

Rules of the South Florida Water Management District

EVERGLADES PROGRAM Chapter 40E-63, F.A.C.



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CHAPTER 40E-63 EVERGLADES PROGRAM

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PART I EVERGLADES REGULATORY PROGRAM: EVERGLADES AGRICULTURAL AREA (EAA) BASIN**40E-63.011 Policy and Purpose.**

(1) The Everglades is a unique national resource. It has a high diversity of species, and provides habitat for large populations of wading birds and several threatened and endangered species, including wood storks, snail kites, bald eagles, Florida panthers, and American crocodiles. Large portions of the northern and eastern Everglades have been drained and converted to agricultural or urban land uses. Only 50% of the original Everglades ecosystem remains today. The remainder is the largest and most important freshwater sub-tropical peatland in North America. The remaining components of the historic Everglades are located in the Water Conservation Areas (WCAs) and Everglades National Park (ENP). ENP and Loxahatchee National Wildlife Refuge (WCA 1) are Outstanding Florida Waters, a designation which requires special protection for the resource.

(2) Large portions of the Everglades ecosystem have evolved in response to low ambient concentrations of nutrients and seasonal fluctuations of water levels. Prior to creation of the Everglades Agricultural Area (EAA), nitrogen and phosphorus were mainly supplied to large areas only in rainfall. Phosphorus is the primary limiting nutrient throughout the remaining Everglades. Sawgrass has lower phosphorus requirements than other species of Everglades vegetation.

(3) A substantial portion of EAA nutrients is transported to the remaining Everglades either in dissolved or in particulate form in surface waters. The introduction of phosphorus from EAA drainage water has resulted in ecological changes in substantial areas of Everglades marsh. These changes are cultural eutrophication, which is an increase in the supply of nutrients available in the marsh. The increased supply of phosphorus in Everglades marshes has resulted in documented impacts in several trophic levels, including microbial, periphyton, and macrophyte. The areal extent of these impacts is increasing.

(4) The State of Florida enacted The Marjory Stoneman Douglas Everglades Protection Act in 1991. The Act required the District to publish notice of rulemaking by October 1, 1991, allowing for a master permit or permits authorizing discharges, subject to conditions or requirements, from landowners within the area served by the drainage structures listed in Appendix A3, TABLE A1. That law was substantially revised in 1994 and is codified today as the Everglades Forever Act, Section 373.4592, F.S.

(5) The regulatory program to address the reduction of total phosphorus loads from the Everglades Agricultural Area (EAA) in general was adopted initially by this chapter in December 1991 and was amended in 1992 to add a specific phosphorus load allocation.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 7-3-01.

40E-63.091 Publications Incorporated by Reference.

(1) "Appendix A1 – Description: Regulated Portion of Everglades Agricultural Area Basins Palm Beach, Broward and Hendry Counties," dated March 15, 2018 [<http://www.flrules.org/Gateway/reference.asp?No=Ref-09163>].

(2) "Appendix A2 – Typical Best Management Practices for the EAA Basin," dated January 2001, and including nutrient control practices, water management practices, particulate matter and sediment control, pasture management, and other BMPs.

(3) "Appendix A3 – EAA Basin Compliance," dated March 15, 2018, [<http://www.flrules.org/Gateway/reference.asp?No=Ref-09164>], and setting forth the procedures the District will follow to determine whether the entire EAA Basin has met the applicable total Phosphorus reduction goals based upon mathematical data analysis.

(4) "Appendix A3.1 – FORTRAN Program for Calculating EAA Basin Flows and Phosphorus Loads," dated March 15, 2018, [<http://www.flrules.org/Gateway/reference.asp?No=Ref-09165>].

(5) "Appendix A3.2 – Flow Computation Methods Used to Calculate EAA Basin Flows," dated March 15, 2018, [<http://www.flrules.org/Gateway/reference.asp?No=Ref-09166>], providing applicable mathematical formulas for calculating flow rates through water management structures.

(6) "Appendix A4 – EAA Basin Farm Scale Allocation," dated March 15, 2018, [<http://www.flrules.org/Gateway/reference.asp?No=Ref-09167>], setting forth the procedure the District will follow to regulate total Phosphorus loads from individual farms when the EAA Basin has been determined to be not in compliance with applicable requirements.

(7) "Appendix A5 – Outline of Compliance and Enforcement Procedures in the EAA Basin," dated January 2001.

(8) "Appendix A6 – EAA Basin Examples of Permit Modifications," dated January 2001, distinguishing permit modifications, letter modifications, and administrative updates.

(9) South Florida Water Management District Form 0779, dated January 2001, entitled "Application for a Works of the District Permit."

(10) "South Florida Water Management District Guidance for Preparing an application for "A Works of the District" Permit in the Everglades Pursuant to Chapter 40E-63, F.A.C.", dated May, 1992.

(11) The documents listed in subsections (1) through (10) are incorporated by reference herein, and are available at no cost by contacting the South Florida Water Management District Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, (800)432-2045, ext. 6805 or (561)682-6805.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.451, 373.453, 373.4592 FS. History—New 7-3-01, Amended 3-15-18.

40E-63.101 Scope.

(1) The goal of the regulatory program contained in Part I of this chapter is to reduce by 25% the total phosphorus loads discharged from the EAA.

(a) The EAA is generally depicted in Appendix A1 Figure 2 and includes the drainage Basins of S-2, S-3, S-5A, S-6, S-7, S-8 and S-150.

(b) The Everglades Protection Area is generally depicted in Appendix A1 Figure 1 and includes Water Conservation Areas 1, 2A, 2B, 3A and 3B, the Arthur R. Marshall Loxahatchee National Wildlife Refuge and the Everglades National Park.

(c) Both areas are more specifically identified and described in Rule 40E-63.104, F.A.C. (Boundaries).

(2) In Part I of this chapter, the "Works of the District within the Everglades" are specifically named. These include water control structures, rights-of-way, canals, and other water resources which the South Florida Water Management District owns, has accepted responsibility for, or has specifically named. All lands within the EAA are deemed to be users of the Works of the District within the Everglades, and as such, must comply with the applicable provisions of this chapter. Any owner of a parcel of land in the EAA must obtain the applicable general, individual, or master permit, and comply with applicable rule criteria.

(3) This rule is based on the assumption that implementation of the regulatory program for the

EAA will not reduce the quantity of water discharged from the S-2, S-3, S-5A, S-6, S-7, S-8 and S-150 Basins by more than 20% of the quantity discharged historically. The District will evaluate water quantity data collected from the structures, beginning on the effective date of this rule, to determine whether the quantity discharged from the structures after implementation of this regulatory program is less than 80% of the historical amount. If the quantity of water discharged is less than assumed or the water supply for the Everglades is inadequate, the District intends to take appropriate actions in the future to insure water supply for the Everglades. Appropriate actions may include, but are not limited to operational changes, or the initiation of proceedings pursuant to Chapter 120, F.S., to modify or revoke District permits or rules relating to water quantity used or discharged (surface water management, consumptive water use and works of the district). This section is not intended to modify or limit in any way the District's authority and responsibilities to plan for and regulate consumptive water use, water shortages and water supply.

(4) The District shall consider alternatives to the requirements specified in this chapter, if the District obtains or is presented with evidence that the alternatives are more appropriate for the particular facts and circumstances presented and are consistent with the policy and purpose of this chapter. This section is intended to allow additional methods for achieving equivalent performance and compliance and not to establish more or less strict requirements. Any proposals for alternative requirements shall be reviewed by District staff, and presented to the Governing Board for action.

(5) The District intends to continue research and evaluation of the data collection procedures and methodology specified in Parts I, II and III of this chapter, the effectiveness of the regulatory program in accomplishing the goal, and the water quality of the Everglades. The regulatory program and requirements set forth in this chapter, including all compliance and enforcement procedures for permittees, are subject to revision if future evaluations indicate that the goal of reducing total phosphorus loads discharged from the EAA by 25% is not met. The District will initiate Chapter 120, F.S., rulemaking procedures to incorporate any significant changes to the data collection procedures, methodology, program requirements, or program compliance and enforcement procedures specified in this chapter. In addition, other water quality parameters, water quantity withdrawal conditions, or requirements may be added, and funding requirements for fulfilling other District objectives could be affected.

(6) The District is also responsible for implementing SWIM Plans for other priority water bodies. However, these areas are not included in the scope of this rule, except to the extent that they are identified and described as part of the area in Rule 40E-63.104, F.A.C. (Boundaries).

(7) Permits issued under this chapter do not eliminate or alter permit requirements for discharges which may also impact other water bodies, such as Lake Okeechobee, or permits which may be required by other District regulatory programs.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 7-3-01.

40E-63.102 Definitions.

When used in this chapter:

(1) "Best Management Practice (BMP) Plan" means the plan required by subsection 40E-63.136(1), F.A.C.

(2) "EAA Basin" means the entire EAA, which is described in subsection 40E-63.104(2), F.A.C. (Boundaries).

(3) "Everglades Agricultural Area Environmental Protection District" (EAA EPD) was established by the State Legislature as a special district representing landowners within the EAA Basin for the

purposes of ensuring environmental protection by means of conducting scientific research on environmental matters related to air and water and land management practices and implementing the financing, construction, and operation of works and facilities designed to prevent, control, abate or correct environmental problems and improve the environmental quality of air and water resources.

(4) "FDEP Comprehensive Quality Assurance Plan" means an approved Florida Department of Environmental Protection (FDEP) plan pursuant to Rule Chapter 62-160, F.A.C., which specifies the proper field sampling procedures and protocols for particular projects which include sampling equipment, equipment cleaning and preparation procedures, sample collection procedures, sample preservation protocols, sample storage and transport protocols, and sample chain-of-custody protocols and documentation.

(5) "Individual Permit" means a single permit issued to any entity, and the owners of all parcels which discharge water tributary to the structures identified in the permit, that is responsible for implementing Best Management Practices and conducting water quality monitoring for all lands specified within the permit.

(6) "Land Practice" means agricultural or other activities conducted on a parcel pursuant to an approved BMP Plan.

(7) "Land Practice Change" means any change in the use of a parcel which is likely to result in significant changes to the scope or type of Best Management Practice specified in the permitted BMP Plan for the parcel or in the effectiveness of the Best Management Practice specified in the permitted BMP Plan.

(8) "Master Permit" means a single permit issued for the entire Everglades Agricultural Area to a legally responsible entity that provides an opportunity to achieve collective compliance with the provisions of this chapter.

(9) "Parcel" means a contiguous land area under single ownership within the Everglades Agricultural Area Basin.

(10) "Structure" means a structural device or hydrologic feature through which water is discharged from a parcel or parcels to a receiving water.

(11) "Total Phosphorus" means the amount of phosphorus in an unfiltered sample which has been converted to ortho phosphate by an acid persulfate digestion.

(12) "Water Management System" means the collection of devices, improvements or natural systems whereby surface waters are conveyed, controlled, impounded or obstructed.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 6-30-97, 6-7-99, 7-3-01.

40E-63.104 EAA Basin Boundaries.

(1) The Everglades Protection Area is generally described as: Water Conservation Areas 1, 2A, 2B, 3A and 3B, the Arthur R. Marshall Loxahatchee National Wildlife Refuge, and the Everglades National Park. It is depicted on maps and legally described in "Appendix A1" which is incorporated by reference in Rule 40E-63.091, F.A.C.

(2) The EAA is generally described as:

(a) The area including, but not limited to, the drainage basins of S-2, S-3, S-5A, S-6, S-7, S-8 and S-150. The EAA is depicted on maps and legally described in "Appendix A1," which is incorporated by reference in Rule 40E-63.091, F.A.C.; and,

(b) The Everglades Construction Project diversion basins, consisting of the areas within the boundaries of the South Florida Conservancy District, South Shore Drainage District, East Shore

Water Control District, East Beach Water Control District, and Closter Farms (also known as 715 Farms or the lessee of agricultural lease number 3420). These basins previously released stormwater to Lake Okeechobee, but stormwater was redirected as new releases to Works of the District within the Everglades under Rule 40E-63.108, F.A.C., when the diversion projects were completed. The Everglades Construction Project Diversion Basins are depicted on maps and described in "Appendix A1," which is incorporated by reference in Rule 40E-63.091, F.A.C.

(3) The areas described in paragraphs (2)(a) and (b), are regulated under Part I of this chapter and are included in calculating phosphorus load reductions as set forth in "Appendix A3" and "Appendix A4," which are incorporated by reference in Rule 40E-63.091, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01, 3-15-18.

40E-63.106 Works of the District within the Everglades.

The Works of The District within the Everglades Agricultural Area Basin include: S-2, S-3, S-5A, S-6, S-7, S-8, S-150, G-88, G-136, G-200, G-344A, G-344B, G-344C, G-344D, G-349B, G-350B, G-357, G-404, G-410, G-402-A, G-402-B, G-402-C, G-402-D, G-605, G-606, Miami Canal, North New River Canal, Hillsboro Canal, C-51 (at both current and ultimate discharge locations into the Everglades Protection Area), and their open channel connections. The Works of the District and other structures which are or have been used for calculating compliance with the phosphorus load reduction objectives of the Everglades program are set forth in "Appendix A3," which is incorporated by reference in Rule 40E-63.091, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01, 3-15-18.

40E-63.108 Implementation.

The effective date of Parts I, II, and III of this chapter is 1-22-92. The rules shall apply to existing and new releases of water to Works of the District within the Everglades.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.110 EAA Basin – Permits Required.

(1) The lands in the EAA, as described in subsection 40E-63.104(2), F.A.C., (Boundaries) release water that ultimately makes use of, connects to, is released to, or is discharged to the Works of the District within the Everglades, as defined in Rule 40E-63.106, F.A.C., (Works of the District within the Everglades) and a general permit, individual permit, or master permit must be obtained pursuant to Subpart A, B or C of Part I of this chapter.

(2) Any landowner in the EAA, as described in subsection 40E-63.104(2), F.A.C., (Boundaries) may submit evidence to the District demonstrating that the water discharged from their property does not use the Works of the District within the Everglades, and request District staff to make a written determination that the requirements of this chapter do not apply to their property. The request and supporting evidence must be submitted no later than 90 days prior to the application date specified below for Subparts B and C for Individual and Master Permits. District staff will review the evidence submitted and other available information and issue a written statement within 60 days specifying whether the property is subject to the requirements of Part I of this chapter.

(3) If the BMP Plan submitted pursuant to Part I of this chapter proposes activities which require new or modified consumptive water use, surface water management, environmental resource, right-

of-way, or well construction permits from the District, applications for the other permits shall be submitted at the same time the Works of the District permit application is submitted. The permit applications for the new or modified activities must be complete by the time the Works of The District permit application is complete. If the applications are not complete, the proposed activities will be excluded from the Works of The District application.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Repromulgated 7-7-92, Amended 7-7-92, 7-3-01.

Subpart A EAA Basin – General Permits

40E-63.120 General Permits for Use of Works of the District Within the Everglades.

