APPENDIX A: OPERATIONAL STRATEGY

This page intentionally left blank

Harmful Algae Bloom Operational Strategy

1. Executive Summary

This operational strategy is proposed to alter the timing and volume of Lake Okeechobee releases to the Water Conservation Areas (WCAs), east, and/or west to allow for greater flexibility with water management decisions when harmful algae blooms (HABs) are present or forecasted in Lake Okeechobee, the St. Lucie or Caloosahatchee estuaries, or the system of canals that connects them. This deviation is not intended to replace any portions of LORS 2008.

2. Definitions

Harmful Algal Bloom (HAB) - freshwater blue/green algae bloom causing adverse environmental, economic, or health effects

3. Why

The blue green algae crisis has caused substantial and widespread impacts to Florida communities over the last several years resulting in state declared emergencies in multiple counties (Glades, Hendry, Lee, Martin, Okeechobee, Palm Beach, and St. Lucie counties)[1]. The State of Florida has formed two emergency task forces to address algal blooms and invested significant resources to develop and implement solutions to the algae crisis. The Corps operates in order to minimize the health effects associated with HABs to the extent practicable. This deviation will enhance the ability of the Corps to respond to HABs within its authority.

4. What

Planned deviation to the Water Control Plan for Lake Okeechobee and Everglades Agricultural Area (also known as Lake Okeechobee Regulation Schedule [LORS] 2008). Main changes to the LORS 2008 for HAB operations can be summarized as follows:

Provide the ability to make larger "advanced" releases east and west than LORS Part D calls for and make releases south when LORS Part C does not recommend releases within the Beneficial Use Sub-Band, Base Flow Sub-Band, Low Sub-Band and the Intermediate Sub-Band in order to have greater flexibility to make less releases when HABs are present.

- Make advanced releases east and west limited up to 2,000 cfs measured at S-79 and up to 730 cfs measured at S-80, and when LORS Part D recommends up to 450 cfs measured at S-79 and up to 200 cfs as measured at S-80, or when Part D does not specifically recommend releases (Beneficial Use Sub-band).
- Allow the flexibility to make advanced releases up to maximum practicable to the WCAs when LORS Part C does not recommend release within the Low, Baseflow, and Beneficial Use Sub-bands. Maximum practicable releases take into account storage within the WCAs, canal conveyance capacity within the Everglades Agricultural Area, and storage and treatment capacity within the Stormwater Treatment Areas.
- These advanced releases will allow for greater flexibility to potentially reduce releases from Lake Okeechobee during periods when HAB are present in Lake Okeechobee, the St. Lucie or Caloosahatchee Estuaries, or the system of canals that connects them. The objective will be to

reach a net zero balance such that the total volume released between 1 February and 1 December each year is unchanged from the releases that would have taken place under the existing schedule.

These operations would only be utilized if conditions were met for HAB operations (see Section 6-a). The decision making-making process for releases out of Lake Okeechobee will remain unchanged from LORS 2008 and is included below for consistency.

The decision making process for Lake Okeechobee water management operations considers all Congressionally-authorized project purposes. The decision-making process to determine quantity, timing, and duration of the potential release from Lake Okeechobee includes consideration of, but not limited to: Central and Southern Florida (C&SF) Project conditions, historical lake levels, estuary conditions/needs, lake ecology conditions/needs, WCA water levels, Stormwater Treatment Area (STA) available capacity, current climate conditions, climate forecasts, hydrologic outlooks, projected lake level ascension/recession, and water supply conditions/needs.

5. When

The proposed planned deviation intends to help mitigate risk associated with HABs by increasing operational flexibility. Because of the nature of this strategy, the Corps may not take water management action immediately upon enactment of this deviation. The operational strategy (**Appendix A**) describes the conditions and the coordination necessary for water management action to be taken. Based on current conditions within Lake Okeechobee (as of 9 June 2020) it is unlikely that action will be taken immediately. Once action is taken, which will be communicated publicly at the beginning and throughout that year, the Corps will evaluate the performance of the strategy, identify outcomes, challenges, and conclusions in a memo to the South Atlantic Division Commander and may request [changes to or] an extension of this deviation based on that analysis. A subsequent extension may be applied for until LORS 2008 is replaced by a new water control plan (LOSOM) anticipated in 2022. The Corps may also terminate this deviation at any time. The Corps agrees to maintain open and cooperative communication during the proposed planned deviation through the Lake Okeechobee periodic scientists calls (PSCs). A summary of findings from the memorandum would be provided at this forum.

