PEER REVIEW FORM
SUWANNEE RIVER WATER MANAGEMENT DISTRICT

Project or Report Name: Technical Report – MFL Establishment for the Waccasassa River, Estuary & Levy (Bronson) Blue Spring

Name and Affiliation of Reviewer: Scott H. Emery, Ph.D. Visiting Research Professor University of South Florida, Senior Technical Consultant to HSW Engineering

Discipline specialty covered by this review: Ecology, Hydrology, Water Quality

This document is for the use of project peer reviewers retained by the Suwannee River Water Management District (District) for the purpose of providing a technical peer review of a District report, including manuscripts prepared by District staff and consultants.

SCOPE OF REVIEW REQUIRED BY THE DISTRICT:

Task 1. Determine whether the method used for establishing the minimum flows is scientifically reasonable.

a. Supporting Data and Information: Review the data and information that supports the method and the proposed minimum flows, as appropriate. The panel shall assume the following:

1. The data and information used were properly collected;
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Note: The reviewers are not expected to provide independent review of standard procedures used as part of institutional programs that have been established for the purpose of collecting data, such as the USGS and District hydrologic monitoring networks.

b. Technical Assumptions: Review the technical assumptions inherent in the methodology and determine whether:

1. The assumptions are clearly stated, reasonable and consistent with the best information available; and
2. Assumptions were eliminated to the extent possible, based on available information.

c. Procedures and Analyses: Review the procedures and analyses used in developing quantitative measures and determine qualitatively whether:

1. The procedures and analyses were appropriate and reasonable, based on the best information available;
2. The procedures and analyses incorporate appropriate factors;
3. The procedures and analyses were correctly applied;
4. Limitations and imprecision in the information were reasonably handled;
5. The procedures and analyses are repeatable; and
6. Conclusions based on the procedures and analyses are supported by the data.

Task 2. If a proposed method is not scientifically reasonable, the CONTRACTOR shall:

a. Deficiencies: List and describe scientific deficiencies.
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REVIEW CONSTRAINTS

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3. The reviewer also certifies that the review was conducted according to the Scope and Conditions specified above.

Signature of Reviewer:	**Date of Peer Review:**

Responder's Certification: The comments and criticisms provided by the Peer Reviewer have been addressed as noted in column C in a separate response document, which is attached, and in the report.

Name and Affiliation of Responder to Peer Review Comments:	
Signature of Responder:	**Date of Response:**

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
1	Page 1-1	No	In Section 1.0, the order of the 2 bullet items might be better reversed, to reflect first the State Law, then the District	Suggestion	Done
2	Page 1-3	No	USGS reference not found in Literature Cited Section; plus no references provided for any of the information in paragraph 2	Please provide reference(s)	Citations were added for HUCs. Other data are based on this investigation, so not referenced.
3	Page 1-7	Yes	Section 1.3.2(b) Fish and Wildlife Habitat and Fish Passage for Levy Blue Spring….is considered of marginal relevancy…..why?	Please provide brief explanation	Done. See text revisions
4	General		The charge of our Peer Review Panel does NOT involve critiquing the qualitative determinations leading to the decision(s) to use WRV-3 for the river and WRV-5 for the spring.	Manatee use is a factor	Done, see text revisions

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			Manatees do use the river(s) –Wekiva and Waccasassa.	in MFLs for several other water systems. This would be within a discussion of WRV-2.	
5	Page 2-1,2,3,4, 13, 14, 15, 17, 18, 21, 24, 25, 27, 28, 29, 30, 32, 33	Yes	Each of these pages contains references that could not be located in the Literature Cited Section, or contained information that had no citation (for example, Map on page 2-25)	Pleaase make sure all references used in the report are also in the Literature Cited Section	Done
6	Page 2-2	No	Figure 1-1 as referenced does not appear to show "where a portion of the river discharge is diverted to Otter Creek"	Either modify Fig. 1-1 or modify the sentence on page 2-2.	Text has been changed to direct reader's attention to cutoff on Figure 1-1

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7	Page 2-2	No	Mangrove swamps are indicated	None were seen within the river or on the banks during our recent field trip. Perhaps these are offshore past the river mouth, or within adjacent areas?	The word mangrove has been deleted. This was a citation from a FWS report. We agree, no mangroves
8	Page 2-26	No	"All large river systems in the southeastern coastal plain……"	If this is not directly from the references provided, it may be safer to change "All" to "Most".	This is a direct reference to the cited source
9	Page 3-5	No	2nd paragraph, reference, should be "Col et al.?"	Suggest change be made	Yes, but the paragraph and reference have been deleted here.
10	Pages 3-10,11 and	No	Cannot locate references in Literature Cited	Suggest adding them.	References have been added