(1) Parcels of land that connect to or make use of the Works of The District Within The Everglades, and that meet the conditions specified below in subsection (2), are granted a General Permit to connect to and make use of the Works Of The District Within The Everglades, subject to the requirements of Part I of this chapter.

(2) The parcels of land described below qualify for a General Permit, subject to the conditions specified below:

(a) The property is less than 40 acres in size, is residential, and is not served by a central drainage system; or

(b) The property is less than 5 acres in size, is commercial or industrial, and is not served by a central drainage system.

(3) The District shall require the submission of applications for individual permits from general permittees if the District determines that the additional participation in this permit program is needed to meet the program goals. Notice of the requirement shall be provided to parcel owners in writing by certified mail.

(4) General permits granted upon adoption of Part I of this chapter do not relieve the permittee of the responsibility to comply with all other laws or regulations applicable to the use of or discharges from the parcel.

(5) General permits granted upon adoption of Part I of this chapter remain effective unless the District notifies a permittee in writing by certified mail pursuant to subsection (3), above, that the permit is revoked.

(6) Parcel owners granted a general permit, who choose to participate in a Master Permit shall notify the District of their participation within 30 days of signing an agreement or other legal document with the master permit application.

(7) No Notice of Intent, permit application, or application fee is required.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 1-1-97, 7-3-01.

Subpart B EAA Basin – Individual Permits

40E-63.130 Individual Permit Application Requirements in the EAA Basin.

(1) Individual Permits are required for all structures which discharge or release water to one of the Works of the District within the Everglades as defined in Rule 40E-63.106, F.A.C., (Works of the District within the Everglades), unless granted a general permit or included in a Master Permit pursuant to Part I of this chapter.

(a) Individual permit applications must be submitted by the owner of land on which a structure is located and any entity responsible for operating the structure. The permit application must include

the owners of all parcels which discharge water tributary to the structure.

(b) Individual permit applications must be submitted by the owners of all parcels not included in either paragraph (a) above, a general permit, or a master permit.

(c) Applications may be submitted by a lessee of a parcel provided the lease is in writing, and reasonable assurance is provided that the lessee has the legal and financial capability of implementing the BMP Plan, monitoring plan and other permit conditions. Reasonable assurance shall be provided by a lease with a duration as long as the duration of an individual permit issued pursuant to Part I of this chapter together with an application co-signed by the parcel owner; however, other alternatives submitted by an applicant will be considered.

(2) An applicant may submit evidence to the District regarding questions about which lands are tributary to a structure, and request District staff to make a written determination. The request and supporting evidence must be submitted no later than June 1, 1992. District staff will review the evidence submitted and other available information and issue a written statement within 60 days of receipt of the request and evidence.

(3) Applications for Individual Permits are due by September 1, 1992.

(4) The District expects to take final agency action on all initial permits issued pursuant to Part I of this chapter no later than July 1993. Accordingly, the District shall process the applications submitted pursuant to Part I of this chapter in strict accordance with the 90-day time provisions set forth in Section 120.60, F.S. Applicants are expected to make good faith efforts to complete applications within a reasonable time. Applications which are not complete within a reasonable time are subject to denial and administrative or judicial enforcement action.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.132 Content of Application for Individual Permits in the EAA Basin.

Applications for Individual Permits shall contain all the following:

(1) Date and signature of the owner or entity responsible for operating all control structures that discharge to District primary canals and of owners of all parcels included in the permit application.

(2) A clear delineation of the area and acreage contained in the permit application, including a map which is correlated with the list of parcel owners in subsection (1) above.

(3) Copies of any existing contracts, agreements, or equivalent regarding use or operation of the control structure between the entity responsible for operating the control structure and the parcel owners included in the application.

(4) A list of all District permits required for the application area and their status.

(5) A completed copy of Form 0779, entitled "Application For A Works Of The District Permit", which is published by reference and incorporated into this chapter.

(6) All the information specified in Application Guidebook 0779, entitled "Guidance For Preparing An Application For A Works Of The District Permit In The Everglades Pursuant To Chapter 40E-63, F.A.C.", dated May 14, 1992, which is published by reference and incorporated into this chapter.

(7) All the information necessary to satisfy the conditions for issuance of Individual Permits in Rule 40E-63.136, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92.

40E-63.134 Permit Application Processing Fee for Individual Permits in the EAA Basin.

The following permit application processing fees shall be paid to the District at the time the following

actions on Individual Permits are filed.

(1) For new applications for Individual Permits: a minimum fee of \$1,880, plus \$1.50 per acre for each acre above 320 acres in size, with a total maximum fee of \$30,000.

(2) For renewals (with or without modifications) to existing Individual Permits: a fee of \$1,560, plus \$0.25 per acre for each acre over 320 acres, with a maximum fee of \$5,000.

(3) For a Modification of an existing Individual Permit: a fee of \$1880.

(4) For a Letter Modification of an existing Individual Permit: a fee of \$500.

(5) For Administrative Information Updates to an existing Individual Permit: No Fee.

(6) For Transfers of existing Individual Permits: a fee of \$200.

(7) An application shall not be considered complete until the appropriate application fee is submitted. These fees are assessed in order to defray the cost of evaluating, processing, monitoring, and inspecting for compliance required in connection with consideration of such applications. Failure of any applicant to pay the applicable fees established herein will result in denial of an application.

Rulemaking Authority 373.044, 373.109, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.109, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 7-3-01.

40E-63.136 Conditions for Issuance of Individual Permits in the EAA Basin.

In order to obtain a permit under Part I of this chapter, an applicant must satisfy all the following conditions:

(1) Submit and implement a BMP Plan which includes:

(a) A description of Best Management Practice implementation and operation;

(b) A description of Best Management Practice rationale (Best Management Practice research can be used to supplement data where appropriate);

(c) A consideration of the Best Management Practices listed in Appendix A2, incorporated by reference into this chapter, and an explanation of why Best Management Practices not included in the BMP Plan are not suitable for implementation;

(d) A fertilization and water management plan for each crop, combination of crops or farming units;

(e) A water management system design plan, including a water budget, probable volume and timing of discharge, nutrient recovery rationale, field water management strategies, infrastructure descriptions, and inter-and intra-operation water routing;

(f) A monitoring plan to verify Best Management Practice implementation, operation and effectiveness (Best Management Practice research can be used to supplement data where appropriate);

(g) An education and training program for management and operation staff responsible for implementing and monitoring the approved BMP Plan;

(h) A schedule for implementing the BMP Plan. The schedule must require Best Management Practices to be in place by February 1, 1995.

(2) Submit an acceptable water quality monitoring plan which provides reasonable assurance that annual water discharge and total phosphorus load are accurately documented. A plan which contains the following items generally provides reasonable assurance, but other alternatives may be proposed by the applicant and authorized by the District:

(a) A description of the proposed monitoring program, including an explanation of how it will measure flow and total phosphorus concentration;

(b) A map, description, and latitude and longitude of all proposed monitoring locations, which

shall include, at a minimum, all structures that discharge into District primary canals;

(c) A description of proposed sample collection methods and schedules, which specifies:

1. Periods of discharge (e.g., biweekly) over which samples will be collected (If there has been no discharge during a period, no samples need to be collected);

2. Water depth location of sample collection;

3. Consistent site location of sample collection (e.g., on the upstream side of the culvert discharging to the District canal, in the tailwater of the pump, if present, etc.);

4. Collection technique (e.g., automatic sampler or grab sampling; automatic samplers may be configured to collect flow-proportional or time-proportional composite samples);

5. Written specification of items 1, 2, 3 and 4 above for each sample location;

6. How samples will be treated (e.g. compositing versus individual analysis);

7. Sample preservation method (acidification shall be required during collection periods prior to pick-up, but refrigeration shall not be required);

8. For sites with a single variable speed pump or more than one pump, a flow proportional sampling method shall be required; for sites with single or multiple pumps run at constant speed, the time-proportional method may be used for each pump (constant volumes of water are collected at set intervals as long as the pump is operating);

9. How water discharges are measured or estimated from pump operating logs (if estimated by operation logs, the pump calibration methodology and results of calibration methodology must be certified by a Professional Engineer);

10. Identification and qualification of individuals who will collect samples;

(d) A description of the proposed sample handling and laboratory analyses, including identification of the laboratory (which must have an approved QA/QC Plan from a laboratory certified in accordance with Section 403.0625, F.S.) to be used to perform the chemical analyses on the samples, a specified schedule for processing samples, and chain of custody documentation. The plan shall include "split sampling", to furnish the District with samples to ensure field and laboratory accuracy;

(e) A description of data management techniques, including a schedule for the delivery of data from the analytical laboratory which provides for data to be transmitted to the District in electronic format monthly and annually, unless another time period is authorized by the District. The electronic format shall be a DOS formatted 3.5 inch disk that contains, in ASCII, horizontal records with evenly spaced columns of owner; site location (latitude-longitude), sample location (u for upstream or d for downstream), water quantity discharges (mgd for million gallons per day), total phosphorus concentrations (mg/1 as P) (including QA/QC results), date (mmddyy) and time (military) of sample collection, period of discharge (mmddyy-mmddyy), whether samples were taken by grab (g) or automatic techniques (t for time proportional or f for flow proportional), whether samples were composited (c for composited or nc for not composited), daily loads (kg/d), and identification of methods used to compute water quantity discharges and phosphorus load;

(f) A description of data review procedures, including the identification of the reports required pursuant to paragraphs 40E-63.143(2)(c) and (d), F.A.C., (Limiting Conditions for Individual Permits), and a schedule for submission of reports monthly and annually, unless another time period is authorized by the District; methodology for calculating daily total phosphorus loads shall be identified by monitoring location when reporting loads;

(g) A backup plan that will be implemented for guaranteeing resumption of sampling if planned sampling devices or techniques become inoperable for whatever reason;

(h) A schedule for implementing the monitoring plan, which shall require water quality monitoring

to begin no later than 90 days after permit issuance and water quantity monitoring to begin no later than 180 days after permit issuance.

(3) Submit applications for new permits or modifications to existing permits required pursuant to other District rules (e.g., Surface Water Management, Environmental Resource, Consumptive Water Use, Well Construction, Right-of-Way, or Lake Okeechobee SWIM), as a result of activities proposed by the BMP Plan.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.138 Duration of Individual Permits in the EAA Basin.

(1) Individual Permits issued pursuant to Part I of this chapter remain effective until January 1, 1997. The duration of renewals of or modifications to Individual Permits issued pursuant to Part I of this chapter will be specified by the District as a permit condition in the renewal or modification.

(2) An application for renewal must be submitted prior to expiration of the permit. Applications for renewals must contain all information required for new applications. Applications for renewals will be evaluated based on the criteria in effect at the time the application is filed.

(3) When timely application is made, the existing permit shall not expire until final agency action. If the permit is denied or the pending approved permit conditions are modified from the previous issuance, the existing permit shall not expire until the last day for seeking review of the District order.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 1-1-97, 7-3-01.

40E-63.140 Modification of Individual Permits in the EAA Basin.

A permittee may apply for a modification to an Individual Permit issued under Part I of this chapter by submitting the same information required for new applications, unless the permit has expired or has been otherwise revoked or suspended and provided the permit is in compliance with all applicable permit conditions. Modifications will be evaluated based on the criteria in effect at the time the application to modify is submitted.

(1) Applications to modify an existing Works of the District Individual Permit shall contain the information required by Rule 40E-63.132, F.A.C., and shall identify the portion of the existing authorization for which the modification is requested.

(2) Applications to modify existing Works of the District Individual Permits shall be made by the following methods:

(a) Modification requiring District Governing Board action for final determination; or

(b) Letter Modifications and Administrative Information Updates for which the District Governing Board has delegated authority for final action pursuant to Rule 40E-63.141, F.A.C., below.

Letter Modifications and Administrative Information Updates to existing Individual Permits pursuant to subsections (4) and (5) below are acknowledged and approved by letter with an accompanying Permit Review Summary (Staff Report) from the District or designee through correspondence to the permittee.

(3) Modifications requiring Board action are those that:

(a) Result in a change in the permit conditions;

(b) Result in a change in the land use;

(c) Require public notice because it is determined to be of heightened public concern in accordance with Rule 40E-1.5095, F.A.C.; or

(d) Result in the addition of acreage not previously included in an existing Everglades Works of the District Permit.

(4) Letter Modifications are those that result in:

(a) A change in an existing permitted boundary basin;

(b) Moving an existing basin from one Everglades Works of the District Permit to another;

(c) The addition of a water control structure to the previously permitted Water Quality Monitoring Plan; or

(d) A change to the previously approved BMP Plan.

(5) Administrative Information Updates are updates to the information in the Permit Review Summary (Staff Report) necessary for administration of the permit.

Examples of Modifications, Letter Modifications and Administrative Information Updates are provided in Appendix A6.

(6) The same review time and informational requirements which apply to new permit applications shall apply to all applications to modify an existing valid permit.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.141 Delegation of Authority Pertaining to Letter Modifications and Administrative Information Updates of Existing Individual Permits.

The Governing Board delegates to and appoints the Executive Director, Deputy Executive Director, Water Resource Regulation Department Director, Water Resource Regulation Deputy Department Director, Everglades Regulation Director and Service Center Directors, as its agents to review and take final action on all Letter Modifications and Administrative Information Updates issued under Chapter 40E-63, F.A.C. However, staff recommendations for denial of such applications shall be considered by the Governing Board.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 7-3-01.

40E-63.142 Transfer of Individual Permits in the EAA Basin.

A permittee and prospective owner must notify the District within 30 days of any transfer of interest or control, sale or conveyance of real property or works permitted under Part I of this chapter. The permittee/seller shall notify the District of the transfer using Form 0779, Section 1, providing the name and address of the new owner or person in control and a copy of the instrument effectuating the transfer. The transferee shall submit the appropriate transfer application and fee using a completed Form 0779, Section 2. The District will transfer the permit provided the land practice remains the same and the permittee is in compliance with all conditions of the permit. All conditions of the permit remain applicable to the new permittee. If the District is not so notified by the transferee within 90 days of the sale or conveyance of the property, the permit is void and the transferee will be required to apply for a new permit.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.143 Limiting Conditions for Individual Permits in the EAA Basin.

(1) The Board shall impose on any Individual Permit granted under Part I of this chapter such reasonable conditions as are necessary to assure that the permitted discharge will be consistent with the overall objectives of the District and will not be harmful to the water resources of the District.

(2) In addition to special conditions, all the following standard limiting conditions (a)-(l) shall be attached to all Individual permits:

(a) The permittee shall successfully implement all elements and requirements of the approved BMP Plan according to schedule, including monitoring of implementation, operation and rationale.

(b) The permittee shall implement all elements and requirements of the approved monitoring program adequately and according to the approved schedule to ensure that flow, total phosphorus concentration, and phosphorus load are documented.