Each year, many factors will be taken into account when evaluating when to initiate advanced releases. The earliest that advanced releases of up to 2,000/730 cfs at S-79/S-80 could occur is February 1st. When and how much to release will be based on the considerations listed in this operational strategy, including, but not limited to: coordination with stakeholders and partner agencies, current and historical lake levels, El Niño Southern Oscillation (ENSO) forecasts, drought conditions, water supply conditions, and ecological conditions in the lake, northern estuaries, and the Greater Everglades. Depending on conditions throughout the spring/early summer, advanced releases might be made less than 2000/730 cfs, and generally a lower amount would be released at lower lake levels (always above 12 FT). It is not intended that the maximum advanced release amount be made on February 1st regardless of conditions. An array of lake stages were analyzed in the modeling analysis (Appendix B) for beginning advanced releases. This provides a range of examples for analysis of effects, but these examples do not prescribe the criteria each year. These scenarios might be used to help inform future implementation of advanced releases.

The public will be notified of any HAB releases by the USACE's normal water management notification process (press release, internet webpage).

6. How

6-a. Any one of these conditions could warrant the use HAB operations to be utilized:

- If a HAB is currently in Lake Okeechobee, C-43 Canal, C-44 Canal, the Caloosahatchee Estuary, or the St. Lucie Estuary.
- If the state of Florida declares a state of emergency due to HABs on Lake Okeechobee, C-43 Canal, C-44 Canal, the Caloosahatchee Estuary, or the St. Lucie Estuary.
- If a HAB is anticipated to occur on Lake Okeechobee, C-43 Canal, C-44 Canal, the Caloosahatchee Estuary, or the St. Lucie Estuary.
- If a HAB has occurred and caused impacts to public safety or the environment during the last 12 months within Lake Okeechobee, C-43 Canal, C-44 Canal, the Caloosahatchee Estuary, or the St. Lucie Estuary.*

*Estuaries are defined as any portion of the St. Lucie or Caloosahatchee Estuary which freshwater algal blooms can be observed. The St. Lucie Estuary is comprised of both North and South Forks which combine near the Roosevelt Bridge and then extends towards the Indian River Lagoon and the Atlantic Ocean. During periods of high freshwater inflows into the estuary the freshwater boundary can extend into the ocean would be included in the definition of estuary here. The Caloosahatchee Estuary begins at the Franklin Lock and Dam and extends out to include lower Charlotte Harbor Basin at San Carlos Bay.

The Corps will consult with partners on the latest science and tools predicting potential and/or indicating actual HAB presence on the Lake and Estuaries. Current tools available include National Oceanic and Atmospheric Administration's (NOAA) remote sensing assessment of HAB potential on the lake and estuaries as well as monitoring of HAB occurrence by the South Florida Water Management District (SFWMD) and Florida Department of Environmental Protection (FDEP).

6-b. Operations under these circumstances could include:

- If any of the conditions above are met, the following represents the intent of the operational strategy:
    - Manage water to reduce the risk of transporting a HAB from Lake Okeechobee to the estuaries
    - Manage water to reduce risk of exacerbating a HAB in the estuaries
    - Manage water in anticipation of HAB conditions by making long term low volume releases before a HAB event and not during

When initializing HAB operations, the Corps will engage with federal and state agencies to develop a unique plan on timing and quantity of the advanced releases to be made under these operations, as the expertise in water quality lies outside the Corps. The State of Florida has the authority to regulate water quality within the C&SF Project and their monitoring information and expertise will be taken into consideration during HAB operations. This plan should be re-evaluated for each instance of

these operations. The Corps is committed to continuing meeting with stakeholders to gather information on current conditions and observations. Periodically (currently select Tuesdays), a group of water managers, scientists and engineers from the Corps, the sponsor (SFWMD), and other federal, state and local agencies meet via telephone conference to discuss conditions of the C&SF system as well as concerns related to fish and wildlife, water quality, and water supply. Information gathered at this forum can help inform when HAB operations may be warranted. The call also allows for members of the public to listen and then provide comment during a public comment period. Reports on the ecological and hydrological status of different physiographic areas, such as estuaries and the Everglades, are presented. Meeting input is documented and available upon request to the Corps. Under the deviation, the Corps would continue consulting with the agencies weekly to determine the status of the individual ecosystems in the study area. Determinations will be made based on best science available on HAB occurrence or likelihood of occurrence in coordination with agency experts at the SFWMD, U.S. Geological Survey (USGS), FDEP, NOAA, Florida Department of Health (FDOH), and the U.S. Environmental Protection Agency (EPA).

The duration of HAB operations is not prescribed but should be based on the conditions or forecasted conditions that led to the implementation of this operational strategy. The risk associated with HABs will be evaluated in close coordination with federal and state agencies which have the technical knowledge to help develop a plan for the timing and quantity of releases (within the impacts expected/discussed *within the associated EA that supports* this deviation). It is acknowledged that with the science in this field rapidly developing, specific durations and timings of these operations for each potential instance cannot be defined for the operational strategy at this time.

