Minimum Flows and Levels and Reservations Team (MFLRT) Update

November 14, 2018

GAT Meeting

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MFLRT Update Items

- MFLRT Scope of Work Schedule/Status
- Adopted and proposed MFLs/reservations
- Recent MFLs status
- SWUCA SWIMAL, MIA and regulatory wells
- Measuring sticks
- MFLRT Methods
- Color coding for MFLs status mapping
- Miscellaneous MFLs and reservation related activities

MFLRT Scope of Work Schedule/Status

Task	Start	Stop	Status
M1 – Support development of a reference condition for ECFTX modeling	2/21/2018	5/31/2018	Done
M2 – Characterize the current and future status of adopted minimum flows and levels and reservations	2/21/2018	1/31/2019*	Current status characterization done
M3 – Develop a technical appendix or supporting document on the current and future status of adopted minimum flows and levels and reservations for the 2020 CFWI regional water supply plan	4/18/2018	1/31/2019*	First draft of introductory sections developed
M4 – Summarize current and future status of adopted minimum flows and levels and reservations for the 2020 CFWI regional water supply plan	4/18/2018	2/28/2019*	To be done
M5 – Summarize adopted prevention or recovery strategies for the 2020 CFWI regional water supply plan	4/18/2018	2/28/2019*	To be done
M6 – Support review of 2015 CFWI Plan “next steps”	02/21/2018	To be determined	To be done

** May change based on proposed RWSP schedule changes*

Adopted and Proposed MFLs/Reservations (Figure B-1)

- 54 adopted MFLs within or extending into the CFWI Planning Area
- 27* MFLs or reservations within or extending into the CFWI Planning Area currently prioritized/ scheduled for adoption (includes reevaluations)

** Total contingent on final water body groupings*

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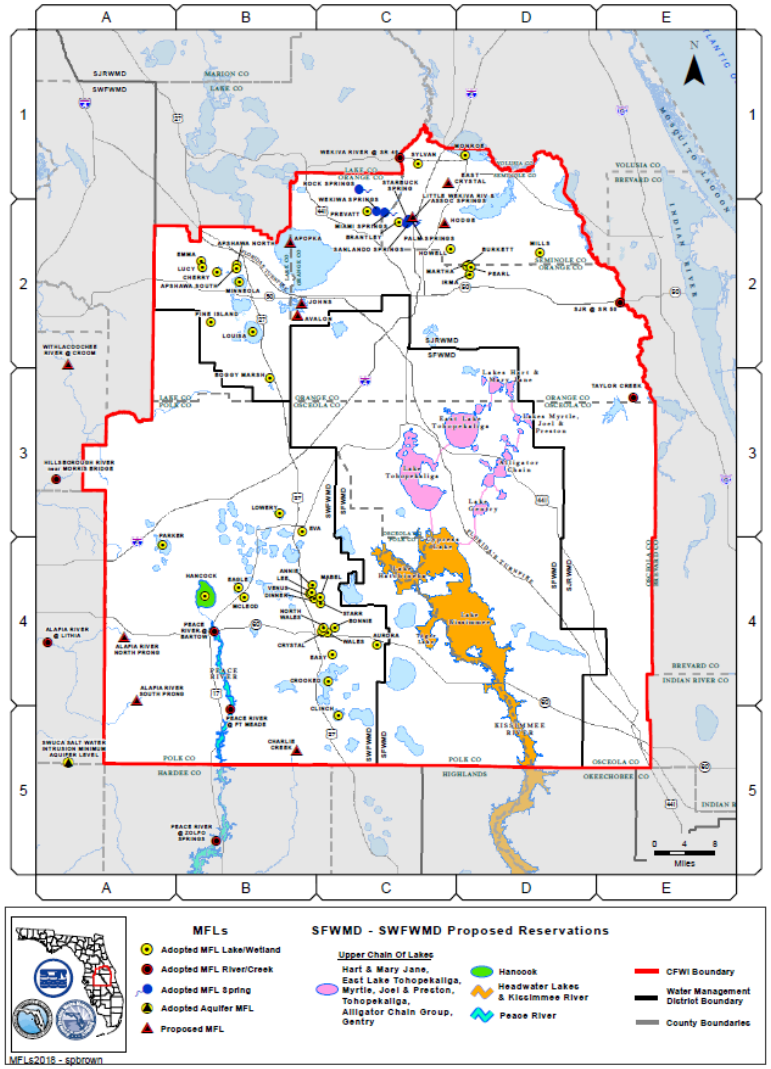

Figure B-1. Adopted and proposed MFLs and proposed reservations within and extending into the CFWI Planning Area.

Recent MFLs Status (Figure B-2)

- 54 total: 41 met, 13 not met
- Sites not-met clustered in southwest Polk County, except for 1 site in southwest Seminole County

