

COMMENTS ON SJRWMD TECHNICAL STAFF REPORT for LAKE APOPKA
RECLAIMED WATER SUPPLEMENT (102497)

May 1,2007

Quoted Statements from the SJRWMD Technical Report are listed and followed by the comments from the FOLA Technical Review Committee.

(1) “Any releases of water from Lake Apopka into NSRA Unit 2 for the purpose of providing water for use by the City would be curtailed when the water level in Lake Apopka is at or below 66.25 feet NGVD” (page 7, line 31).

Response- For Lake Apopka the low end of the Regulation Schedule is 66.75 feet and its Minimum Desirable Elevation is 66.50 feet NGVD. Allowing withdrawals for City use to take place below 66.75 is not reasonable for the following reasons:

1. The lake’s average depth is already low (about 5.4 feet at 66.5 feet NGVD). Further reductions would limit boating and fishing activity.
2. Lower lake levels occur during dry periods. At such times, the City’s demand for Reuse may well be high and the City can demand up to 12.5 mgd.
3. During dry periods, the lake’s 66.25 elevation can continue to fall. Very low lake levels will expose the fish and wildlife to increased pollution and bacteria which have been know to cause their deaths.
4. Lower lake levels are not consistent with restoring Lake Apopka to a Class 3 water body.

In our opinion, no water should be withdrawn from Lake Apopka for the City’s use. Only excess storm water in Unit 2 should be made available. The City should also be told that the restoration of Unit 2 will require shallow flooding (high evaporation) and therefore the District will in all probability reduce the amount the City can receive later during the 20-year permit period.

(2) “Generally it takes waste water generated from two to four residents to supply one resident with reclaimed water” (page 5, line13).

Response- This amount of reuse water demanded is excessive. Only newly built residences in the City of Apopka require waste water from nearly four residences to provide one residence with reclaimed water. Estimates of the amount of water used outside the home relative to the amount used inside are as follows:

Resident Usage	Outside/Inside
Newly built City of Apopka	3.73
Typical existing	2.00
High Conservation	0.89

For typical residences in Winter Garden and older homes in the City of Apopka, the

outside water use is about twice the amount used inside. From 1996-99 the American Water Works Association reports that 58% of the total water per household is used outdoors. This is a ratio of 1.38 and is the North American average.

The two key features of High Conservation landscape are (1) limit the turf grass to less than 35% of the yard and (2) landscape with native drought resistant plants, groundcover, and trees which use micro-irrigation (*Residential Irrigation Water use in the Central Florida Ridge*, M. Baum May 2005).

(3) “Reclaimed water that is not needed during low demand periods is stored for future use if storage is available or is disposed of via the City’s 106 acre restricted access spray field located adjacent to the plant site” (page 3, line 17).

Response- Spray fields waste reclaimed water. What is needed are large storage areas for the collection of reclaimed water and stormwater during periods of low reuse demand. This reuse water can then be used later when it is needed. In this regard the District has provided financial assistance to the City of Apopka to build a large storage pond. In our opinion, more facilities which collect and store reclaimed water and stormwater are a better use of the District’s financial aid for a long term sustainable solution then funding a facility which removes water from Lake Apopka.

(4) “ Based on anticipated growth in the service area it is projected that reclaimed water demands will be approximately 12.3 mgd by 2010 with only 4.4 mgd of projected waste water flows. This results in a projected supplemental water source demand of approximately 7.9 mgd on a average day as early as 2010” (page 5, line 14).

Response- If landscape conservation of the type described in Response (2) above is used, a large reduction in average Reuse Demand results.(See *Conservation of Reuse Water*, J.Hawley, Rev.2 March 2007. This report can be found at www.fola.org and describes how landscape conservation can be used to meet the City of Apopka needs without supplements from wells or surface waters).

Using the City’s expected growth, landscape conservation can reduce demand to 6.7 mgd by 2010 With the 4.4 mgd of reclaimed water this yields a Reuse Demand of 2.3 mgd on an average day in 2010. The difference between the City’s projected 2010 deficit of 7.9 mgd and the deficit in the conservation approach is 5.6 mgd (12.3-6.7). This 5.6 mgd savings of Reuse exceeds the amount that the City wants to take from Lake Apopka. In our opinion, conservation is better than draining water from Lake Apopka.

(5) “Based on this expanded service area the 2005 Reclaimed Water Master Plan Update projects that reclaimed water demands could be as high as 35.75 mgd by 2035 with projected waste water flows of only 14mgd. This would result in a potential supplement water source demand of up to 22 mgd by 2035” (page 4, line 9).

Response- This 22mgd deficit shows where we are headed if we don't conserve reuse. Using the landscape conservation described above, the 2035 demand of Reuse is about 15.9 mgd and the supplemental water source demand is only 2.2mgd. This 2.2 mgd is less than the 5.0 mgd the City wants to take from Lake Apopka.

The City of Apopka is not the only area under rapid development. The city of Minneola has requested 20 mgd of Lake Apopka withdrawal right now. In our opinion, the conventional approach to landscaping must be changed now if we are to prevent permanent damage from draining water from our springs, lakes, and rivers.

(6) " Staff concluded that reasonable assurances have been provided that the proposed use of water in such quantity as is necessary for economic and efficient utilization pursuant to 10.3 (a), 12.2 and 12.9 AH provided the permittee complies with conditions recommended for this permit" (page 5, line 26).