(c) The permittee shall submit to the District the reports of monitoring results as required by the approved monitoring plan. Quantitative data must be submitted in electronic format. The first report is due 180 days after issuance of the permit. The first annual report is due one year and 180 days after issuance of the permit.

(d) The permittee shall submit to the District reports summarizing implementation of the approved BMP Plan. The report must contain a summary of all required activities including Best Management Practice installation, Best Management Practice operation activities (pertinent to water management and nutrient management), water quality assurance audits, and monitoring. The first report is due November 1, 1993; subsequent reports are due July 1, 1994, January 1, 1995, and February 1 annually thereafter.

(e) The permittee shall allow District staff or designated agents reasonable access to the permitted property at any time for the purpose of evaluating the water quality monitoring system on site, collecting water quality samples, or monitoring Best Management Practice implementation. District staff shall attempt to notify by telephone a person designated by the permittee prior to a site visit. Since it is not possible to predict precisely when discharges will occur or problems will arise resulting in the need for a site visit, the District may not be able to provide a lengthy period of notice to the designated person in advance of a visit. However, at a minimum, the District will provide notice at least one hour prior to a site visit for the purpose of water quality monitoring and at least 24 hours prior to a site visit for Best Management Practice installation or operation inspections.

(f) The permittee shall notify the District in writing within 30 days after any significant change in land practice, as described in subsection 40E-63.102(7), F.A.C., is made on the permitted parcel.

(g) This permit does not relieve the permittee of the responsibility to comply with all other laws or regulations applicable to the use of or discharges from the parcel.

(h) This permit does not convey to the permittee any property right nor any rights or privileges other than those specified in the permit.

(i) This permit does not relieve the permittee from liability from harm or injury to: human health or welfare; animal, plant or aquatic life; or property.

(j) The surface water management and monitoring systems must be effectively operated and maintained, and any changes in drainage, land use or operations that could affect validity or interpretation of monitoring data must be reported in writing to the District.

(k) The permitted discharge shall not otherwise be harmful, or adversely affect property use and operation of the works of the District.

(l) The permittee shall achieve the phosphorus load limitations specified in Appendices A3 (EAA Basin Compliance) and A4 (EAA Farm Scale Allocation), in accordance with the procedures described in Rule 40E-63.145, F.A.C. (Compliance and Enforcement of Individual Permits).

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 7-3-01.

40E-63.145 Compliance and Enforcement of Individual Permits in the EAA Basin.

(1) The District shall begin reviewing compliance with permit application requirements by parcel owners in the EAA Basin no later than September 1, 1992. Parcel owners who are not in compliance with permit application due dates are subject to immediate enforcement action by the District, as described in subsection (6) below.

(2) The District shall begin reviewing compliance with monitoring plan requirements by parcel owners in the EAA Basin no later than October 1, 1993, and compliance with Best Management Practice implementation, operation and rationale by parcel owners in the EAA Basin no later than January 1, 1995. All permittees who are not in compliance with their approved monitoring plan or BMP Plan requirements are subject to notification by the District. All permittees who receive notice from the District must submit to the District within 10 working days a plan and schedule for achieving compliance within 60 days after transmittal of the notice. Permittees who do not comply with this requirement are subject to enforcement action as outlined in subsection (6) below.

(3)(a) The District shall begin collecting monitoring data from the EAA Basin on January 1, 1995, for the purpose of determining compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3 (EAA Basin Compliance).

(b) When the District periodically evaluates the monitoring data collected to assess the general trend in phosphorus load reduction, the evaluation shall be included in an annual report.

(c) The District shall determine whether the EAA Basin is in compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3, as of April 30, 1996, and annually thereafter. The District shall attempt to make the determination and publish the results by July 1, 1996, and annually thereafter.

(d) If the EAA Basin is determined to be in compliance with the phosphorus load reduction requirement, permittees in the EAA Basin shall not be subject to compliance and enforcement action by the District in regard to achievement of the phosphorus load reduction requirement, so long as the EAA Basin remains in compliance. However, permittees are still subject to monitoring and enforcement action for failure to comply with an approved monitoring plan or BMP Plan requirements, pursuant to subsections (1) and (2) above.

(e) If the EAA Basin is determined to be not in compliance on April 30, 1996, or any subsequent year, with the phosphorus load reduction requirement calculated in accordance with Appendix A3, permittees in the EAA Basin shall be subject to the following compliance and enforcement actions:

1. The District shall determine, according to Appendix A4 (EAA Basin Farm Scale Allocation), which structures shall be required to meet a Maximum Unit Area Load (MUAL) in order to bring the EAA Basin in compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3 (EAA Basin Compliance).

2. The District shall provide written notice to permittees of structures required to meet a Maximum Unit Area Load. The notice shall specify the Maximum Unit Area Load assigned to the permittee. The District shall attempt to transmit the written notices by July 1, 1996, and by July 1 of any subsequent year the EAA Basin is determined to be not in compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3 (EAA Basin Compliance).

3. Permittees shall submit to the District within 45 days of transmittal of the written notice, a revised BMP Plan which proposes changes in BMPs needed to ensure that the Maximum Unit Area Load will be met. The revised plan shall include all the elements specified in subsection 40E-63.132(6), F.A.C. (Content of Application for Individual Permits in the EAA Basin), or explain why an omitted element is not relevant to evaluation of the revised Plan. The implementation schedule shall require complete installation within 6 months of District approval of the revised BMP Plan. Permittees shall make good faith efforts to provide complete revised BMP Plans. Failure to provide

a complete revised BMP Plan within 45 days shall not justify a corresponding delay of the date on which a permittee is required to meet a Maximum Unit Area Load pursuant to subparagraph 40E-63.145(3)(e)6., F.A.C.

4. The District shall review and take final agency action on the revised BMP Plan within 60 days of receipt of a complete plan.

5. Permittees who fail to complete the revised BMPs according to the approved implementation schedule shall be subject to enforcement action pursuant to subsection (6) below.

6. Permittees shall be required to meet the Maximum Unit Area Load on the first April 30 occurring 24 months after the April 30 on which the EAA Basin was determined to be not in compliance with the load allocation calculated in accordance with Appendix A3 (EAA Basin Compliance).

7. If the EAA Basin does not achieve the phosphorus load reduction sufficient to bring the Basin in compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3 on the April 30 occurring 24 months after the April 30 on which the EAA Basin was determined to be not in compliance, the District shall repeat the procedures specified in subparagraphs 1.-6. above, and seek whatever enforcement or corrective action is appropriate, including those set forth in subsection (6) below against permittees who failed to achieve their Maximum Unit Area Load.

(4) Applicants may elect to participate in an "Early Baseline Option," which is described below in paragraphs (a)-(i). Participation is optional. Applicants should make the decision on whether to participate after careful evaluation of all relevant factors, including site specific data, farming practices, and personal circumstances. The compliance and enforcement actions specified in subparagraphs (3)(e)1.-7. above will not be applied to permittees who elect to participate in the Early Baseline Option, except as specifically provided below.

(a) Applicants who elect to participate in the Early Baseline Option must declare their intention to do so in the initial permit application due in 1992. In addition to the information required by Rule 40E-63.132, F.A.C. (Content of Application for Individual Permits in the EAA Basin), the application must identify soil type, include soil phosphorus test results and methods, describe crops for the last five years, indicate expected future crops, describe the automatic recording rainfall collectors to be installed at each structure discharging to a District primary canal, and identify the acreage served by each collector.

(b) Applicants who elect to participate in the Early Baseline Option must implement the required monitoring plan for water quality and quantity by January 1, 1993. The plan shall require monitoring reports to be submitted monthly and annually, beginning on February 1, 1993. The plan must be approved by the District before implementation.

(c) Applicants who elect to participate in the Early Baseline Option are encouraged to complete their permit applications promptly, so that the District can take final agency action on the entire application before January 1, 1993. However, if requested by the applicant, the District will take final agency action on the monitoring plan only in December 1992, subject to the condition that subsequent final agency action on the entire permit application may include revisions to the monitoring plan.

(d) Applicants who elect to participate in the Early Baseline Option must have the approved BMPs in place by January 1, 1994.

(e) Permits issued to applicants who elect to participate in the Early Baseline Option shall have special limiting conditions reflecting the monitoring and BMP deadlines and any other requirements necessary to implement the Early Baseline Option.

(f) The District will calculate the Early Baseline for each permittee who has elected to participate. The Early Baseline is the total phosphorus load for each participating permittee against which future reductions will be compared. The District shall attempt to transmit the Early Baseline results to the permittee in writing by July 1, 1994. The results shall identify any permitted structures excluded from further participation in the Early Baseline Option pursuant to subparagraph 2. below.

1. The Early Baseline calculation shall be based on data collected from May 1, 1993 to April 30, 1994.

2. The District shall evaluate the data reported by each permittee who participates in the Early Baseline Option to determine whether the reported load for each permitted structure is reasonable. The determination shall be based on an analysis of outliers, an analysis of consistency with existing total phosphorus load data, evaluation of data from rainfall automatic collectors, and other relevant information. Any permitted structure for which the Early Baseline load is determined to be unreasonable shall be excluded from further participation in the Early Baseline Option, unless the permittee can demonstrate to the District, by a preponderance of evidence, that the reported loads are accurate and unbiased.

3. The District shall consider requests presented by permittees under subsection 40E-63.101(4), F.A.C., to calculate the baseline to reflect implementation of BMPs prior to implementation of the plan for monitoring water quantity and quality. Such requests should be accompanied by adequate supporting evidence, for example data from the area subject to the request and from a similar area on which BMPs have not been implemented regarding soil type, depth of muck, crop type, historical usage, drainage system, water quality and water quantity.

(g) If the EAA Basin is determined to be in compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3, as of April 30, 1996, or annually thereafter, permittees who elected to participate in the Early Baseline Option shall not be subject to compliance and enforcement action by the District in regard to achievement of the phosphorus load limitation, so long as the EAA Basin remains in compliance. However, permittees are still subject to monitoring and enforcement action for failure to comply with the requirements of an approved monitoring plan or BMP Plan, pursuant to subsection (2) above.

(h) If the EAA Basin is determined to be not in compliance as of April 30, 1996, or any subsequent year, with the allocation calculated in accordance with Appendix A3, permittees who elected to participate in the Early Baseline Option shall be subject to the following compliance and enforcement actions:

1. The District shall determine whether the permittee has reduced the Early Baseline load from permitted structures by 25%, adjusted for hydrological variability. The District shall provide written notice of the determination to permittees. The District shall attempt to transmit the written notices by July 1, 1996, and by July 1 of any subsequent year the EAA Basin is found to be not in compliance with the phosphorus load reduction requirement calculated in accordance with Appendix A3 (EAA Basin Compliance).

2. Permittees who have reduced the Early Baseline load by 25% are in compliance with the goal of this chapter and shall not be subject to further compliance and enforcement action by the District in regard to reduction of phosphorus load, so long as the 25% reduction is maintained, unless this chapter is amended to provide otherwise.

3. Permittees who have not reduced the Early Baseline load by 25% shall submit to the District, within 45 days of transmittal of the written notice, a revised BMP Plan which proposes changes in BMPs needed to ensure that the 25% reduction will be achieved. The revised Plan shall include all the elements specified in subsection 40E-63.132(6), F.A.C. (Content of Application for Individual

Permits in the EAA Basin), except for elements not relevant to evaluation of the revised Plan. The revised Plan shall contain an explanation of why any omitted elements are not relevant. The implementation schedule shall require complete installation of revised BMPs within 6 months of District approval of the revised BMP Plan. Permittees shall make good faith efforts to provide complete revised BMP Plans. Permittees shall be required to meet the 25% reduction the next time the EAA Basin is determined to be not in compliance with the load allocation calculated in accordance with Appendix A3 (EAA Basin Compliance). Failure to provide a complete revised BMP Plan within 45 days shall not justify a corresponding delay of the date on which a permittee is required to meet the 25% reduction.

(i) If the EAA Basin is determined to be not in compliance for a subsequent year, permittees who elected to participate in the Early Baseline Option shall be required to reduce the Early Baseline load by 25%. Any permittee who has not reduced the Early Baseline load by 25% is subject to the Compliance and Enforcement actions set forth in subparagraphs (3)(e)2.-7. above, including compliance with the MUAL and legal enforcement proceedings.

(5) In applying the requirements of this Chapter after the EAA has been determined to be not in compliance with the allocation calculated in accordance with Appendix A3, the District shall determine whether to accept an alternative method or level of phosphorus reduction for a particular permittee based on the demonstrated site-specific impracticability of achieving the required reduction of phosphorus in accordance with an approved Best Management Plan, if requested by a permittee.

(a) The Permittee shall have the burden of demonstrating that compliance with the BMP or phosphorus reduction requirements is impracticable at the permittee's site or sites of operation. Any such request for a determination of impracticability shall:

1. Specify the facts showing that the required reduction of phosphorus cannot be reasonably accomplished at the site or sites in question, and

2. Set forth the alternative methods of reducing the loading of phosphorus that are proposed or have been considered, the reasons for choosing any such alternatives, and

3. The amount of reduction of phosphorus that reasonably could be expected to result at the site.

(b) Such requests shall apply only to the portion of a site to which the showing of impracticability applies.

(c) The District shall send a copy of each such request and correspondence concerning it to the Department.

(d) By order of the Governing Board, the District shall grant the request and any related permit modifications if the permittee makes the required showing and the request (including the proposed alternative requirements and other special permit conditions imposed by the District as necessary) would not conflict with the intent of Chapter 373, Part IV, F.S., or with the intent of this chapter.

(6) The District is authorized to seek any enforcement or corrective action available under Florida law for permittees out of compliance with the provisions of this chapter, including:

(a) Enforcement orders issued pursuant to Chapter 373, F.S., and rules adopted thereunder;

(b) Court actions for injunctive or other appropriate relief pursuant to Sections 373.044 and 373.136, F.S.;

(c) Court actions to recover civil penalties, including fines, pursuant to Section 373.129, F.S.;

(d) Warrants for arrest pursuant to Section 373.603, F.S.;

(e) Administrative enforcement orders pursuant to Section 373.119, F.S.

An outline of the compliance and enforcement procedures for the EAA Basin is provided in Appendix A5 which is incorporated by reference.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.119, 373.129, 373.136, 373.451, 373.453, 373.4592, 373.603 FS. History—New 1-22-92, Amended 7-7-92, 8-25-96, 11-11-98, 6-7-99, 10-31-99, 7-3-01.

Subpart C EAA Basin – Master Permits

40E-63.150 Master Permit Application Requirements in the EAA Basin.