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	15		Section		
11	Page 3-9	No	Section 3.1.3 is a valuable section – well done	None needed	
12	Page 3-10	No	Section 3.2 is a valuable section – generally well done – one suggestion	It would help the lay reader to state "why" the data used are considered "baseline" data	Done – a footnote was added
13	Page 3-11and12	Yes	With only 4 data points available, it is important to explain how these were used. For example, how was it determined from 4 data points that a 33 day time lag was optimal? Did any other wells other than Well N. 33 meet the requirements? If so, why was Well 33 selected?	Additional explanation and Clarification would help greatly.	Done, please see text. No other wells in or near the basin met the requirements of daily measurements.
14	Page 3-11	No	How did the "numerical filter" work?	Clarification would	All references to filtering have

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				help	been removed. The filtering did not work.
15	Page 4-20, 25, 26,31,42	No	Cannot locate multiple references in the Literature Cited Section	Please make sure all references used in the report are also in the Literature Cited Section	Completed
16	Page 4-1	Yes	"…..the assumption that adequate flow to the lower portion of the river also provides adequate flow for the non-tidal portion of the river" (last sentence of 1st paragraph). Upstream from the location of the proposed MFL the river bifurcates into the Wekiva and the Waccasassa Rivers. The volume of flow from the Wekiva into the lower Waccasassa is substantial, perhaps greater than that from the Upper Waccasassa itself. What if 100% of an upstream withdrawal came from the Waccasassa, upstream of the confluence with the	Please provide a reason(s) why this assumption is a valid one.	Comment 16 : This concern would be addressed in the water permitting process. Withdrawals would not be permitted so that 100% of withdrawals came out of the Waccasassa.

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			Wekiva? Is it possible that the downstream MFL could still be met while withdrawing a major percentage of the flow from the Upper Waccasassa?		This is precluded by the application in the "harm standard" in 40B-2.
17	Page 4-3	No	The station numbers in the figure do not exactly match the ones in the caption	Please clarify	Comment 17 Corrected in text.
18	Page 4-4 and 5	No	Mean annual DO concentrations were used. Were the actual measurements taken at regular intervals, or sporadically? Were early morning and late day readings taken?	Suggest a few sentences to describe the extent to which the readings covered the diurnal cycle.	Comment 18: Monthly samples, various times of day. Added to text.
19	Page 4-32,33, and 51	No	The approach used for the cluster analysis work lacks adequate description. Also, the subjectivity of the identified station groups is not well-explained. If the objective is to examine salinity, then would not the sample at the mouth of the Waccasassa be grouped with the other samples	Suggest a few sentences that explain approach.	Comment 19: Text added.

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			near the mouth (Group C)?		
20	Page 4-33 and 34	No	Group E……the text does not discuss it. The figure would tend to indicate Group E might go with Group H	Please clarify	Comment 20 Group E essentially consisted of an outlier and was not considered meaningful to address in the text.
21	Page 4-43	No	Is the graph of only fish, or does it include nektonic invertebrates (like shrimp?). The text on page 4-45 seems to indicate the latter.	Please clarify	Comment 21: Graph includes nektonic organisms such as shrimp, this was clarified in text.
22	General	No	While the attempts to use the available invertebrate and vertebrate species data in	Perhaps the vertebrate and invertebrate work	Comment 22: The information presented in

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			Chapter 4 are laudable and extensive, it appears in Chapter 5 that the benthic and nekton analyses described in Chapter 4 were not used in the determination of the MFL(s). In addition, there was no explanation of whether other methods were considered (such as PHABSIM) and why these were rejected.	done in Chapter 4 could be summarized in the main report, and the actual analyses be placed as an Appendix. The vegetation work in Chapter 4 (which is used in the MFL determination) could stay in the main body of the report. With respect to other methods not used, short statements about the lack of available data would suffice.	Chapter 4 was crucial in the understanding of the relationships between flow/salinity and benthos and fish. It was necessary to perform these analyses to determine what could be carried over and applied to selecting the MFLs in Chapter 5, for this reason we chose to include it in Chapter 4. Regarding the consideration of

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					PHABSIM, the MFL for this river was concerned with estuarine resources and PHABSIM is not applicable to estuaries.
23	Page 5-1	No	Need a period after one sentence and no colon after a sub-section heading	Please correct	Comment 23: Corrected in report.
24	Page 5-3,4,7, 13, 14	No	Incomplete citation(s) and/or no corresponding citation in Reference Section	Please correct	Comment 24: Citations added to Reference section.
25	Page 5-3, 15	No	The link between the data presented in Section 4 and the eventual isohaline of 5ppt is unclear. Is the 5ppt selected because of Odum et al (1984)? Is the 5ppt selected because of cypress tolerance? What nekton nursery area analyses (as mentioned	Perhaps a summary at the end of the very long Chapter 4 that highlights those analyses which support the 5ppt	Comment 25: The isohaline of 5 ppt was selected based on composite information from

