

Minimum Flows and Levels and Reservations Team (MFLRT) Update

February 27, 2019

WRAT Meeting

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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

MFLRT Update Items

1. Presented GAT-identified (MFL and non-MFL) environmental criteria to the SC on 1/17/2019.
2. Developed alternative peaking factor approach for 2003 and 2005 withdrawals simulations that are needed to assess freeboard/deficits for MFLs environmental criteria in the SJRWMD.
3. Identified need to use reductions from withdrawals in the calibration withdrawals data set, rather than the 2014 Reference Condition data set, to assess freeboard/deficits for MFL and MFLs-related environmental criteria in the SWFWMD.
4. Identified data/information formats for presentation of MFLs and MFL-related environmental criteria results in support of GAT groundwater availability assessments.
5. Revising/refining MFLRT technical methods appendix to the RWSP.



Model Scenario Methods/Issues Update

- Simulations for all users: Calibration, 2014RC, 2030 and 2040 withdrawal conditions
- MFLRT-specific simulations:
 - 2014RC_50% (50% reductions in 2014RC withdrawals). *Not preferred*
 - 2014RC_25% (25% reductions in 2014RC withdrawals). *Not preferred*
 - ECFTX_50% (50% reductions in calibration withdrawals). *Preferred*
 - ECFTX_25% (25% reductions in calibration withdrawals). *Preferred*
 - ~~– 2003 withdrawal conditions (using 2014RC peaking factor approach).~~
 - ~~– 2005 withdrawal conditions (using 2014RC peaking factor approach).~~
 - 2003 withdrawal conditions (using alternative peaking factor approach).
 - 2005 withdrawal conditions (using alternative peaking factor approach).



EXTRA SLIDES

2003 and 2005 Withdrawals Simulations



Proposed Peaking Factors for SJRWMD 2003 and 2005 MFL Runs (02/22/19)

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- Problem Statement:
 - Estimated freeboards in 2003 and 2005 are based on average pumping in those years
 - When peaking factors are applied, the average pumping from 2003 thru 2014 needs to be equal to the pumping in the MFL year (2003 or 2005) regardless of climatic condition
- Proposed methodology:
 - Peaking factor in Month X of Year Z = $\text{Pumping in Month X of Year Z} / \text{Average Pumping in Year Z}$
 - X = January through December
 - Z = 2003 through 2014
 - Develop county level by user type