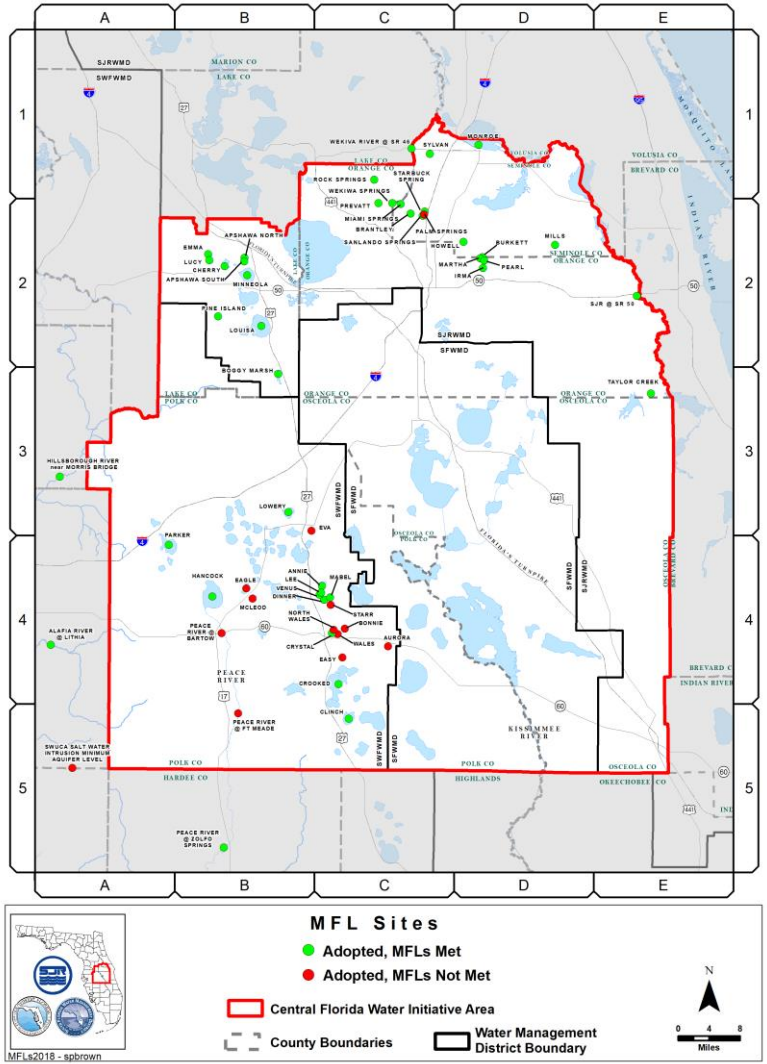

Figure B-2. Recent status of adopted MFLs within and extending into the CFWI Planning Area..

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SWUCA SWIMAL, MIA and Regulatory Wells (Figure B-3)

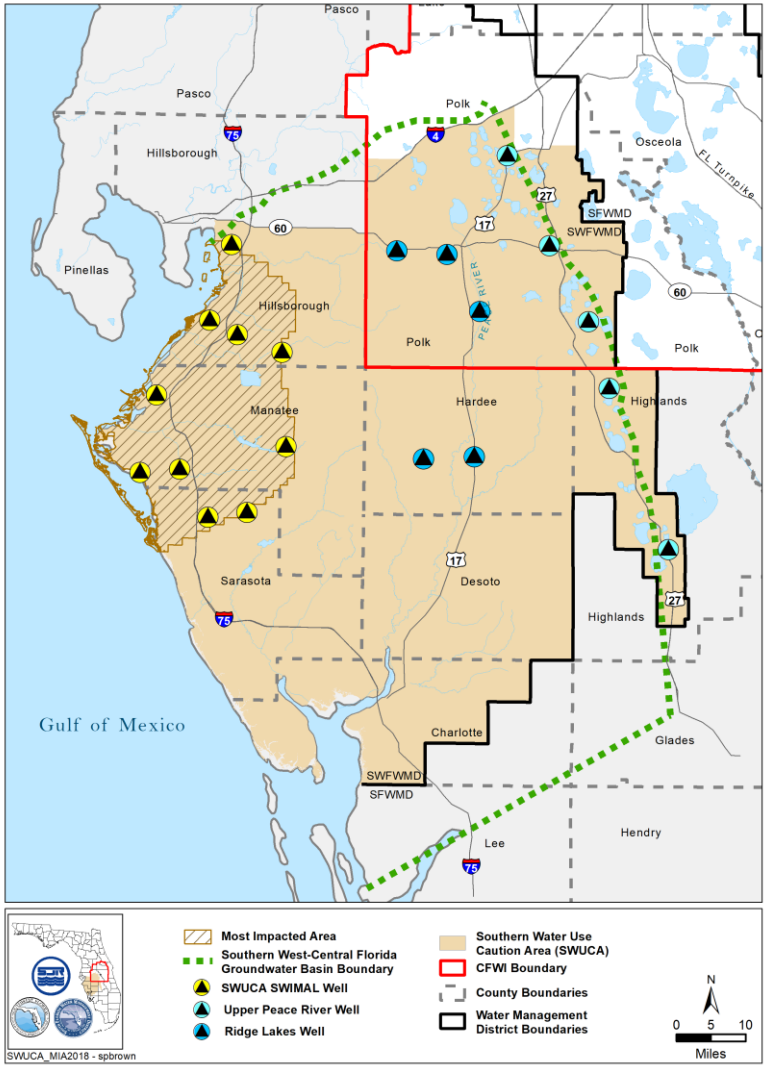

Figure B-3. Southern Water Use Caution Area (SWUCA), Most Impacted Area of the SWUCA and the Southern West-Central Florida groundwater basin relative to the CFWI Planning area.
Note: Regulatory wells associated with the Saltwater Intrusion Minimum Aquifer Level (SWIMAL) adopted for the Most Impacted Area of the SWUCA, and regulatory wells in the Upper Peace River and Lake Wales Ridge area of the SWUCA established as part of the SWUCA Recovery Strategy are also shown.

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Measuring Sticks

Measuring Sticks: Background

- From CFWI 2015 RWSP:

  *"The measuring sticks, identified in **Volume IA**, **Appendix B** and in CFWI 2013a, b, were developed for water resources including MFLs, non-MFL water bodies, wetlands and water quality, springs, rivers and groundwater system, and were used as constraints or considerations along with other regulatory considerations by the Districts to review potential environmental concerns in a uniform manner. "*

  *"To assess the potential impacts of cumulative water use on the environment and groundwater resources using the ECFT groundwater model, water resource constraints or considerations called "measuring sticks" (as discussed in **Chapter 3**) were used to identify environmental impact limits that could be used to develop planning-level estimates of groundwater availability."*

2015 RWSP Measuring Sticks Summary

31 MFLs Constraints Identified by the GAT

- 25 adopted lake/wetland MFLs in the CFWI area.
- 6 adopted spring MFLs in the CFWI area

14 MFLs Considerations Identified by the GAT

- Proposed MFLs for Johns Lake, Lake Avalon, Lake Hiawassee
- Proposed (reevaluation) MFLs for North Lake Apshawa, Prevatt Lake, South Lake Apshawa, Sylvan Lake
- Established MFLs for Wekiva River at State Road 44
- Proposed MFLs for Upper/Middle Withlacoochee River (model boundary flux and aquifer/river groundwater exchange)
- Adopted MFLs for Upper Hillsborough River (model boundary flux)
- Adopted MFLs for Peace River (aquifer/river groundwater exchange)
- Adopted SWUCA SWIMAL (model boundary flux)
- Adopted Peace River target well water levels for the SWUCA Recovery Strategy
- Adopted Lake Wales Ridge target well water levels for the SWUCA Recovery Strategy

Non-MFL Lakes/Wetlands

- Isolated ridge wetland acreage changes based on statistical method presented for RC and 2035 in RWSP.
- Water level change from the RC at assessed wetland sites (?)

