

MEMORANDUM

TO: Tommy Strowd, Director, Operations, Maintenance & Construction Division
Terrie Bates, Director, Water Resources Division

FROM: Susan Sylvester, Chief, Water Control Operations Bureau
Linda Lindstrom, Chief, Applied Science Bureau
Dean Powell, Chief, Water Supply Bureau

DATE: April 25, 2012

SUBJECT: Operational Position Statement for the Week of Apr 24 – Apr 30, 2012

The U.S. Army Corps of Engineers (USACE) is responsible for managing Lake Okeechobee water levels and makes operational decisions about whether to retain water or release water based on their regulation schedule release guidance. The USACE makes this decision taking into account the best available science and data provided by its staff and a variety of partners, which includes the South Florida Water Management District (SFWMD).

The SFWMD team has discussed the system wide environmental conditions, the water supply conditions, and has evaluated the overall status of the water management system. Detailed reports are available at the SFWMD's [Operational Planning](#) internet page.

Recommendation to the USACE

As requested by the SFWMD, the USACE initiated S-79 releases on Monday, April 23rd to reduce the likelihood of a possible algal bloom upstream of S-79. The requested release was unrelated to the SFWMD's Lake Okeechobee Adaptive Protocols, but was consistent with the SFWMD Governing Board's April 12th direction for up to a 3-day, 2000 cfs discharge. The SFWMD recommends that at the end of this release, the USACE operate the S-79 gates to transition release rates back to those provided by basin runoff. No further Lake releases are requested to supplement S-79 discharges after this current operation is completed.

The SFWMD understands that the LORS-2008 Water Control Plan describes circumstances where use of "Additional Operational Flexibility" may be considered. This provision was anticipated to be used infrequently and when the lake is above the Water Shortage Management Band. The Water Control Plan describes circumstances where a low volume pulse release may be implemented to benefit water quality within the lake and/or downstream. This recognizes that short-term high rates of release from Lake Okeechobee may be effective at breaking up algal blooms and that the District may request the Corps to initiate releases for this purpose.

The SFWMD also recommends that the USACE continue their standard operation to allow runoff from the C-44 basin (S-308 to S-80) to backflow to Lake Okeechobee via S-308 rather than discharge to tide via S-80.

Background for the Recommendation

Lake Okeechobee remains in the Beneficial Use sub-band and SFWMD staff continue to follow the Lake Okeechobee Adaptive Protocols (AP). The AP were developed to provide guidance for both baseflow discharges and environmental water supply releases. The water supply balance achieved by following the protocol was evaluated by the Water Resources Advisory Commission and the SFWMD Governing Board, leading to board acceptance in Sep 2010.

At the April 12, 2012 SFWMD Governing Board meeting, direction was given to staff to continue to follow the Lake Okeechobee Adaptive Protocol release guidance and recommended that the USACE make no S-77 release to the Caloosahatchee Estuary for purposes of improving salinity conditions. At the same time, the SFWMD Governing Board also directed staff to continue conducting special water quality sampling between S-78 and S-79 and, if conditions warrant, request that the USACE initiate a short duration pulse release (up to a 3-day, 2,000 cfs pulse) to manage algal bloom conditions in the Caloosahatchee River utilizing the provisions of the Water Control Plan.

In follow-up to the Governing Board direction, staff have worked diligently over the past weeks to complete continuous water quality sampling along more than 40 miles of the Caloosahatchee River in an effort to ensure that water management decisions are based on sound scientific data.

Sampling for microcystin revealed no toxins and no visible algae blooms. Chlorophyll-a levels were higher near S-78 than downstream at S-79, raising concerns that a release could push the elevated blue-green algae levels closer to S-79. With a weekend forecast for significant rainfall in the lower west coast, and in continued consultation with the USACE, the decision was made to time operations to capitalize on the expected rain event, thereby maximizing the opportunity to push water through more of the system.

Weather and Climate

Rainfall during the past week totaled 1.81 inches district wide (through 7am Apr 24th). For the past 30 days district average rainfall has totaled about 2.54 inches (96% of average). The SFWMD precipitation outlook for the next ten days (Apr 24 - May 3) is below-average with moderate confidence. The 19-Apr CPC precipitation outlook for May indicates equal chances of below-normal, normal, and above-normal rainfall. For the remainder of the 2011-2012 dry season and for the beginning of the wet season, the CPC outlook shows equal chances for below-normal, normal, and above-normal rainfall.