- (1) A Master Permit application may be submitted for lands which:
- (a) Meet the responsibility requirements specified in paragraph 40E-63.156(1)(b), F.A.C., below; and
 - (b) Are either contiguous, have interconnected drainage systems or propose coordinated BMP Plans.
- (2) Applications for Master Permits are due by October 1, 1992.
- (3) The District expects to take final agency action on all initial permits issued pursuant to this chapter no later than July 1993. Accordingly the District shall process the applications submitted pursuant to Part I of this chapter in strict accordance with the 90-day time provisions set forth in Section 120.60, F.S. Applicants are expected to make good faith efforts to complete applications within a reasonable time. Applications which are not complete within a reasonable time are subject to denial and administrative or judicial enforcement action.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.152 Content of Application for Master Permits in the EAA Basin.

Applications for Master Permits shall contain the following:

- (1) Date and signature of the applicant entity or group of owners submitting the application;
- (2) All information required by subsections 40E-63.132(2), (3), (4), (5), (6) and (7), F.A.C. (Content of Application for Individual Permits in the EAA Basin).
- (3) Information which demonstrates that the applicant entity or cooperating group of landowners possesses the legal, financial, and institutional authority and ability to carry out all acts necessary to implement the terms and conditions of the permit, including, at a minimum:
 - (a) A description of the legally responsible entity or cooperating group of landowners, and copies of enabling legislation, articles of incorporation, interlocal agreements, deeds, contracts, or other evidence of authority;
 - (b) A description of financial, institutional and other resources available to implement BMP programs, monitoring plans, and enforcement and compliance efforts;
 - (c) Interlocal agreements with any participating municipalities and other entities of local government, indicating their consent and intent to participate in the Master Permit and specifying the terms of the participation;
 - (d) Written contracts with participating landowners indicating their consent and intent to participate and specifying the terms of participation;
 - (e) Identification of the area covered by the Master Permit application, including identification of all areas and owners within the general area who have elected to participate in the Master Permit application.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.154 Permit Application Processing Fee for Master Permits in the EAA Basin.

The following permit application processing fees shall be paid to the District at the time the following actions on Master Permits are filed.

(1) For new applications for a Master Permit: a minimum fee of \$1,880, plus \$1.50 per acre for each acre above 320 acres in size, with a total maximum fee of \$750,000.

(2) For renewals (with or without modifications) to existing Master Permits: a fee of \$1,680, plus \$0.25 per acre for each acre above 320, with a total maximum fee of \$150,000.

(3) For a Modification of an existing Master Permit: a fee of \$1880.

(4) For a Letter Modification of an existing Master Permit: a fee of \$500.

(5) For Administrative Information Updates to an existing Master Permit: No Fee.

(6) For Transfers of existing Master Permits: a fee of \$500.

(7) An application shall not be considered complete until the appropriate application fee is submitted. These fees are assessed in order to defray the cost of evaluating, processing, monitoring, and inspecting for compliance required in connection with consideration of such applications. Failure of any applicant to pay the applicable fees established herein will result in denial of an application.

Rulemaking Authority 373.044, 373.109, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.109, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-7-92, 7-3-01.

40E-63.156 Conditions for Issuance for Master Permits in the EAA Basin.

(1) In order to obtain a permit under Part I of this Chapter, an applicant must satisfy all the following conditions:

(a) The permittee shall comply with all conditions required by subsections 40E-63.136(1), (2) and (3), F.A.C. (Conditions for Issuance of Individual Permits in the EAA Basin); and

(b) The permittee shall demonstrate sufficient legal and financial capability to carry out all acts necessary to implement the terms and conditions of the Master Permit, including the ability to take necessary enforcement action.

(2) The number of monitoring sites required for a Master Permit may be reduced by the District provided the proposed monitoring plan can reasonably be expected to accomplish the plan rationale, including the documentation of flow and total phosphorus concentration discharged from all lands included in the Master Permit.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.158 Duration of Master Permits in the EAA Basin.

(1) Master Permits issued pursuant to Part I of this chapter remain effective until January 1, 1997. The duration of or modifications to Master Permits issued pursuant to Part I of this chapter will be specified by the District as a permit condition in the renewal or modification.

(2) An application for renewal must be submitted prior to expiration of a permit. Applications for renewals must contain information required for new applications. Applications for renewals will be evaluated based on the criteria in effect at the time the application is filed.

(3) When timely application is made, the existing permit shall not expire until final agency action. If the permit is denied or the pending approved permit conditions are modified from the previous issuance, the existing permit shall not expire until the last day for seeking review of the District order.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.085, 373.086, 373.451, 373.453,

373.4592 FS. History—New 1-22-92, Amended 7-7-92, 1-1-97, 7-3-01.

40E-63.160 Modification of Master Permits in the EAA Basin.

A permittee may apply for a modification to a Master Permit issued under Part I of this chapter by submitting the same information required for new applications, unless the permit has expired or has been otherwise revoked or suspended and provided the permit is in compliance with all applicable permit conditions. Modifications will be evaluated based on criteria in effect at the time the application to modify is submitted.

(1) Applications to modify an existing Works of the District Master Permit shall contain the information required by Rule 40E-63.152, F.A.C., and shall identify the portion of the existing authorization for which the modification is requested.

(2) Applications to modify existing Works of the District Master Permits shall be made by the following methods:

(a) Modification requiring District Governing Board action for final determination; or

(b) Letter Modifications and Administrative Information Updates for which the District Governing Board has delegated authority for final action pursuant to Rule 40E-63.161, F.A.C., below.

Letter Modifications and Administrative Information Updates to existing Master Permits pursuant to subsections (4) and (5) below are acknowledged and approved by letter with an accompanying Permit Review Summary (Staff Report) from the District or designee through correspondence to the permittee.

(3) Modifications requiring Board action are those that:

(a) Result in a change in the permit conditions;

(b) Result in a change in the land use;

(c) Require public notice because it is determined to be of heightened public concern in accordance with Rule 40E-1.5095, F.A.C.; or

(d) Result in the addition of acreage not previously included in an existing Everglades Works of the District Permit.

(4) Letter Modifications are those that result in:

(a) A change in an existing permitted boundary basin;

(b) Moving an existing basin from one Everglades Works of the District Permit to another;

(c) The addition of a water control structure to the previously permitted Water Quality Monitoring Plan; or

(d) A change to the previously approved BMP Plan.

(5) Administrative Information Updates are updates to the information in the Permit Review Summary (Staff Report) necessary for administration of the permit.

Examples of Modifications, Letter Modifications and Administrative Information Updates are provided in Appendix A6 which is incorporated by reference.

(6) The same review time and informational requirements which apply to new permit applications shall apply to all applications to modify an existing valid permit.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.161 Delegation of Authority Pertaining to Letter Modifications and Administrative Information Updates of Existing Master Permits.

The Governing Board delegates to and appoints the Executive Director, Deputy Executive Director, Water Resource Regulation Department Director, Water Resource Regulation Deputy Department

Director, Everglades Regulation Director and Service Center Directors, as its agents to review and take final action on all Letter Modifications and Administrative Information Updates issued under Chapter 40E-63, F.A.C. However, staff recommendations for denial of such applications shall be considered by the Governing Board.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 7-3-01.

40E-63.162 Transfer of Master Permits in the EAA Basin.

A permittee and prospective owner must notify the District within 30 days of any transfer of interest or control, sale or conveyance of real property or works permitted under Part I of this chapter. The permittee/seller shall notify the District of the transfer using Form 0779, Section 1, providing the name and address of the new owner or person in control and a copy of the instrument effectuating the transfer. The transferee shall submit the appropriate transfer application and fee using a completed Form 0779, Section 3. The District will transfer the permit provided the land practice remains the same and the permittee is in compliance with all conditions of the permit. All conditions of the permit remain applicable to the new permittee, including the legal, financial and institutional capability to carry out all acts necessary to the terms and conditions of the Master Permit. If the District is not so notified by the transferee within 90 days of the sale or conveyance of the property, the permit is void and the transferee will be required to apply for a new permit.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.163 Limiting Conditions for Master Permits in the EAA Basin.

(1) The Board shall impose on any Master Permit granted under Part I of this chapter such reasonable conditions as are necessary to assure that the permitted discharge will be consistent with the overall objectives of the District and will not be harmful to the water resources of the District.

(2) In addition to special conditions, all the following standard limiting conditions (a)-(c) shall be attached to all master permits:

(a) All conditions required by paragraphs 40E-63.143(2)(a)-(l), F.A.C. (Limiting Conditions for Individual Permits in the EAA Basin).

(b) Legal entities or groups of cooperating landowners responsible for implementing a Master Permit shall remain capable of performing their responsibilities required by permits issued pursuant to Part I of this chapter.

(c) In the event that the District determines that any participant in a Master Permit is not complying with the specific terms and conditions of the Master Permit, the District will institute enforcement proceedings against either the Master Permit holder, the participant, or both, and if necessary, require the individual participant to apply for an Individual Permit.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592 FS. History—New 1-22-92, Amended 7-3-01.

40E-63.165 Compliance and Enforcement of Master Permits in the EAA Basin.

The provisions of Rule 40E-63.145, F.A.C., (Compliance and Enforcement of Individual Permits in the EAA Basin) apply to the compliance and enforcement of Master Permits issued pursuant to Part I of this chapter.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.085, 373.086, 373.451,

373.453, 373.4592 FS. History–New 1-22-92, Amended 7-3-01.

PART II EVERGLADES WATER SUPPLY AND HYDROPERIOD IMPROVEMENT AND RESTORATION

40E-63.201 Scope.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History–New 11-26-95, Repealed by Section 3, Chapter 2012-31, Laws of Florida, 5-27-12.

Subpart A BMP Replacement Water

40E-63.211 Purpose.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History–New 11-26-95, Repealed by Section 3, Chapter 2012-31, Laws of Florida, 5-27-12.

40E-63.212 Definitions.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History–New 11-26-95, Repealed by Section 3, Chapter 2012-31, Laws of Florida, 5-27-12.

40E-63.223 Model to Quantify Annual Allocation of Replacement Water.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History–New 11-26-95, Repealed by Section 3, Chapter 2012-31, Laws of Florida, 5-27-12.

40E-63.225 Delivery of Average Annual Allocation of Replacement Water.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History–New 11-26-95, Repealed by Section 3, Chapter 2012-31, Laws of Florida, 5-27-12.

PART III BMP RESEARCH, TESTING AND IMPLEMENTATION TO ADDRESS WATER QUALITY STANDARDS

40E-63.301 Scope.

(1) The 1994 Everglades Forever Act (Section 373.4592, F.S.) requires the District to amend Chapter 40E-63, F.A.C., to establish requirements of Everglades Agricultural Area (EAA) landowners to sponsor through the EAA Environmental Protection District (EAA-EPD) or otherwise and implement a comprehensive program of research, testing and implementation of BMPs that will address all water quality standards within the EAA and the Everglades Protection Area.

(2) The goal of the regulatory program contained in this chapter is to establish a schedule of BMP research, testing, and implementation to identify water quality parameters that are not being significantly improved by the stormwater treatment areas (STAs) and the current level of BMPs being widely implemented throughout the EAA, and to identify strategies needed to address such parameters.

(3) The research program prescribed by this chapter shall include field testing of BMPs in a sufficient number of representative sites in the EAA which reflect soil and crop types within the EAA, as well as other factors that effect BMP effectiveness and design.

(4) Continued basin monitoring and the operation of the STAs will yield additional data concerning water quality in the Everglades Protection Area (EPA). As additional data is collected, and in light of future rulemaking to recognize existing actual beneficial uses of the conveyance

canals in the EAA, this rule shall be reviewed at a minimum of once every five years, and amended if necessary. These reviews and potential amendments may include, but are not limited to, an increase or reduction in parameters monitored and an increase or reductions of BMPs being tested.

(5) As per the Everglades Forever Act, by December 31, 2006, all permittees which discharge to the EPA shall implement additional water quality measures, taking into account the water quality treatment provided by the STAs and the effectiveness of BMPs.

(6) It is the intent of the District that the program of BMP research, testing, and implementation conducted pursuant to this chapter be complementary with research on BMP related issues undertaken by other entities. Every effort shall be made to avoid requiring unnecessary or duplicative studies.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97.

40E-63.302 Permits Required.

(1) A master permit (on behalf of EAA landowners) to sponsor and conduct a program of BMP research, testing and implementation must be obtained by the EAA-EPD or its successor interests.

(2) If a notice of intent to issue a master permit has not been issued to the EAA-EPD or its successor interests as required by subsection 40E-63.302(1), F.A.C., by August 1, 1997, all landowners who are required to obtain a Works of the District permit pursuant to subsection 40E-61.041(4), Rules 40E-63.130 and 40E-63.150, F.A.C., must modify such permits individually to comply with this Part pursuant to Rules 40E-63.320 through 40E-63.323, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97.

40E-63.305 Master Permit.

A master permit constituting compliance with the rules adopted pursuant to Section 373.4592(4)(f)2., F.S., is hereby granted by the District to landowners identified in subsection 40E-61.041(4), Rules 40E-63.130 and 40E-63.150, F.A.C., provided that a scope-of-work addressing a program of BMP research, testing and implementation pursuant to the criteria specified in subsections 40E-63.310(1)-(6), F.A.C., sponsored by the EAA landowners through the EAA-EPD or its successor interests, is submitted to the District, and approved by the District.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97.

40E-63.310 Conditions for Issuance of a Master Permit.

In order to qualify for the no-notice master permit provided for in Rule 40E-63.305, F.A.C., the EAA-EPD must satisfy all the following conditions:

(1)(a) Submit and implement a scope-of-work which addresses the following elements:

1. The current EAA-EPD sponsored farm-scale research to be conducted at ten farms (or other locations throughout the EAA representative in sufficient number to reflect soil and crop types and other factors that influence BMP design and effectiveness) for verification of BMP effectiveness to reduce total phosphorus discharged shall continue.

2. In recognition that substantial particulate matter such as sediments are being discharged from farms, given that published University of Florida Institute of Food and Agricultural Services data has demonstrated that particulate phosphorus constitutes a significant portion of total phosphorus, the farm-scale research pursuant to subparagraph 1. shall be expanded to include the development,

testing, and implementation of BMPs for reducing discharge of particulate phosphorus (i.e., sedimentation basins).

3. The farm-scale research pursuant to subparagraph 1. shall be expanded to include monitoring for specific conductance at all points where total phosphorus is currently being monitored. The expanded research program shall include the development, testing and implementation of BMPs to address reduction of specific conductance.

4. The organic pesticides Atrazine and Ametryn shall continue to be monitored as per conditions of the FDEP Operating Permit for the Everglades Nutrient Removal (ENR) Project. The monitoring is conducted quarterly at the ENR inflow and outflow pump stations. The outflow station quarterly sample will be taken on a 28 day lag from the inflow sampling time to account for hydraulic detention within the ENR. A control monitoring point within the L-7 perimeter canal will be sampled on the same schedule as the outflow station. The District and the EAA-EPD shall cost share equally the laboratory analysis for the organic pesticides Atrazine and Ametryn. Any modification to the FDEP Operating Permit for the ENR concerning sampling and analysis of these parameters shall require a modification to the program scope-of-work pursuant to subsection 40E-63.310(6), F.A.C.

