

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

CITY OF SANIBEL, TOWN OF FORT
MYERS BEACH, AND CITY OF CAPE
CORAL,

Petitioners,

and

VILLAGE OF ESTERO, CITY OF FORT
MYERS, CITY OF BONITA SPRINGS,
AND CAPTIVA ISLAND PROPERTY
OWNERS ASSOCIATION, INC., d/b/a
CAPTIVA COMMUNITY PANEL,

Intervenors,

vs.

Case No. 18-5114RP

SOUTH FLORIDA WATER MANAGEMENT
DISTRICT,

Respondent.

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FINAL ORDER

Pursuant to notice a final hearing was held in this matter on October 29 and 30, 2018, in Fort Myers, Florida, before Francine M. Ffolkes, an Administrative Law Judge with the Division of Administrative Hearings (DOAH).

APPEARANCES

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STATEMENT OF THE ISSUES

The issues to be determined in this proceeding are:

(1) whether the challengers have standing; and (2) whether Proposed Rule 40E-8.221(2) is an invalid exercise of delegated legislative authority.

PRELIMINARY STATEMENT

On July 23, 2018, the Respondent, South Florida Water Management District (District), published a notice of proposed rule to amend Florida Administrative Code Rule 40E-8.221(2) (Proposed Rule). The Proposed Rule revises the minimum flow (MFL) for the Caloosahatchee River. The District's governing board held a public hearing on September 13, 2018, to adopt the Proposed Rule. The Proposed Rule increases the MFL at the Caloosahatchee River's S-79 structure (the S-79 structure or S-79) and revises the compliance criteria.

On September 24, 2018, the Petitioners, City of Sanibel (Sanibel), Town of Fort Myers Beach (Town), and City of Cape Coral (Cape Coral), timely filed a joint petition challenging the Proposed Rule. On October 19, 2018, the Petitioners amended their challenge. On October 8, 2018, the Intervenors, City of Fort Myers (Fort Myers), City of Bonita Springs (Bonita Springs), and Village of Estero (Estero), filed petitions to intervene, which were granted on October 22, 2018. On October 15, 2018, the Intervenor, Captiva Island Property Owners Association, Inc.,

d/b/a Captiva Community Panel (CCP), filed an amended petition to intervene, which was granted on October 22, 2018. On October 16, 2018, Captiva Erosion Protection District filed its amended petition to intervene, which was denied on October 22, 2018.

The Petitioners filed a joint motion for summary final order on October 15, 2018, which was denied without prejudice at the start of the final hearing. On October 16, 2018, the District filed a motion for summary final order, which was denied without prejudice at the start of the final hearing. The Joint Pre-hearing Stipulation was filed on October 29, 2018.

At the final hearing, Joint Exhibits J-1 through J-16 were admitted into evidence. Intervenor Bonita Springs presented the testimony of Arleen Hunter for the purpose of establishing standing. Bonita Springs' Exhibits BS-1 through BS-5 were received into evidence. Intervenor Estero presented the testimony of Kyle Coleman for the purpose of establishing standing. Estero's Exhibits E-1 through E-3 were admitted into evidence. Intervenor CCP presented the testimony of David Mintz for the purpose of establishing standing. CCP's Exhibits CCP-1 through CCP-4 were received into evidence. Intervenor Fort Myers presented the testimony of Brian Dodson and Richard Thompson for the purpose of establishing standing. Fort Myers' Composite Exhibit 1 was received into evidence.

The District presented the fact testimony of Don Medellin and Jason Godin and the expert testimony of Cassondra Armstrong, Ph.D.; Peter H. Doering, Ph.D.; Amanda Kahn, Ph.D.; Detong Sun, Ph.D.; and Fawen Zheng, Ph.D. In lieu of his appearance at the final hearing, the parties agreed to introduce the deposition transcript of District expert Christopher Buzzelli, Ph.D. The District's Exhibits 2, 10, 18, 25, 38, 50, 63, 82, 83, 84, 85, 92, and 94 were received into evidence.

The Petitioners Sanibel and Cape Coral presented the expert witness testimony of Anthony Janicki, Ph.D., and Peter Doering, Ph.D. (adverse), and fact witness testimony of Donald Medellin (adverse). Petitioners' Exhibits 1, 3, 42, 48, 63, 72, and 78 were received into evidence.

The two-volume Transcript of the final hearing was filed with DOAH on November 16, 2018. The parties submitted proposed final orders that were considered in the preparation of this Final Order.

References to Florida Statutes are to the 2018 version, unless otherwise stated.

FINDINGS OF FACT

Based on the parties' stipulations and the evidence adduced at the final hearing, the following findings of fact are made:

The Parties

1. The District is a government entity existing and operating pursuant to chapter 373, Florida Statutes, as a multi-purpose water management district. The District has the power and duty to adopt MFLs consistent with the provisions of part I of chapter 373.

2. Sanibel is a barrier island sanctuary in Lee County and a duly-formed municipality with a population of more than 6,000. Sanibel is situated at the mouth of the Caloosahatchee River, within the Caloosahatchee's greater estuarine area. Sanibel is known primarily for its natural beauty, including clear blue waters, shell beaches, world-class sport fisheries, and wildlife refuges. That is why tourists come from around the globe to visit Sanibel, and why Sanibel's residents move and remain there.

3. Sanibel actively participated in the rulemaking process for the Proposed Rule from its inception. Sanibel submitted two technical comment letters to the District during the development of the Proposed Rule. Sanibel's natural resources director, James Evans, attended numerous public and technical meetings associated with the development of the Proposed Rule, speaking on the record at each of the public meetings prior to the adoption hearing by the District's governing board.

4. The Town, located on Estero Island in Lee County, is also a barrier island community and duly-formed municipality with

a population of more than 6,000. The Town is situated just south of the mouth of the Caloosahatchee River and on the southeastern edge of the Caloosahatchee River's greater estuarine area. The Town is known primarily for its natural beauty, including clear blue waters, shell beaches, world-class sport fisheries, and wildlife refuges.

5. Cape Coral is a duly-formed municipality in Lee County and is the largest city between Tampa and Miami, with a population in excess of 150,000. Cape Coral is bordered on the south by the Caloosahatchee River and has over 400 miles of navigable canals and waterways, all of which are within the Caloosahatchee River's greater estuarine area. In addition, Cape Coral has an assigned load reduction allocation under the Basin Management Action Plan (BMAP) for the Caloosahatchee River Estuary (CRE) due to it being designated as impaired for dissolved oxygen and nutrients. Maintaining sufficient flow in the Caloosahatchee River would have a direct impact on Cape Coral's ability to meet its assigned load reduction allocation.

6. In addition to living on or near the water, a substantial number of the residents of Sanibel, Cape Coral, and the Town engage in water-based recreational activities such as swimming, fishing, boating, kayaking, paddle boarding, bird watching, and nature observation in and around the Caloosahatchee River's greater estuarine area.

7. Fort Myers is a duly-formed municipality in Lee County and has a population of approximately 80,000. Fort Myers is bordered by the CRE throughout its entire jurisdictional boundary. Fort Myers owns and maintains a yacht basin (Ft. Myers Yacht Basin), which includes a mooring field and an anchorage field in the Caloosahatchee River. Fort Myers presented testimony that commercial crabbing and recreational fishing have declined and that it has suffered economic harm due to water quality issues.

8. Fort Myers owns the submerged land in the Caloosahatchee River from Marker 39 to Marker 58, and islands in the river. One such island will be used as a park for recreational activities such as canoeing, kayaking, and hiking for visitors to enjoy the Caloosahatchee River. Fort Myers also owns and operates piers and a public boat ramp within the Caloosahatchee River.