Non-MFL Springs

- 3 springs within the CFWI area without adopted MFLs

Wellfield Water Quality

- Vertical migration of poorer quality water at 5 wellfields

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MFLRT Constraints and Considerations: Background

- From RWSP 2015 Appendix B (MFLs Methods):

  "The potential measuring sticks were classified as MFL constraints or other considerations based on MFLs site location relative to CFWI Planning Area and ECFT groundwater model domain boundaries and the type of resource characteristic, as outlined below.

- Basically, MFLs-related constraints were adopted lake/spring MFLs in CFWI area; MFLs-related considerations were adopted/proposed river MFLs, proposed lake MFLs in CFWI area, adopted SWUCA SWIMAL, adopted (not-MFLs) SWUCA recovery target wells

- Non-MFL-related considerations were non-MFLs lakes/wetlands, non-MFLs springs, and wellfield water quality

Current MFLs-Related Measuring Stick Options: Descriptions

36 MFLs Constraints

- Adopted MFLs for 29 lakes/wetlands within the CFWI Planning Area.
- Adopted MFLs for six springs within the CFWI Planning Area.
- Adopted MFLs for one river segment within the CFWI Planning Area.

Up to 16 MFLs-Related Considerations

- As available, MFLs that may be proposed but are not yet adopted for three lakes within the CFWI Planning Area.
- As available, revised MFLs that may be proposed but are not yet adopted for three lakes with established MFLs within the CFWI Planning Area (reevaluation MFLs).
- As available, revised MFLs that may be proposed but are not yet adopted for one river segment with established MFLs within the CFWI Planning Area (reevaluation MFLs).
- As available, revised MFLs that may be proposed but are not yet adopted for six springs with established MFLs within the CFWI Planning Area (reevaluation MFLs).
- An adopted Saltwater Intrusion Minimum Aquifer Level (SWIMAL) for the Most Impacted Area of the Southern Water Use Caution Area (SWUCA) within the SWFMWD.
- An established target regulatory water level based on five UFA wells used to characterize ground water levels below Lake Wales Ridge Lakes where MFLs have been established and are being recovered.
- An established target regulatory water level based on five Upper Floridan aquifer (UFA) used to characterize groundwater levels below the upper Peace River where MFLs have been established and are being recovered.

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Current MFLs-Related Measuring Stick Options (Table B-6)

Table B-6. MFL constraints and considerations identified as potential measuring sticks for initial evaluations of regional groundwater availability in the CFWI Planning Area.

Map Grid [a]	Water Body/ Regulatory Well Target Name	County	Water Management District [b]	Year Adopted [c]	Recent MFLs (or Regulatory Target) Status
MFL Constraints					
Adopted Lake and Wetland MFLs within the CFWI Planning Area					
C-4	Aurora, Lake	Polk	SWFWMD	2018	Not Met
B-3	Boggy Marsh	Lake	SJRWMD	2001	Met
C-2	Brantley, Lake	Orange	SJRWMD	2001	Met
D-2	Burkett Lake [d]	Orange	SJRWMD	2002	Met
B-2	Cherry Lake	Lake	SJRWMD	2002	Met
C-4	Crooked Lake	Polk	SWFWMD	2017	Met
B-4	Eagle Lake	Polk	SWFWMD	2017	Not Met
C-4	Easy, Lake	Polk	SWFWMD	2018	Not Met
B-2	Emma, Lake	Lake	SJRWMD	2003	Met
B-3	Eva, Lake	Polk	SWFWMD	2018	Not Met
B-4	Hancock, Lake [d]	Polk	SWFWMD	2016	Met
D-2	Howell Lake [d]	Seminole	SJRWMD	2001	Met
D-2	Irma, Lake [d]	Orange	SJRWMD	2002	Met
B-2	Louisa, Lake	Lake	SJRWMD	2000	Met
B-3	Lowery, Lake	Polk	SWFWMD	2018	Met
B-2	Lucy, Lake	Lake	SJRWMD	2003	Met
B-4	McLeod, Lake	Polk	SWFWMD	2017	Not Met
D-2	Martha, Lake [d]	Orange	SJRWMD	2002	Met
D-2	Mills Lake	Seminole	SJRWMD	1998	Met
B-2	Minneola, Lake	Lake	SJRWMD	2002	Met
B-2	North Lake Apshawa	Lake	SJRWMD	2002	Met
A-4	Parker, Lake [d]	Polk	SWFWMD	2006	Met
D-2	Pearl, Lake [d]	Orange	SJRWMD	2002	Met
B-2	Pine Island Lake	Lake	SJRWMD	2001	Met
C-2	Prevatt Lake	Orange	SJRWMD	1998	Met
B-2	South Lake Apshawa	Lake	SJRWMD	2002	Met
C-4	Starr, Lake	Polk	SWFWMD	2017	Not Met
C-1	Sylvan Lake	Seminole	SJRWMD	1998	Met
C-4	Wailes, Lake	Polk	SWFWMD	2017	Not Met
Adopted River MFLs within the CFWI Planning Area					
C-1	Wekiva River at State Road 46	Lake/Seminole	SJRWMD	1992	Met
Adopted Spring MFLs within the CFWI Planning Area					
C-2	Miami Springs [e]	Seminole	SJRWMD	1992	Met
C-2	Palm Springs [e]	Lake	SJRWMD	1992	Not Met
C-1	Rock Springs [e]	Orange	SJRWMD	1992	Met
C-2	Sanlando Springs [e]	Seminole	SJRWMD	1992	Met
C-2	Starbuck Spring [e]	Seminole	SJRWMD	1992	Met
C-2	Wekiwa Springs [e]	Orange	SJRWMD	1992	Met
Considerations					
Proposed Lake MFLs within the CFWI Planning Area					
B-2	Avalon, Lake *or* Johns Lake [fg]	Orange	SJRWMD	na	na
C-1	East Crystal Lake [g]	Seminole	SJRWMD	na	na
C-2	Hodge, Lake [g]	Seminole	SJRWMD	na	na
Proposed, Revised Lake MFLs within the CFWI Planning Area (Reevaluation MFLs)					
C-2	Prevatt Lake [g]	Orange	SJRWMD	1998	Met
B-2	South Lake Apshawa [g]	Lake	SJRWMD	2002	Met
C-1	Sylvan Lake [g]	Seminole	SJRWMD	1998	Met
Proposed, Revised River MFLs within the CFWI Planning Area (Reevaluation MFLs)					
C-1	Wekiva River at State Road 46 [g]	Lake/Seminole	SJRWMD	1992	Met
Proposed, Revised Spring MFLs within the CFWI Planning Area (Reevaluation MFLs)					
C-2	Miami Springs [gh]	Seminole	SJRWMD	1992	Met
C-2	Palm Springs [gi]	Lake	SJRWMD	1992	Not Met
C-1	Rock Springs [g]	Orange	SJRWMD	1992	Met
C-2	Sanlando Springs [gi]	Seminole	SJRWMD	1992	Met
C-2	Starbuck Spring [gi]	Seminole	SJRWMD	1992	Met
C-2	Wekiwa Springs [g]	Orange	SJRWMD	1992	Met
Adopted Aquifer MFLs (Reevaluation MFLs)					
A-5	SWUCA Salt Water Intrusion Minimum Aquifer Level [j]	Hillsborough/ Manatee/Sarasota	SWFWMD	2007	Not Met
Regulatory Wells					
See Figure B-3	Ridge Lakes Regulatory Wells [k]	Polk/Hardee	SWFWMD	2007	Target Met
	Upper Peace River Regulatory Wells [k]	Polk	SWFWMD	2007	Target Met