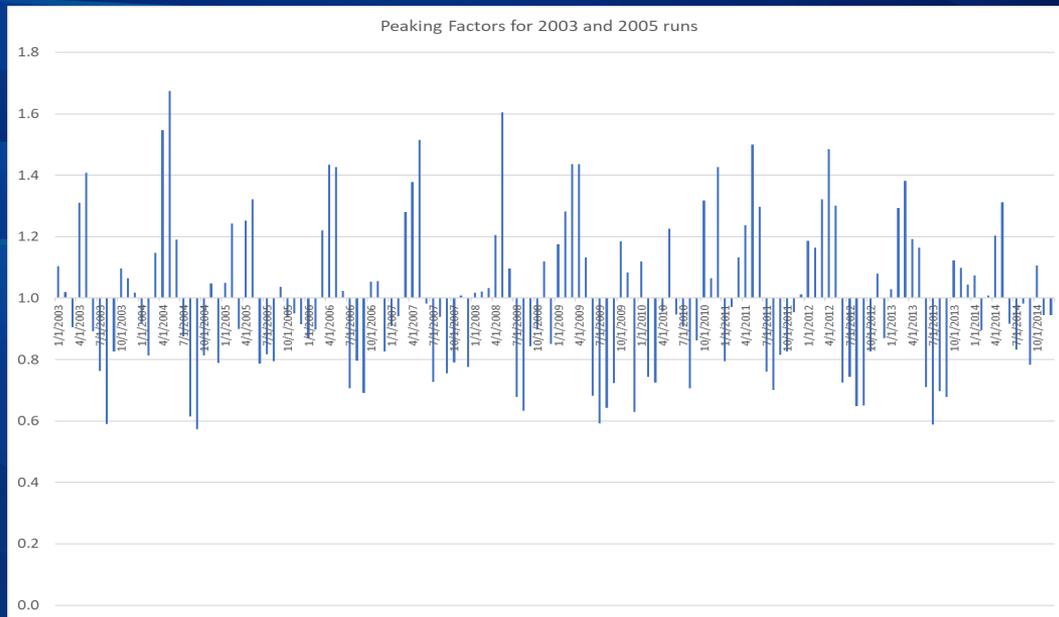


Example

Year	Annual average
2003	1668.7
2004	1733.6
2005	1547.7
2006	2089.6
2007	1970.0
2008	1743.8
2009	1863.4
2010	1779.2
2011	1701.7
2012	1769.1
2013	1644.5
2014	1512.0

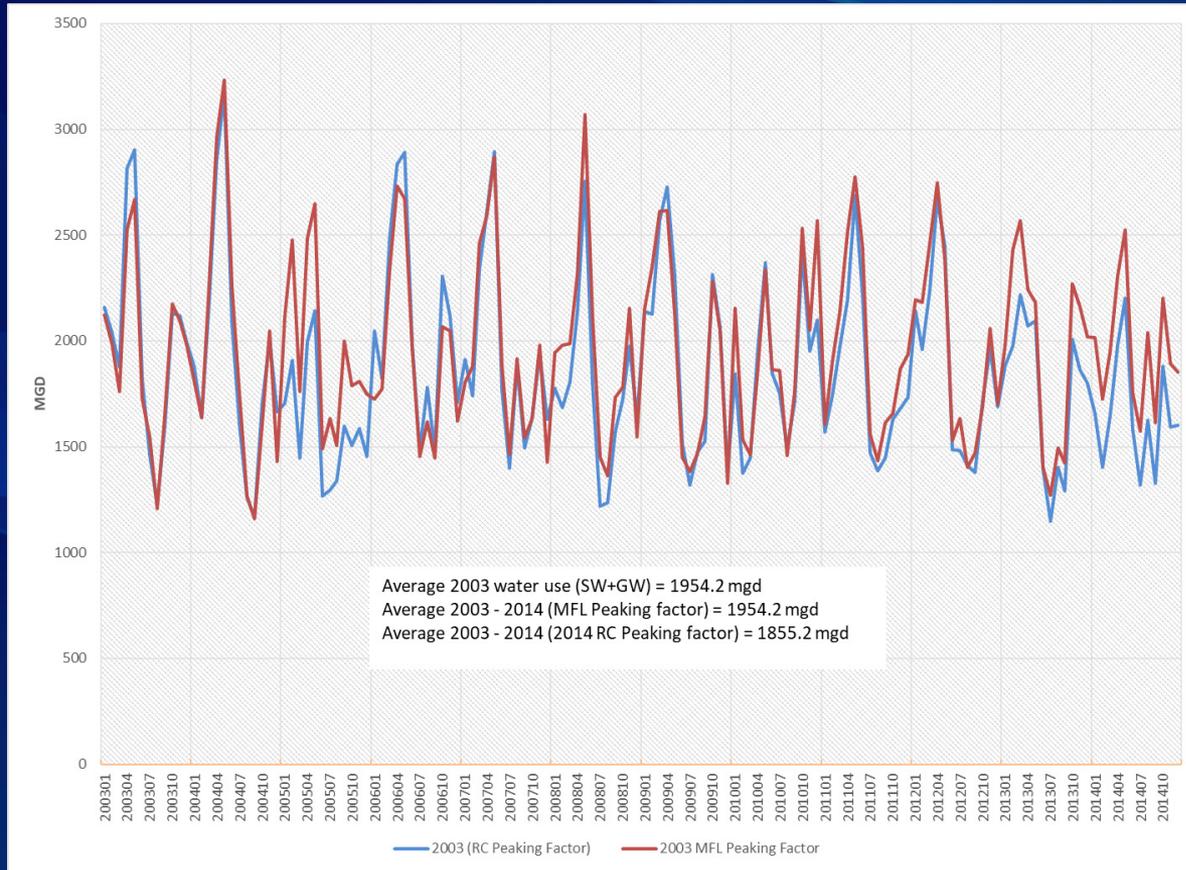
MonthYear	Year	ECF _X _m gd	PF
1/1/2003	2003	1843.187	1.105
2/1/2003	2003	1701.459	1.020
3/1/2003	2003	1510.601	0.905
4/1/2003	2003	2187.185	1.311
5/1/2003	2003	2349.929	1.408
6/1/2003	2003	1487.754	0.892
7/1/2003	2003	1274.317	0.764
8/1/2003	2003	985.4632	0.591
9/1/2003	2003	1377.602	0.826
10/1/2003	2003	1829.538	1.096
11/1/2003	2003	1777.906	1.065
12/1/2003	2003	1699.051	1.018
1/1/2004	2004	1587.795	0.916
2/1/2004	2004	1410.832	0.814
3/1/2004	2004	1987.273	1.146
4/1/2004	2004	2681.826	1.547
5/1/2004	2004	2900.965	1.673
6/1/2004	2004	2064.081	1.191
7/1/2004	2004	1517.193	0.875
8/1/2004	2004	1066.386	0.615
9/1/2004	2004	994.08	0.573
10/1/2004	2004	1409.184	0.813
11/1/2004	2004	1816.863	1.048
12/1/2004	2004	1366.162	0.788

