Regional Water Quality NEWSLETTER

DATE: Report for Sept 2011

A Tempe, Glendale, Peoria, Chandler, CAP, SRP, Arizona American Water– ASU Regional Water Quality Partnership

http://enpub.fulton.asu.edu/pwest/tasteandodor.htm

Quick Update of Water Supplies for September 2011
(during day of sampling – September 13/14, 2011)

SUMMARY: EVALUATION AND RECOMMENDATIONS

1. MIB levels are high in the Salt River water supply now being used, and will get worse over the next few weeks.
2. MIB levels nearly doubled in the Arizona Canal between Pima and 56th Streets, from 8 to >20 ng/L – presumably due to attached algae production.
3. MIB plus geosmin levels are above 10 ng/L – levels noticeable to consumers. We confirmed this by collecting tap water samples at ASU and levels of 12.5 ng/L MIB was noticeably earthy-musty in odor.
4. Our **ANNUAL WORKSHOP is planned for September 30th** 830-1130am at the SRP PERA CLUB. A preliminary agenda is provided – but we welcome your suggestions. We have a good group of folks who already RSVP'd. If you did not, but want to attend – please email p.westerhoff@asu.edu (see last page of current rsvp folks to see if you already responded)

   Preliminary Topics to Be Covered at September 30th Annual Workshop

   - Overview of regional water quality
   - Taste and Odor – is it just formed in reservoirs or will it be produced in canals once again
   - Water quality under climatic variability and influence of droughts, fires, flood & building a historical water quality database
   - How much wastewater is in our Colorado River water supply?
   - Comparison of Convention Powder Activated Carbon with Superfine-PAC (PAC)
   - In-situ regeneration of Granular Activated Carbon

Taste and Odor Data

MIB plus geosmin levels above 10 ng/L in finished water lead to noticeable earthy-musty odors by customers. Currently MIB+geosmin levels are above 10 ng/L in the canals.

Water Supply Sources

Sample Description	Location	MIB (ng/L)	Geosmin (ng/L)	Cyclocitral (ng/L)
Lake Pleasant (August11)	Eplimnion	**<2.0**	**<2.0**	**<2.0**
Lake Pleasant (August11)	Hypolimnion	**2.6**	**<2.0**	**<2.0**
Verde River @ Beeline				
Bartlett Reservoir	Epilimnion	**17.8**	**<2.0**	**<2.0**
Bartlett Reservoir	Epi-near dock	**22.9**	**<2.0**	**<2.0**
Bartlett Reservoir	Hypolimnion	**<2.0**	**2.5**	**<2.0**
Salt River @ BluePt Bridge		**7.6**	**3.7**	**<2.0**
Saguaro Lake	Epilimnion	**34.9**	**4.0**	**<2.0**
Saguaro Lake	Epi - Duplicate	**35.0**	**4.1**	**<2.0**
Saguaro Lake	Epi-near dock	**32.9**	**5.9**	**<2.0**
Saguaro Lake	Hypolimnion	**13.1**	**2.0**	**<2.0**
Lake Havasu (August11)		**<2.0**	**<2.0**	**2.7**
Verde River at Tangle Creek (July11)		**21.1**	**2.0**	**<2.0**

Around this time every year, Saguaro Lake has very high MIB levels. As the lake thermally destratifies (usually in September) this causes a 4 to 6 week PULSE of MIB into the SRP system. Fortunately, MIB also biodegrades in the reservoir at a rate of about 1 ng/L/day. Also, the epiliminion of warm water containing the MIB is only 10-15 m deep, so when it mixes with the other 30-40 m depth of water it is also diluted.

Over the next few weeks we can expect MIB concentration in SRP water to gradually increase.

