
Tempe South Plant Treated	2.4	0.030	1.3	N/A
Greenway WTP Inlet	3.5	0.063	1.8	N/A
Greenway WTP Treated	2.7	0.023	0.9	N/A
Glendale WTP Inlet	3.8	0.073	1.9	N/A
Glendale WTP Treated	2.6	0.024	0.9	N/A
Anthem WTP Inlet	3.5	0.068	2.0	N/A
Anthem WTP Treated	N/A	N/A	N/A	N/A
24th Street WTP Inlet	4.0	0.072	1.8	N/A
24th Street WTP Treated	2.4	0.027	1.1	N/A
Chandler WTP Inlet	2.3	0.043	1.9	N/A
Chandler WTP Treated	2.3	0.030	1.3	N/A

Rivers and Canals- April 2rd- 3rd, 2018

Sample Description	DOC (mg/L)	UV254 (l/cm)	SUVA (L/mg-m)	TDN (mg/L)
Waddell Canal	3.1	0.053	1.7	N/A
Anthem WTP Inlet	3.452	0.068	2.0	N/A
Union Hills Inlet	3.225	0.057	1.8	N/A
CAP Salt-Gila Pumping Station (March)	2.9	0.052	1.8	N/A
CAP Mesa Turnout (March)	2.8	0.051	1.8	N/A
CAP Canal at Cross-connect	N/A	N/A	#VALUE!	N/A
Salt River @ Blue pt. Bridge	4.0	0.074	1.9	N/A
Verde River @ Beeline	2.4	0.046	1.9	N/A
AZ Canal above CAP Cross-connect	3.9	0.070	1.8	N/A
AZ Canal below CAP Cross-connect	4.1	0.073	1.8	N/A
AZ Canal at Highway 87	4.1	0.072	1.7	N/A
AZ Canal at Pima Rd.	4.0	0.084	2.1	N/A

AZ Canal at 56th St.	4.0	0.072	1.8	N/A
AZ Canal - Central Avenue	3.9	0.070	1.8	N/A
AZ Canal - Inlet to Glendale WTP	3.8	0.073	1.9	N/A
AZ Canal - Inlet to Greenway WTP	3.5	0.063	1.8	N/A
South Canal below CAP Cross-connect	4.3	0.070	1.6	N/A
Head of Tempe Canal	2.4	0.045	1.8	N/A
Tempe Canal - Inlet to Tempe's South Plant	2.4	0.053	2.2	N/A
Head of the Consolidated Canal	2.4	0.047	2.0	N/A
Middle of Consolidated Canal	2.6	0.057	2.2	N/A
Chandler WTP - Inlet	2.3	0.043	1.9	N/A

Reservoir Samples - April 2rd- 3rd, 2018

Sample Description	Location	DOC (mg/L)	UV254 (l/cm)	SUVA (L/mg-m)	TDN (mg/L)
Havasu (March)		2.8	0.053	1.9	N/A
Lake Pleasant (March)	Epilimnion	3.4	0.055	1.6	N/A
	Hypolimnion	3.5	0.056	1.6	N/A
Verde River	at Tangle	N/A	N/A	#VALUE!	N/A
Verde River	at Beeline Highway	2.4	0.046	1.9	N/A
Bartlett Reservoir	Epilimnion	N/A	N/A	#VALUE!	N/A
	Hypolimnion	N/A	N/A	#VALUE!	N/A
Saguaro Lake	Epilimnion	N/A	N/A	#VALUE!	N/A
	Epi - Duplicate	N/A	N/A	#VALUE!	N/A
	Hypolimnion	N/A	N/A	#VALUE!	N/A
Salt River	at Blue Point Bridge	4.0	0.074	1.9	N/A
Salt River	above Roosevelt	N/A	N/A	#VALUE!	N/A
Roosevelt Reservoir Point 1	Epilimnion	N/A	N/A	N/A	N/A
	Hypolimnion	N/A	N/A	N/A	N/A
Roosevelt Reservoir Point 2	Epilimnion	N/A	N/A	N/A	N/A
	Hypolimnion	N/A	N/A	N/A	N/A
Apache Reservoir Point 1	Epilimnion	N/A	N/A	N/A	N/A
	Hypolimnion	N/A	N/A	N/A	N/A
Apache Reservoir Point 2	Epilimnion	N/A	N/A	N/A	N/A
	Hypolimnion	N/A	N/A	N/A	N/A
Canyon Reservoir Point 1	Epilimnion	N/A	N/A	N/A	N/A
	Hypolimnion	N/A	N/A	N/A	N/A
Canyon Reservoir Point 2	Epilimnion	N/A	N/A	N/A	N/A
	Hypolimnion	N/A	N/A	N/A	N/A

Taste and Odor

MIB, Geosmin and Cyclocitral are compounds naturally produced by algae in our reservoirs and canals, usually when the water is warmer and algae are growing/decaying more rapidly. They are non toxic, but detectable to consumers of water because of their earthy-musty-moldy odor. The human nose can detect these in drinking water because the compounds are semi-volatile. Since compounds are more volatile from warmer water, these tend to be more noticeable in the summer and fall. The human nose can detect roughly 10 ng/L of these compounds. Our team collects samples from the water sources and raw/treated WTP samples.