$1843.187 / 1668.7 = 1.105$



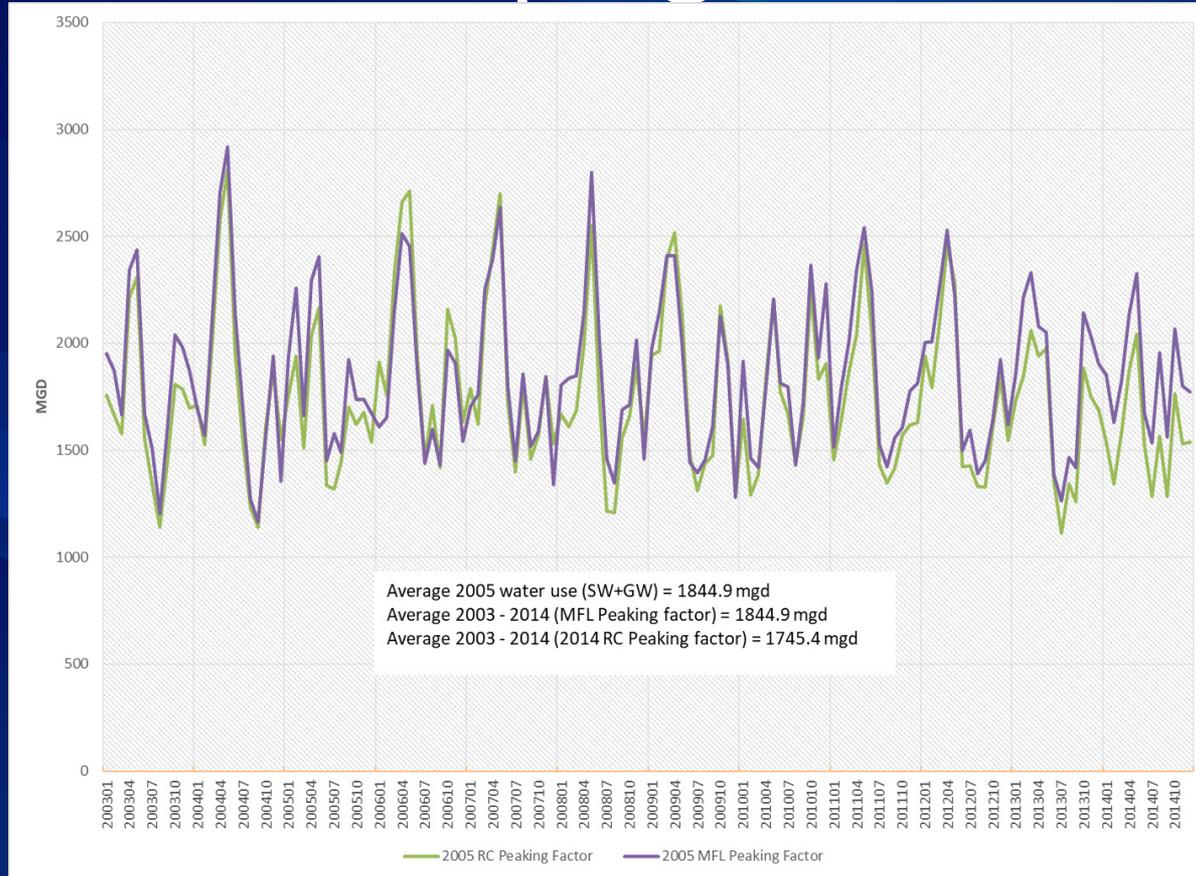
2003 Pumping condition

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2005 Pumping condition

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MFLRT Data/Information Formats for Supporting Groundwater Availability Assessments



Example MFLRT Information for Groundwater Availability Assessment

- Freeboard/deficit tables for MFLs and MFL-related environmental criteria for the Calibration, RC2014, 2030 and 2040 simulations
- Freeboard/deficit maps color coded with red/green symbology for met/not met status
- Freeboard/deficit maps color coded with red/green/yellow symbology for met/not met status and change in status (for 2030 and 2040 simulations)
- As appropriate, caveats/qualifications for specific MFLs or MFLs-related environmental criteria
- Brief review/summary of applicable recovery strategies

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Example Table 1: MFL and MFL-Related Environmental Criteria

Table B-11. Summary status counts of MFL and MFL-related environmental criteria and identified for use by the CFWI Groundwater Availability Team for the recent (2018) compliance status assessment and for the modeled 2014 Reference Condition, 2030, and 2040 withdrawal condition scenarios.

MFL and MFL-Related Environmental Criteria	2018 Status ^a	ECFTX Groundwater Model Withdrawal Scenario		
		2014 Reference Condition	2030 Withdrawal Condition	2040 Withdrawal Condition
Number Met	41			
Number Not Met	13			

^a 2018 status is provided for comparison with ECFTX groundwater model withdrawal scenario results and is based on 2018 Statewide Annual Report, 2018 Water Management District performance measures included in the Florida Water Plan, and information prepared for the Southwest Florida Water Management District's annual SWUCA recovery status update.

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Example Table 2: MFL and MFL-Related Environmental Criteria

Table B-9. Summary results for MFL and MFL-related environmental criteria evaluated for the modeled 2014 Reference Condition, 2030 withdrawal condition, and 2040 withdrawal condition scenarios.