5. A proactive BMP program focused on the prevention of the misapplication of pesticides throughout the EAA shall be developed and implemented. The program shall include an annual continuing education program for all pesticide applicators which will focus on the prevention of misapplication of pesticides in field ditches, laterals, farm canals, drainage district main canals, and District canals and waterways.

6. A schedule for implementing the scope-of-work shall require the program elements to be implemented no later than 6 months following District approval of the program scope-of-work.

(b) The scope-of-work shall be approved by the District if it provides reasonable assurance that the program of BMP research, testing, and implementation meets the requirements of subparagraphs 1.-6. above.

(2) The applicant is advised that standard research protocol requires an approved Florida Department of Environmental Protection (FDEP) Comprehensive Quality Assurance (Comp QA) Plan for collection of field samples. As such, an approved FDEP Comp QA Plan for all parameters specified in subparagraphs 40E-63.310(1)(a)1.-3., F.A.C., must be obtained by the entity collecting samples prior to initiation of field sample collection. Submit a copy of the approved FDEP Comp QA Plan obtained by the entity who will be conducting field sample collection.

(3) Submit verification of laboratory certification as required by Section 403.0625, F.S., of the laboratory to be used to perform the chemical analyses on the samples. The certification must cover analysis of water quality parameters specified in subparagraphs 40E-63.310(1)(a)1.-3., F.A.C.

(4) All data being collected as part of the farm-scale research pursuant to subparagraph 1. shall be maintained by the EAA-EPD in a database format for all parties to access and review upon request.

(5) Reports on the status of the EAA-EPD or its successor interests sponsored program of BMP research, testing, & implementation pursuant to subparagraphs 40E-63.310(1)(a)1.-6., F.A.C., shall be submitted according to a schedule provided in the District approved scope-of-work summarizing program data results, conclusions, milestones, and accomplishments.

(6) The program scope-of-work shall be submitted for District review by January 1, 1997. The District shall take final agency action to approve or deny the program scope-of-work pursuant to this chapter not later than July 31, 1997. The District will conduct an annual public workshop for presentation and discussion of an update of the scope of work, including any application for modification. An annual formal scope-of-work review shall be conducted as a public workshop.

Written request for modification to the scope-of-work may be presented and submitted at that time. The District will receive comments from all persons at the public workshop and provide a written determination on the scope-of-work modification within 60 days of the workshop held pursuant to this subsection. The District will approve the modification if the request provides reasonable assurance that the provisions of Section 373.4592(4)(f)2., F.S., will be met.

(7) All information required in subsections (1) through (6) shall be submitted to the South Florida Water Management District, Environmental Resource Permitting Division, 3301 Gun Club Road, West Palm Beach, Florida 33406, Attention: Everglades Regulation Division.

(a) District staff shall notify the EAA-EPD or its successor interests in writing via regular mail of its decision to approve or deny the master permit based upon the EAA-EPD's compliance with subsections (1) through (6).

(b) District staff's decision to approve or deny the master permit shall constitute final agency action. If the District's decision is to deny the master permit, the EAA-EPD may, at any time thereafter, request a hearing to address the Governing Board regarding the District staff's decision. This request shall be submitted to the South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, Florida 33406, Attention: Everglades Regulation Division.

(c) Immediately upon receipt of a request pursuant to subsection (b), District staff shall schedule consideration of this matter by the Governing Board at its next available, regularly scheduled meeting.

(d) The applicant shall be notified of the date and time of this meeting – or any subsequent meeting if final agency action is not taken – via regular mail to be received by the applicant at least 7 days in advance of the Governing Board meeting.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History–New 1-1-97, Amended 6-30-97, 7-3-01.

40E-63.312 Transfer of Master Permit.

(1) The master permit granted by this rule may be transferred to another entity.

(2) To transfer the master permit, the proposed transferee must submit a written request to transfer the master permit. This request shall be submitted to the South Florida Water Management District, Surface Water Management Division, 3301 Gun Club Road, West Palm Beach, Florida 33406, Attention: Everglades Regulation Department.

(3) The District will approve the request to transfer provided the transferee provided reasonable assurances that the permit conditions listed in Rule 40E-63.310, F.A.C., will continue to be met.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History–New 1-1-97, Amended 6-30-97.

40E-63.313 Master Permit Duration.

The master permit issued pursuant to this Part shall expire 5 years from issuance. The duration of renewals or modifications to the master permit issued pursuant to this Part will be for five year terms.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History–New 1-1-97, Amended 6-30-97.

40E-63.314 Master Permit General Conditions.

The master permit shall be subject to the following conditions subsections (1)-(9):

(1) All field sampling required as part of this research shall be collected according to an

approved FDEP Comprehensive Quality Assurance Plan as specified in subsection 40E-63.310(2), F.A.C.

(2) All laboratory analysis of parameters required as part of this research shall be analyzed by a laboratory certified in accordance with Section 403.0625, F.S., to analyze the specific parameters identified in the permitted program scope-of-work.

(3) All data collected as part of this research shall be available in a database format, clearly described and made available to all parties.

(4) The research elements shall be implemented no later than 6 months following District approval of the scope-of-work.

(5) The permittee shall submit to the District the quarterly and annual reports as specified in the approved scope-of-work. The first annual report is due one year and 180 days after issuance of the permit.

(6) The permittee shall allow District staff or designated agents access to the permitted property for the purpose of evaluating the water quality monitoring system on site, collecting water quality samples, or monitoring Best Management Practice testing and implementation. District staff shall attempt to notify the permittee by telephone prior to a site visit. Since it is not possible to predict precisely when discharges will occur or problems will arise resulting in the need for a site visit, the District may not be able to provide a lengthy period of notice to the designated person in advance of a visit.

(7) This permit does not relieve the permittee of the responsibility to comply with all other laws or regulations applicable to the use of or discharges from the parcel.

(8) This permit does not convey to the permittee any property right nor any rights or privileges other than those specified in the permit.

(9) This permit does not relieve the permittee from liability for harm or injury to: human health or welfare; animal, plant or aquatic life; or property.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97, 7-3-01.

40E-63.320 Individual Permits for BMP Research.

If a master permit for BMP research is not obtained by August 1, 1997, or if conditions of the master permit are not met, all landowners identified in subsection 40E-61.041(4), Rules 40E-63.130 and 40E-63.150, F.A.C., shall be required to modify their Works of the District (WOD) permits, issued pursuant to Part I of Chapters 40E-61 and 40E-63, F.A.C., individually in order to comply with the requirements of Section 373.4592(4)(f), F.S.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97.

40E-63.321 Conditions for Issuance of Individual Permits.

The applications for modification of WOD permits, referenced under Rule 40E-63.320, F.A.C., shall contain all applicable requirements listed under Rule 40E-63.310, F.A.C. Application for the modifications to WOD permits, issued pursuant to Part I of Chapters 40E-61 and 40E-63, F.A.C., must be submitted within 60 days of notification by the District that the master permit will not be issued or is no longer valid. All pertinent administration of these modified permits (e.g., duration, transfers) shall continue to be conducted per the provisions set forth in Part I of Chapters 40E-61 and 40E-63, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97.

40E-63.323 Individual Permit Conditions.

All conditions listed under Rule 40E-63.314, F.A.C., shall be included in each modified permit referenced under Rule 40E-63.320, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.4592(4)(f) FS. History—New 1-1-97, Amended 6-30-97.

PART IV EVERGLADES PROGRAM: C-139 BASIN

40E-63.400 Purpose and Policy.

(1) This part of Chapter 40E-63, F.A.C., implements requirements of the Everglades Forever Act (EFA), Sections 373.4592(4)(f)5. and 6., F.S., for the C-139 Basin, and also provides a regulatory process for landowners whose water management systems connect with and make use of the canals, structures and other Works of the District within the C-139 Basin, in accordance with Section 373.085, F.S.

(2) Since water quality monitoring data from the C-139 Basin demonstrate that the landowners within the C-139 Basin have collectively exceeded historical annual phosphorus loading levels, landowners are required to implement a best management practices (BMP) program for reduction of phosphorus in discharges that is consistent with the land uses within the Basin.

(3) The objectives of this part of Chapter 40E-63, F.A.C., are as follows:

(a) To implement and continuously improve through adaptive management a BMP program, including modifications to existing water management systems, for reducing and controlling phosphorus discharges from the C-139 Basin;

(b) To provide a water quality monitoring program, performance measures and a compliance methodology to evaluate the effectiveness of the BMP program in reducing phosphorus discharges;

(c) To establish a BMP compliance verification and enforcement program to ensure that phosphorus discharges from the basin do not exceed historic levels, based upon water quality monitoring data from the period October 1, 1978 to September 30, 1988, in accordance with Chapter 40E-63, F.A.C., Appendix B2, "C-139 Basin Performance Measure Methodology", dated November 2010 (incorporated by reference in subsection 40E-63.446(1), F.A.C.); and

(d) To develop and conduct research and demonstration projects to improve and confirm the effectiveness of BMPs for reducing phosphorus and other constituents that are not being significantly improved by either Stormwater Treatment Areas (STAs) or BMPs.

(4) This part of Chapter 40E-63, F.A.C., requires landowners to reduce phosphorus discharges from the C-139 Basin, and in conjunction with the STAs, provide a sound basis for the State of Florida's long-term improvement and restoration objectives for the Everglades. It is recognized that achieving phosphorus and other water quality standards will involve an adaptive management approach, whereby best available information and technology are used to identify and implement incremental BMP improvement activities for further phosphorus reduction and water quality improvements, if needed.

(5) The BMP implementation requirements, performance measures and compliance methodology established in this part of Chapter 40E-63, F.A.C., pertain to phosphorus only. Should regulation of other nutrients or constituents be required to meet statutory requirements, including water quality standards, the District shall initiate rulemaking pursuant to Chapter 120, F.S.

(6) Unless otherwise provided by this part of Chapter 40E-63, F.A.C., nothing herein shall be

construed to modify any existing state water quality standards, nor to otherwise restrict the authority granted to the District pursuant to Chapter 373, F.S.

(7) Section 403.067(7)(c)2., F.S., authorizes the Florida Department of Agriculture and Consumer Services (FDACS) to develop and adopt BMPs by rule.

(8) The District's sub-basin monitoring and maintenance program for data collection, performance measure assessment, and determination of when water quality improvement activities are required, as described in subsection 40E-63.446(2), paragraphs (2)(a), (2)(e) and subsection (4), F.A.C., and Appendices B3.1 and B3.2 (which are incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.), are an inseparable component of this part of Chapter 40E-63, F.A.C., for ensuring that landowners are responsible for their proportional share of phosphorus load discharged from the C-139 Basin. If these provisions are declared invalid, the District shall initiate rulemaking pursuant to Chapter 120, F.S., to revise this part of Chapter 40E-63, F.A.C., to ensure that the proportional share objectives of the EFA, Section 373.4592(4)(f), F.S., are met.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.401 Scope of Program.

(1) For the purposes of this part of Chapter 40E-63, F.A.C., the Works of the District for the C-139 Basin include water control structures, right-of-ways, canals, and other water resources that the South Florida Water Management District owns, operates and controls, and that have been specifically named as Works of the District pursuant to Sections 373.085 and 373.086, F.S. Works of the District for the C-139 Basin include G-96, G-134, G-135, G-136, G-150, G-151, G-152, G-406, G-342A, G-342B, G-342C, G-342D, L-1 Canal, L-2 Canal, L-3 Canal (north of G-406), and their open channel connections.

(2) Unless expressly exempted, all lands within the C-139 Basin are users of the Works of the District within the C-139 Basin, and as such must be granted a No Notice General Permit pursuant to the provisions of Rule 40E-63.415, F.A.C., or must obtain a General Permit pursuant to the provisions of Rule 40E-63.430, F.A.C. The rules shall apply to existing and new discharges within the C-139 Basin.

(3) Landowners in the C-139 Basin share responsibility for achieving phosphorus load limitations in the basin. The compliance program, as established in this part of Chapter 40E-63, F.A.C., ensures that landowners are responsible for their proportional share of phosphorus load discharged from the C-139 Basin based upon their proportional share of acreage to the total C-139 Basin acreage.

(4) Permits issued under this part of Chapter 40E-63, F.A.C., do not eliminate or alter other applicable permit requirements for discharges that impact other water bodies, basins, or Works of the District, nor do they affect the permit requirements of other District regulatory programs.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.402 Definitions.

(1) "Best Management Practice (BMP)" means a practice or combination of practices determined by the District, in cooperation with the Department of Environmental Protection (Department) and FDACS, based on research, field testing, and expert review, to be the most effective and practicable on-location means, including economical and technological considerations, of improving water quality in agricultural and urban discharges to a level that balances water quality improvements, and

agricultural productivity, as applicable.

(2) "BMP Plan" means a combination of BMPs that meets, but is not limited to, the requirements of Rules 40E-63.435 and 40E-63.437, F.A.C., as determined by the District.

(3) "BMP equivalent point" means the numerical value assigned to a BMP as provided in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.). The points are used for regulatory permit review to ensure a comparable level of effort in BMP implementation among permittees. The points are an indication of relative BMP effectiveness. The points were based on expert review, technical publications, best professional judgment, and cooperative workshops with stakeholders.

(4) "C-139 Basin" means those lands described in the EFA, Section 373.4592(16), F.S. or lands outside those boundaries which discharge to the C-139 Basin or to the canals or structures described in subsection 40E-63.401(1), F.A.C.

(5) "Demonstration project" means an investigation based on technical information to evaluate the feasibility and effectiveness of best management practices techniques offering phosphorus reduction benefits. Criteria to be considered by the District for review are described in subsection 40E-63.437(3) and Rule 40E-63.438, F.A.C.

(6) "Discharge" means any surface water runoff generated by rainfall, irrigation, or seepage flowing off-site from a land area. Runoff may occur through a structure (pump or gravity) or may flow as uncontrolled discharge from a land area.

(7) "Nutrient control practices" means a category of BMPs that minimizes nutrient input and the movement of nutrients off-site by efficient and controlled application of nutrients (e.g., organic and chemical fertilizers, soil amendments, and residuals).

(8) "Parcel" means a contiguous land area identified in the county tax rolls under common ownership.

(9) "Particulate matter and sediment control practices" means a category of BMPs that minimizes the movement off-site of nutrients in particulate matter and sediments by controlling the amount of eroded soil and plant matter in discharges.

(10) "Permit basin" means a parcel or group of parcels served by one or more discharge structures that collectively represent all of the discharge from that area of land. A permit may have one or more permit basins. The boundaries of a permit basin are determined by the District based on available hydrologic data to define, to the extent practicable, the land area discharging to each sub-basin.

(11) "Structure" means a structural device or hydrologic feature (e.g. pump, culvert, open connection, land surface grading, ditch) that water flows through or across and is ultimately discharged/directed from a permit basin to a receiving water body.