9. Fort Myers' dock master has observed declines in seagrasses in the Caloosahatchee River during his 19-year career working at the Ft. Myers Yacht Basin. Fort Myers has adopted a Harbor Management Plan for the management of its mooring and anchorage fields in the Caloosahatchee River. Fort Myers has also been assigned a load reduction allocation under the BMAP for the CRE, and is responsible for a certain amount of pollution reduction over time.

10. Bonita Springs is a municipality of more than 50,000 in Lee County. The borders of Bonita Springs include portions of Estero Bay, which, along with San Carlos Bay and the Caloosahatchee River, is part of the greater Lower Charlotte Harbor Estuary. Bonita Springs includes wildlife refuges, such as the Estero Bay Aquatic Preserve and Lovers Key State Park and Recreation Area.

11. While Bonita Springs' strategic priorities include environmental protection and water quality, it does not have environmental staff or test water quality. Bonita Springs participates in Estero Bay Management and the Charlotte Harbor National Estuary Program (CHNEP). Bonita Springs provides financial assistance to the Caloosahatchee Citizen Sea Grass Gardening Project. Concerns regarding harm to the CRE and tape grasses are shared by a significant number of residents in Bonita Springs and Estero, including injury to the quality of life and recreational uses such as swimming, boating, and kayaking in the waterways.

12. Estero is a municipality of more than 30,000 in Lee County. Estero borders the eastern portion of Estero Bay. Estero includes wildlife refuges, such as Estero Bay Aquatic Preserve and Koreshan State Park. While Estero has environmental policies, it does not have environmental staff or test water quality. Estero makes financial contributions to CHNEP. Estero

is concerned that the Proposed Rule will affect its water quality, which could affect its residents' quality of life. Estero believes it could be harmed by poor water quality because its residents are portable retirees who can move away, or tourists who can choose not to visit.

13. Captiva Island is situated at the mouth of the Caloosahatchee River, within the Caloosahatchee's greater estuarine area. CCP is a Florida not-for-profit corporation representing property owners, businesses, and the community of Captiva Island. Captiva Island is part of unincorporated Lee County and is located north of Sanibel. CCP has 200 financial contributors comprised of property owners, businesses, and residents on Captiva Island.

14. CCP's mission includes protection of clean off-shore water, diverse and healthy marine life, and robust native vegetation along with the protection of mangrove fringe and water quality. CCP works with Lee County on provisions of the County's comprehensive plan, which include the quality of adjacent waters.

15. CCP relied on the expertise of James Evans, the director of natural resources for Sanibel, and on the Sanibel-Captiva Conservation Foundation (SCCF). CCP was advised that the Proposed Rule was not sufficient to protect the environment and Vallisneria americana (Vallisneria) or tape grass during the dry season.

Caloosahatchee River and Estuary

16. The watershed of the Caloosahatchee River covers approximately 861,058 acres. The watershed consists of four sub-watersheds, three of which are upstream of the S-79 structure. The Tidal Caloosahatchee Basin sub-watershed (estuarine system) is downstream of the S-79 structure. The S-79 structure captures all the upstream discharges of fresh water that go into the estuarine system through the S-79 structure. Major tidal tributaries of the Tidal Caloosahatchee Basin are the Orange River and Telegraph Creek, which drain into the upper estuary downstream of the S-79 structure. Fresh water inflows from these and other tributaries also contribute fresh water into the estuarine system.

17. The Caloosahatchee River was originally a natural watercourse running from its origin at Lake Flirt to San Carlos Bay. It is currently defined as the "surface waters that flow through the S-79 structure, combined with tributary contributions below S-79 that collectively flow southwest to San Carlos Bay." Fla. Admin. Code. R. 40E-8.021(2).

18. Man-made alterations to the Caloosahatchee River began as early as 1884, but major alterations began in the 1930s with the authorization and construction of the C-43 Canal. The C-43 Canal runs 41.6 miles from Lake Okeechobee at Moore Haven, i.e., from the S-77 structure, to Olga, i.e., the S-79 structure. The

C-43 Canal serves as a conveyance feature to drain water from the three sub-watersheds located upstream of the S-79 structure and convey regulatory discharges of water from Lake Okeechobee.

19. In 1957, the United States Army Corps of Engineers (USACOE) prepared a report focused on drainage, flood control, and navigation needs of the Caloosahatchee River Basin, and one recommendation was construction of the S-79 structure. The key objectives of the S-79 structure were to eliminate undesirable salinity in the lower Caloosahatchee River, prevent the rapid depletion of water supplies, and raise the prevailing dry weather water table levels.

20. The S-79 structure was constructed in 1965. It is a lock and dam structure that is also known as the Franklin Lock and Dam. The S-79 structure captures all upstream fresh water discharges that go into the CRE.

21. The S-79 structure demarcates the head of the CRE, which extends 26 miles downstream to Shell Point, where it empties into San Carlos Bay in the southern portion of the greater Lower Charlotte Harbor Estuary. Most of this surface water flow takes a southerly route, flowing to the Gulf of Mexico under the Sanibel Causeway that crosses San Carlos Bay. When fresh water inflows are high, tidal action pushes some of this water back up into Matlacha Pass and Pine Island Sound.

Additionally, some water exits to the south and flows into Estero Bay through Matanzas Pass.

22. Salinity exhibits a strong gradient in the CRE. Changes in the watershed upstream of the S-79 structure have profoundly influenced the delivery of fresh water to the CRE. Runoff is now more variable with higher wet season flows and lower dry season discharges. Large volumes of fresh water during the wet season can flush salt water from the tidally-influenced sections of the water body, resulting in low salinity conditions throughout most of the CRE. In contrast, fresh water inflow at the S-79 structure can stop entirely during the dry season, especially during significant drought events. This results in saline intrusion that can extend upstream to the S-79 structure. Fluctuations of this magnitude at the head and mouth of the system cause mortality of organisms at both ends of the salinity gradient.

23. Downstream of the S-79 structure, the CRE was significantly altered by multiple dredging activities, including the removal of extensive shoals and oyster bars. Seven automobile bridges, a railroad trestle, and the Sanibel Causeway were built between the 1880s and 1960s. A large canal network was built along the northern shoreline of the CRE in Cape Coral. To provide navigational access from the canal network to deeper water, multiple access channels were dredged within the CRE.

24. Alterations to the delivery of fresh water combined with structural changes to the tidally-influenced sections of the water body have had lasting ecological consequences. These include the loss of extensive shoals and oyster bars, loss of a flourishing bay scallop fishery, and significant decline in seagrass cover in deeper areas.

MFLs

25. An MFL is the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area. The District's rules define significant harm as the "temporary loss of water resource functions, which results from a change in surface or ground water hydrology, that takes more than two years to recover, but which is considered less severe than serious harm." Fla. Admin. Code R. 40E-8.021(31). The rule further specifies that a water body's specific water resource functions addressed by an MFL are defined in the MFL technical support document. Id.

26. MFLs are calculated using the best information available. The regulatory agency is required to consider changes and structural alterations to watersheds, and the constraints such changes or alterations placed on the hydrology of an affected watershed. Certain waterbodies may not serve their historical hydrologic functions and recovery of these waterbodies to historical hydrologic conditions may not be economically or

technically feasible. Accordingly, the regulatory agencies may determine that setting an MFL for such a water body based on its historical condition is not appropriate.