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Current MFLs-Related Measuring Stick Options (Table B-6 Footnotes)

[a] Map grid refers to **Figure B-1**, except for the Ridge Lake and Upper Peace River Regulatory Wells, which are shown in **Figure B-3**.

[b] South Florida Water Management District (SFWMD), St. Johns River Water Management District (SJRWMD) and Southwest Florida Water Management District (SWFWMD).

[c] Date listed is effective date for the MFLs rule; in some instances, adoption may have occurred in the preceding year.

[d] No significant Floridan aquifer connection (NSFAC).

[e] Although minimum spring flows were set primarily to cumulatively maintain minimum flows in the Wekiva River System, the assumption was also made that these flows would be sufficient to protect the ecology of individual springs.

[f] MFLs will be developed for either Lake Avalon or Johns lake, but not both.

[g] As available.

[h] Reevaluated spring MFLs may be consolidated with reevaluated Wekiwa Springs MFLs

[i] Reevaluated spring MFLs may be consolidated with reevaluated Little Wekiva River MFLs

[j] Well sites associated with the adopted Southern Water Use Caution Area (SWUCA) Salt Water Intrusion Minimum Aquifer Level are outside of the CFWI Planning Area, but groundwater withdrawals within the CFWI Planning Area may affect water levels in the wells.

[k] Some established Lake Wales Ridge and Upper Peace River regulatory wells associated with the Southern Water Use Caution Area (SWUCA) recovery strategy are outside of the CFWI Planning Area, but groundwater withdrawals within the CFWI Planning Area may affect water levels in the wells.

MFLRT Methods

MFLRT Data and Model Simulation Needs

- Hydrographs of groundwater (UFA) levels (below MFL lakes, at 10 SWUCA regulatory wells, and at the SWUCA MIA boundary) or flows (at MFL springs) for the 2003-2014 ECFTX simulation period, based on use of the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RWSP for:
  - 2014 withdrawal conditions (2014 Reference Condition or 2014 RC)
  - 2030 withdrawal conditions
  - 2040 withdrawal conditions
  - 2003 withdrawal conditions
  - 2005 withdrawal conditions
  - 50% withdrawal reduction from the RC
  - 25% withdrawal reduction from the RC
- Hydrogaphs of groundwater (SAS) levels below MFL lakes for the 2003-2014 ECFTX simulation period
- Existing freeboard/deficit values for each MFL water body, SWUCA MIA Boundary drawdown criterion, recent regulatory well water levels

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MFLs-Related Measuring Stick Definitions

Freeboard

- For lake or wetland MFLs constraints or considerations, freeboard is the potential or allowable drawdown in the UFA, in feet, that could occur without resulting in an MFL not being met.
- For spring MFLs constraints or considerations, freeboard is the potential or allowable reduction in flow rated, in cubic feet per second, or the percentage reduction in flow rate that could occur without resulting in an MFL not being met.
- For the SWUCA SWIMAL consideration, freeboard is the potential or allowable drawdown in the UFA, in feet, that could occur without resulting in more than a 0.0495 ft drawdown in ECFTX model cells that include the boundary of he Most Impacted Area (MIA) of the SWUCA
- For SWUCA regulatory well considerations, freeboard is the potential or allowable drawdown in the UFA, in feet, that could occur without reducing water levels below regulatory target levels

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Deficit or Negative Freeboard

- Amount of water required (i.e., increase in UFA water level in feet or increase in cubic feet second) needed to: recover an MFL, reduce the drawdown in ECFTX model cells that include the SWUCA MIA boundary to 0.0495 ft, or achieve SWUCA regulatory well target levels

MFLs-Related Measuring Stick Definitions (continued)

Withdrawal Condition Scenarios

2014 Reference Condition: represents 2014 withdrawals normalized using the 2015 RWSP approach

25% Withdrawal Reduction Condition: represents a 25% reduction in 2014 withdrawals normalized using the 2015 RWSP approach

50% Withdrawal Reduction Condition: represents a 50% reduction in 2014 withdrawals normalized using the 2015 RWSP approach

2030 Withdrawal Condition: represents projected 2030 withdrawals normalized using the 2015 RWSP approach

2040 Withdrawal Condition: represents projected 2040 withdrawals normalized using the 2015 RWSP approach

Surface Water Model Year Condition: represents withdrawals in the year an MFL was assessed using a surface water (SW) model. The SW model-year pumping will be normalized using the 2015 RWSP approach.