(12) "Sub-basin" is an area of land determined by the District to represent all discharges to District monitoring locations based upon hydrologic mapping, and permittee submitted information, as represented in Appendix B3.1 "Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the Permit Basin Discharge Monitoring Program", dated November 2010, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.

(13) "Verification plan" means a water quality monitoring program to verify the expected effectiveness of a BMP Plan or proposed water quality improvement activities in accordance with subsection 40E-63.461(4), F.A.C.

(14) "Water management practices" means a category of BMPs that minimizes the quantity and improves the quality of off-site discharges which carry nutrients downstream. BMPs for water management include discharge and irrigation management practices to reduce runoff.

(15) “Water management system” means the collection of devices, improvements or natural systems whereby surface waters are conveyed, controlled, impounded, or obstructed. For water management systems serving multiple entities, dams, impoundments, reservoirs and their structures and canals are referred to as the common facilities.

(16) “Water quality improvement activities” means a combination of modifications to a BMP Plan proposed by a permittee to meet the required total phosphorus reduction requirements of Appendix B3.2. (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.). Improvement activities may include revising implementation methods to increase the effectiveness of existing BMPs or implementing additional BMPs.

(17) “Water year” or “WY” means the 12-month period beginning on May 1 and ending on the following April 30.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.404 Forms, Instructions and References.

The documents listed in subsections (1) through (9) are incorporated by reference throughout this part of Chapter 40E-63, F.A.C., and are available on the District’s website (www.sfwmd.gov/rules), or from the South Florida Water Management District Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, 1(800) 432-2045 or (561) 686-8800, upon request.

(1) South Florida Water Management District Form 1045, “Application For a C-139 Basin Pollutant Source Control Permit”, dated November 2010, incorporated by reference in subsection 40E-63.430(2), F.A.C.

(2) “Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit” (“Guidebook”), dated November 2010, incorporated by reference in subsection 40E-63.430(2), F.A.C.

(3) “Appendix B1 – BMP Description and Equivalent Points Reference Table”, dated November 2010, incorporated by reference in subsection 40E-63.435(1), F.A.C.

(4) “Appendix B2 – C-139 Basin Performance Measure Methodology”, dated November 2010, incorporated by reference in subsection 40E-63.446(1), F.A.C.

(5) “Appendix B2.1 – FORTRAN Program for Calculating C-139 Basin Flows and Phosphorus Loads”, dated January 2002, incorporated by reference in subsection 40E-63.446(1), F.A.C.

(6) “Appendix B2.2 – Flow Computation Methods Used to Calculate C-139 Basin Flows”, dated November 2010, incorporated by reference in subsection 40E-63.446(1), F.A.C.

(7) “Appendix B3.1 – Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the Permit Basin Discharge Monitoring Program”, dated November 2010, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.

(8) “Appendix B3.2 – Criteria for Required Phosphorus Reductions”, dated November 2010, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.

(9) “Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C., Everglades BMP Permit Program”, amended July 24, 1997, incorporated by reference in paragraph 40E-63.462(2)(b), F.A.C.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.406 Delegation.

(1) The Governing Board delegates to and appoints the Executive Director and his or her

designated agents to review and take final action on BMP Plan pre-approvals and applications for permits issued under Chapter 40E-63, F.A.C., including the addition of special conditions as necessary to implement the requirements of Chapter 40E-63, F.A.C., and the Everglades Forever Act, Section 373.4592, F.S., and other applicable provisions of Chapters 373 and 403, F.S., except when the staff recommendation is for denial of such applications.

(2) All recommendations for denial of applications shall be considered by the Governing Board.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.410 Waivers.

Any landowner in the C-139 Basin, as described in EFA, Section 373.4592(16), F.S., may submit evidence to the District demonstrating that the water discharged from such property does not use the Works of the District within the C-139 Basin and request a written waiver from the requirements of this chapter pursuant to Rule 28-104.002, F.A.C. and Section 120.542, F.S.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02.

40E-63.415 No Notice General Permits.

(1) No Notice General Permits for Use of Works of the District within the C-139 Basin are hereby granted to the landowners of parcels of land that connect to or make use of the Works of the District within the C-139 Basin, subject to the requirements of this part of Chapter 40E-63, F.A.C., including paragraphs 40E-63.444(1)(d), (g), (h), (i), (j), (l), (m), (r), (s), (t) and (u), F.A.C., and the conditions specified below:

(a) The parcel is not part of the common facilities of a water management system as defined in subsection 40E-63.402(15), F.A.C., of water control districts or drainage districts pursuant to Chapter 298, F.S., or any other entity operating a central drainage system already permitted under Chapter 373, F.S.;

(b) The parcels are inactive, or add up to less than 40 acres under the same ownership. "Inactive" means land parcels that are not used for agriculture, urban, commercial, industrial or other development, as determined by the District. It also includes lands in their undeveloped native state (unless used as pastures). Lands may be determined by the District as temporarily inactive if they are not operated or are vacant due to changes in ownership or land use. The District's determination applies only to the requirements of this part of Chapter 40E-63, F.A.C.;

(c) The following BMPs are implemented by the landowner, lessees, and operators, if applicable, and the property must be made available for inspection by District staff or other delegated agents after notice:

1. Phosphorus is only applied to correct phosphorus deficiencies based on soil testing or tissue testing, or for turf and landscape areas, phosphorus is only applied to meet initial establishment and growth needs (fertilizer composition less than 2% for an application rate not to exceed 0.25 lbs P₂O₅/1000 ft² per application, nor exceed 0.50 lbs P₂O₅/1000 ft² per year.);

2. Fertilizer or other soil amendments containing phosphorus are not applied within 10 feet of any pond, stream, lake, water course, or any designated wetland;

3. Spill prevention practices for nutrients are implemented; and

4. Runoff is managed in accordance with surface water or environmental resource permits, if applicable.

(2) No Notice General Permits within the C-139 Basin granted upon adoption of part of Chapter

40E-63, F.A.C., remain effective for 5 year periods and shall be automatically renewed unless the District notifies a permittee in writing that the permit is revoked.

(3) No Notice General Permits granted upon adoption of this part of Chapter 40E-63, F.A.C., do not relieve the permittee of the responsibility to comply with all other laws or regulations applicable to the use of or discharges from the parcel.

(4) Landowners meeting the foregoing shall not be obligated to submit a permit application or application fee.

(5) Notwithstanding the foregoing, the District shall require the submission of applications for General Permits from No Notice General Permit holders if the District determines that the property exceeds its proportional share of phosphorus loading based on representative water quality data for the property, as determined in Appendix B3.1. (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.). Notice of the requirement shall be provided to parcel owners in writing. Applications for new General Permits shall be submitted to the District within 45 days from the date of the notice.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.420 BMP Plan Pre-approvals.

(1) For entities required to obtain a General Permit, a BMP Plan shall be submitted to the District within 30 days after the effective date of this part of Chapter 40E-63, F.A.C. Failure to provide a complete BMP Plan within 30 days from the effective date of this part of Chapter 40E-63, F.A.C., shall not justify a corresponding delay for full implementation of the approved BMP Plan as described in subsection 40E-63.420(2), F.A.C., and will result in enforcement action pursuant to Rule 40E-63.461, F.A.C.

(2) The approved BMP Plan shall be fully implemented within 90 days of the effective date of this part of Chapter 40E-63, F.A.C., unless the District authorizes a different implementation schedule.

(3) In order to assure that the schedule mandated by subsection 40E-63.420(2), F.A.C., is met, the District will pre-approve a BMP Plan by letter, as long as the BMP Plan is complete and meets the criteria required under Rule 40E-63.435 or 40E-63.437, F.A.C., as applicable. The District will attempt to make a final determination on the BMP Plan within 10 days of receipt of a complete plan and the applicant shall begin implementation in accordance with the approved implementation schedule.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.430 General Permit Applications.

(1) A General Permit is required for parcels of land that connect to or make use of the Works of the District within the C-139 Basin that have not been issued a waiver pursuant to Rule 40E-63.410, F.A.C., or do not qualify for a No Notice General Permit pursuant to Rule 40E-63.415, F.A.C.

(2) Within 45 days after the effective date of this part of Chapter 40E-63, F.A.C., applications for new General Permits or General Permit Renewals shall be submitted to the District. Applicants shall use Form 1045, dated November 2010, and the "Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit" ("Guidebook"), dated November 2010, incorporated by reference herein, or the equivalent electronic permitting application (e-permitting) tool, with all required supporting documentation. Copies of Form 1045 and the Guidebook are available on the District's website (www.sfwmd.gov/rules), or from the South Florida Water Management District

Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, 1(800) 432-2045 or (561) 686-8800, upon request.

(3) Landowners, lessees and/or operators of a parcel or parcels may submit applications for General Permits as an applicant or co-applicant. A lessee or operator may submit an application provided the lease (or equivalent contract) is for no less than five years, is in writing, and reasonable assurance is provided that the lessee/operator has the legal and financial capability of implementing and complying with the BMP Plan and other permit conditions.

(4) General Permit applications shall include the following:

(a) Date, signature, title and authority of the person, persons or entity submitting the application;

(b) For each applicant, information that demonstrates that the applicant possesses the legal and financial authority and ability to carry out all acts necessary to implement the terms and conditions of the permit, including, at a minimum:

1. For individual applicants, recorded deeds, contracts, leases, property tax record of ownership, or other evidence of ownership or authority are required.

2. For co-applicants, a description of the legally responsible entity or cooperating group of entities together with copies of documents demonstrating its legal authority, such as enabling legislation and articles of incorporation; completed and signed Certificates of Participation indicating the individual applicant's consent and intent to participate in the General Permit; and written contracts or agreements with co-applicants indicating their consent and agreement to comply with the permit and specifying the terms of participation, where applicable.

(c) A clear delineation of the boundaries and acreage contained in the permit application, including a map which is correlated with a list of all parcel owners and corresponding county tax identification numbers, and operators or lessees associated with the acreage contained in the application. The delineation should also include drainage features depicting the permit basin, general direction of flow, inflow points, and discharge points off-site for delineation of permit basins, as defined in subsection 40E-63.402(10), F.A.C.

(d) A list of all existing and pending District permits for the application area and their status.

(e) A BMP Plan.

(f) For General Permit applications encompassing water management systems or portions thereof that serve multiple entities, an executed legally binding written agreement or contract between the owners, operators, and or users of the system, as applicable, regarding construction, use, maintenance and operational criteria, and BMP implementation requirements for the system shall be provided. Specifically, the written agreement or contract shall identify the entities and their authority and responsibility for use and operation of the system (e.g. a shared canal or off-site discharge structure).

(5) If activities proposed in the permit application submitted pursuant to this part of Chapter 40E-63, F.A.C., will affect water management systems or activities regulated pursuant to other rules (e.g. Surface Water Management, Environmental Resource Permit, Consumptive Water Use, Well Construction, Right-of-Way, or Lake Okeechobee SWIM), then the Applicant shall also submit applications for new permits or modifications to existing permits, as appropriate.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.432 Permit Modifications, Transfers and Renewals.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 6-20-07, Repealed

11-9-10.

40E-63.434 Permit Duration.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 6-20-07, Repealed 11-9-10.

40E-63.435 BMP Plans.

In order to obtain a General Permit, applicants shall submit a BMP Plan that includes a multi-level approach to implementation and operation for each crop or land use within each permit basin. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms based on available data; and ensure that a thorough approach to implementation and maintenance will be implemented. If a water management system is shared by multiple operating entities, each entity shall submit a separate BMP Plan for their land but the water management operational plan shall be consistent. The BMP Plan shall include the following:

(1) A description of a BMP Plan, including specific methods for implementation and maintenance, based on the BMPs described in Appendix B1, "BMP Description and Equivalent Points Reference Table", dated November 2010, incorporated by reference herein. To ensure that approved BMP plans have a comparable level of effort among permittees, the BMP Plan shall propose a minimum of 35 BMP equivalent points. A copy of Appendix B1 is available on the District's website (www.sfwmd.gov/rules) or from the South Florida Water Management District Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, 1(800) 432-2045 or (561) 686-8800, upon request.

(2) Of the 35 BMP equivalent points, a minimum of 20 BMP equivalent points shall meet the following criteria:

(a) A minimum of 10 BMP equivalent points in nutrient control practices.

(b) A minimum of 5 BMP equivalent points in water management practices.

(c) A minimum of 5 BMP equivalent points in particulate matter and sediment control practices. Pasture management BMPs, as described in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.), can provide equivalent points towards this category, if applicable.

(3) If at the time a BMP Plan is proposed for approval, the District has previously determined the C-139 Basin to be out compliance, and the permit basin has an approved BMP Plan including water quality improvement activities, the proposed BMP Plan shall include continuation of the approved BMP Plan and water quality improvement activities; or propose an equivalent alternative for District consideration. The applicant shall provide reasonable assurance that the alternative contains the equivalent or greater phosphorus reduction effectiveness of the approved BMP Plan and water quality improvement activities. The proposal must provide the basis that the BMP Plan and water quality improvement activities would have met the criteria indicated in subsections 40E-63.461(3) and (4), F.A.C., as applicable, for the years when the C-139 Basin was determined by the District to be out of compliance and water quality improvement activities were required.

(4) An education and training program for the management and operation staff responsible for implementing and monitoring the approved BMP Plan. The training may be provided in-house or arranged by the permittee or other educational resources.

(5) A description of records and documentation to be maintained on-site or at a suitable location that is readily available for District review. The records and documentation shall be sufficient to

verify BMP implementation, maintenance, and training, as described in the post-permit compliance section, Appendix C of the Guidebook (incorporated by reference in subsection 40E-63.430(2), F.A.C.), on the form entitled "C-139 Basin Annual Report – Certification of BMP Implementation".

(6) A proposed implementation schedule. Except for BMP Plans required immediately upon amendment of this part of Chapter 40E-63, F.A.C., as described in Rule 40E-63.420, F.A.C., implementation of new BMPs shall be completed within 90 days after the date of District approval. Alternate implementation schedules may be considered by the District if the applicant demonstrates through reasonable assurance that an equivalent level of phosphorus source control is provided.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.436 Permit Application Processing Fees.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.437 Alternative BMP Plans.

Applicants who propose to satisfy the water quality requirements of this part of Chapter 40E-63, F.A.C., by employing a BMP Plan other than those described in subsections 40E-63.435(1) and (2), F.A.C., may seek approval for an equivalent alternative through the District permit process. The applicant shall provide reasonable assurance, through the information required below and the requirements indicated in subsections 40E-63.435(3), (4), (5) and (6), F.A.C., that the alternative contains the equivalent or greater phosphorus reduction effectiveness of a 35-point BMP Plan. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms; and ensure that a thorough approach to implementation and maintenance will be implemented. In order to seek approval of an alternative BMP Plan, applicants must submit the information specified for the applicable alternative as part of the permit application process.