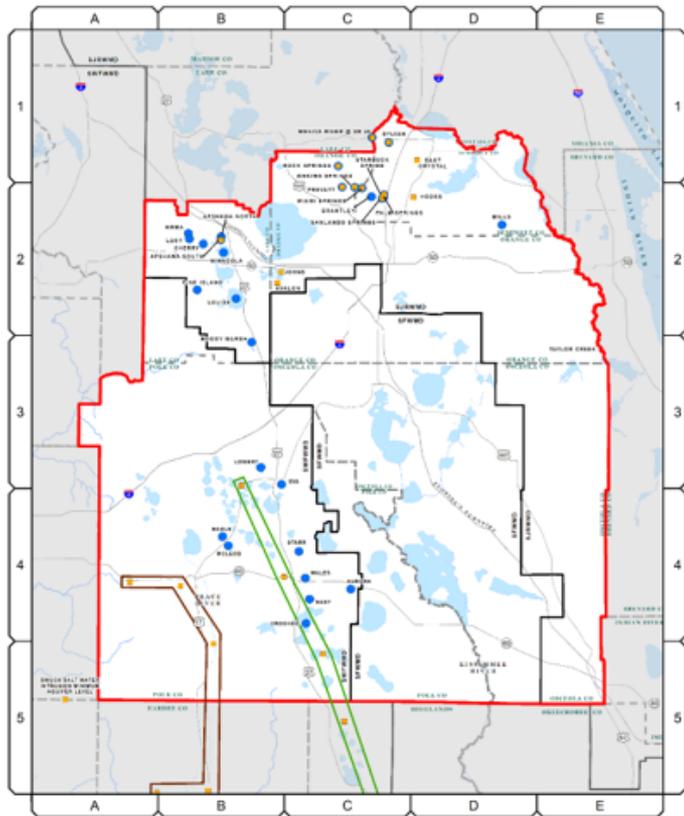
Map Grid ^a	Water Body/ Regulatory Well Target Name	2014 Reference Condition Status ^b	2014 Reference Condition Freeboard or Deficit ^c	2030 Withdrawal Condition Status ^b	2030 Withdrawal Condition Freeboard or Deficit ^c	2040 Withdrawal Condition Status ^b	2040 Withdrawal Condition Freeboard or Deficit ^c
<i>Adopted Lake and Wetland MFLs within the CFWI Planning Area</i>							
C-4	Aurora, Lake						
B-3	Boggy Marsh						
C-2	Brantley, Lake						
D-2	Burkett, Lake		NSFAC		NSFAC		NSFAC
B-2	Cherry Lake						
C-4	Crooked Lake						
B-4	Eagle Lake						
C-4	Easy, Lake						
B-2	Emma, Lake						
B-3	Eva, Lake						

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Example Figure 1: MFLs and MFL-Related Environmental Criteria