Methods for SJRWMD Systems

1. Run the ECFTX model for the 2003-2014 simulation period using a well file for the 2014 RC and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RWSP.
2. Generate a groundwater level (below an MFL lake) or flow (at an MFL spring) hydrograph for each MFL system using model output from the 2014 RC run (Hydrograph 1 in Figure SJ-1).
3. Run the ECFTX model (with appropriate model well file) using the respective surface water model year pumping and the 2015 RWSP peaking-factor approach for each system (see Table SJ-1), as was done for the 2014 RC.
4. Generate a groundwater level or flow hydrograph for each MFL system using output from the surface water model year condition run (see Hydrograph 2 in Figure SJ-1).
5. Calculate average drawdown or flow reduction by averaging the difference between the 2014 RC hydrograph (see Hydrograph 1 in Figure SJ-1) and the SW model year condition hydrograph (Hydrograph 2 in Figures SJ-1).
6. Subtract the calculated average drawdown or flow reduction from the freeboard/deficit estimated for surface water model year shown in Table SJ-1 to determine the 2014 RC freeboard or deficit.

Methods for SJRWMD Systems (continued)

7. Run the ECFTX model for the 2003-2014 simulation period using well files for the 2030 Withdrawal Condition and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RSWP.
8. Generate a groundwater level (below an MFL lake) or flow (at an MFL spring) hydrograph for each MFL system using model output from the 2030 Withdrawal Condition model run.
9. Calculate average drawdown or flow reduction for the 2030 Withdrawal Condition by averaging the difference between the 2014 RC hydrograph and the 2030 Withdrawal Condition hydrograph.
10. Subtract the calculated average drawdown or flow reduction from the 2014 RC freeboard/deficit to determine the 2030 Withdrawal Condition freeboard or deficit.
11. Repeat steps 7 through 10 for the 2040 Withdrawal condition (and any additional simulations).

SJRWMD Methods (Figure SJ-1)

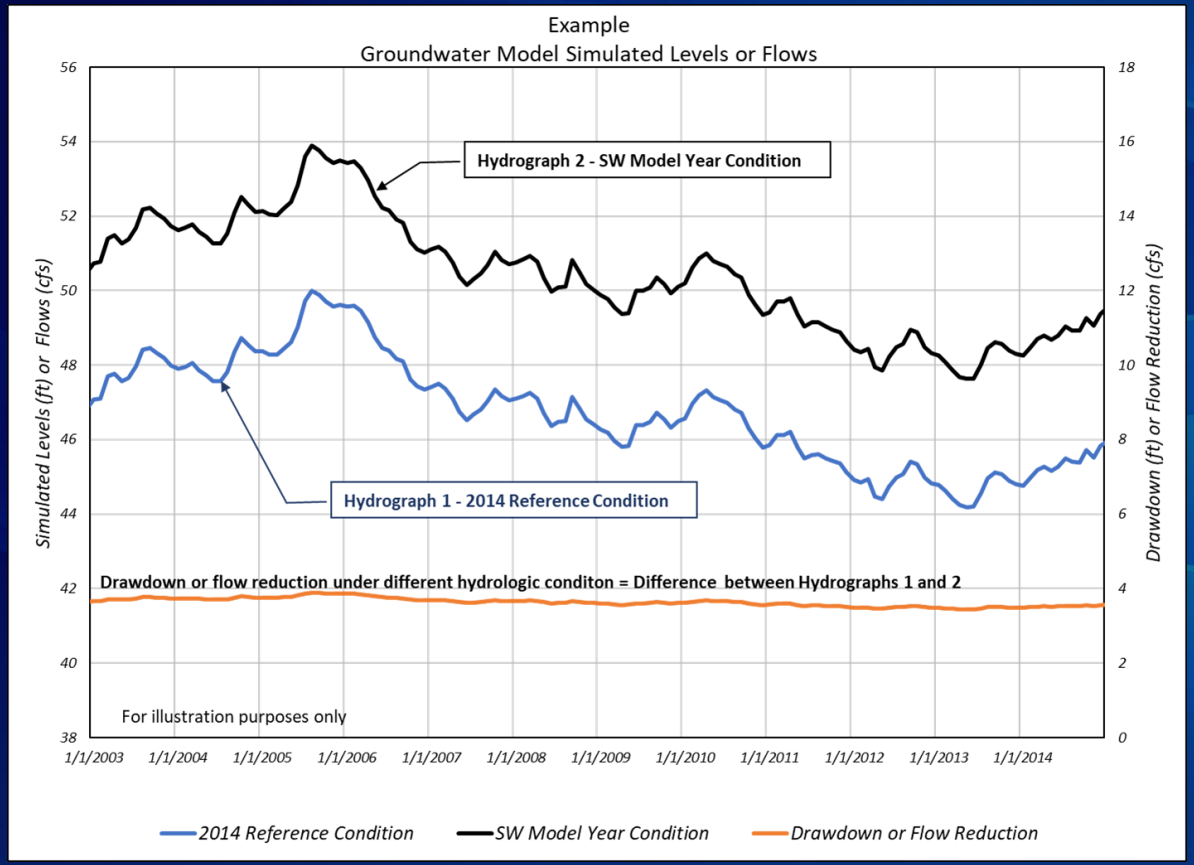

Figure 1. Illustrative graph for estimating freeboard/deficit in 2014 using ECFTX model

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SJRWMD Methods (Table SJ-1)

Table SJ-1 . Summary of MFLs from 2015 CFWI RWSP

Water Body Type	Year Adopted / Proposed Rule Making	Site	County	Surface Water Model Year	2005 Freeboard (+) or Deficit (-) (ft or cfs)
Lake	2002	Apshawa North	Lake	1998	0.4
Lake	2002 / 2019	Apshawa South	Lake	1998	0.4
Lake / Wetland	2001	Boggy Marsh	Lake	2005	2.1
Lake	2001	Brantley	Seminole	2003	2.2
Lake	2002	Cherry	Lake	2003	1.5
Lake	2003	Emma	Lake	2003	3.0
Lake	2000	Louisa	Lake	2003	2.0
Lake	2003	Lucy	Lake	2003	3.0
Lake	1998	Mills	Seminole	2003	2.3
Lake	2002	Minneola	Lake	2003	2.1
Lake	2001	Pine Island	Lake	2005	1.5
Lake	1998 / 2019	Prevatt	Orange	2002	1.1
Lake	1998 / 2017	Sylvan	Seminole	2002	1.1
River	1992 / 2019	Wekiva River at State Road 46	Orange	1990	8.0
Spring	1992 / 2019	Miami	Seminole	1990	1.0
Spring	1992 / 2019	Palm	Seminole	1990	-1.8
Spring	1992 / 2019	Rock	Orange	1990	2.4
Spring	1992 / 2019	Sanlando	Seminole	1990	4.0
Spring	1992 / 2019	Starbuck	Seminole	1990	0.1
Spring	1992 / 2019	Wekiwa	Orange	1990	2.3