Caloosahatchee MFL

27. For the CRE, MFL criteria were designed to protect the estuary from significant harm due to insufficient fresh water inflows and were not guidelines for restoration of estuarine functions to conditions that existed in the past. The MFL criteria consider three aspects of the flow in terms of potential significant harm to the estuary: (1) the magnitude of the flow or the volume of fresh water entering the estuary; (2) the duration of time that flows can be below the recommended level before causing significant harm; and (3) the return frequency, or the number of times the MFL can be violated over a number of years before it results in significant harm, recognizing that natural climatic variability will be expected to cause fresh water inflows to fall below recommended levels at some natural frequency.

28. The CRE MFL initially adopted in 2001 was primarily based on the salinity tolerance of one valued ecosystem component (VEC). The VEC was Vallisneria americana or tape grass, a fresh water aquatic plant that tolerates low levels of salinity. A major assumption of this approach was that flow and salinity

conditions that protect Vallisneria would also protect other key organisms in the estuary.

29. The 2001 CRE MFL was based on a regression model for estimating the relationship between surface salinity measured at the Ft. Myers monitoring station located in the Ft. Myers Yacht Basin and discharge at the S-79 structure. Although the District monitors surface and bottom salinity at multiple stations in the CRE, the Ft. Myers monitoring station is located centrally in the CRE and at the historical downstream extent of the Vallisneria habitat.

30. The Ft. Myers monitoring station also has the most comprehensive period of record of monitoring data available. The fixed data sondes that monitor surface and bottom salinity are located at 20 percent and 80 percent of total river depth measured at mean low water. The data sondes continuously measure temperature and specific conductivity and, depending on the manufacturer, contains programs that calculate salinity. Those calculations are based on standards recognized and used worldwide by estuarine, marine, and oceanographic scientists.^{1/}

31. The regression model only implicitly included inflows from the Tidal Caloosahatchee Basin sub-watershed downstream of the S-79 structure. To address this, during the 2003 re-evaluation, a linear reservoir model of Tidal Caloosahatchee Basin inflows was developed.

32. The regression model results showed that a total inflow from S-79 plus the Tidal Caloosahatchee Basin of about 500 cubic feet per second (cfs) was required to produce a salinity of 10 at the Ft. Myers monitoring station. Thus, the 2001 CRE MFL of 300 cfs measured at the S-79 structure would produce a salinity of 10 at the Ft. Myers monitoring station only with additional inflow from the downstream Tidal Caloosahatchee Basin sub-watershed. However, that additional inflow estimate was highly uncertain. The conclusion was that actual flow measurements over a period of time were needed in order to perform more robust calibrations for the new models that were being developed.

The Re-evaluation

33. The District's re-evaluation effort began in 2010 after the Conservancy of Southwest Florida filed a petition requesting review of the Caloosahatchee MFL. At the time, the governing board denied the petition but directed staff to undertake additional research and monitoring to ensure a future revision would be supported by the best information available.

34. The first step was to review the September 2000 Final Peer Review Report (PRR) for the initial adoption. The 2000 PRR identified several items the District should consider, including a hydrodynamic salinity model, a numerical population model for Vallisneria, quantification of habitat value for Vallisneria, and documentation of the effects of minimum flows on downstream

estuarine biota. The 2000 PRR documented concerns that the current MFL was based solely on the salinity tolerance of Vallisneria and recommended using multiple indicator species. To address those recommendations, the District conducted studies to evaluate multiple ecological indicators, such as zooplankton, aquatic vegetation, oysters, benthic communities, and blue crabs, in the Caloosahatchee from the S-79 structure to beyond Shell Point.

35. In addition, the District collected flow data from the Tidal Caloosahatchee Basin sub-watershed for at least five years to develop watershed, flow, and hydrodynamic models that could properly simulate inflows and salinity responses.

36. When the initial research was complete in 2016, the District published the Draft Science Document containing 11 component studies. In September 2016, the District held a two-day Science Symposium to present the 11 component studies and gather public comment. In response to public comment, the District performed additional evaluations, modeling, and updated the component studies to produce a Draft Technical Document.

37. A Peer Review Panel reviewed the Draft Technical Document, which included the Draft Science Document. The Peer Review Panel has over 150 years of combined relevant scientific experience. The Peer Review Panel toured the CRE by air and

water. The District also held a Peer Review Session to engage the public and obtain feedback.

38. The Peer Review Panel's 2017 report (PRP report) stated that the District had "crafted a well-executed and well-documented set of field and laboratory studies and modeling effort" to re-evaluate the CRE MFL. The PRP report supported the 11 component studies, the modeling, the evaluations, and the initial proposed rule language.

39. The Final Technical Document published in January 2018 incorporated five different models and additional science, examining the entire watershed and the criteria itself. The Final Science Document was Appendix A to the Final Technical Document and contained the scientific research and analysis that was done for the 11 component studies, the modeling, and the additional scientific analyses performed in response to public and stakeholder input.

40. The District initiated rule development in December 2017. Rule development workshops were held in February and June 2018 and a stakeholder technical meeting was held in May 2018. The District validated the comments after each workshop and meeting, and revised the proposed rule language.

41. The District published its Notice of Proposed Rule on July 23, 2018.^{2/} At its September 13, 2018, meeting, the District's governing board held a public hearing on the Proposed

Rule. The mayors of Sanibel, Cape Coral, and the Town publicly commented at the hearing. After considering public comments, the governing board adopted the Proposed Rule.

42. The District documented and responded to each public comment, memorializing the information in the Final Technical Document. Later, after the rule workshops and May 2018 technical meeting, the District prepared and presented all of the updated information, including public comment, at the September 2018 adoption hearing. Thus, the District's re-evaluation process was open and transparent.

The Re-evaluated Caloosahatchee MFL

43. The science supporting the re-evaluation involved a comprehensive assessment of the effects of diminished dry season fresh water inflows on the CRE. The dry season was chosen for two reasons. First, because it is well-established that the upstream migration of salt combined with reduced fresh water inflow alters the health and productivity of estuarine habitats. Second, because the dry seasons are the times when the current MFL criteria are likely to be exceeded or violated. The 11 component studies targeted specific concerns regarding physical and ecological characteristics. Together they offered a holistic understanding of the negative effects of diminished fresh water inflow on estuarine ecology.

44. The re-evaluated MFL criteria were developed using a resource-based approach. The approach combined the VEC approach and the habitat overlap concept. The habitat overlap approach is based on the idea that estuaries serve a nursery function and salinity determines the distribution of species within an estuary, including distribution during different life stages.

45. The combined approach studied the minimum flow requirements of the various indicator species in terms of magnitude, duration, and return frequency, resulting in the following three aspects of the flow: (1) for magnitude, a 30-day moving average flow of 400 cfs measured at the S-79 structure; (2) for duration, an MFL exceedance occurs during a 365-day period when the 30-day moving average flow at S-79 is below 400 cfs and the 30-day moving average salinity exceeds 10 at the Ft. Myers salinity monitoring station; and (3) for return frequency, an MFL violation occurs when an exceedance occurs more than once in a five-year period.

46. The magnitude component is based on the salinity requirements of Vallisneria, along with results from the 11 studies modeling salinity and considering the salinity requirements of the other VECs. The duration component is based mainly on the estimates of rate of loss of Vallisneria shoots when salinity rises above 10 and the recovery rate of the shoots when salinities fall back below 10. Return frequency was

determined based on long-term rainfall records rather than flow measurements from the S-79 structure, which the PRP report felt was well justified.