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			on page 5-15) suggest 5ppt?	selection would be useful.	all sources, including the vegetation and nekton analysis.
26	Page 5-8	No	The 3 graphs look almost too identical.	Check to ensure they are different sets of data	Comment 26: Checked.
27	Page 5-9	No	The cumulative discharge curve (Sumflow) is said to include Wekiva Spring flow. Is that flow a valid estimate of the entire Wekiva River flow?	Perhaps some verbiage that describes the Wekiva River inflow just above the Gulf Hammock Gage would be useful.	Comment 27: This material is covered in Chapter 3.
28	Page 5-11	No	Caption is not correct in describing the graphs	Please correct	Comment 28: Corrected.
29	Page 5-15	No	Edit needed on sentence #4	Please correct	Comment 29: Corrected.
30	Page 5-17	No	y-axis labels missing	Please correct	Comment 30: Corrected.

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31	Page 5-18,19	Yes	When comparing the verbiage with Figure 5-10, the verbiage states that a flow of equal to or greater than 98 cfs occurs 31.4% of the time, while Figure 5-10 seems to indicate it occurs 68.6% of the time. In the report it is also stated that the long term median flow is 157 cfs. The verbiage about 98 cfs and 31.4% is likely not correct.	Please clarify	Comment 31: Corrected.
32	Page 5-19	Yes	The 15% is not supported with citations from other reports. As this is the factor used in determining an acceptable reduction, it would greatly strengthen the argument if other studies could be cited.	Please consider using citations from other MFL reports.	Comment 32: Text and citations have been added to elaborate on basis of 15%.
33	Page 5-20	No	Captions under Figures 5-9 and 5-10 are identical, but graphs are not	Please correct	Comment 33: Corrected in report.

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34	Page 5-22	Yes	The proposed MFL for Levy Blue Spring is proposed to be set at 90% of the baseline flow duration curve. This % is not supported by citations from other reports. It would greatly strengthen the argument if other studies could be used.	Attempt to include citations of other MFLs established that exhibit a similar allowable (or greater) decline.	Comment 34: The 10% reduction (i.e., the proposed MFL of 90% of baseline from the FDC) is based on our anticipation of balancing the needs of the spring, for recreation and flow to the Waccasassa, with the need for water supply for the Bronson area.
35	Page 6-2	No	Item #3 under "Waccasassa River" has	Correct to be consistent	This was a typo, corrected in

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			34.1%.....do the authors mean 31.4% as stated in Section 5?	with Section 5 and with Comment #31.	report.

NOTE: Insert additional lines as needed.

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Name and Affiliation of Reviewer: Mark E. Luther, Ph.D., University of South Florida

Discipline specialty covered by this review: Estuarine hydrodynamics and water quality

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1	p. 3-6, pp. 5	No	Taking "daily average of hourly tide stage measurements" can be very misleading due to end effects. Primary tidal period is approximately 25 hours. One should make at least a 25-hour running mean but due to spring-neap cycles the beginning and end of a 25 hour period will have different heights, so tide does not completely "average out." Ideally one should do a low-pass filter with a 25 to 36 hour cut off but a 25-hour running mean is sufficient.	Perform 25-hour average and correct text	The analysis performed for the Waccasassa resort utilized daily data as released by the USGS and NOAA. The purpose was to characterize tidal cycles and discuss the effects of tides on riverine data. No effort was made to re-process the data and the 15-minute tidal data were not utilized in any way where the correction mentioned here would be relevant to the MFL. Therefore, no action was taken on this comment.
2	p. 3-6, pp. 6	No	Seasonal pattern is due mostly to steric effects – colder water in winter "stands down" lower that warmer, less dense water in summer. Fresh water input in summer	Expand and correct explanation in text	We agree that steric effects are present although we are not convinced that they are the only cause of the

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			also decreases density, allowing water to stand higher, but this is secondary to temperature effects. Wind patterns account for the "spikyness" and winter is dominated by frontal passages while summer by occasional tropical systems.		seasonal tidal pattern. Temperature has been added to the list of causes, however.
3	p. 3-9	No	Relationship of salinity to flow is the central issue in setting the MFL, yet salinity studies from 1985 and 2005 that are key to setting the MFL are not mentioned until p. 5-3.	Consider moving discussion of salinity studies to Sec. 3 and summarizing in Sec. 3.1.3	The purpose of Chapter 3 is to introduce the physical aspects of the system. Chapter 5 introduces the salinity aspects and pulls the salinity data together with the ecological.
4	Fig. 3-23 on p. 3-22	No	Don't understand why linear fit is included in this plot. What is its significance?	Either explain linear fit or omit it from figure	Linear fit has been omitted from figure.
5	p. 3-23, pp. 2, line	No	"gage data from will be used" – missing gage identifier, assumed to be 02313700 Gulf Hammock	Insert "02313700 Gulf Hammock" or omit "from"	Done