Advanced releases as part of HAB operations could be done between the Intermediate sub-band and the Water Shortage Management Band (WSM) (see Figure 1). The figure illustrates several zones where advanced releases could occur throughout the year. There is the Green Zone where advanced releases could be made up to 2,000/730 cfs at S-79/S-80. The Orange Zone where advanced releases could be made up to 1,000/400 cfs at S-79/S-80. The Purple zone where advanced releases would not be made and normal LORS 2008 operations would occur. These zones were informed by the modeling analysis, specifically Table 1 within **Appendix B**. Releases could be reduced or held back at any point in the schedule if HAB conditions are present. The figure also shows the point on 1 December where the net zero release target is, which means that by that time it is intended that the water bank account will be at zero (any advanced releases were made up by holding back releases). These advanced release zones only apply when LORS Part D recommends releases of 650 cfs (450/200 at S-79/S-80), as shown by the red boxes in Figure 3.

The tops of these zones could be raised or lowered based on the antecedent conditions by up to 0.5 feet (bottoms of zones would remain the same as shown in the figure). Conditions could include but are not limited to El Niño forecasts, above/below normal precipitation forecasts, drought or floods during previous year, water supply conditions, ecological conditions within Lake Okeechobee, etc..

6-c. Releases South from Lake Okeechobee

Consistent with LORS 2008, advanced releases south would be evaluated before releases east/west, as outlined in Part C. If LORS Part C (see Figure 2) does not recommend release south, and

HAB conditions are in effect (as defined in section 6-a), then advanced releases south up to maximum practicable could be made in accordance with this operational strategy. Maximum practicable releases relates to: the capacity in the Miami River, North New River, and Hillsboro canals to deliver water south while still providing the authorized flood control; and the treatment capacity in the STAs to meet downstream water quality standards. The key difference between HAB operations and normal operations under LORS for advanced releases south will be that the Tributary Hydrologic Conditions and the Multi-Seasonal Outlook would not be evaluated during HAB operations. Water levels and impacts to Everglades' ecosystems would still be evaluated as is currently done with in LORS Part C (Figure 2). Further elaboration is provided here.

Advanced releases south are defined as flows in the Miami River, North New River, and Hillsboro Canals which lead to the STAs/WCAs. Advanced releases for HAB operations will not be made out of S-271 (C-10A) and to tide to the Lake Worth Lagoon via C-51.

Advanced releases made south would be done for HAB operations only when in the Low, Baseflow, and Beneficial Use Sub-bands and only if conditions allow. Allowable conditions would include when all downstream WCAs (WCA-1, WCA-2A, and WCA-3A) are less than a quarter of a foot above their top zone on their respective regulation schedules. (Zone A1 for WCA-1, and Zone A for WCA-2A/WCA-3A) WCAs. Downstream WCAs refer to the WCAs downstream of the WCA ultimately receiving Lake Okeechobee releases, following water quality treatment in the State of Florida STAs. For example, if it is desired to make an advanced release to WCA-3A (via STA-3/4), both WCA-2A and WCA-3A water levels would be required to be less than s than a quarter of a foot above Zone A (on their respective regulation schedules) to initiate the advanced releases to WCA-2A.

Environmental conditions within the WCAs would also be evaluated. If advanced releases south would cause any of the WCAs to rise more rapidly than is ecologically preferable, then advanced releases may not be sent south from the lake. Advanced releases south would be determined based on weekly coordination with agency scientists (SFWMD and FDEP) and the WCA-3A Periodic Scientist Calls. Hydrologic, ecological, and water supply conditions within the WCAs would be evaluated before sending water south, consistent with how releases south from Lake Okeechobee are managed under LORS. No impacts to the WCAs are anticipated for HAB operations.

6-d. Releases to Tide (East and West to Estuaries)

Advanced releases would be limited up to 2,000 cfs measured at S-79 and up to 730 cfs measured at S-80. These advanced releases would only be done when LORS guidance indicates up to 450 cfs measured at S-79 and 200 cfs measured at S-80 or is silent on releases (Beneficial Use Sub-band). The red boxes in Figure 3 show the applicable boxes which could be subject to increased releases due to HAB operations. Not shown in Figure 3 is the Beneficial Use Sub-band, which would also be subject to increased releases due to HAB operations.

Releases could be reduced or held back/postponed due to HABs (postponed meaning doing less than the up-to limits within Part D of LORS during a HAB event) and would be "banked" as positive volumes to be tracked for a duration of 10 months (between 1 February and 1 December). The decision to postpone releases because of HAB decisions will be unique each time. The Corps will weigh the risk of holding back releases with risks associated with HABs. Flood risk is managed by the Corps DSO, and can

be informed by tropical activity/forecasts, precipitation forecasts, lake level, projected lake level and many other factors. HAB operations do not guarantee that releases will be ceased during HAB conditions. Under the current LORS 2008, a provision for make-up releases exists to account for releases held back in the operational band that can then be made up later. Due to the unprecedented construction on Herbert Hoover Dike (HHD) to repair the vulnerable high hazard dam, the holding back of releases when LORS 2008 recommends them is a decision which the DSO will closely evaluate based on the unique conditions at the time. Advanced releases will give the DSO much more flexibility to consider reducing or holding back releases from Lake Okeechobee.