47. In addition to the component studies, the re-evaluated MFL criteria and existing recovery strategy were evaluated using a suite of hydrologic and ecological models simulating long-term fresh water inflow to the CRE associated with varying management options, the resulting salinity in the CRE, and the ecological response of indicator species that are sensitive to low fresh water inflows. Five models were utilized. Three models simulated fresh water inflows to the CRE: two for S-79 flows; and one for Tidal Caloosahatchee Basin sub-watershed flows. The other two models were a three-dimensional hydrodynamic salinity model and a Vallisneria model.

48. Tidal Caloosahatchee Basin sub-watershed has a number of tributaries that drain fresh water into the CRE. The flow at several of the tributaries was monitored for a five-year period. The measured flow was used to calibrate a watershed model and conduct a long-term simulation. The results showed an average fresh water inflow for all seasons of approximately 430 cfs. The average fresh water inflow during the dry season was 245 cfs while the wet season average fresh water inflow was 613 cfs. Fresh water inflow from the Tidal Caloosahatchee Basin sub-watershed was approximately 20 percent of total fresh water

inflow to the CRE while 80 percent was released through the S-79 structure.

Petitioners' and Intervenors' Objections

A. 400 cfs Is Too Low

49. Sanibel relied on a memorandum prepared by Dr. David Tomasko (Tomasko report) concerning his company's review of the January 2018 Final Technical Document supporting the Proposed Rule. The Tomasko report, dated October 23, 2018, was in the form of a "technical memorandum" outlining "preliminary findings." The Tomasko report was admitted as a joint exhibit; however, Dr. Tomasko did not testify at the final hearing.

50. The Tomasko report is hearsay that was not used to supplement or explain competent direct evidence. Although hearsay is admissible in this proceeding, it cannot be the sole basis for a finding of fact.^{3/} See § 120.57(1)(c), Fla. Stat.

51. The District's expert witnesses, who testified at the final hearing, explained that ten of the 11 component studies identified average indicator flows at S-79 ranging from 237 to 545 cfs with standard deviations ranging from plus or minus 57 to plus or minus 774 cfs.^{4/} The District's experts performed three different evaluations of those flow results. They identified the mean of all the means, calculated the median of the means, and performed a probability density function.

52. The flow results for each of the three evaluations were 381 cfs, 400 cfs, and 365 cfs, with standard deviations that ranged from plus or minus 277 cfs to plus or minus 706 cfs. The District's experts testified that the three flow results are indistinguishable from a statistical point of view. The District chose 400 cfs because it was the highest flow result, and, therefore, the most protective of the three.

53. The Petitioners and Intervenors failed to present evidence that showed any deficiencies in the District's component studies, hydrologic, hydrodynamic, or statistical modeling, or analysis of compliance data.

54. The preponderance of the evidence established that the District used the best available science to calculate the MFL criteria. The District did not act arbitrarily or capriciously when it chose 400 cfs as the magnitude component of the MFL criteria.

B. Inclusion of Salinity in the MFL Criteria

55. The preponderance of the evidence also established that Vallisneria continues to be a particularly useful indicator of environmental conditions in the CRE. It supports essential ecological goods and services, is sensitive to salinity fluctuations at the ecosystem scale, and has value to a variety of stakeholders.

56. The location of Vallisneria habitat in the upper CRE and its negative response to increased salinity made it an excellent candidate as an ecological indicator for fresh water inflow. A combination of field monitoring, mesocosm studies, and modeling results allowed the application of Vallisneria responses as a platform to quantify the effects of high salinity duration in the upper CRE.

57. Component Study Eight reviewed the development and initial application of a simulation model for Vallisneria in the CRE. The Vallisneria model was used to evaluate the salinity conditions that led to net annual mortality, or, in other words, the duration of high salinity exposure that led to decreased Vallisneria shoots versus the duration of low salinity conditions required for recovery.

58. Component Study Seven included an analysis of the relationship between the number of consecutive days where salinity at the Ft. Myers monitoring station was greater than 10 and the percentage of initial Vallisneria shoots remaining at the end of each high salinity period.

59. To further evaluate the duration element associated with the MFL criteria, the field monitoring data contained in Component Study Seven was evaluated with the mesocosm and modeling results. All three sources were analyzed similarly to

derive a combined curve showing high salinity exposure duration that is significantly harmful to Vallisneria.

60. The model also provided information that was used to quantify the duration of low salinity conditions required for Vallisneria to recover a relative fraction of shoots after high salinity exposure. Merging the exposure and recovery evaluations facilitated a determination of the unfavorable salinity duration that could significantly harm Vallisneria habitat.

61. With significant harm defined as the environmental harm from which two years are required to recover, the determination was that Vallisneria should experience no more than 55 consecutive days of salinity greater than 10. However, stakeholders expressed concerns regarding the percentage loss of Vallisneria habitat after 55 days of high salinity exposure. In response, the District conducted further analysis of modeling results and revised the duration component to accept the stakeholder recommendation, now expressed in the Proposed Rule, of a 30-day moving average salinity greater than 10.

62. The Petitioners and Intervenors argued that by expressing the MFL as a "flow plus salinity component" the Proposed Rule enlarges, modifies, or contravenes the specific provisions of law implemented.

63. However, the duration component is part of compliance and represents the duration of time that flows can be below the

recommended level before causing significant harm to the indicator species Vallisneria.

64. The MFL in the Proposed Rule is a 30-day moving average flow of 400 cfs measured at the S-79 structure. Flow is both measured and operationally controlled at the S-79 structure. However, as previously found, there are other sources of fresh water entering the CRE downstream of the S-79 structure. The District does not control and cannot control these downstream sources, which modeling reveals contribute approximately 20 percent of total fresh water inflow to the CRE.

65. By including salinity, the District can account for fresh water inflows coming from the tidal basin when there are low or no flows at S-79 since the significant harm threshold in the CRE is directly related to salinity tolerance of the indicator species Vallisneria. The District's experts also testified that salinity can be used as a flow component because it is not affected by chemical or biological processes and is an indicator of how much fresh water is entering the system.^{5/}

66. Salinity is included in the duration component of the MFL criteria and is an exceedance criterion because the science established that the salinity gradient is crucial to the overall health of the CRE. Including salinity in the duration component of the MFL criteria achieves the purpose of the statutory mandate

to set MFLs that are designed to avoid significant harm to the water resources and ecology of the area.

C. No Unit of Measurement for Salinity

67. The Petitioners and Intervenors argued that the Proposed Rule is vague because the language does not contain any units for salinity.

68. The UNESCO calculation is the standard equation used by the estuarine and marine science community to convert specific conductivity and temperature data to salinity. The District's experts testified that the UNESCO calculation reports salinity as a ratio, which is a dimensionless number and has no units. The District uses the UNESCO calculation and performs the conversion in a spreadsheet that it maintains. In some instances, certain brands of data sondes are programmed to perform the calculation and provide the salinity number.

69. The preponderance of the evidence established that use of the practical salinity unit (PSU) is not technically correct. PSU is a misnomer, a pseudo-unit equivalent to a unitless salinity number. The Petitioners' and Intervenors' expert witness, Dr. Anthony Janicki, conceded there is no difference between reporting salinity as unitless or as PSU. And although technically incorrect, he suggested that placing the word "practical" or putting "PSU" in the Proposed Rule would reduce confusion and vagueness.

70. However, since the preponderance of the evidence established that use of PSU is not technically correct, the use of a pseudo-unit would actually cause confusion instead of reduce confusion.