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	4				
6	Sec. 4.6	No	Shannon-Wiener diversity, ANOSIM, SIMPER analyses need some explanation for the biostatistically impaired	Add some very brief explanation of these analyses	Comment 6: Text added.
7	Botto m of p. 4-37	No	Greek symbol "rho" for the Spearman rank correlation coefficient shows up as little boxes	Correct type face	Comment 7: Corrected.
8	p. 4-6, Sec. 4.2.1	No	I question the validity of using Lithia Springs as a proxy for Blue Springs for fecal coliform levels and swimming standards. Why do coliforms in Lithia Springs have any bearing on Levy Blue Springs?	Better justification/explanation is needed	Lithia Springs is not meant to be used as a proxy but rather information to provide the reader with the knowledge that even heavily used springs for recreational purposes are not limited by coliform standards. The text has been revised to make this clear.
9	Fig. 5-4	Yes	Note that isohaline average locations are farther upstream at the bottom than at the	At the very least, recognize this potential effect. One can	Comment 9: Text recognizing potential

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			surface. This indicates a gravitational residual circulation that may affect the relationship between flow and salinity distribution that is not captured in the linear regression, as this residual circulation is a result of tidal mixing, fresh water flow, and bathymetry, and is inherently a non-linear process.	easily compute the magnitude of this residual circulation from the Knudsen relations (see basic estuarine processes texts such as Knauss, 1997)	affect was added.
10	p. 5-9	No	"significant improvement" or "significantly improved" is used in several places. How is this defined?	Need some additional explanation	Comment 10: Corrected.
11	p. 5-9, pp. 4	No	More discussion of adjusting 2005 data to account for tide height needed here. What is TIDEFT? It's explained later in this section but it's confusing here.	Need additional discussion/explanation	Comment 11: Corrected.
12	p. 5-18, Sec. 5.3.3	No	In first sentence, I think it should read "… indicates that a flow equal to or less than 98 cfs occurs 31.4% of the time …"	Correct wording	Comment 12: Corrected.

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
13	Sec. 5.3.4	No	Certainly the lack of adequate salinity data, especially the lack of continuous salinity recorder data, is the greatest uncertainty. As noted in the last paragraph on p. 5-21, additional observations are needed.	None needed – just wanted to point that out again	Comment 13: No response needed.
14	General	No	A point on the Wekiva - if the MFL is downstream of the confluence then by implication everything upstream must be considered. On P. 3-18 it's stated that Wekiva Springs and hence the Wekiva River contributes 15 to 60% to the Waccasassa discharge at Gulf Hammock, 30% at median flow. Even though this is beyond our charge, and the spring is privately owned, flows in the Wekiva River should be protected. This cannot be guaranteed by protecting the Waccasassa flow at the Gulf Hammock gage. This comment may violate Review Constraint 1.	None needed	Comment 14: No response needed.

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15	General	No	Manatees were observed in the Wekiva River. No mention is made of manatee use in the discussion of water resource values. Some discussion is needed as to why manatee use was not considered, as was done for other water resource values that were not considered. I don't think this violates Review Constraint 4.	Additional discussion/explanation required	Manatee visitations in the Waccasassa are random. Their occurrences are generally limited to the river downstream from the confluence with the Wekiva. The Waccasassa has not been designated as either a Primary or Secondary Thermal Refuge by the Warm-Water Task Force (2004) because the springs are miles inland and inaccessible to the manatee. Therefore, while we investigated whether manatee were at risk or not and whether the criteria applied, they are not a viable basis for a MFL. A similar statement has been placed in the

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					document as a footnote in Section 1.

NOTE: Insert additional lines as needed.

Reference:

Knauss, J., 1997: *Introduction to Physical Oceanography*, 2nd edition, Prentice-Hall, New York.

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Name and Affiliation of Reviewer: Ken W. Watson, Ph.D. , President and Principal Hydrologist, HSW Engineering, Inc., Courtesy Professor, University of South Florida.

Discipline specialty covered by this review: Quantitative Hydrology, Statistics

This document is for the use of project peer reviewers retained by the Suwannee River Water Management District (District) for the purpose of providing a technical peer review of a District report, including manuscripts prepared by District staff and consultants.