The Corps will consult with federal and state agencies with the authority and technical expertise to determine HAB risks as described above. Those agencies could include, but not limited to, FDEP, FDOH, EPA, NOAA, and USGS.

Advanced releases within the Beneficial Use Sub-band would be cut back if lake levels fell within 0.25 feet of the WSM Band in order to reduce the risk of falling into this band (indicated by the red dashed line in Figure 1). In addition, when lake stages are below the ideal ecological low stage of 12 feet as defined in the 2005 Lake Okeechobee Conceptual Ecological Model, advanced releases would only be made if the lake was rising rapidly (greater than 0.15 feet per week). This action would be done to avoid risk of extreme low lake levels that can impact Lake Okeechobee ecology and threatened and endangered species. Attenuating the rate of rise on the lake can be ecologically beneficial to the lake ecology, including submerged aquatic vegetation and nesting birds, and therefore have a positive impact.

All advanced releases under HAB operations could be implemented in a pulse pattern or steady flows and should be based on the best available science. If a pulse is implemented, the duration of the pulse does not have a limit. The Corps typically coordinates with estuarine scientists at the SFWMD and other agencies to help determine the best pulse duration and pattern for the desired average flows based on current salinity conditions as well as rainfall forecasts. Under HAB operations this practice would continue.

The public will be notified of any HAB releases by the USACE's normal water management notification process (press release, internet webpage).

6-e. Water Bank for HAB operations

Advanced releases made and releases held back will be tracked for 10 months (between 1 February and 1 December). This time period was chosen to correspond with the beginning of the endangered everglades snail kite nesting period, for which Lake Okeechobee is considered a critical habitat. The intent is that action would not be taken prior to the nest initiation time period, such that conditions would be consistent with LORS 2008 conditions. Once any advanced releases are begun, recession rate constraints are applied such that any active nests would not be affected by the deviation releases. The volume of releases that are recommended by LORS 2008 but are not made (reduced releases) will be banked as a "deposit" and have a positive volume. Releases made that exceed those called for under LORS Part D guidance will be banked as a "withdrawal" or "loan" and have a negative volume. Values will be summed for a total bank amount which can be either positive or negative at any time during the HAB tracking period. The goal will always be to get to a zero balance by 1 December.

When the bank has a surplus (+) sum at any time, then more releases would be planned for later in the annual tracking period. When the bank has a deficit (-) at any time, it means releases could be held back during HAB conditions. Conditions which may impact the zero sum could be, but not limited to, a large rainfall or tropical event, drought, La Niña or El Niño, or environmental concerns. Tracking and banking these releases is intended to maintain all project purposes of Lake Okeechobee to the same levels as the 2008 LORS. Actual releases made will be based on the targeted weekly averages at the associated structure (S-79 and S-80) so the time step will be based on the release decision (often weekly but could vary). By 1 December, if a balance is still present in the water bank, this will be taken into consideration when evaluating when/if advanced releases are made the following year, as well as the guidelines for potential advanced releases.

Each year a "credit limit" will be established when the advanced releases are initiated based upon conditions and forecasts in order to set some guidelines for operations that year. This credit limit would limit the total volume of advanced releases made in the spring/early summer before defaulting back to LORS. This limit aims to find a balance between releasing enough to hold back in summer but not releasing too much so as to impact water supply if drier than expected conditions occur later on. A specific amount is not prescribed in this operational strategy and the limit should be based on conditions in the spring of that year; a reasonable example of this parameter was included in the modeling analysis of 120,000 ac-ft.

Releases south from Lake Okeechobee are made for multiple reasons to include regulatory releases from Lake Okeechobee, as well as water supply (for agricultural, municipal, and industrial uses as well as to prevent saltwater intrusion along the east coast of Florida). Under LORS 2008, when Part C does not call for lake releases to be sent south, the water for water supply may still be sent as required. Only lake water sent south to the STAs/WCAs as part of HAB operations would be tracked and banked. It is not anticipated that releases south will be held back during HAB operations, as there is minimal risks associated with sending water south when blooms are occurring or forecasted. Advanced releases made south when Part C does not call for them will be banked as negative volumes.