(1) Alternative Type BMP. If an applicant proposes BMPs not listed in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.), the application shall also include the following information for District approval:

- (a) A description of the best management practice rationale for the BMP selected;
- (b) A detailed explanation of the proposed BMP;
- (c) A schedule for implementation of the BMP;
- (d) Sample documentation of the BMP implementation, how the BMP will be verified;
- (e) Technical basis for the reduction effectiveness of the proposed BMP. The applicant shall be required to demonstrate effectiveness through a proposed monitoring program or through representative technical references including modeling results approved by the District. If approved, the District will determine the appropriate BMP equivalent point credit consistent with Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.).

(2) Alternative BMP Points per Category. If the BMP Plan does not meet the minimum number of equivalent points per BMP category as required in subsection 40E-63.435(2), F.A.C., the application shall include a site assessment demonstrating that an alternative BMP Plan will provide an equivalent or greater reduction effectiveness than using the standard approach.

The site assessment shall evaluate phosphorus imports and transport in discharges; current BMPs and implementation methods; other activities for which BMPs are not being implemented and representative water quality and soil data. Water quality data that can be used for the assessment

include those available from the District sub-basin or synoptic (grab) monitoring programs, or properly collected grab samples using field kits of adequate precision by the applicant.

(3) Alternative BMP Demonstration Project. If a demonstration project is proposed to meet the BMP implementation requirements of subsection 40E-63.435(1) or (2), F.A.C., a proposed project scope of work shall be submitted for District review and approval based on the following criteria:

(a) The scope of eligible projects shall include, at a minimum, the demonstration or research hypothesis, a description of implementation, the technical basis and scientific methods that will be employed, the performance indicators that will be measured such as water quality, water quantity, soil testing, or as applicable, the progress and final reports that will be produced to verify progress and results, and a schedule that details the beginning date, critical milestones and ending date of the project.

(b) The 35 BMP equivalent point requirement shall be met in the permit basin where the project is proposed. The proposed demonstration shall account for no more than 20 BMP equivalent points as approved by the District. The remaining 15 BMP equivalent points shall include 10 BMP equivalent points in the nutrient control practices category and 5 BMP equivalent points in the water management practices category.

(c) The proposed BMP equivalent points for the demonstration project will only be considered for the period of project implementation, the permit basin where the project is located, and for the crops or land uses to which the project applies.

(d) BMP equivalent points shall be initially determined by the District prior to issuance of a permit based on the BMP equivalent points established in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.). Additional BMP equivalent points will be approved by the District, if the applicant provides reasonable assurance through plans, test results, water quality data or other information, that the BMP project will demonstrate improvement in phosphorus removal efficiency in comparison to standard BMP implementation methods.

(e) Once the demonstration project is complete and a final report is submitted in accordance with the approved scope, the permittee shall submit a Letter Modification application requesting that the approved BMP Plan be modified to incorporate the BMP or water quality improvement activity if the District determines that they were successfully developed under the project. The application shall include the information described under Rules 40E-63.430, 40E-63.435 and 40E-63.437, F.A.C., as applicable, and shall describe how the report recommendations for BMP implementation will apply to the applicable crops or land uses for District review. The District shall review the BMP equivalent points initially assigned and will adjust them based on the reported phosphorus reduction levels and approved methods for implementation of the proposed BMP or water quality improvement activity. If the permittee decides that the BMP resulting from the demonstration project is not to be proposed for continued implementation, the permittee is required to submit a permit modification proposing a BMP Plan, as described in Rule 40E-63.435 or 40E-63.437, F.A.C., as applicable. The application for modification of the approved BMP Plan shall be submitted no later than 30 days after the project completion date pursuant to the District-approved scope.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.438 Early Implementation of Water Quality Improvement Activities.

An applicant may request approval for early implementation by opting to submit a proposal for voluntary implementation of additional BMPs (early BMPs), or a voluntary demonstration project that includes a BMP performance verification plan. Applicants electing these approaches must submit for

District review the following:

(1) Either proposal shall be submitted together with an application for a new permit, permit renewal, or as a Letter Modification.

(a) For optional early BMPs the application shall provide information for meeting the criteria below:

1. A description of the BMP or group of BMPs (early BMPs) that are proposed in addition to those required by rule at the time of application (Rule 40E-63.435 or subsection 40E-63.461(3), F.A.C., as applicable). The proposal shall include the specific methods for implementation and maintenance of the early BMPs.

2. The proposal shall provide reasonable assurance through technical documentation, and the requirements indicated in subsections 40E-63.435(4) and (5), F.A.C., that the combined effect of the optional early BMPs and rule-required BMPs will ensure a phosphorus loading reduction for the identified permit basin or parcels sufficient for the C-139 Basin to consistently achieve the performance measurer's target, as described in Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.). The District will review whether the proposed loading reduction levels would be conducive to meeting the target Unit Area Load (UAL) based on the most recent five years of water quality data.

3. The proposal shall include an implementation schedule.

(b) For voluntary demonstration projects, the application shall propose a BMP or water quality improvement measure demonstration project that meets the following:

1. Complies with the criteria described under paragraph 40E-63.437(3)(a), F.A.C.,

2. Projects estimated phosphorus reductions based on available technical references, and

3. Proposes a verification plan through a Permit Discharge Monitoring Program to confirm and quantify the estimated phosphorus reductions. The verification plan shall meet the criteria described in subsection 40E-63.461(4), F.A.C.

(2) Upon District approval of the voluntary early BMP implementation project or demonstration project with a verification plan, the permittee will be subject to the BMP reporting and verification requirements of this chapter for those voluntary initiatives, as described in permit conditions. Permittees cannot be deemed out of compliance solely for failure to implement the early initiatives, however, the permittee cannot qualify with the conditions of paragraphs 40E-63.446(2)(b) and (c), F.A.C. unless:

(a) The early BMP's are implemented.

(b) Reporting and verification requirements for the voluntary early implementation projects are met, as determined by the District; and

(c) The permittee is in compliance with the BMP Plan required by the permit.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.439 Permit Modifications, Transfers and Renewals.

(1) Applicants for permit modifications, transfers and renewals must use the appropriate sections of Form 1045 (incorporated by reference in subsection 40E-63.430(2), F.A.C.), or equivalent electronic permitting application (e-permitting) tool.

(2) Modifications and Letter Modifications: Letter modifications are applicable for requesting approval for demonstration or verification plan projects for phosphorus reduction under Rule 40E-63.437, F.A.C., for early implementation of water quality improvement activities under Rule 40E-63.438, F.A.C., for implementing or modifying a voluntary Permit Basin Discharge Monitoring

Program under Rule 40E-63.462, F.A.C., and for water quality improvement activities in accordance with subsection 40E-63.461(3) or (4), F.A.C., if the C-139 Basin is determined to be out of compliance with the water quality requirements of this part of Chapter 40E-63, F.A.C., pursuant to Rule 40E-63.446, F.A.C. Applications for modifications are applicable to any other changes except for clerical changes as indicated in subsection 40E-63.443(3), F.A.C.

A permittee may apply for a modification or a letter modification to an existing General Permit issued under this part of Chapter 40E-63, F.A.C., unless the permit has expired or has been otherwise revoked or suspended. An application for modification or letter modification will not be processed as a complete application if the permit is not in compliance with applicable permit conditions, unless the permit modification is required to bring the permit into compliance. Modifications and letter modifications will be evaluated based on the criteria in effect at the time that the application to modify is submitted. Applications for permit modifications and letter modifications shall be subject to the following requirements and limitations:

(a) Applications to modify an existing permit shall contain the same information required in a new application, as applicable, and shall identify the portion of the existing authorization for which the modification is requested.

(b) Modifications to existing permits are acknowledged and approved by letter with an accompanying Permit Review Summary (Staff Report) from the District through correspondence to the permittee.

(3) Transfers: A permittee shall notify the District within 30 days after any transfer, sale or conveyance of land or works permitted under this part of Chapter 40E-63, F.A.C., to allow time for processing the application. The permittee remains responsible for the requirements of the permit until the permit is transferred or closed at the request of the permit holder at the time the property is sold. A permittee or transferee may apply for a permit transfer, conveying responsibility for permit compliance. If an application for permit transfer is not received, the permit will become nontransferable and the transferee will be required to apply for a new permit. Permit transfers shall be subject to the following requirements and limitations:

(a) A permit may only be transferred if the land practice, total acreage, and approved BMP Plan remain the same and the permittee is in compliance with all conditions of the permit.

(b) All conditions of the existing permit will remain applicable to the new permittee.

(c) Any other changes or additions will require a permit modification in accordance with subsection 40E-63.439(2), F.A.C.

(4) Renewal: A permittee shall apply for a permit renewal prior to the expiration of an existing permit, subject to the following requirements and limitations:

(a) Applications for renewals must contain all information required for new applications and will be evaluated based on the criteria in effect at the time the application is filed.

(b) If the permittee allows the permit to expire prior to applying for a permit renewal, an application for a new permit shall be required.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.440 General Permit Application Requirements in the C-139 Basin.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.441 Permit Duration.

Pursuant to the EFA, Section 373.4592(4)(f)2., F.S., permit renewals issued pursuant to this part of Chapter 40E-63, F.A.C., are valid for a 5-year term, beginning 90 days after the effective date of this rule amendment. Subsequent permit renewals are effective for 5-year renewal cycles from the previous expiration date, unless:

- (1) The permit is automatically inactivated at the expiration of the permittee’s lease or contract (where the permittee is the lessee or equivalent) that authorized the permittee to control operations (and permit compliance) on the permitted land; or
- (2) The permit is otherwise modified by enforcement actions pursuant to subsection 40E-63.461(1), F.A.C.; or
- (3) The permit is otherwise renewed pursuant to subsection 40E-63.439(2), F.A.C.; or
- (4) A permit application for a new permit or a permit renewal has been filed by a permittee on a timely basis prior to the expiration date of a previously-issued permit, and the District has not completed review of the application, in which case the previously-issued permit will remain effective until final agency action is taken by the District on the application; or
- (5) A new permit has been issued within one year of the permit renewal cycle begin date. In that case, the new permit duration will be greater than five years, but no more than six years to align its expiration date with the expiration date of the basin’s five-year renewal cycle.
- (6) Permit duration will not be affected by permit transfers or modifications of any kind.
- (7) All previously issued permits shall expire 90 days after the effective date of this part of Chapter 40E-63, F.A.C., unless a permit application for renewal or for a new permit has been received by the District within that period.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 11-9-10.

40E-63.442 Basis for Issuance of General Permits in the C-139 Basin.

Rulemaking Authority 373.044, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.423, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Repealed 11-9-10.

40E-63.443 Permit Application Processing Fees.

(1) The following permit application processing fees shall be paid to the District at the time the permit applications are filed.

Permit Type	New	Renewal	Modification	Letter Modification	Transfer
General Permit	\$250	\$250	\$100	\$0	\$100

(2) Without the proper fee, the application shall be considered incomplete and will result in denial of the application if the fee is not paid upon notice.

(3) Notwithstanding the table above, no fees shall be charged for clerical modifications that do not alter the approved BMP Plan or monitoring requirements of the underlying permit.

(4) In cases where more than one permit application type applies, the application shall be submitted as the permit type with the higher application fee.

Rulemaking Authority 373.016, 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.109, 373.451, 373.453, 373.4592(4)(f) FS. History–New 11-9-10.

40E-63.444 Limiting Conditions for General Permits in the C-139 Basin.

(1) All of the following standard limiting conditions paragraphs (a) through (u) shall be attached to all General Permits:

(a) The permittee shall implement all elements and requirements of the approved BMP Plan according to schedule, including documentation of implementation, operation, and rationale where applicable. At no time shall BMP implementation be less than the required 35 BMP equivalent points using the criteria in Rule 40E-63.435 or 40E-63.437, F.A.C., as applicable.

(b) Each applicant to which a General Permit is issued is a co-permittee and is jointly and severally liable for implementing the requirements of the General Permit. This includes non-compliance with permit conditions caused by lessees or operators that are not co-permittees.

(c) The permittee shall submit to the District an annual report certifying BMP implementation in accordance with the permit. The report is due February 1 of each year. Failure to submit the report by February 1 will result in onsite verification of BMP implementation by District staff and the requirement for the permittee to submit a detailed report documenting implementation of each BMP in the approved BMP Plan for the previous calendar year. Failure to submit the required annual report by April 30 of each year may result in revocation of the General Permit. The notification will be sent by certified mail and indicate that the permit will be revoked within 30 days after the date of the certified mailing unless the annual report is received within those 30 days. If the permit is revoked, the permittee shall be required to apply for a new General Permit and shall be subject to enforcement under subsection 40E-63.461(1), F.A.C. The new permit will include special conditions requiring that documentation certifying BMP implementation is submitted quarterly, at a minimum.

(d) The permittee shall allow District staff and designated agents, reasonable access to the permitted property at any time to verify compliance with the rule and the permit. Since it is not possible to predict precisely when discharges will occur or problems will arise resulting in the need for a site visit, the District may not be able to provide a lengthy period of notice to the designated person in advance of a visit. However, at a minimum, the District will provide notice at least 24 hours prior to a site visit for verifying best management practice installation or operation.

(e) The permittee shall notify the District in writing within 30 days after any changes in permit basin acreage.

(f) The permittee shall notify the District in writing within 30 days of any transfer, sale or conveyance of land or works described in the permit.

(g) This permit does not relieve the permittee of the responsibility to comply with all other laws or regulations applicable to the use of or discharges from the parcel.

(h) This permit does not convey to the permittee any property right or any rights or privileges other than those specified in the permit.

(i) This permit does not relieve the permittee from liability from harm or injury to human health or welfare; animal, plant or aquatic life; or property.

(j) The surface water management and monitoring system must be effectively operated and maintained in accordance with the Environmental Resource/Surface Water Management Permit. Any change in drainage or operations not identified previously that could affect the surface water management system, must be reported in writing in advance to the District to determine if an Environmental Resource/Surface Water Management Permit is required.

(k) If not previously authorized by a District permit under this part of Chapter 40E-63, F.A.C., the permittee shall submit a permit modification application 30 days in advance of conducting any:

1. Changes in BMPs; or
2. Changes in land practice affecting the approved BMP Plan; or
3. Changes in water management that may affect the Sub-basin Monitoring Program (e.g., resulting from completing Environmental Resource/Surface Water Management Permit authorized water management system changes).

(l) The permitted discharge shall not otherwise be harmful, or adversely affect proper use and operation of the Works of the District.

(m) The C-139 Basin is required to achieve compliance with the phosphorus load limitation requirement and performance measures as specified in Appendix B2 (incorporated by reference in subsection 40E- 63.446(1), F.A.C.).

(n) Legal entities or groups of cooperating owners or operators (co-permittees) responsible for implementing a General Permit shall remain legally and financially capable of performing their responsibilities required by the permits issued pursuant to this section.

(o) Within 30 days of issuance of the permit, as of the effective date of the amendments to this part of Chapter 40E-63, F.A.C., for lessees that are not co-applicants, the permittee shall provide written certification that the lessees have received a copy of the permit and agree to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto.