SCOPE OF REVIEW REQUIRED BY THE DISTRICT:

Task 1. Determine whether the method used for establishing the minimum flows is scientifically reasonable.

a. Supporting Data and Information: Review the data and information that supports the method and the proposed minimum flows, as appropriate. The panel shall assume the following:

1. The data and information used were properly collected;
2. Reasonable quality assurance assessments were performed on the data and information;

Note: The reviewers are not expected to provide independent review of standard procedures used as part of institutional programs that have been established for the purpose of collecting data, such as the USGS and District hydrologic monitoring networks.

b. Technical Assumptions: Review the technical assumptions inherent in the methodology and determine whether:

1. The assumptions are clearly stated, reasonable and consistent with the best information available; and
2. Assumptions were eliminated to the extent possible, based on available information.

c. Procedures and Analyses: Review the procedures and analyses used in developing quantitative measures and determine qualitatively whether:

1. The procedures and analyses were appropriate and reasonable, based on the best information available;
2. The procedures and analyses incorporate appropriate factors;
3. The procedures and analyses were correctly applied;
4. Limitations and imprecision in the information were reasonably handled;
5. The procedures and analyses are repeatable; and
6. Conclusions based on the procedures and analyses are supported by the data.

Task 2. If a proposed method is not scientifically reasonable, the CONTRACTOR shall:

a. Deficiencies: List and describe scientific deficiencies.
b. Remedies: Determine if the identified deficiencies can be remedied and provide suggested remedies.
c. If the identified deficiencies cannot be remedied, then, if possible, identify one or more alternative methods that are scientifically reasonable, based on published literature to the extent feasible.

REVIEW CONSTRAINTS

CONTRACTOR and the review panel shall acknowledge the statutory constraints and conditions (Sections 373.042 and 373.0421, Florida Statutes) affecting the District's development of MFLs. CONTRACTOR shall also acknowledge that review of certain assumptions, conditions, and established legal and policy interpretations of the Governing Board (hereinafter referred to as "givens") is not included in the Scope of Work. These givens include:

1. The selection of water bodies for which minimum flow and/or levels are to initially be set;
2. The determination of the baseline from which "significant harm" is to be determined; and
3. The definition of what constitutes "significant harm" to the water resources or ecology of the area.
4. The determination of the specific water-resource values considered in development of the MFL.

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Instructions:

1. The results of this review are for the use of the District and they are not to be revealed to others without the express permission of the District.
2. By signing this form, the reviewer certifies that the peer review was conducted according to the guidelines listed above and that the opinions and recommendations included in the review constitute an independent review per Chapter 373.042(4)(b), in the discipline noted above.
3. The reviewer also certifies that the review was conducted according to the Scope and Conditions specified above.

Signature of Reviewer:	**Date of Peer Review:**

Responder's Certification: The comments and criticisms provided by the Peer Reviewer have been addressed as noted in column C in a separate response document, which is attached, and in the report.

Name and Affiliation of Responder to Peer Review Comments:	
Signature of Responder:	**Date of Response:**

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
1	Chapter 1	No	The authors use a qualitative screening method for ranking WRVs and selecting those WRVs that are relevant, important and for which data for evaluating are available. Based on this preliminary screening, selected WRVs are retained for further evaluation. Based primarily on the value of the estuary as habitat and because protection of flow to maintain the estuary appears to protect the other WRVs, the MFL for the Waccasassa River was based on WRV 3. Estuarine resources. The MFL for Levy Blue Spring was based on WRV-5 - Maintenance of freshwater storage and supply. As stipulated in the peer review instructions, the selection of WRVs for protection is a given and the selection	None	Comments are noted. Please be aware that all water-resource values are retained and considered throughout the MFL investigation process. The screening is for the purposes of identification of potentially critical data needs and initiate evaluation of limiting criteria.

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			process and rationale were not evaluated.		
2	Section 2	No	Introduction to the Waccasassa Basin and Study Area provides very good background information on the physiography, hydrogeology, ecology, climate, water use, land use and habitat of the study area. The reviewer found the background information very informative and complete, providing the reader with both a technical and visual picture of the basin. The literature cited was current and relevant to the project goal of providing analyses for the development of MFLs. Some citations not found in the bibliography	None	Citations have been added to references cited
3	3-11 last par.	No	Sentences repeat	Please correct	Done

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
4	3-11 to 3-12	No	Section 3.3.1 is confusing. How can lag be determined with only 4 data points to cross-correlate?	Please clarify	Changes have been made in text.
5	3-5 par. 2	No	States that a small number of agricultural permits account for 95% of permitted water use; however on page 2-5 2nd paragraph it is stated that agricultural use represents 73.1 % of water use.	Please clarify	We're not sure about the paragraph on p. 3-5. It appears to be related to use data we did not rely upon. The paragraph has been deleted. Section 2.7 includes the discussion of water use.
6	3-11 3rd par.	No	Please name, reference or describe filtering procedure	Please clarify	As noted in the draft, we did not use the filtered data. All reference to the filtered data has been removed from the text.
7	3-13 2nd par. And Fig.3-11	Yes	Not obvious that the simulated spring discharge is "best available information" as compared to the historic data.	Please clarify	A change has been made to the report to indicate why it is considered the best available. Basically, it is because the historic data are biased towards a