Will use:

- 2003 Withdrawal Condition simulation for 2003 and 2002 surface model year water bodies
- 2005 Withdrawal Condition simulation for the 2005, 1990 and 1998 surface model year water bodies

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Methods for SWFWMD Lakes

1. Run the ECFTX model for the 2003-2014 simulation period using a well file for the 2014 RC and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RWWP.
2. Generate a groundwater level (below an MFL lake) hydrograph for each MFL lake using model output from the 2014 RC run.
3. Run the ECFTX model (with appropriate model well file) for the 50% Withdrawal Reduction Condition with the 2015 RWSP peaking-factor approach, as was done for the 2014 RC.
4. Generate a groundwater level hydrograph for each MFL lake using model output from the 50% Withdrawal Reduction Condition run.
5. Calculate average drawdown by averaging the difference between the 2014 RC hydrograph and the 50% Withdrawal Reduction Condition hydrograph.
6. Subtract twice (2x) the calculated average drawdown from the total allowable freeboard identified for each MFL lake (see Table SW-1) to determine the 2014 RC freeboard or deficit.

Methods for SWFWMD Lakes (continued)

7. Run the ECFTX model for the 2003-2014 simulation period using well files for the 2030 Withdrawal Condition and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RSWP.
8. Generate a groundwater level (below an MFL lake) hydrograph for each MFL lake using model output from the 2030 Withdrawal Condition model run.
9. Calculate average drawdown or flow reduction for the 2030 Withdrawal Condition by averaging the difference between the 2014 RC hydrograph and the 2030 Withdrawal Condition hydrograph.
10. Subtract the calculated average drawdown or flow reduction from the 2014 RC freeboard/deficit to determine the 2030 Withdrawal Condition freeboard or deficit.
11. Repeat steps 7 through 10 for the 2040 Withdrawal condition (and any additional simulations).

Note: These steps are the same as steps 7 through 11 identified for SJRWMD MFL systems

SWFWMD Methods (Table SW-1)

Table SW-1 . Total freeboard summary.

Water Body Type	Year Adopted	Site[a]	County	Total Freeboard (+) or Deficit (-) (ft)
Lake	2018	Aurora	Polk	2.0
Lake	2017	Crooked	Polk	To be determined
Lake	2017	Eagle	Polk	2.2
Lake	2018	Easy	Polk	1.5
Lake	2018	Eva	Polk	2.0
Lake	2016	Hancock	Polk	NSFAC[b]
Lake	2018	Lowery	Polk	13.1
Lake	2017	McLeod	Polk	2.5
Lake	2006	Parker	Polk	NSFAC[b]
Lake	2017	Starr	Polk	To be determined
Lake	2017	Wailes	Polk	To be determined

[a] *Also investigating status of water budget modeling for potential inclusion of two additional Polk County lakes (Annie and Clinch).*

[b] *NSFAC = No significant Floridan aquifer connection.*

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Methods for SWFWMD SWUCA SWIMAL (MIA)

1. Run the ECFTX model for the 2003-2014 simulation period using a well file for the 2014 RC and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RWSP.
2. Generate a groundwater level hydrograph for each ECFTX model cell that includes the MIA boundary (see Figure B-3) using model output from the 2014 RC run.
3. Run the ECFTX model (with appropriate model well file) for the 50% Withdrawal Reduction Condition with the 2015 RWSP peaking-factor approach, as was done for the 2014 RC.
4. Generate a groundwater level hydrograph for each ECFTX model cell that includes the MIA boundary using model output from the 50% Withdrawal Reduction Condition run.
5. Calculate average drawdown for each ECFTX model cell that includes the MIA boundary by averaging the difference between the 2014 RC hydrograph and the 50% Withdrawal Reduction Condition hydrograph.
6. Subtract twice (2x) the calculated average drawdown from the total allowable freeboard (0.0495 ft) identified for each ECFTX model cell that includes the MIA boundary to calculate the 2014 RC freeboard or deficit drawdown for each cell.

Methods for SWFWMD SWUCA SWIMAL (MIA) (continued)

7. Run the ECFTX model for the 2003-2014 simulation period using well files for the 2030 Withdrawal Condition and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RSWP.

8. Generate a groundwater level hydrograph for each ECFTX model cell that includes the MIA boundary using model output from the 2030 Withdrawal Condition model run.

9. Calculate average drawdown or flow reduction for the 2030 Withdrawal Condition by averaging the difference between the 2014 RC hydrograph and the 2030 Withdrawal Condition hydrograph.

10. Subtract the calculated average drawdown or flow reduction from the 2014 RC freeboard/deficit to calculate the 2030 Withdrawal Condition freeboard or deficit.

11. Repeat steps 7 through 10 for the 2040 Withdrawal condition (and any additional simulations).

Note: These steps are the same as steps 7 through 11 identified for SJRWMD MFL systems and SWFWMD Lakes

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Methods for SWFWMD SWUCA Regulatory Wells