The water bank will be in one bank account for all HAB operations where advanced and reduced releases would be all put into the same bank. Advanced releases may be done east, west, or south depending on where releases could be beneficial or have minimal impacts. Needs may include, but not be limited to, environmental releases to maintain salinities within the estuaries or to hydrate the WCAs during important nesting periods. The balance of the water bank will be reported periodically in the Lake Okeechobee Periodic Scientists Call and summarized after the initial tracking period (1 February to 1 December) of this deviation being in place.

Table 1: HAB Operational Flexibility Accounting Example
(note the values in this table do not indicate maximums or minimums and are only used to illustrate a mathematic example of the banking to be done)

Week of	LORS Part D guidance (cfs)	Actual Releases made (cfs)	Delta Guidance/ LORS (cfs) (-) above LORS (+) below LORS	Duration (days)	Delta - Guidance/ LORS (ac-ft)* (-) above LORS (+) below LORS	Cumulative Water Account** (ac-ft)
27-Mar-18	650	2,730	-2,080	7	-28,872	-28,872
3-Apr-18	650	2,730	-2,080	7	-28,872	-57,745
10-Apr-18	650	2,730	-2,080	7	-28,872	-86,617
17-Apr-18	650	2,730	-2,080	7	-28,872	-115,490
24-Apr-18	650	2,730	-2,080	7	-28,872	-144,362
1-May-18	650	2,730	-2,080	7	-28,872	-173,235
8-May-18	650	2,730	-2,080	7	-28,872	-202,107
15-May-18	650	2,730	-2,080	7	-28,872	-230,980
22-May-18	4,170	4,170	0	7	0	-230,980
29-May-18	5,800	5,800	0	7	0	-230,980
5-Jun-18	5,800	5,800	0	7	0	-230,980
12-Jun-18	5,800	5,800	0	7	0	-230,980
19-Jun-18	4,170	4,170	0	7	0	-230,980
26-Jun-18	4,170	4,170	0	7	0	-230,980
3-Jul-18	5,800	5,800	0	7	0	-230,980
10-Jul-18	4,170	0	4,170	7	57,884	-173,096
17-Jul-18	4,170	0	4,170	7	57,884	-115,212
24-Jul-18	4,170	0	4,170	7	57,884	-57,329
31-Jul-18	4,170	0	4,170	7	57,884	555
7-Aug-18	4,170	4,170	0	7	0	555
					Total (ac-ft)* **	**555**

*Conversion between cfs per day and ac-ft is 1.983 (cfs per day * 1.983 = ac-ft)

**(+) Actual releases were more than LORS 2008 guidance (taking out a loan)

(-) Actual releases were less than LORS 2008 guidance (making a deposit)

*** Total at the end of the year. Positive means that all advanced releases were made up (held back slightly more than we released ahead of time) Note that numbers being non-zero is just the nature of the weekly time step

7. Potential effects

This deviation is expected to be in place for multiple years and the impacts will be discussed in terms of several scenarios since exact conditions are unknown. If the operations are successful in a net zero water bank balance would occur on 1 December. In this perfect scenario, there will be no expected effects to lake stage, and therefore no net effect to project purposes. Since the HAB operations effect the timing of releases, there will be conditions which would lead to higher or lower releases and lake levels temporarily but the overall volume of water released will be the same and therefore there will be no net effect on lake stage by 1 December each year. Risk of adverse environmental effects will be minimized through consideration of current and forecasted hydrologic and environmental conditions, and continued adherence to the HAB operational plan developed and implemented in close coordination with federal and state agencies through the Lake Okeechobee Periodic Scientists Calls. The goal of real time analysis and coordination is to avoid advanced releases that can cause stages to go into the WSM and/or could impact threatened and endangered species foraging and nesting on Lake Okeechobee. Complete effects analysis is included in the body of the associated Environmental Assessment. Additionally, a modeling analysis has been completed and is included in Appendix B, which includes lake ecological, water supply, and estuary ecological performance of this proposed deviation and compares to LORS 2008. The Corps' operations under this deviation will be consistent with NEPA coverage. If conditions warrant operations outside of the NEPA analysis associated with this deviation, additional NEPA documentation will be prepared.

The advanced releases are equivalent to a loss of 0.01 ft/day (0.06 ft/week) due to the west (2,000 cfs) and 0.003 ft/day (0.02 ft/week) to the east (730 cfs) on Lake Okeechobee. This estimation is a conservative maximum estimate of the greatest one day or weekly effects to lake stage (multi-day effects can be calculated by multiplying by the number of days to be implemented). In reality, a significant portion of the flows out of S-79 and S-80 is normally derived from local basin runoff, meaning that the effect on lake stage may be less.

Two scenarios where conditions may not be conducive to reaching net zero releases have been developed below in an effort to illustrate an envelope of effects. These scenarios are not meant to be all-inclusive or limiting in any way but meant to identify any potential effects that this deviation could have. All efforts will be made to anticipate factors and avoid the below scenarios.