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					relatively wet period centered on the early 1970s.
8	Fig. 3-10	No	Difficult to read labels	Increase font	Figure has been increased in size
9	3-23 2nd par.	No	Second sentence is incomplete	Please correct	This has been corrected
10	3-1 Appendix A	No	It is difficult to discern the spatial variations of groundwater levels without using the same temporal (x axis) and water level (y axis) scales.	Please consider grouping wells with similar time scales or some other means for direct temporal comparison.	The arrangement used in the report is ordered on the basis of District site ID, which we find useful for data review, etc. We prefer not to change the sequence.
11	3-1 6th par 1st sentence	No	It is difficult to see the similar patterns over all wells. For example, there are some extreme points in the plots for wells #25 and #26. What was the cause? Monitoring system malfunctioned or other reasons?	Please explain	It was out of scope for this project to perform a QA review of the groundwater monitoring data. Only continuous, daily measurement data were used for data synthesis and those data were

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					evaluated for outliers, etc. before use.
12	3-2 Figures 3-1 and 3-2	No	The hydrography and potentiometric contour indices are difficult to see.	Please consider modifying	Both figures on this page are being rotated and placed on single pages to enlarge figures. Hydrography includes the streams, etc. There are no potentiometry lines on figure. We failed to remove the notation from the legend. This has been corrected.
13	3-5 1st par.	No	The 3rd sentence is not clear. A GIS map or spread-sheet table might be helpful to indicate where the permitted wells are located and how many lie in the watershed of interest.	Please consider clarifying	At the time of preparation of this section, data were not available to show specific uses and well locations..
14	3-7 Figure 3-3	No	What is the time frame for the stages.	Please indicate	Measurements are daily. Captions have been changed to indicate this.

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15	3-8 Figure 3-6	No	the rain gauge index is missing.	Please correct	1. Index (site ID) has been added to Table 3-3 as separate column. The indices were originally presented without identification in column with gage name. 2. Figure 3-6 in the review draft was the stream gage map. This has been replaced with the precipitation gage location map (with gage indices).
16	3-10 6th par	No	All references are missing.	Please add	These have been added to reference list
17	3-13 Figure 3-11	No	There is a concern that at low discharge the FDCs differ so much.	Please explain	The FDC for historical data is based on measurements in late 1960s and early 70s (Fig. 2-24). The period was one of low to moderate rainfall and there were no

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					wet or dry year signals in the data set. The synthesized data include both the record drought and el Nino rainfall events. Therefore, the synthesized FDC is more representative of the long term variations in spring discharge than the historic data set.
18	3-17 section 3.3.4	No	What is a longer-term tide?	Please explain	The text refers to filtering of short term events, specifically tides, by construction of a moving average. There are no "longer term" tides, nor did we refer to such in this section.
19	3-20 Figure 3-18	No	This figure might be more useful for understanding the relationship between stages and discharges using the same	Please consider modifying	Standardizing the stage and discharge data might, but demonstrating the magnitudes of the

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			scales. Would normalized stages and discharges be possible to establish a meaningful relationship?		responses is too important to standardize the data. The purpose of this graph is to demonstrate the looping nature of the data.
20	3-22 Figure 3-22	No	See the comment for Figure 3-18	Please consider modifying	Please see previous response.
21	3-24 Figure 3-26	No	See the comment for Figure 3-18	Please consider modifying	Please see previous responses.
22	Section 3	General	Some figures are difficult to identify with small fonts and unmatched indices. Also, some of the figures might be better arranged within the text. A final summary for this section would be useful to indicate what hydrologic data are to be used for the MFLs analysis in Section 5. What deficiencies in the "best available data" would cause	Please consider modifying.	Fonts have been increased and located within the text to the extent possible. Needless to say, where several figures refer to a small paragraph of text, the figures will be somewhat distant from the paragraph.

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			what potential problems in the MFLs analysis?		The MFL issues are discussed in Section 5, after the ecological considerations have been introduced.
23	4-1 4th par	No	Consider using consistent name for "Levy Blue Spring(s)".	Please correct	Comment 23 (page 9 of 18): Name changed for consistency throughout
24	4-3 Figure 4-1	No	Station name in title should match that in figure.	Please modify	Comment 24: Text changed.
25	4-4 1st par	No	What is the time step for the DO measurements used in Figure 4-3?	Please specify	Comment 25 and 26: DO measurements are taken monthly and this clarification was added to report.
26	4-5 3rd par.	No	Are the mean DO concentrations in the lower Waccasassa daily, monthly, or annual values?	Please specify	Comment 25 and 26: DO measurements are taken monthly and this clarification was added to report.