Upper and Lower Kissimmee Basins

Stages in the most of the Kissimmee Chain of Lakes are no lower than 0.3 feet below their respective flood regulation schedules or the temporary snail kite recession lines. Lake Toho stage is about 0.4 feet above the temporary snail kite recession line. The temporary snail kite recession lines have been implemented for Lakes Toho, East Toho, Kissimmee, Cypress and Hatchineha. Lake Kissimmee stage continues to recede due to the dry weather and S-65 environmental releases, which are made to the Kissimmee River per the Interim Operational Schedule and Release Rules for Lake Kissimmee-Hatchineha-Cypress. Discharge at S-65 to the Kissimmee River averaged about 290 cfs for the week ending April 22nd, up from last week's 205 cfs. Discharge from the Kissimmee River to Lake Okeechobee via S-65E averaged about 150 cfs for the week ending April 22nd, up from last week's 50 cfs.

Lake Okeechobee Stage and Regulation Schedule

The April 23, 2012 Lake Okeechobee stage (reported by the USACE on April 24th) was 11.83 feet NGVD, 0.08 feet higher compared with 7-days ago. The April 23rd stage was about 0.8 feet lower than it was a month ago and about 0.7 feet higher than a year ago. The current stage is about 1.9 feet lower than the historical average for this date. This week the Tributary Hydrologic Conditions is again in the "dry" classification (LORS-2008 classifications). The 14-day average Lake Okeechobee Net Inflow was -122 cfs (dry) through April 22nd. The April 21st Palmer Index was -3.48 (very dry). The April 23rd Lake stage was about 0.8 feet below the bottom of the Baseflow Sub-band and about 0.7 feet above the Water Shortage Management Band. The LORS-2008 release guidance suggests no releases to the WCAs due to the dry tributary hydrologic conditions. The LORS-2008 release guidance provides no guidance regarding

environmental water supply releases at S-79 and at S-80 for the current dry conditions. The SFWMD's Adaptive Protocol provides the necessary guidance for the appropriate release amount. Refer to the Caloosahatchee Estuary section below.

Water Supply Risk Indicators

The risk status for Lake Okeechobee Area is slightly improved compared with last week. Two of the six LOSA water supply risk indicators remain in the "high risk" category: Palmer Index and the projected Lake stage. The one month CPC precipitation outlook improved from the medium risk to low risk category. The Multi-Seasonal Net Inflow Forecast remains in the "medium risk" category. The CPC precipitation outlook for the upcoming 3 months and the Seasonal Net Inflow Forecast both remain in the "low risk" category. The risk status for all WCAs (except WCA-2A) and Lower East Coast service areas remains within the "low risk" category. WCA-2A remains in the "high risk" category due to low water levels.

The South Florida Water Management District Governing Board voted on November 10 to rescind a series of water shortage orders that restricted landscape irrigation and placed mandatory reductions of agricultural and other large water uses. The action was taken in response to improved water resource conditions throughout the District's 16-county region following the fourth-wettest October on record. With long-term forecasts still calling for below-average rainfall during the 2011-2012 dry season, the Governing Board also declared a water shortage warning to encourage continued vigilance and voluntary water conservation.

Groundwater Levels

Groundwater levels increased over most of the District this week, particularly in areas south of Lake Okeechobee. The majority of the United States Geological Survey (USGS) real-time wells in the Kissimmee Basin within the District boundaries remain in their lowest 30th to 10th percentile ranges for this time of year, despite rises in water levels in Floridan aquifer wells this week. Stages in the Upper East Coast (UEC) canals C-23, C-24, and C-25 dropped this week and are at 22.17, 19.78, and 20.21 ft NGVD, respectively, well above the 14 ft NGVD agricultural cutoff level. Groundwater levels in wells in the UEC mostly are at their lowest 30th percentile ranges for this time of year. Biscayne aquifer levels increased in most of the Lower East Coast (LEC) this week, notably in southern Miami-Dade County. Most wells in the LEC are at median levels for their periods of record for this time of year. LEC wells in Homestead and Tequesta are still below 2 ft NGVD (not unusual for this time of year), but did rise this week. For more detailed information, refer to the April 24, 2012 Water Supply Report, which is posted at www.sfwmd.gov.