71. The Petitioners and Intervenors also argued that the Proposed Rule is vague because the language does not state that the method of measuring salinity is specific conductivity, or that the equation used to convert specific conductivity and temperature data to salinity is the standard developed by UNESCO. The Petitioners and Intervenors essentially argued that members of the public and those who may be regulated by the Proposed Rule are left to guess about the method or methods used to measure salinity.

72. Because the Proposed Rule identifies and locates by latitude and longitude coordinates the Ft. Myers salinity monitoring station as the location where salinity would be measured for compliance, the Proposed Rule language is not vague. The Proposed Rule is not vague because it does not describe the data sondes, what parameters are measured by the data sondes, and how those parameters are converted to a salinity number.

D. Salinity Monitoring Location and Mean Low Water

73. The Petitioners and Intervenors argued that the Proposed Rule is vague for failing to define the phrase "20% of the total river depth at mean low water," and is arbitrary or

capricious for failing to include more than one salinity monitoring station.

74. Total river depth or the water column depth is a standardized measurement that is made from the surface down to the bottom of the river bed. Mean low water is commonly understood in the oceanographic and coastal sciences community as the average of all low tides over the time period defined as the national tidal datum epic. The District's expert witness, Dr. Cassondra Armstrong, testified that mean low water can be determined by using two documents prepared by the National Oceanographic and Atmospheric Administration (NOAA), i.e., the NOAA tide charts and glossary.

75. The District's expert witnesses testified that "20% of the total river depth at mean low water" is the location of the data sonde at the Ft. Myers monitoring station that measures surface salinity. This is also the depth at which Vallisneria is located in the CRE. Since, the Proposed Rule language simply identifies the location of the existing data sonde at the Ft. Myers salinity monitoring station, the language is not vague.

76. The preponderance of the evidence established that the Ft. Myers salinity monitoring station has two salinity data sondes, the one at 20 percent of the total river depth and the other at 80 percent. The data sonde at 20 percent of the total river depth was identified in the Proposed Rule for the following

reasons. First, this is the depth where Vallisneria grows and is representative of the salinity exposure for Vallisneria. Second, it guarantees the data sonde is always submerged and able to record data. Third, it has the most comprehensive period of record of monitoring data available.

77. As previously found, Vallisneria continues to be a particularly useful indicator of environmental conditions in the CRE. The location of Vallisneria habitat in the upper CRE and its negative response to increased salinity made it an excellent candidate as an ecological indicator for fresh water inflow.

78. Because the preponderance of the evidence established that Vallisneria continues to be a particularly useful indicator of environmental conditions in the CRE, the choice of the Ft. Myers monitoring station is not arbitrary or capricious.

E. Water Resource Functions vs. Environmental Values

79. The District's MFL rule specifies that a water body's specific water resource functions addressed by an MFL are defined in the MFL technical support document. See Fla. Admin. Code R. 40E-8.021(31). The Final Technical Document identified the relevant water resource functions of the CRE as fish and wildlife habitats, estuarine resources, water supply, recreation, navigation, and flood control.

80. The Petitioners and Intervenors argued that the environmental values listed in Florida Administrative Code

Chapter 62-40, also known as the Water Resource Implementation Rule, were not adequately addressed in the Final Technical Document.

81. A proposed rule challenge is not the proper forum to determine whether a proposed rule is consistent with the Water Resource Implementation Rule. Such a determination is within the exclusive jurisdiction of the Department of Environmental Protection under section 373.114(2), Florida Statutes.

82. Consistency of the District's Proposed Rule with the Water Resource Implementation Rule of the Department of Environmental Protection is not a basis in this proceeding for a finding that the Proposed Rule is an invalid exercise of delegated legislative authority.

F. Other Issues

83. The Petitioners and Intervenors raised other issues during the hearing, although not specifically argued in their proposed final order. Since those issues were identified as disputed issues in the Joint Pre-hearing Stipulation, they are addressed below.

1. Elimination of Single-day Exceedance Criterion

84. During the rulemaking process, Sanibel and SCCF sent the District a letter requesting justification for eliminating the single-day exceedance salinity criterion in the current rule.

85. The District staff evaluated the available Caloosahatchee River MFL compliance record, dating back to when the MFL was adopted in September 2001. The District maintains a historical record of MFL monitoring data and reviewed it to determine if the single-day exceedance salinity criterion was exceeded before the 30-day moving average criterion. The compliance record showed five exceedance events of the single-day salinity criterion have occurred.

86. However, the compliance record also showed that the 30-day moving average salinity criterion had already been exceeded before the five events occurred. In other words, the single-day criterion was never exceeded before the 30-day moving average criterion.

87. Based on this evaluation, the District eliminated the single-day exceedance salinity criterion because it did not provide any additional resource protection. The District's decision was not arbitrary or capricious.

2. Not Using the Latest Model

88. Evaluation of recommended MFL criteria and a recovery strategy for the CRE were greatly aided by integration of a suite of hydrologic and ecological models simulating (1) long-term fresh water inflow associated with varying management options, (2) the resulting salinity in the estuary, and (3) ecological

response of indicator species that are sensitive to low fresh water inflows.

89. Five models were specifically utilized, including three models for simulations of fresh water inflows to the CRE, a three-dimensional hydrodynamic salinity model, and a Vallisneria model. The three models simulating fresh water inflows included (1) the South Florida Water Management Model (SFWMM) to simulate fresh water discharges at S-79, which includes regional operations of Lake Okeechobee and incorporates Caloosahatchee River irrigation demands; (2) the C-43 Reservoir Model, which uses the SFWMM-simulated daily S-79 flow as input and simulates the management benefit of the C-43 Reservoir; and (3) the Watershed (WaSh) Model to simulate tidal tributary inflow from the Tidal Caloosahatchee Basin sub-watershed.

90. The Caloosahatchee Hydrodynamic/Salinity Model was based on the Curvilinear Hydrodynamic Three-dimensional Model (CH3D) modeling framework with the functionality of simulating the spatial salinity structure across the entire estuary. The Vallisneria Model took the CH3D modeled salinity as input to simulate Vallisneria growth at critical locations in the estuary.

91. The District did review the more recent Environmental Fluid Dynamic Code (EFDC) model developed for the Caloosahatchee Total Maximum Daily Load (TMDL) and being used by the Department of Environmental Protection. The District's expert witness,

Dr. Detong Sun, testified that until 2014, the hydrodynamic part of the EFDC model was not working well. He testified that in 2016, the District still had concerns and suggested the use of the District's continuous monitoring data from seven locations across the CRE rather than grab samples for model calibration. Dr. Sun's opinion was that the EFDC model has improved in recent years, but was still behind the CH3D model in terms of performance.

92. The District's expert witness, Dr. Amanda Kahn, testified that the water quality component of the EFDC model was not appropriate for this re-evaluation because the MFL is about water quantity, not water quality. The water quality component of the EFDC model addresses nutrient loadings, not minimum flows. Dr. Kahn also testified that in setting MFL criteria for the CRE, salinity was not a water quality component. Salinity was used as a water quantity component because it does not change with biological processes and can be a measure of how much fresh water is coming into the system.

93. Based on a preponderance of the evidence, the District's decision not to use the EFDC model was not arbitrary or capricious.

3. Seasonality

94. The Petitioners and Intervenors argued that the District is required to set an MFL that varies by season.

95. For the CRE, the District set MFL criteria that protect the system from low flow that would occur in either the wet or dry season. As previously found, the re-evaluation studies focused on the dry season for two reasons: first, because it is well-established that the upstream migration of salt combined with reduced fresh water inflow alters the health and productivity of estuarine habitats; and second, because the dry seasons are the times when the current MFL criteria are likely to be exceeded or violated.