Scenario 1 (potential impacts to water supply and no risk to dam safety): Advanced releases are made towards the beginning of the wet season in anticipation of a HAB within the Baseflow Sub-band. In this case an assumption of a 30 day duration of advanced releases at 2,730 cfs is made (2,000 + 730 cfs – assuming all releases out of S-79 and S-80 came from Lake Okeechobee) which is 2,080 cfs over a Baseflow release of 650 cfs. Releasing 2,080 cfs for 30 days would affect lake stages by approximately 0.28 feet (123,740 ac-ft). Then conditions turn unexpectedly drier than normal bringing stages down into the Beneficial Use Sub-band. There would be no lake releases to make-up, due to lake stages in the Beneficial Use Sub-band – as LORS does not outline releases in this sub-band. The volume of advanced releases (equivalent to 0.28 feet on Lake Okeechobee) would have a nominal effect on water supply and starting stage for Everglade snail kite nesting the following dry season. This is considered the worst-case scenario, but there is a low probability of this occurrence. See modeling Appendix B for further analysis of scenarios such as this.

Scenario 2 (potential improvements to dam safety and minimal risk to water supply): Advanced releases are made towards the beginning of the wet season in anticipation of a HAB, and then a large rain event impacts the lake, bringing the lake up multiple feet into the High Lake Management Band. The most recent example of this was 2017 Hurricane Irma, which brought the lake up very quickly and took many months to make levels safe again. In a scenario like this, releases may not be reduced or held back, to zero out the water bank account, due to dam safety risks. In this scenario, it is likely that most project purposes would benefit from releasing water out of Lake Okeechobee, especially flood risk management/dam safety. In this case, if the same flow and duration assumptions were made as in Scenario 1 (2,080 cfs for 30 days), the lake would crest 0.28 feet lower than without HAB operations, reducing the dam safety risk than if no HAB operations were implemented. There would be no risk to project purposes (water supply, fish and wildlife enhancement, navigation, and recreation). See modeling Appendix B for further analysis of scenarios such as this.