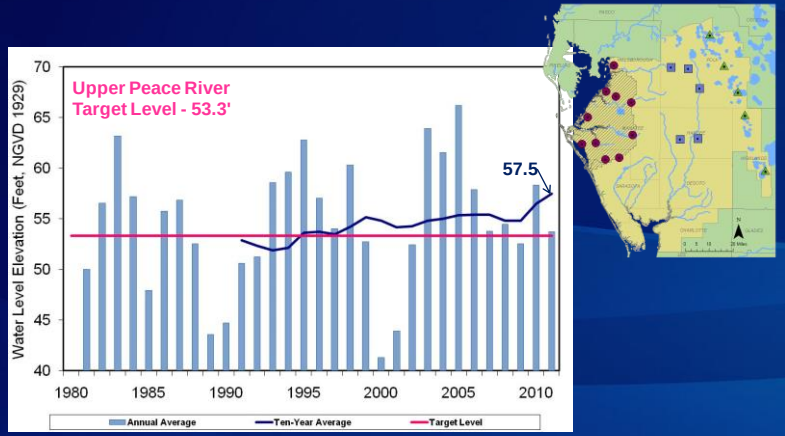
1. Determine the median of the “recent”, 10-year (2005 through 2014) moving average UFA water levels for the five Upper Peace River regulatory wells, and separately, for the five Ridge Lakes regulatory wells (see Figures B-3 and SWF-1).
2. Run the ECFTX model for the 2003-2014 simulation period using a well file for the 2014 RC and the peaking-factor approach for adjusting monthly pumping that was used for the 2015 RWSP.
3. Generate a groundwater level hydrograph for each regulatory well using model output from the 2014 RC run.
4. Run the ECFTX model (with appropriate model well file) for 2030 Withdrawal Condition with the 2015 RWSP peaking-factor approach, as was done for the 2014 RC.
5. Generate a groundwater level hydrograph for each regulatory well using model output from the 2030 Withdrawal Condition runs.
6. Calculate average drawdown for each regulatory well by averaging the difference between the 2014 RC hydrograph and the 2030 Withdrawal Conditions hydrograph.

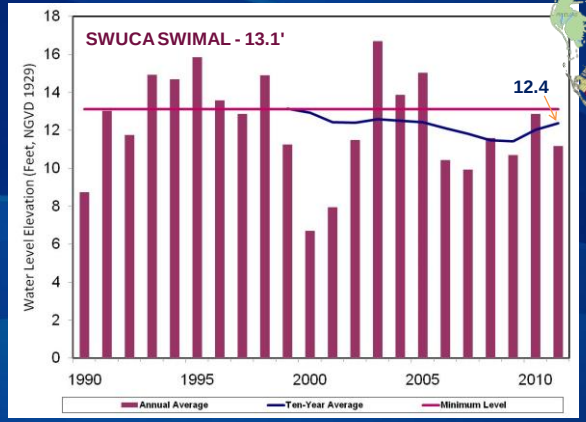
Methods for SWFWMD SWUCA Regulatory Wells

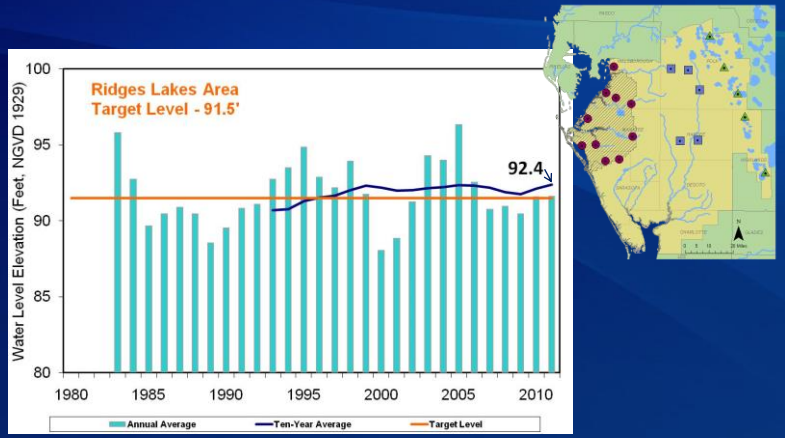
7. Subtract the median of the calculated average drawdown for each regulatory well set (i.e., the Upper Peace and Ridge Lakes wells) from the respective “recent” averaged-regulatory well water levels, and compare to the regulatory well target level (53.5 ft above NGVD29 for Upper Peace wells; 91.5 ft above NGVD29 for Ridge Lakes wells) to determine the 2030 Withdrawal Condition freeboard or deficit.

8. Repeat steps 4 through 7 for the 2040 Withdrawal Condition (or any additional simulations).

SWUCA Regulatory Well Targets and SWIMAL (Figure SWF-1)







Note: example figures for illustrative purposes only

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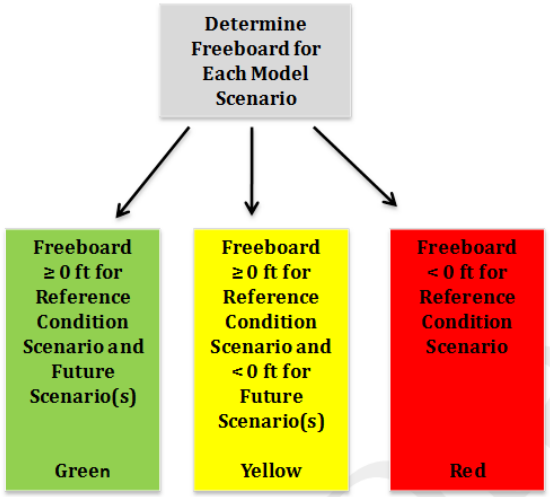
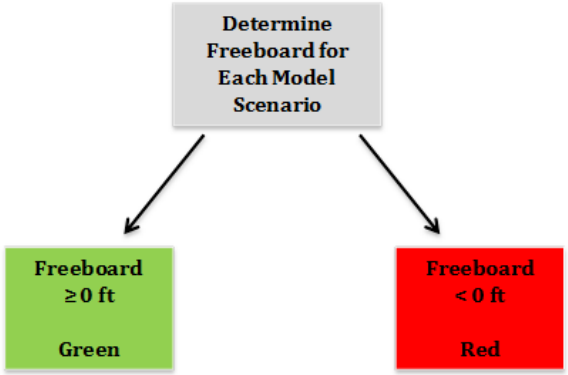
Color Coding for MFLs Status Mapping



Three-color coding scheme for classification of minimum flows and levels freeboard values. The approach was also used for metrics associated with other considerations that were evaluated.



Two-color coding scheme for classification of minimum flows and levels freeboard values. The approach was also used for metrics associated with other considerations that were evaluated.

- Format was agreed upon during previous MFLRT meeting.
- At a recent WRAT meeting, the need to check on use of “red” in left panel for only the RC scenario was questioned.
- Review of 2015 RWSP Appendix B indicates use for the coding as presented above (see next slide).