96. The MFL statute states that "when appropriate, [MFLs] may be calculated to reflect seasonal variations." § 373.042(1)(b), Fla. Stat. The preponderance of the evidence showed that for the CRE, it was not necessary to set an MFL that varied by season.

Improper Purpose

97. The Petitioners, Sanibel, Cape Coral, and the Town, did not participate in this proceeding primarily to harass or to cause unnecessary delay or for frivolous purpose or to needlessly increase the cost of litigation. The Petitioners did not participate in this proceeding for an improper purpose.

98. The Intervenors, Fort Myers, Estero, Bonita Springs, and CCP, did not participate in this proceeding primarily to harass or to cause unnecessary delay or for frivolous purpose or

to needlessly increase the cost of litigation. The Intervenor did not participate in this proceeding for an improper purpose.

CONCLUSIONS OF LAW

Jurisdiction

99. Under section 120.56, Florida Statutes, DOAH has jurisdiction over challenges to a proposed rule to determine whether it is an "invalid exercise of delegated legislative authority" as defined in section 120.52(8).

100. DOAH is not the proper forum for determining whether a proposed rule is consistent with the Water Resource Implementation Rule. Such a determination is within the exclusive jurisdiction of the Department of Environmental Protection under section 373.114(2).

Standing

101. Any person substantially affected by a proposed rule may seek an administrative determination of the invalidity of the rule on the ground that the rule is an invalid exercise of delegated legislative authority. See § 120.56(1)(a), Fla. Stat.

102. A petitioner has the burden of proving its standing by a preponderance of the evidence. See § 120.56(2)(a), Fla. Stat.

103. Generally, to establish standing, a party must show the challenged agency action will result in a real and immediate injury in fact, and the alleged interest is within the zone of

interest to be protected or regulated. See Jacoby v. Fla. Bd. of Med., 917 So. 2d 358, 360 (Fla. 1st DCA 2005).

104. A less demanding test for standing is applicable in rule challenge cases than in licensing cases. See Fla. Dep't of Prof'l Reg., Bd. of Dentistry v. Fla. Dental Hygienists Ass'n, 612 So. 2d 646, 651-52 (Fla. 1st DCA 1993).

105. The nature of the interests that can furnish the basis for standing to challenge a proposed rule are those that would be protected or regulated by the proposed rule. See Abbott Labs. v. Mylan Pharms., Inc., 15 So. 3d 642 (Fla. 1st DCA 2009).

106. An MFL is the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area. The CRE's relevant water resources were identified as fish and wildlife habitats, estuarine resources, water supply, recreation, navigation, and flood control.

107. The Petitioners and Intervenors established that the nature of the interests they identified as concerns through testimony and evidence are those that would be protected or regulated by the Proposed Rule.

108. The Petitioners, Sanibel, Cape Coral, and the Town, are substantially affected by the Proposed Rule and, therefore, have standing to challenge it.^{6/}

109. The Intervenors, Fort Myers, Bonita Springs, Estero, and CCP, are substantially affected by the Proposed Rule and, therefore, have standing to challenge it.

110. In addition, CCP established associational standing to challenge the Proposed Rule. See Fla. Home Builders Ass'n v. Dep't of Labor & Emp. Sec., 412 So. 2d 351 (Fla. 1982).

General Rule Challenge Principles

111. A person challenging a proposed rule must state with particularity the reasons that the proposed rule is an invalid exercise of delegated legislative authority. See § 120.56(2), Fla. Stat. The challenger has the burden of going forward with evidence to support the allegations in the petition. Id. If the challenger meets this burden, the burden of persuasion shifts to the agency to prove by a preponderance of the evidence that the proposed rule is not an invalid exercise of delegated legislative authority "as to the objections raised." Id.

112. A proposed rule is not presumed to be valid or invalid. See § 120.56(2)(c), Fla. Stat.

113. The validity of a rule does not turn on whether it represents the best means to accomplish the agency's purposes. See Bd. of Trs. of Int. Imp. Trust Fund v. Levy, 656 So. 2d 1359, 1364 (Fla. 1st DCA 1995).

Whether the Proposed Rule Enlarges the Law Implemented

114. A proposed rule is an invalid exercise of delegated legislative authority under section 120.52(8)(c) if it enlarges, modifies, or contravenes the specific provisions of law implemented. The question to be determined is whether the rule gives effect to a specific law and whether the rule implements or interprets the law's specific powers and duties. See Bd. of Trs. of Int. Imp. Trust Fund v. Day Cruise Ass'n, 794 So. 2d 696, 704 (Fla. 1st DCA 2001).

115. Section 373.042 authorizes Florida water management districts to establish MFLs for priority surface waters and aquifers within their jurisdictions. The goal of an MFL is to prevent significant harm from occurring to the water body from consumptive use withdrawals. Significant harm is defined as the "temporary loss of water resource functions, which results from a change in surface or ground water hydrology, that takes more than two years to recover, but which is considered less severe than serious harm." Fla. Admin. Code R. 40E-8.021(31). MFL rules contain specific criteria based on existing best available information. MFL criteria are periodically re-evaluated and revised as needed based on new information and changing water resource conditions.

116. The Petitioners and Intervenors argued that by expressing the MFL as a "flow plus salinity component" the

Proposed Rule enlarges, modifies, or contravenes the specific provisions of law implemented. However, the duration component is part of compliance and represents the duration of time that flows can be below the recommended level before causing significant harm.

117. As previously found, salinity is included in the duration component of the MFL criteria and is an exceedance criterion because the science established that the salinity gradient is crucial to the overall health of the CRE. Including salinity in the duration component of the MFL criteria achieves the purpose of the statutory mandate to set MFLs that are designed to avoid significant harm to the water resources and ecology of the area.

118. The District proved that the Proposed Rule does not enlarge, modify, or contravene the specific provisions of law implemented.

Whether the Proposed Rule is Vague

119. The concept of "vagueness," described in cases such as Cole Vision Corporation v. Department of Business and Professional Regulation, 668 So. 2d 404, 410 (Fla. 1st DCA 1997), is that a man of common intelligence is unable to read the rule and understand what he is supposed to do to comply with it, or what he must avoid doing in order not to violate the rule.

120. The preponderance of the evidence at hearing established that the Proposed Rule sensibly sets forth the MFL criteria in sufficient detail for scientists and the public to fully understand its requirements and restrictions. As the court stated in Wissel v. State of Florida, 691 So. 2d 507 (Fla. 2d DCA 1997), it is not necessary for the agency to include in its rule "every step, aspect or procedure" of the scientific process at issue. It is doubtful that a rule could ever include sufficient detail to make an untrained layman completely conversant on the subject of salinity or mean low water measurements. It is certain that the MFL statute does not require the District to undertake such a seminar in its rule. See Wissel v. State of Fla., 691 So. 2d at 507, 508 ("We hold that procedures that are implicit and incidental . . . do not require further codification.").

121. The Proposed Rule identifies and locates by latitude and longitude coordinates the existing Ft. Myers salinity monitoring station as the location where salinity would be measured for compliance. In addition, the preponderance of the evidence established that use of PSU to report salinity is technically not correct. The use of such a pseudo-unit would actually cause confusion instead of reduce confusion.