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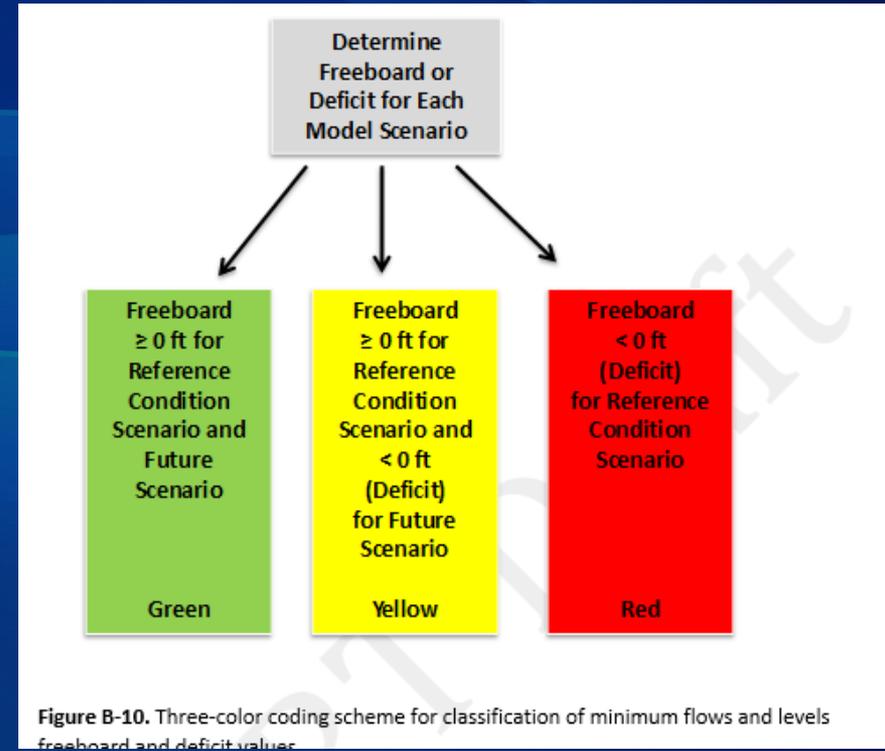
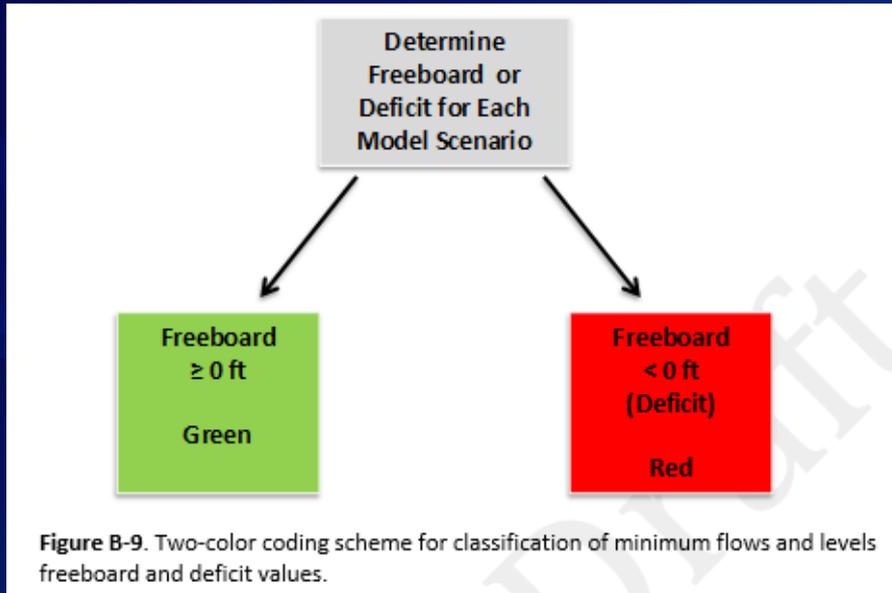
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Figure B-4. MFLs and MFL-related environmental criteria identified to support groundwater availability assessments.

Note: Peace River Regulatory Wells and Ridge Lake Regulatory Wells polygons included to group the set of 5 wells for each that is categorized as a criterion, but only 4 Ridge Lake Well location are depicted in this map.