Some MIB and Geosmin Data

Table 2 - Water Treatment Plants – September 13, 2011

Sample Description	MIB (ng/L)	Geosmin (ng/L)	Cyclocitral (ng/L)
Union Hills Inlet	4.9	2.4	5.8
Union Hills Treated	4.2	2.6	<2.0
Tempe North Inlet	17.9	10.8	3.0
Tempe North Plant Treated	10.6	2.7	<2.0
Tempe South WTP	4.2	2.2	<2.0
Tempe South Plant Treated	3.7	<2.0	<2.0
Anthem Inlet	2.7	<2.0	<2.0
Anthem Treated	2.4	<2.0	<2.0
Chandler Inlet	8.3	2.4	<2.0
Chandler Treated	8.4	3.7	<2.0
Greenway WTP Inlet	7.6	5.6	<2.0
Greenway WTP Treated	5.2	3.3	6.0
Glendale WTP Inlet	20.9	20.6	4.9
Glendale WTP Treated	<2.0	<2.0	<2.0

There now appears to be MIB and geosmin production in the Arizona Canal between PIMA and 56th Street. In the past we observed this same phenomena (early 2000's) at these locations. Cities had requested SRP to treat the canals using copper or modified street sweepers which could remove attached algae from the sides of the canal which were identified as the source of MIB. These treatments proved effective for 2-3 weeks and were less expensive than PAC. *Alternatively, it did rain on 9/11 and a pulse of MIB could have come down the Verde River, but this is unlikely as no flow was measured in the USGS gauging station on Sycamore Creek which flows into the Verde River near Fountain Hills.*

Table 3 - Canal Sampling –September 13, 2011

System	Sample Description			
CAP	Waddell Canal	<2.0	<2.0	<2.0
	Union Hills Inlet	4.9	2.4	5.8
	CAP Canal at Cross-connect	3.0	<2.0	<2.0
	Salt River @ Blue Pt Bridge	7.6	3.7	<2.0
	Verde River @ Beeline			
AZ	AZ Canal above CAP Cross-connect			
Canal	AZ Canal below CAP Cross-connect	8.8	3.7	<2.0
	AZ Canal at Highway 87	8.9	6.0	2.4
	AZ Canal at Pima Rd.	8.6	3.9	<2.0
	AZ Canal at 56th St.	15.0	7.9	3.2
	AZ Canal - Central Avenue	18.6	22.7	3.0
	AZ Canal - Inlet to Glendale WTP	20.9	20.6	4.9
	Head of the Consolidated Canal	8.8	5.4	<2.0
	Middle of the Consolidated Canal	7.0	3.6	<2.0
South	South Canal below CAP Cross-connect	12.8	7.5	6.8
Tempe	Head of the Tempe Canal	9.6	4.2	<2.0
Canals	Tempe Canal - Inlet to Tempe's South Plant	4.2	2.2	<2.0

RSVP List for the September 30th workshop

Will attended
Doug Toy / Chandler
Lori McCallum / Chandler
Nina Miller / AZ American Water
Jim Grooman/ AZ American Water
Joseph Conejo / AZ American Water
Jason Bobko / AZ American Water
Susan Armijo / Global Water
Dipti Shah / Gilbert
Brian Henning / CAP
Chris Hassert / Scottsdale
Stephen Rot / Glendale
Gregg Elliott / SRP
Hilary Hartline / Phoenix
Shari Brady / SRP
R. Michael Kennedy / Mesa
Charolett Jones / Phoenix
Mark Williams / Peoria
Ray Schultz / Peoria
Kris Erickson / Phoenix
David McNeil / Tempe
Carrie Wilson / Scottsdale
Susan Butler / Scottsdale
Paul Zelenka / Phoenix
Brian Fayle / Phoenix
Tom Doyle / Phoenix
Yu Chu Hsu / Phoenix

Steve Acquafredda, P.E. | Project Engineer | Jacobs Engineering Group, Inc.
Reb Ferrell
Mary Reker
Rolf Halden / ASU
Mark Gross / Carollo
Vance Lee / WaterWorks Enginers
Damon Williams / Jacobs
Bob Ardizzone / Carollo

Not available, but would have attended if in town
Brandy Kelso / Phoenix