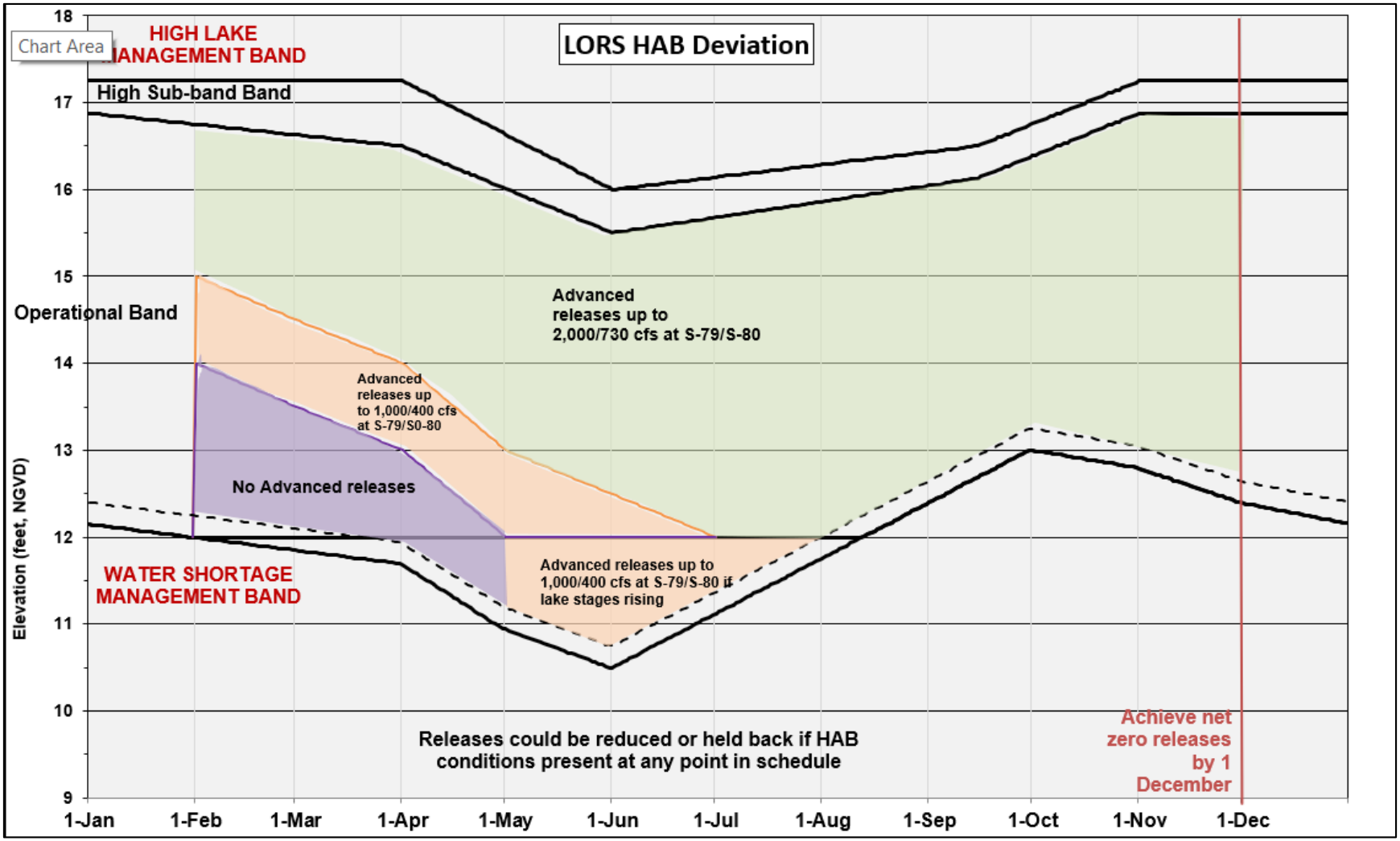

Figure 1: Range of lake stages where and how much east/west advanced releases could occur and at what level. Dashed black line indicates 0.25 ft above Water Shortage Management Band where advanced releases would not occur. Red line indicates that net zero releases are targeted by 1 December.

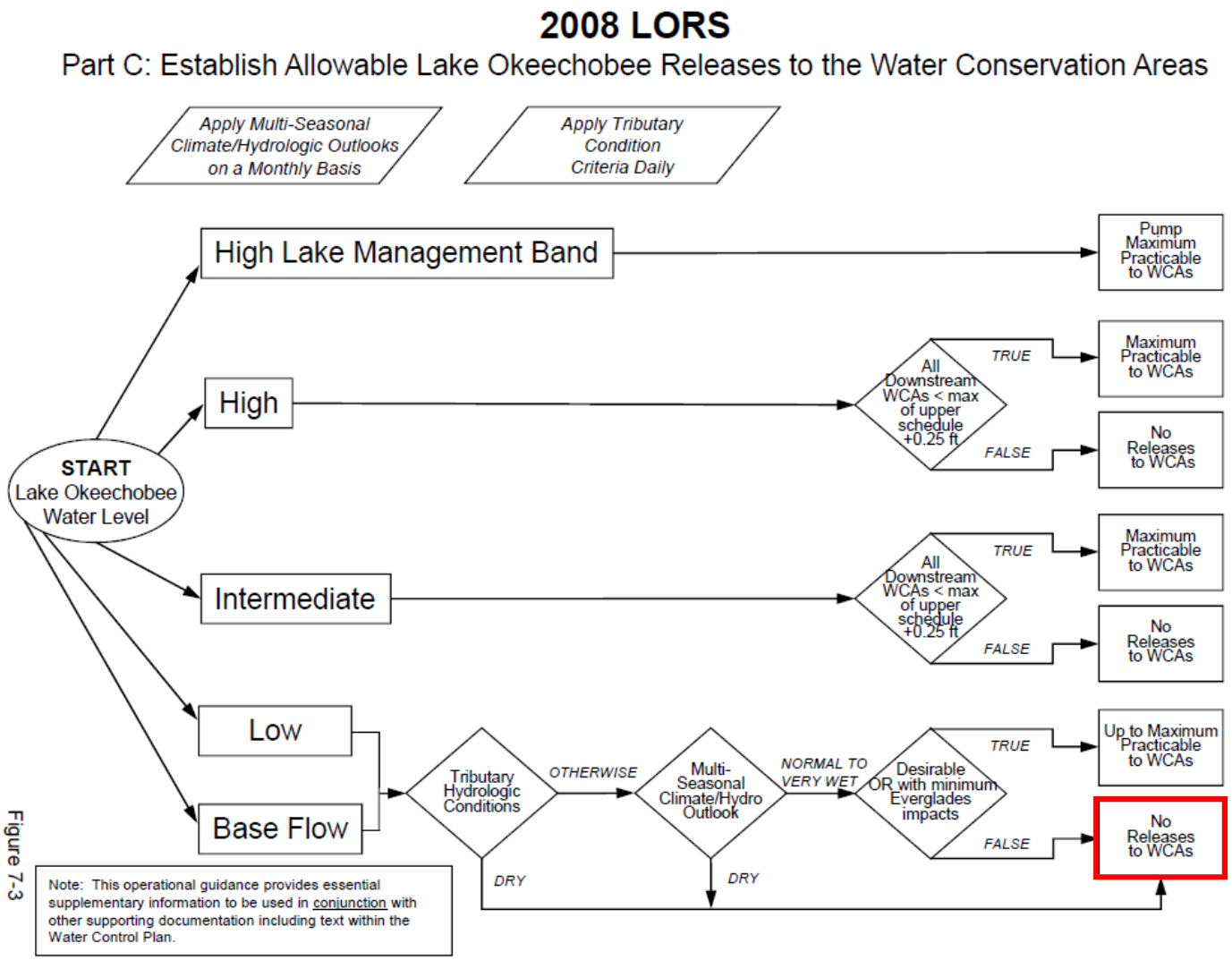

Figure 7-3

Figure 2: LORS Part C. The red boxes in Figure 3 show the applicable decision tree boxes which could be subject to increased releases due to HAB operations.