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27	4-5 4th par	No	What mechanisms might account for the association between the distribution of inorganic and organic forms of nitrogen from upstream and downstream in the Waccasassa river and salinity?	Please explain	Comment 27 (page 10 of 18): As inorganic nitrogen moves downstream it is taken up by primary producers, leaving more organic nitrogen present from breakdown remineralization. In a typical riverine system, flow does not slow enough for primary producers to uptake until it hits the downstream, tidally influenced portion of the river. This accounts for the inverse relationship between inorganic and organic nitrogen.
28	4-29 1st par. and 4-45 1st par	No	Are there criteria for dominance?	Please clarify	Comment 28: Dominance was calculated as stated in the report. The dominance measure also is referred to as an

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					Importance Index in fisheries science.
29	4-30 through 4-31 all par.	No	The authors may wish to provide some discussion of strength of associations between salinity and other abiotic variables as indicated by the r-value in the Pearson correlation analysis. Also, Figure 4-16 in two places should be cited as Figure 4-17.	Please consider revising	Comment 29: Text added/revised.
30	4-32 1st par.	No	The approach used for cluster analysis (e.g. single linkage, median, or average, etc.) is unclear.	Please clarify	Comment 30 (page 11 of 18): Text added.
31	4-33 1st par. and 4-51 2nd par.	Yes	The number of clusters was determined subjectively. Were quantitative algorithms in determining the number of cluster, such as R-square, semi-partial R-square, root mean square standard deviation, or/and cubic clustering criterion, considered?	Please explain	Comment 31: Text modified and Boesch's (1977) recommends a more flexible approach to interpreting dendrograms with ecological data; the presentation of the 2-way coincidence table (in lieu of a formal nodal analysis)

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			(Milligan and Cooper. 1985. An examination of procedures for determining the number of clusters in a data set. Psychometrika 50:159-179; Sarle W.S. 1983. Cubic Clustering Criterion. SAS technical report A-108, Cary, NY: SAS institute Inc.) .		provides support for the breaks.
32	4-34 Figure 4-19	Yes	Why was group E included in the cluster of group H?	Please explain	Comment 32: Similar percentages of *Tharyx sp.* (polychaete); *Monticellina* (polychaete) was 14% of H and 4% of E-; different because *Carazziella hobsonae* (polychaete) was 25 Xs proportionately more abundant in E
33	4-35 through 4-37 Figures 4-20, 4-	Yes	Group E was not identified as an individual cluster in 1st par in page 4-33. However, this group was used in the figures. Can a cluster not include a	Please explain	Comment 33 (page 12 of 18): Yes, a "cluster" can be a single sample—but as a single sample it doesn't provide a lot of

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	21, 4-22, and 4-23		single sample?		information about the overall spatial patterns.
34	4-37 2nd par.	No	The sentences regarding the dimensional space might be clearer; Spearman rank correlation coefficient is a typo.	Please consider modifying	Comment 34: Text added.
35	4-40 Table 4-5	No	There are two explanations of X in the table title.	Please explain/correct	Comment 35: Text added.
36	4-40 all par.	No	The discussion is more a summary of conclusions drawn from previous sections. It may be more informative by adding some discussion for each concluding remark.	Please consider modifying	Comment 36: Text added.
37	4-63 Table 4-12	No	Consider moving Table 4-12 somewhere before the discussion section.	Please consider	Comment 37: Table moved as suggested.
38	4-63 after last par.	No	It seems unnecessary to include so many plots from Janicki Environmental, Inc (2004). To support the conclusion of salinity's influence on the nekton	Please consider changing	Comment 38: (page 13 of 18): The plots show how the salinity ranges were derived, and the varying probability of occurrence

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			assemblage, a concise summary of conclusions from Janicki Environmental, Inc (2004) may be all that is necessary.		throughout the range. We feel this is more useful than simply presenting the ranges.
39		No	A final conclusion for this chapter would be helpful to summarize the ecological analyses and how the results of the analyses are relevant to the proposed MFLs.	Please consider addition	Comment 39: The conclusions from Section 4.0 are restated in Section 5.1, no addition made to Section 4.0.
40	Section 4 general	No	There is a substantial amount of statistical analyses devoted to the correlation and distribution of biotic communities that seems unnecessary given what transpires in section 5. It seems that the basis of the MFL for the river is related to the location of the 5 ppt isohaline (as a metric for maintaining a salinity regime) and it is not explicitly stated how all of the analyses presented in section 4 supports	Consider removing information from the section and or please explicitly discuss why analyses are performed and how they will be applicable to the development of an MFL. Perhaps adding this to sections 4.5.3.1 and 4.6.2.1 would be places to add this as an objective.	Comment 40: The information presented in Chapter 4 was crucial in the understanding of the relationships between flow/salinity and benthos and fish. It was necessary to perform these analyses to determine what could be carried over and applied to selecting the MFLs in