122. The District's expert witnesses testified that "20% of the total river depth at mean low water" is the location of the

data sonde at the Ft. Myers monitoring station that measures surface salinity. This is also the depth at which Vallisneria is located in the CRE. Since, the Proposed Rule language simply identifies the location of the existing data sonde at the Ft. Myers salinity monitoring station, the language is not vague.

123. Thus, the District proved that the Proposed Rule is not vague.

Whether the Proposed Rule is Arbitrary or Capricious

124. A rule is arbitrary if it is not supported by fact or logic and capricious if it has been adopted with no thought or reason. See § 120.52(8)(e), Fla. Stat.

125. If an agency rule "is justifiable under any analysis that a reasonable person would use to reach a decision of similar importance, it would seem that the decision is neither arbitrary nor capricious." Dravo Basic Materials Co., Inc. v. State, Dep't of Transp., 602 So. 2d 632, 634 n.3 (Fla. 2d DCA 1992). A rule is not arbitrary or capricious if there is any evidence to show a rational basis for the rule. See Fla. League of Cities, Inc. v. Dep't of Env'tl. Reg., 603 So. 2d 1363, 1367 (Fla. 1st DCA 1992).

126. In this case, not only is there a rational basis for the Proposed Rule, but the District proved by a preponderance of the evidence that it did not adopt the Proposed Rule without thought or reason and that it used the best available science to calculate the MFL criteria.

127. The preponderance of the evidence established that Vallisneria continues to be a particularly useful indicator of environmental conditions in the CRE. The District's choice of the Ft. Myers salinity monitoring station as the location at which to measure compliance is supported by the facts and logic, and is reasonable.

128. In addition, the preponderance of the evidence established that the District's decisions to eliminate the single-day exceedance salinity criterion, to not use the EFDC model, and to not set seasonal MFL criteria were not arbitrary or capricious.

129. Thus, the District proved that the Proposed Rule is not arbitrary or capricious.

Improper Purpose

130. The District seeks attorney's fees and costs as the prevailing party in this proposed rule challenge proceeding.

131. Section 120.595(2) states, in relevant part:

If the agency prevails in the proceedings, the appellate court or administrative law judge shall award reasonable costs and reasonable attorney's fees against a party if the appellate court or administrative law judge determines that a party participated in the proceedings for an improper purpose as defined by paragraph (1) (e).

132. Section 120.595(1) (e) states that "'[i]mproper purpose' means participation in a proceeding pursuant to

s. 120.57(1) primarily to harass or to cause unnecessary delay or for frivolous purpose or to needlessly increase the cost of litigation, licensing, or securing the approval of an activity."

133. The Petitioners, Sanibel, Cape Coral, and the Town, did not participate in this proceeding for an improper purpose.

134. The Intervenors, Fort Myers, Estero, Bonita Springs, and CCP, did not participate in this proceeding for an improper purpose.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, it is ORDERED that:

1. The Petitioners and Intervenors are substantially affected by the Proposed Rule and, therefore, have standing to challenge it.

2. The Proposed Rule 40E-8.221(2) is a valid exercise of delegated legislative authority, and the petition is dismissed.

3. The District's request for attorney's fees and costs is denied, because the Petitioners and Intervenors did not participate in this proceeding for an improper purpose.

DONE AND ORDERED this 8th day of March, 2019, in
Tallahassee, Leon County, Florida.



FRANCINE M. FFOLKES
Administrative Law Judge
Division of Administrative Hearings
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Filed with the Clerk of the
Division of Administrative Hearings
this 8th day of March, 2019.

ENDNOTES

^{1/} The District's lead scientist for the Caloosahatchee MFL,
Dr. Christopher Buzelli, testified that:

Salinity is defined as the nonvolatile,
nonorganic ionic content of water. Now in the
case of saltwater, the dominant ion is
chloride. So the secondary ion is sodium.
So chloride is about almost 80 percent and
sodium is 18 to 19 percent, thus the
word salt and salinity. There are other ions,
but salinity is defined historically, again,
as the chlorinity or the chloride ion content
of the water. That was the functional
definition until the 1970's into the early
80's where a group of scientists
oceanographers, in an international UNESCO
program, came up with a relationship that's
based on the conductivity of the water.

Pets. Ex. 72, p. 12.

2/ The Notice of Proposed Rule provided:

THE FULL TEXT OF THE PROPOSED RULE IS:

40E-8.221 Minimum Flows and Levels (MFLs):
Surface Waters.

The MFLs contained in this Part identify the point at which further withdrawals would cause significant harm to the water resources, or ecology, of the area as applicable, pursuant to Sections 373.042 and 373.0421, F.S. It is the District's intent to correct or prevent the violation of these MFLs through management of the water resources and implementation of a recovery strategy.

(1) No change.

(2) Caloosahatchee River. The MFL for the Caloosahatchee River is the 30-day moving average flow of 400 cubic feet per second (cfs) at S-79. ~~A minimum mean monthly flow of 300 CFS is necessary to maintain sufficient salinities at S-79 in order to prevent a MFL exceedance. A MFL exceedance occurs during a 365-day period, when:~~

(a) A MFL exceedance occurs during a 365-day period when the 30-day moving average flow at S-79 is below 400 cfs and the 30-day moving average salinity exceeds 10 at the Ft. Myers salinity monitoring station (located at latitude 26° 38' 57.84" N, longitude 81° 52' 5.68" W). Salinity at the Ft. Myers salinity monitoring station shall be measured at 20% of the total river depth at mean low water. ~~A 30-day average salinity concentration exceeds 10 parts per thousand at the Ft. Myers salinity station (measured at 20% of the total river depth from the water surface at a location of latitude 263907.260, longitude 815209.296); or~~

(b) A MFL violation occurs when a MFL exceedance occurs more than once in a 5-year period ~~A single, daily average salinity~~

~~exceeds a concentration of 20 parts per thousand at the Ft. Myers salinity station. Exceedance of either paragraph (a) or (b), for two consecutive years is a violation of the MFL.~~

(3) through (5) No change.

Rulemaking Authority §§ 9, 10 P.L. 83-358, 373.042, 373.044, 373.113, 373.119, 373.129, 373.136, 373.171 FS. Law Implemented 373.016, 373.036, 373.042, 373.0421, 373.175, 373.216, 373.219, 373.223, 373.246, 373.709 FS. History-New 9-10-01, Amended 4-1-03, 12-12-06., _____.

^{3/} Even so, Sanibel argued in the proposed final order that the Tomasko report concluded the proposed MFL of 400 cfs will not produce salinity values of 10 or lower at the Ft. Myers monitoring station, which is necessary to protect Vallisneria. However, the Tomasko report actually stated that Dr. Tomasko's company did not attempt to independently develop or model "flow vs. salinity" relationships for the CRE. The Tomasko report simply summarized findings from the Final Technical Document and concluded with a list of four recommendations. Those recommendations were focused on seeking explanations from the District as to how an MFL of 400 cfs was expected to produce the target salinity of 10 during average dry season conditions. The Tomasko report only focused on the two component studies related to Vallisneria and did not address the District's resource-based approach where the 11 study components included evaluation of multiple indicator species.

^{4/} Component Study One used the Curvilinear Hydrodynamic Three-dimensional model for the Caloosahatchee River. This tool was used to explore changes in circulation and salinity caused by structural alterations. It did not provide estimates of inflows relative to estuarine response variables.

Component Study Two evaluated the variable annual relationship between water volume and salinity by quantifying the amount of fresh water from S-79 required to reach a surface salinity of 10 at the Ft. Myers salinity monitoring station. An exponential decay equation was used which contained 21 years of salinity data collected at the Ft. Myers salinity monitoring station. The average monthly inflow at S-79 required to produce an average monthly salinity of 10 at the Ft. Myers station was 445 cfs plus or minus a standard deviation of 218 cfs.