Example: Coding Results Figure from RWSP 2015

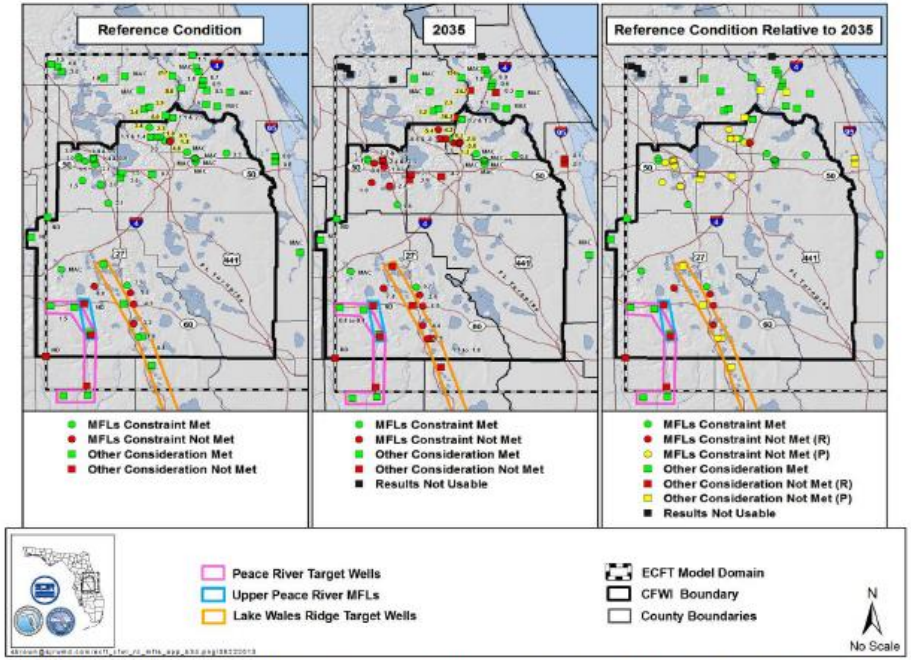


Figure B-34. 2035 Withdrawal Scenario – MFL Constraints and Other Considerations: Status (met or not met) and remaining freeboard for the Reference Condition (2005) and 2035 withdrawal scenario (left and middle panels) and status for the Reference Condition (2005) relative to the 2035 withdrawal scenario with recovery (R) and prevention (P) status differentiated (right panel).

Note: Remaining freeboard values expressed in feet (non-highlighted values) or cubic feet per second (yellow highlighted values), with MAC indicating that freeboard was not established due to minimal aquifer connection at the site and ND indicating that freeboard was not determined. Two freeboard values are shown for four sites with adopted and proposed MFLs that were used respectively, as MFLs constraints and other considerations. A range of freeboard values is shown for each set of wells based on the method used for their derivation (see Section 4). Symbols for Blue Cypress Water Management Area (other consideration met; remaining freeboard value = MAC) and the southernmost of the Lake Wales Ridge wells grouped by the orange polygon are not shown in the mapped area.

Miscellaneous MFLs and Reservation Related Activities

- 2018 MFLs priority lists and schedules to be submitted to DEP by 11/15/2018
- Wekiva Basin MFLs peer review update

EXTRA SLIDE(S)

Draft RWSP Schedule

07/03/2018 DRAFT Schedule for 2020 CFWI RWSP				
Task	Old Due Dates	Old Duration	New Due Dates	New Duration
Transient Model Calibration Completed	12/31/2017		November 2018 ?	
All Scenarios - Model Runs - Completed	9/30/2018		December 2018 - January 2019 ?	
Technical Methods Workshop	N/A		February ? 2019	
All Analyses Completed (This is all teams - MFLRT, EMT, GAT and includes producing maps and results for the RWSP)	10/17/2018		February 2019 - 4/30/2019	
Introduction, Progress since 2015, Demand, Conservation, Funding, WR Development, Sources Options Chapters and Appendices to RWSP	10/1/2018		2/1/2019	
All Remaining (model dependent) Chapters and Appendices to RWSP Team	8/30/2018 - 2/27/2019		5/30/2019	
Technical Writing Team Prepares 1st Internal Draft	2/27/2019 - 6/5/2019	95 Days	5/30/2019 - 8/14/2019	75 Days
1st Internal RWSP Draft Release	6/5/2019		8/15/2019	
Review by Internal Team and Comments	6/5/2019 - 8/7/2019	62 Days	8/15/2019-9/30/2019	45 Days
Technical Writing Team Prepares 2nd Internal Draft	8/7/2019 - 10/18/2019	71 Days	10/1/2019 - 12/9/2019	67 Days
2nd Internal RWSP Draft Release	10/18/2019		12/10/2019	
Review by Internal Team and Comments	10/18/2019 - 12/3/2019	45 Days	12/10/2019 - 1/10/2020	30 Days
SC Meeting to Notify Posting of External Draft of RWSP in March	N/A		January 2020	
Optional Briefing to GBs to Notify of RWSP Being Posted in March	N/A		January 2020	
Technical Writing Team Prepares External Draft	12/4/2019 - 2/3/2020	60 Days	1/10/2020 - 3/13/2020	63 Days
Present External Draft Summary to Governing Boards	March 2020		February 2020 / March 2020	
External Draft Posted to Websites	2/3/2020		3/13/2020	
Check in with SC & MOC (Start Review 3/13/2020 and have comments to us 5/15/2020)	N/A		April 2020	
Public Comment Period	2/5/2020 - 5/26/2020	111 Days	3/13/2020-5/15/2020	62 Days
Public Workshops	3/4/2020 - 5/1/2020		April 2020	
Review Comments, Answer and Update Draft RWSP	4/14/2020 - 8/25/2020	133 Days	5/15/2020-8/25/2020	103 Days
MOC Review of RWSP Updates and Changes Made	8/26/2020 - 9/16/2020	21 Days	8/26/2020 - 9/16/2020	21 Days
SC Approval	October ? 2020		October ? 2020	
Final Draft (with Comments / Responses Appendix) - Posted to Website After SC Approval	October ? 2020		October ? 2020	
Final Draft (with Comments / Responses Appendix) - Governing Board Approvals	October 2020		November 2020	

- May need to change MFLRT scope of work task dates once RWSP schedule is finalized.

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