



Water Treatment Plant

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MEMORANDUM

TO: Mark Bates, Administrative Services Director
FROM: Samy Faried, P.E., Utilities Director
DATE: April 23, 2008
SUBJECT: Issues at the Water Treatment Plant

During the past week two issues arose at the Water Treatment Plant that directly affect potable water production and may require we expedite the connection with the County.

1. Rise in Chloride Levels in Monitoring Wells LW-7 & LW-8:

WTP personnel have been closely watching the chloride results from our monitoring wells and our production wells. Even with the City in phase 3 water restrictions, we are seeing chlorides start to increase. If the trend continues the City may be further restricted by SFWMD on withdrawals from our wellfield. We are most concerned about Wells 1, 2 and 4 that are located in Memorial Park (west of "A" Street between 5th and 6th Avenue South). Monitoring wells LW-7 and LW-8, which are located between these wells continue to show a rise in chlorides. Monitoring well LW-7 chlorides recently jumped from 45 mg/L to 117 mg/L. The WTP cut back on Well 2 withdrawals and the chloride level dropped back down to 92 mg/L.

SFWMD could curtail withdrawals, or in a worse case scenario, not allow us to use of these production wells at all, similar to the restriction on Well 5. If the latter were to happen it would translate into approximately 3 million-gallons-per-day (MGD) loss of raw water withdrawal, or roughly 25 percent of our total wellfield capacity.

The WTP is planning to downsize Well 2 by installing a smaller pump, thereby reducing pumpage from 900-GPM to 600-GPM. By doing this we hope to slow down the increase of chlorides in monitoring well LW-7. It will take 2 or 3 weeks to accomplish this pump change-out.

2. Rise in Potable Water Demand:

Subsequent to the relaxation of Phase III water restriction in the County (not including Lake Worth), the WTP has seen a rise in potable water demand from approximately 5.7-MGD to 6.0-MGD. While there has also been drier weather over the past few weeks, this issue is noted since the City's withdrawal allotment will become 5.9-MGD in July of this year. We are looking into a number of alternatives

to offset the shortage in water withdrawal, to include purchase of water through the current emergency connection with the County and/or blending some Floridan water into the lime softening treatment system.

3. Ideas to Make-up Water Shortage of Consumptive Use Permit:

As part of our current consumptive use permit (CUP) the SFWMD will be restricting our water withdrawals from the Surficial Aquifer from 7.57 MGD to 5.9 MGD. This becomes effective in July 2008. The 5.9 MGD does not appear to be sufficient to meet the customer usage load we currently need to output. In reviewing possible short term alternative water options the following ideas were brainstormed by Utilities staff:

a) Renegotiate CUP permit: Note, SFWMD has already stated we can not do a letter modification, and will require a full permit renewal. This is an 18-month process, and does not guarantee we will get a larger allocation.

b) Purchase water from Palm Beach County: The new 24-inch main will not be in for approximately 2-years. However there is an existing emergency connection at 6th Ave South and Congress. If the County would permit extended use of this connection we could get somewhere between 0.3 and 0.5 MGD through that connection depending on operational parameters. However, per the emergency connection agreement, the County must agree to our use of the connection.

 c) Purchase water from West Palm Beach: There is an existing emergency connection at the North Ball Fields. If WPB would permit extended use of this connection we could get somewhere between 2 and 3 MGD through that connection depending on operational parameters. However, there is currently no use agreement with WPB. Also the Health Department has strongly commented that they do not want us to use that connection due to quality issues with WPB water and since WPB is a surface water system.

d) Blend Floridan Water into Lime Treatment Process: We could add Floridan water into the lime treatment process. We could get about 0.5 to 0.7 MGD added before permitted chloride levels would be exceeded. However there may be an odor issue around the plant due to off gassing of H₂S from the Floridan water.

e) Install Trailer Mounted RO-Units at the WTP: This would have to be approved by FDEP and the Health Department. However, trailer mounted 0.5 to 1 MGD RO units could be towed into the WTP and hooked up to the Floridan wells. The resulting water would be treated high quality water that we could mix with the lime plant's discharge.

f) Disconnect Large Consumption Irrigation Systems: When the North Ball Fields came off potable water and started using canal water the City saw a 0.5 MGD savings in consumption. If Bryant Park and the Cemetery's irrigation could be taken off potable water another large reduction in usage could be seen. Similar

skid mounted units that were suggested above could be used to treat Intracoastal water or an MBR skid could be placed at the master pump station so to utilized reclaim water from the sewer system. This latter option may also work at other large parks that are by lift stations.

- g) Lower System Pressure: Currently we pump water to maintain a “farthest point” pressure in the system at around 57 to 60 psi. Reducing system pressure about 5 psi will reduce water usage across the entire City.

4. Prioritization of Water Production Projects:

The following four projects need to be fast tracked to ensure the maximum availability of water from our Surficial Wellfield:

- a) New Well 16. This project is ready to bid and will put a new surficial well online west of I-95.
- b) Test Well for Wells 12 and 15: This test well will ensure the viability of drilling wells 12 and 15 deeper to produce more water. Wells 12 and 15 are both west of I-95 and have backup emergency power available. However they are currently non-operational.
- c) Preliminary Engineering and Hydrological Study on Well 15. This will provide the field work and development of an RFP to bid the rework of Well 15.
- d) Emergency Power for Wells 1, 2, and 4: This project will install an emergency generator to power these wells in case of an outage, and replace the aging electric service and controls to these wells to ensure they will be operational in an emergency. This project will be ready to bid in approximately one to two weeks.