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			or is germane to the MFL approach used in section 5.		Chapter 5, for this reason we chose to include it in Chapter 4.
41	Section 5 general	No	Perhaps section 5.1 is where the relevance of section 4 is discussed (see previous comment)	To the extent that this is so the authors might consider reducing the amount of information presented to that which supports 5.1.	Comment 41(page 14 of 18): Agreed, see comment 39. However, no reductions made to Section 4.0, see comment 40.
42	5-1 2nd par.	No	"effect" should be replaced by "affect".	Please change	Comment 42: Changed.
43	5-1 2nd par.	No	Need a period for this paragraph.	Please add	Comment 43: Changed.
44	5-1 in the title for 5.1.1	No	No need to have ":" after Benthos	Please remove	Comment 44: Changed.
45	5-1 3rd par	No	Multiple cite sources are from Janicki Environmental, Inc. (2005). It would be helpful for readers to identify the specific citation using additional indices such as a, b, c to clarify which reference	Please clarify	Comment 45: Referenced added.

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
			was referred to where.		
46	5-2 2nd par. From bottom	No	The 2nd sentence needs edits.	Please change	Comment 46 (page 15 of 18): Corrected.
47	5-3 2nd par.	No	"Odum 1984" should be "Odum et al. 1984".	Please change	Comment 47: Corrected.
48	5-4 1st par.	No	"SRWMD/WAR, 2005" is missing.	Please add	Comment 48: Reference added.
49	5-4 2nd par.	No	The 2nd sentence needs editions.	Please revise	Comment 49: Sentence revised.
50	5-4 Figure 5-1	No	The references in the figure title are missing.	Please specify	Comment 50: Reference added.
51	5-5 2nd par.	No	The "was" used in 4th sentence should be "were".	Please change	Comment 51: Corrected.
52	5-7 Figure 5-2	No	What the 1985 SWFWMD/Mote and the 2005 SRWMD/WAR mean? Should USGS Flow (cfs) be median flow of 157cfs as stated in the 2nd figure title?	Please clarify	Comment 52: Clarified.

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Comment No.	Figure, Table, or Page and Paragraph Number	Does Comment Directly and Materially Affect Conclusions of Report? (Yes/No)	To be completed by Reviewer(s)		To be completed by report author(s)
			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
53	5-8 Figure 5-3	No	Three plots look very similar. Are there no variations of salinity with depth at each fixed location? In addition, it is not clear about the ranges of depth in defining average surface and bottom salinity in the figure title.	Please explain	Comment 53: Checked.
54	5-11 Figure 5-4	No	The figure title doesn't match the plots, the 2005 study is in the left and the 1985 study is in the right.	Please correct	Comment 54: Reference added.
55	5-13 Table 5-3	No	What is the reference source for Mote/SWFWMD (1985) in the table title?	Please specify	Comment 55: Reference added.
56	5-14 Table 5-4	No	What is the reference source for WAR/SRWMD (2005) in the table title?	Please specify	Comment 56: Corrected.
57	5-15 4th sentence	No	Sentence needs edition.	Please correct	Comment 57: Corrected
58	5-17 Figure 5-7	No	The title for the y-axis is missing.	Please correct	Comment 58 (page 17 of 18): Checked.

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
59	Page 5-18 to 5-19 (Section 5.3.3)	Yes	This section appears incorrect. Figure 5-10 seems to show that 98 cfs is equaled or exceeded 68.6 % of the time not 31.4%. Do you mean flow is equal to or less than 98 cfs 31.4% of time? And the MFL condition is to allow flow to be equal to or less than 98 cfs 36.1% of the time – i.e. more low flow conditions?	Please explain or correct.	Comment 59: Corrected.
60	5-19 2nd par	Yes	Why is an RRI of 15% considered to be significant risk instead of 10% or 20%? The authors may wish to provide the literature sources to support this statement or a more comprehensive rationale.	Please consider	Comment 60: Text Added.
61	5-19 3rd par	No	The reference to Figure 5-9 in 3rd par. in page 5-19 should be Figure 5-10.	Please correct	Comment 61: Text Changed.
62	5-20 Figure 5-9	No	The title for Figure 5-9 is identical to that for Figure 5-10. In addition, Figure	Please correct	Comment 62 (page 18 of 18): Checked.

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			A. Reviewer's Specific Comments	B. Reviewer's Specific Recommended Corrective Action	C. Action to be Taken in Response to Comment
			5-9 appears not to be a duration curve but a time series of monthly discharges.		
63	Section 5.0	No	Please provide explanation for using surface rather than depth integrated or bottom isohaline.	Please explain	Comment 63: Explained in first paragraph of results section.

NOTE: Insert additional lines as needed.