Everglades WCAs

During the past week WCA water levels at the gages used for the regulation schedules rose due to welcome rainfall. Rainfall amounts ranged from a low of 1.96 inches in WCA-3A, to a high of 3.73 inches in WCA-2A. Most areas received between 2 and 3 inches. WCA-1 marsh and canal stages increased about a half foot to just above the Zone A1 regulation schedule. WCA-2A marsh gage (2-17) increased to about a half foot above the 11.0 ft-NGVD schedule, and the canal gage increased to an elevation of about 10.8 ft-NGVD. Water supply releases from WCA-2A were suspended due to the rain. WCA-3A marsh and canal stages increased to within a few tenths of a foot from the bottom of its regulation schedule's Zone E1.

No water releases from WCA-3A to ENP per the Shark Slough Rainfall Plan were made last week. The Rainfall Formula amount this week is again 0 cfs; target flow is also 0 cfs since the average WCA-3A stage is below the transition zones of the regulation schedule, thus requiring no regulatory/supplemental flow component. All S-12 structures are closed. Water supply releases from WCA-3A to the SDCS were suspended due to weekend rainfall.

St. Lucie Estuary

The estuary received no inflow via S-80 from Lake Okeechobee during the past week. Little to no inflow from C-23 and C-24 occurred. 7-day average salinity conditions in the SLE remained steady during the past week, and the 30-day moving average remains close to the upper limit of the preferred range at the US-1 Bridge and A1A Bridge. Conditions are classified as good for oysters for this time of year. It is recommended that the estuary should not receive inflows from the Lake or from C-44 basin runoff. To conserve water supplies it is recommended that the USACE continue their current operation to direct C-44 basin runoff westward to Lake Okeechobee, and not eastward through S-80 to tide.

Caloosahatchee Estuary

Consistent with the Lake Okeechobee Adaptive Protocol (AP) recommendations. No S-79 releases were made from March 27th to April 23rd. And this week no releases to the Caloosahatchee Estuary are being requested via the AP. Releases had been made to the Caloosahatchee Estuary via S-79, supplemented as needed with Lake O releases at S-77, during the 14.5 week period: December 16, 2011 through March 27, 2012. These releases were also consistent with the AP recommendations.

Unrelated to the Adaptive Protocol, the USACE initiated at the SFWMD's request, a 3-day 2000 cfs discharge at S-79 to reduce the likelihood of a possible algal bloom upstream of S-79. The requested release volume was consistent with the SFWMD Governing Board's April 12th direction.

The 30-day moving average surface salinity is rising and estimated to be about 11.8 psu at Val I75 and 18.0 psu at Ft. Myers. Salinity conditions in the estuary are considered to be poor for tape grass (> 10 psu) in much of the estuary. Salinity conditions are fair for oysters (30-35 psu) considering their location in the estuary. The April 24th salinity forecast (assuming no releases) indicates the 30-day moving average salinity at Val I-75 will increase during the next two weeks, and will continue to exceed 5 psu.

The following describes the release guidance per the [Final Adaptive Protocols for Lake Okeechobee Operations \(September 16, 2010\)](#). Each Tuesday the Coastal Ecosystem Section reviews the salinity conditions in the Caloosahatchee Estuary and forecasts the predicted salinity for 14 days into the future at Val I75. The criterion for when the estuary needs water depends on the two week predicted salinity at Val I75 being at least 5 psu. Therefore according to the salinity criterion, the estuary needs freshwater inflow at S-79.

The lower branch of the Adaptive Protocol release guidance flowchart applies since the stage is within the Beneficial Use Subband of the regulation schedule. Currently there is less than a 50% chance that the Lake stage will fall below elevation 11.0 ft, NGVD, before the end of the dry season, and the Tributary Hydrologic Condition is in the Dry classification. Correspondingly, the release guidance suggests "No S-77 release to the Caloosahatchee Estuary unless the Governing Board recommends otherwise".