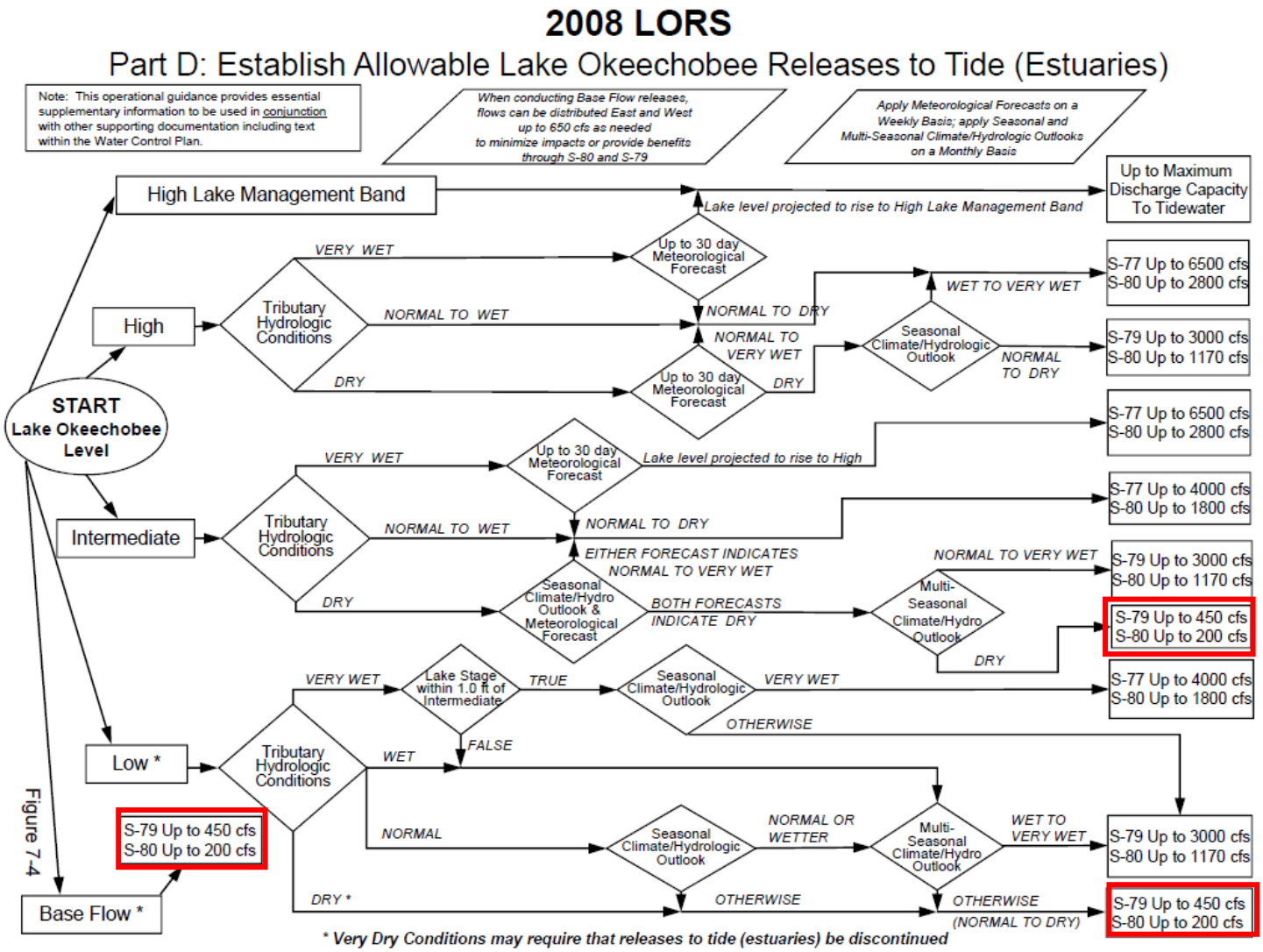

Figure 3: LORS Part D. The red boxes in Figure 3 show the applicable decision tree boxes which could be subject to increased releases due to HAB operations.

8. References

1. https://www.floridadisaster.org/news-media/news/20180709-gov.-scott-issues-emergency-order-to-combat-algal-blooms-in-south-florida/