Response- Irrigation at this level is not necessary nor is it an efficient utilization of Lake Apopka waters. The Florida Legislature has given the District the task of restoring Lake Apopka and its NSRA. This water withdrawal will not further restoration.

(7) " The average discharge from the lock and dam is approximately 51.1 mgd based on historical records from the period 1958 through 1998 " (page 7, line 8).

Response- According to the USGS, the average annual discharge through the Apopka Beauclair Canal is about 44.3 mgd based on the historical record from the period 1966-2006. The average discharge is only 37.7 mgd for the period from 1997 through 2006. Possible reasons for this reduction are (1) the 1997 change in North shore land use from farming to restoration ; (2) lower water discharges from new basin developments which are the result of the District's total phosphorous limitation rule; and (3) lower flows from the Gourd Neck Spring because of increases in well usage near the Spring by Clermont and commercial water bottlers.

(8) " Section 9.4.4 AH also provides that interference occurs when the withdrawal capability of any individual withdrawal facility of a presently existing legal use of water experiences a 10% or greater reduction in water capacity or when the existing legal user experiences economic, health, or other type of hardship as a result of the new use" (page 8, line 28).

Response- At the April 2007 meeting with the Friends of Lake Apopka representatives, the District Staff presented a chart which indicated that the average annual discharge from the Lake Apopka through the Beauclair Canal would be reduced from 51.1mgd to 46.1 mgd if 5 mgd of lake water was put into the NSRA. Thus the lake levels would not

be effected. The 51.1 mgd is not consistent with the USGA average outflows through 2006. The down stream lakes can experience more than a 10% reduction for both averages of a 40-year and a 10-year period which end in 2006 (see Response (7) above). Reduction of over 10% may be viewed as a hardship on the down stream lakes. To remedy this the District may no longer propose to reduce the downstream flow by 5 mgd. In that case water level in Lake Apopka would be lowered..

(9) “The [District] analysis indicates that if 5mgd were to be released from Lake Apopka into NSRA Unit 2 with no change in downstream releases, the average water level in Lake Apopka would be reduced by 0.4 feet. The reduction in average lake level can be eliminated with a relatively small reduction in average downstream discharges from Lake Apopka. The District proposes to reduce minimum downstream releases from Lake Apopka from 23 cfs to 10 cfs. In the budget simulation releases from Lake Apopka occurred only when the lake level was at least 66 feet NGVD. Based on this analysis diversion of up to 5 mgd could be made 75% of the time along with compensation reductions in downstream discharges so as not to impact the lake stage” (page 7, line 14).

Response- The District has taken results from their model reported in Lake Apopka Water Evaluation January 17, 2006. This model of Lake Apopka water levels was compared to the actual water levels in Lake Apopka for various periods of time. For the historical period between January 1962 through January 2001, the model compares reasonably well with the actual lake level when the lake stage is between 67.5 and 66.0 NGVD. However, when the actual lake stage is lower, it does not predict the lake level well. For actual lake stages between 66 feet and 65 feet, the model predicts lake levels which are typically 0.5 feet higher. When the actual lake stage drops below 65 feet, the model predicts levels which are 1.5 to 2.0 feet higher. The lower the lake level, the larger the error. Actual “lake stage data for this period” shows that about one-half of the time the lake is below its Minimum Desirable Elevation which is 66.5 feet NGVD. This elevation corresponds to an average lake depth of only about 5.4 feet. At lake stages below 66 feet NGVD, the model predicts water levels which are higher. Therefore, it erroneously predicts that downstream discharges will have no adverse effect on the lake stage. If the downstream discharges stop completely when Lake Apopka drops below 66 feet, this downstream discharge error can be avoided. But simply reducing the minimum discharge rate from 23cfs to 10cfs will not avoid this model problem.

Next, consider the effect of an average 5mgd discharge from Lake Apopka into the NSRA for use by the City of Apopka. If all other factors remain equal, the 5 mgd will reduce the lake’s level by 0.182 feet each year. In six years the average lake level would drop from approximately 5.4 feet to 4.3 feet. The District plans to reduce “the minimum discharges” from 23 cfs to 10 cfs in order to prevent a lower lake stage. It is not clear what “minimum discharge” means. For example, historical USGS records show the mean monthly downstream discharges are already been below 23 cfs for 68 months of 117 months in the period between Jan. 1996 to Sept. 2006. For the same period the monthly mean release downstream has been below 10 cfs for 32 months of this 117 month period.

If all things stay as expected and 5 mgd is taken from Lake Apopka and put into the NSRA, a reduction in the downstream discharge of 5 mgd is needed to maintain the lake stage.

(10) Under “General Conditions” items 3-8, 10, 14,&16. These items pertain to the measurement and limits for items which include water withdrawals from the NSRA by the City, canal water elevation, Lake Apopka water elevation, water diversion from Lake Apopka, pump readings et cetra (summary pages 9-11).

Response- The technical report does not state who in the SJRWMD will be responsible to ensure that these conditions are measured correctly and the limits enforced. In the past, the District has experienced problems in monitoring and regulating Lake Apopka projects. In our opinion, any agreement with the City should specify the District person who will closely monitor on a weekly basis all of the items listed above. The District should further specify that if defects are found and not corrected immediately (in fewer than three days), the District will impose large fines for all violations. The field representative should also be given complete authority to inspect any part of the City’s facilities which are located on District property and investigate any unforeseen problems associated with the project in a timely manner so as to limit adverse effects.

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Friends of Lake Apopka