Component Study Three evaluated the effects of low flow on water quality parameters for dissolved oxygen and chlorophyll a, within the CRE's water column. These parameters provide a measure of phytoplankton or algal biomass in the water column. Long-term monitoring of these chlorophyll a indicated that concentrations greater than the water quality standard was associated with an average inflow at S-79 of 469 cfs plus or minus a standard deviation of 689 cfs. Modeling of chlorophyll a concentrations produced an average inflow result of 269 cfs plus or minus 493 cfs.

Component Study Four analyzed zooplankton response to fresh water inflows within the CRE, evaluating real time sample data from May 2008 to April 2010 at 14 stations between San Carlos Bay and the S-79 structure. Zooplankton assemblages, consisting of fish larvae, provide an essential food web link whose position in the estuary fluctuates with inflow. The zooplankton assemblages are a source for commercial and recreational fisheries. A statistical regression was used to evaluate how low flow volumes affected habitat compression and impingement of zooplankton at the S-79 structure. Impingement was possible if average inflow from the S-79 structure fell below 412 cfs plus or minus a standard deviation of 165 cfs.

Component Study Five evaluated the relationship between flow and movement of ichthyoplankton (juvenile fish) to prevent impingement or flushing out to sea. Ichthyoplankton communities are key components of food webs in the upper reaches of most estuaries. This study utilized the salinity preference of ichthyoplankton to estimate the habitat area with reduced inflow. Abundance of ichthyoplankton was greatest when the 30-day inflows at S-79 averaged between 151 and 600 cfs. Salinity preference was less than 10 and abundance was centered near Beautiful Island in the Upper CRE. This abundance and salinity preference were associated with an average inflow from S-79 of 237.5 cfs plus or minus a standard deviation of 255.5 cfs.

Component Study Six evaluated benthic macrofauna organisms that serve as a food source for mobile organisms. The abundance, diversity, and composition of the macrofaunal community were determined relative to observed fluctuations in salinity. Average inflow on the days when the salinity range was greater than the tolerance range of the macrofaunal community was 501 cfs plus or minus a standard deviation of 525 cfs.

Component Study Seven utilized quantitative monitoring of Vallisneria from 1993 to 1999 and from 2007 to 2013. A change

point analysis was used to evaluate long-term monitoring data and develop an empirical relationship between mortality of Vallisneria shoots and changes in salinity. The average inflow for dry season days, where the salinity at Ft. Myers ranged from 9 to 10 during the years when Vallisneria was abundant, was 545 cfs plus or minus a standard deviation of 774 cfs.

Component Study Eight developed a simulation model to evaluate Vallisneria survival and biomass over a long period of time. The model was populated with results from mesocosm studies and was calibrated to field data and environmental variables. The study highlighted Vallisneria response to different environmental variables, including light, salinity, and temperature. A salinity of 12 at the Ft. Myers station and an average inflow of 342 cfs plus or minus a standard deviation of 180 cfs were identified as the salinity and inflows where Vallisneria experienced net mortality.

Component Study Nine evaluated the ideal salinity envelope for oysters. Salinity conditions from the 2006 to 2014 dry seasons were categorized relative to oyster habitat criteria and related to fresh water inflow. The salinity conditions from the Cape Coral and Shell Point monitoring stations were used. When daily salinity was 20 to 25, i.e., within the appropriate range for oysters, daily inflow at S-79 averaged 296 cfs plus or minus a standard deviation of 410 cfs.

Component Study Ten analyzed the influence of hydrologic variables, including fresh water inflows, on blue crabs. Blue crabs are a historically important commercial fishery for Lee County and a resource function of the Caloosahatchee River. Twenty-eight years of blue crab catch data from the Florida Wildlife Research Institute, rainfall data, and daily discharge data for S-79 were used. Average inflow was estimated using rainfall and S-79 discharge relationships. The average inflow was 400 cfs plus or minus a standard deviation of 57 cfs.

Component Study Eleven evaluated the salinity range under dry season flows for the shallow habitat of the federally endangered smalltooth sawfish. The CRE is presently an important sawfish nursery. Juvenile sawfish habitat can be characterized as nearshore environments of less than one meter in depth, where salinities range from 12 to 27. This study quantified sawfish habitat with variable inflow to the CRE in the dry season using a combination of bathymetric analyses and hydrodynamic modeling. Inflows of 150 to 300 cfs positioned the 12 and 27 salinities in

the shallowest part of the estuary. Specifically, the area of sawfish habitat was greatest (5.7 km²) when inflow through the S-79 structure was 270 cfs in the dry season. Under reduced inflow, the habitat migrated into the channel above Beautiful Island where it was compressed against the S-79 structure. Higher inflows pushed the location of salinity 27 out of the estuary.

^{5/} The District's principal scientist, Don Medellin, testified that the District's scientific evaluation determined that a flow of 400 cfs is needed to essentially prevent significant harm from occurring to the indicator species. When asked why the Proposed Rule also included a 30-day moving average salinity component, he testified that the salinity component is a "downstream check" or "surrogate for flow," and that if the flows at the S-79 structure are not met, there may not be a need to discharge additional fresh water through the S-79 structure. He explained:

The idea is to do a downstream check of the salinity values in the event that flows at S-79 are not met. The idea is to make sure that we're, as part of - like I indicated earlier, as part of the recovery strategy that we're not wasting water. It's a downstream check. So if the salinity is still . . . below 10, then the MFL is still met. The threshold is still met.

Tr. 140.

Dr. Buzzelli also testified:

That's what we call the combined flow exceedance. That also included a salinity trigger. And so to answer your question, I believe was yes, it is possible for either flow or salinity to lead to an MFL violation. That's why [they are] both in there.

* * *

So if you're going to have an inflow, one must also account for an indicator inside the water body that represents that flow variable. And in our case that indicator is called salinity which is a conservative property of the water that is not affected by chemical or biological processes, only mixing between salt and fresh.

Thus, the inclusion of both an inflow and a salinity component to the rule. On top of that . . . the hydrodynamics of the estuary mandate inclusion of both of those variables.

Pets. Ex. 72, pp. 33-35.

^{6/} The parties stipulated to the Petitioners, Sanibel, Cape Coral, and Town's, standing in this proceeding. Although parties can stipulate to facts that may or may not result in the legal conclusion that a party has standing, the actual legal conclusion is within the exclusive authority of the relevant tribunal. See Grand Dunes, Ltd. v. Walton Cnty., 714 So. 2d 473, 475 (Fla. 1st DCA 1998) ("In the administrative context, standing is equated with jurisdiction of the subject matter of litigation and is held subject to the same rules, one of which is that jurisdiction of the subject matter, thus standing to bring suit, cannot be conferred by consent.").

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NOTICE OF RIGHT TO JUDICIAL REVIEW

A party who is adversely affected by this Final Order is entitled to judicial review pursuant to section 120.68, Florida Statutes. Review proceedings are governed by the Florida Rules of Appellate Procedure. Such proceedings are commenced by filing the original notice of administrative appeal with the agency clerk of the Division of Administrative Hearings within 30 days of rendition of the order to be reviewed, and a copy of the notice, accompanied by any filing fees prescribed by law, with the clerk of the District Court of Appeal in the appellate district where the agency maintains its headquarters or where a party resides or as otherwise provided by law.