Example Figure 2: Color Coding MFL and MFL-Related Environmental Criteria Status



Example Figure 3: Coding Results from RWSP 2015

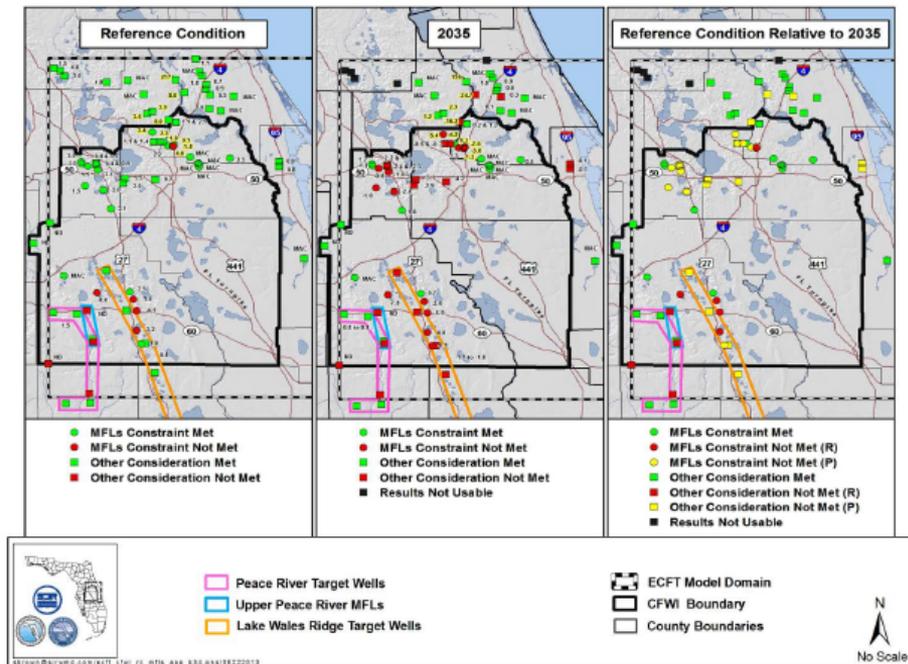


Figure B-34. 2035 Withdrawal Scenario – MFL Constraints and Other Considerations: Status (met or not met) and remaining freeboard for the Reference Condition (2005) and 2035 withdrawal scenario (left and middle panels) and status for the Reference Condition (2005) relative to the 2035 withdrawal scenario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

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Example Figure 4: SWUCA SWIMAL, MIA and Regulatory Wells

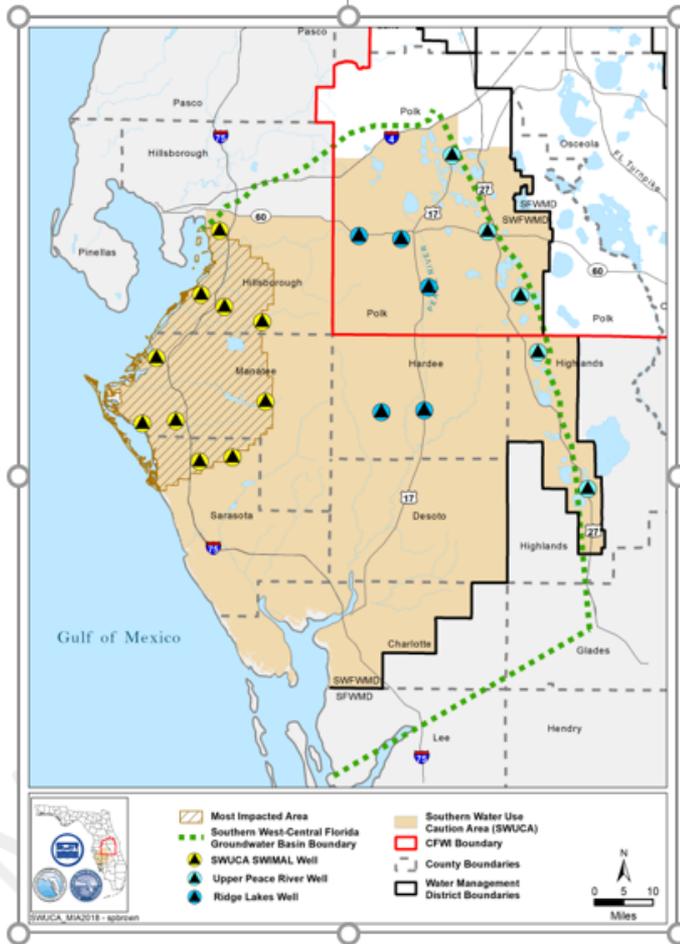


Figure B-3. Southern Water Use Caution Area (SWUCA), Most Impacted Area of the SWUCA and the Southern West-Central Florida groundwater basin relative to the CFW Planning area.

Note: Regulatory wells associated with the Saltwater Intrusion Minimum Aquifer Level (SWIMAL) adopted for the Most Impacted Area of the SWUCA, and Upper Peace River and Ridge Lakes regulatory wells established as part of the SWUCA Recovery Strategy are also shown.

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