(p) For leases executed after the effective date of the amendments to this part of Chapter 40E-63, F.A.C. (in which the lessee is not a co-applicant), within 30 days of its date of execution, the permittee shall provide written certification by the lessee or a copy of the lease indicating the lessee's agreement to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto.

(q) If the District determines that any permittee in a General Permit is not complying with the specific terms and conditions of the General Permit, or the water quality performance measures (including proportional share, in accordance with Chapter 40E-63, F.A.C.), the District will institute enforcement or corrective proceedings against the permittee, any co-permittees, or both, as applicable pursuant to Rules 40E-63.446 and 40E-63.461, F.A.C.

(r) Authorizations from other agencies for disposal or application of wastewater residuals (biosolids), animal manure, solid waste, fill material, or other materials containing phosphorus within the C-139 Basin, shall not relieve permittees from complying with the provisions of this rule. Permittees will be required by the District to demonstrate no potential impacts on phosphorus loading.

(s) The permitted discharge shall not cause adverse water quality impacts to receiving water and adjacent lands regulated by Chapter 373, F.S.

(t) The permitted discharge shall not cause adverse environmental impacts.

(u) The permitted discharge shall be consistent with State Water Policy, Chapter 62-40, F.A.C.

(2) General permits shall be subject to other reasonable conditions as necessary to assure that proposed BMP and Permit Discharge Monitoring Plans meet the conditions for issuance in Rules 40E-63.435, 40E-63.437 and 40E-63.462, F.A.C.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 1-24-02, Amended 11-9-10.

40E-63.446 C-139 Basin Compliance.

(1) If the C-139 Basin is determined to not meet the performance measures developed in accordance with Appendix B2 "C-139 Basin Performance Measure Methodology", dated November 2010, Appendix B2.1 "FORTRAN Program for Calculating C-139 Basin Flows and Phosphorus Loads" dated January 2002, and Appendix B2.2, "Flow Computation Methods Used to Calculate C-139 Basin Flows" dated November 2010, incorporated by reference herein, the basin as a whole will be deemed out of compliance with the water quality requirements of this part of Chapter 40E-63, F.A.C. Copies of Appendices B2, B2.1 and B2.2 are available on the District's website

(www.sfwmd.gov/rules) or from the South Florida Water Management District Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, 1(800) 432-2045 or (561) 686-8800, upon request.

(2) If the C-139 Basin is out of compliance, water quality improvement activities will be required for permit basins except in the following situations:

(a) The permit basin is located in a sub-basin that is determined to not exceed its proportional share of the basin-wide loading based on District-collected data for the sub-basin or, if applicable, its Permit Basin Discharge Monitoring Program results are determined not to exceed the proportional share in accordance with Appendix B3.1 "Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the Permit Basin Discharge Monitoring Program", dated November 2010, and Appendix B3.2 "Criteria for Required Phosphorus Reductions", dated November 2010, both of which are incorporated by reference herein. Copies of Appendices B3.1 and B3.2 are available on the District's website (www.sfwmd.gov/rules) or from the South Florida Water Management District Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, 1(800) 432-2045 or (561) 686-8800, upon request.

(b) District approved early BMPs, as described in paragraph 40E-63.438(1)(a), F.A.C., were fully implemented in the permit basin during a water year that was used to deem the C-139 Basin out of compliance (this provision applies only to the parcels where the early BMPs apply).

(c) A District approved demonstration project including a verification plan, as described in paragraph 40E-63.438(1)(b), F.A.C., was conducted within the permit basin during a water year that was used to deem the basin out of compliance (this provision applies only to the land uses or crops to which the project applies).

(d) The permit basin, or portion thereof, has been issued and meets the conditions of a determination of impracticability as described in subsection 40E-63.461(6), F.A.C. (this provision applies only to the lands where the determination applies), or

(e) The performance measure determination includes the permit basin UAL from either of the two water years immediately following a water year for which the permit basin was required to implement water quality improvement activities.

(3) Upon the effective date of the amendments to this part of Chapter 40E-63, F.A.C., the first water year of compliance determination for which water quality improvement activities can be required is WY2013.

(4) If the C-139 Basin is deemed out of compliance, the District will evaluate BMP program performance at the sub-basin level in accordance with Appendix B3.1 (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.).

(5) The District will determine annual phosphorus discharge performance for permit basins that have an individual discharge monitoring plan in accordance with Appendix B3.1 (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.).

(6) The District will provide written notice to the C-139 Basin permittees on the C-139 Basin compliance based upon performance measure results (Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C.), and the sub-basin and permit basin performance results (Appendix B3.1, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.) and whether water quality improvement activities are required. The District shall attempt to transmit the written notices by August of each year. The notices shall describe permittees' required actions for proposing water quality improvement activities based on these assessments including required total phosphorus reduction levels in accordance with Appendix B3.2 (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.). These actions are described in subsection 40E-63.461(2), F.A.C.

(7) In accordance with Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.), the District shall continue collecting monitoring data from the C-139 Basin for the purpose of determining compliance.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.450 Individual Permit Application Requirements in the C-139 Basin.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.452 Basis for Issuance of Individual Permits in the C-139 Basin.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.454 Limiting Conditions for Individual Permits in the C-139 Basin.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.456 Optional Discharge Monitoring Program.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.458 Limiting Conditions for the Optional Discharge Monitoring Program.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.460 C-139 Basin Compliance.

Rulemaking Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

40E-63.461 C-139 Basin Permit Compliance.

The District is authorized to seek any enforcement or corrective action available under Florida law for permittees out of compliance with the provisions of this chapter, pursuant to Chapter 373, F.S., and rules adopted thereunder.

(1) If an individual permittee is determined to be out of compliance with permit conditions the following applies:

(a) The District shall begin reviewing “permit compliance” with BMP implementation, documentation, and operation by permittees in the C-139 Basin immediately upon the effective date of this part of Chapter 40E-63, F.A.C.

(b) All permittees who are not in compliance with their permit are subject to notification and enforcement actions by the District.

(c) All permittees who receive notice of non-compliance with their permit from the District must submit to the District, within 10 business days of receipt of the notice, a plan and schedule for achieving permit compliance within 60 days after transmittal of the District notice.

(d) Compliance with the permit includes timely submittal and implementation of any additional

water quality improvement activities if required by rule. Delay by permittees in fulfilling the BMP implementation requirements will not extend the timeline for determining the need for additional water quality improvement activities at the sub-basin or permit basin level.

(2) If the C-139 Basin is determined to be out of compliance with the water quality requirements of this part of Chapter 40E-63, F.A.C., pursuant to Rule 40E-63.446, F.A.C., the permittee shall propose water quality improvement activities in accordance with the following:

(a) The permittee shall submit a letter modification application for the District's consideration, within 120 days of the District's transmittal of the notice that the C-139 Basin is not in compliance. The submittal shall include the section entitled "Water Quality Improvement Activities" of Form 1045, dated November 2010, incorporated by reference in subsection 40E-63.430(2), F.A.C.

(b) The submittal shall include a proposal for water quality improvement activities along with the estimated phosphorus reductions to be achieved in accordance with subsection 40E-63.461(3), F.A.C., or a verification plan in accordance with subsection 40E-63.461(4), F.A.C. The phosphorus reductions shall be the minimum levels necessary to meet the permit basin's proportional share of required total phosphorus reductions as determined by the District (Appendices B3.1 and B3.2, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.). The proposal shall include a schedule to ensure that full implementation of an approved BMP Plan incorporating any proposed water quality improvement activities is in effect as soon as feasible and no later than April 30 following the District's transmittal of the notice that the C-139 Basin is not in compliance, unless otherwise approved by the District. An alternate implementation schedule will be approved by the District with justification based on the scope of the proposed activities. A permittee shall be required to implement intermediate water quality improvement activities or BMPs, as applicable, if an alternate implementation schedule is approved.

(3) All proposals for water quality improvement activities shall meet the following criteria for District review and approval:

(a) Include a detailed description of the proposed improvements to the approved BMP Plan in comparison to the current implementation practices. The basis for the proposed BMP improvements shall consider pre-improvement conditions (e.g., current levels of BMP implementation, pre-BMP improvement water quality data) and the parameters affecting BMP performance and total phosphorus load (site-specific conditions, phosphorus speciation, flow). If the proposal includes implementation of additional BMPs not listed in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.), the proposal shall also include the information indicated in subsection 40E-63.437(1), F.A.C. Note that in contrast with BMP Plans, additional improvements to an approved BMP Plan do not need to be proposed for each land use or crop within a permit basin if it is demonstrated that focus on selected land uses, crops, or acreage will be sufficient to achieve the required total phosphorus reduction of the basin wide load.

(b) Indicate the expected range of percent total phosphorus removal resulting from the proposal as follows:

1. The expected or assumed range of percent total phosphorus removal shall equal or exceed the percent required total phosphorus reduction applicable to the permit basin.

2. The expected or assumed total phosphorus removal efficiency shall be based on data from the most current representative technical references including peer reviewed or published BMP research and demonstration projects, with consideration of permit basin specific conditions such as identified when a site-assessment is completed pursuant to subsection 40E-63.437(2), F.A.C.

3. Each proposal shall include a detailed description of the technical basis and copies of documents as applicable. All proposed total phosphorus reductions shall be based on scientific

studies, calibrated models, or data collection representative of the C-139 Basin for District approval.

(c) If the permittee is unable to demonstrate that the required total phosphorus reductions can be achieved in accordance with paragraph (b) above, a verification plan shall be required.

(d) If the proposal includes a verification plan, it shall meet the criteria for approval described below. The proposal and monitoring plan shall aim to demonstrate the ability to achieve the total phosphorus reduction levels that would be necessary to meet the overall required total phosphorus reduction levels.

(4) If a permittee elects to or is required to conduct a monitoring program to confirm that required total phosphorus reductions will be achieved, a permittee shall propose a verification plan in addition to the proposal for improvements to an approved BMP Plan or water quality improvement activities. All verification plan proposals shall meet the following criteria for District review and approval:

(a) The description of who will be responsible for project implementation.

(b) The proposed reporting procedures during and at completion of the project.

(c) A Final report at completion that describes how the recommendations for BMP implementation will be applicable to the crops or land uses to meet the required total phosphorus reduction.

(d) The tools that will be used to verify total phosphorus reduction levels such as water quality and quantity monitoring to determine total phosphorus loading pre- and post-BMP improvement and to estimate total phosphorus reduction. Total phosphorus and phosphorus speciation data collected at the District sub-basin monitoring locations may serve as representative monitoring.

(e) The parameters under which total phosphorus reduction levels will be measured and verified so that findings are repeatable and applicable within the C-139 Basin conditions (climatic conditions, soils, geology, etc.).

(f) A schedule not to exceed three calendar years from the date of District approval of the proposal. Once the confirmatory verification is completed and a final report is submitted in accordance with the approved scope, the permittee shall either submit a Letter Modification application in accordance with Rule 40E-63.439 and subsections 40E-63.461(2) and (3), F.A.C., to either:

1. Modify the approved BMP Plan to incorporate changes based on the final report recommendations for the District's consideration, or

2. Propose other water quality improvement activities consistent with the requirements of this rule.

(5) The District shall repeat the procedures specified in Rule 40E-63.446, F.A.C., above as many times as required to achieve C-139 Basin compliance, and seek corrective action as appropriate against entities within the C-139 Basin, as applicable.

(6) Permittees may elect to demonstrate that water quality improvement activities are impracticable. Any such request for determination of impracticability must be submitted to the District under a permit modification application. For the District to consider the application for approval, the submittal shall:

(a) Specify all of the BMPs and activities that were implemented previously and provide evidence to show that no additional BMPs and activities or refinements for the reduction of phosphorus can be reasonably accomplished at the site or sites of operation.

(b) Propose the expected amount of phosphorus discharge in comparison to the C-139 Basin's phosphorus load targets and limits, calculated in accordance with Appendices B3.1 and B3.2 (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.), for the range of historic rainfall conditions in accordance with Appendix B2 (incorporated by reference in subsection 40E-63.446(1),

F.A.C.). No increasing trend in phosphorus from the property, as determined by the District, will be allowed under any scenario. The District will review the proposed performance level in reference to available representative historic data.

(c) Propose a discharge monitoring plan in accordance with Rule 40E-63.462, F.A.C., to verify that the proposed performance level is met. In the event that the farm configuration is not conducive to flow collection under a discharge monitoring program, the District may consider requests for the use of alternate representative locations or monitoring for concentration only. Upon District approval of the monitoring plan, special limiting conditions (such as applicable conditions from Rule 40E-63.464, F.A.C.) will be incorporated in the permit.

(d) Such requests shall apply only to the permit basin or portion thereof (e.g., land use, crop or acreage) which demonstrated further activities are impracticable.

(e) The District shall send a copy of each such request to the Department of Environmental Protection.

(f) Determinations of impracticability will be valid until the next permit renewal cycle. Permittees shall re-apply for a permit in accordance with Rule 40E-63.439, F.A.C. A previously permitted impracticability status shall not be automatically renewed. The District will review each request as a new request. All requests shall be reviewed to verify that there have been no increasing trends in phosphorus discharges in the previous 5 years and that the proposed levels of BMP implementation are in accordance with improved BMP implementation techniques based on the latest technical information, as described in Appendix B3.2 (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.).

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.462 Permit Basin Discharge Monitoring Program.

(1) In addition to implementing an approved BMP Plan, permittees may elect or be required to participate in a discharge monitoring program pursuant to Rules 40E-63.437, 40E-63.438, paragraph 40E-63.444(1)(r), subsection 40E-63.461(4) or 40E-63.461(6), F.A.C., and be subject to:

(a) For permittees electing a discharge monitoring program or permittees required to implement a monitoring program pursuant to subsection 40E-63.461(6), F.A.C.: alternative, site-specific evaluations of compliance with phosphorus load targets and limits for the areas represented by the monitoring plan when the C-139 Basin is collectively determined to be out of compliance in accordance with Chapter 40E-63, F.A.C., Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.); and

(b) Compliance with permit conditions in accordance with Rule 40E-63.464, F.A.C.

(2) To implement a discharge monitoring program, permittees must submit a permit application with the following information:

(a) An acceptable discharge (quantity and quality) monitoring plan that provides reasonable assurance that annual water discharge and total phosphorus load are accurately documented.

(b) All flow quantity discharge from the property shall be calculated using a method proposed by a Florida-Registered Professional Engineer in a flow calibration report approved by the District. A calibration report shall be required for each pump, culvert or other discharge structure. Uncontrolled off-site discharges, such as overland sheet flow, shall also be quantified in the report. Each calibration report shall contain, at a minimum: data collection methodology, instrumentation and procedures; the actual field data collected; the basis for the full operating range represented by the data; the methodology for development of the calibration equation; operational information needed

to calculate flow with a temporary backup methodology to be used if the primary equipment becomes inoperable; and the final calibration equation and primary method for calculating the flow. A plan that includes the items specified in the "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C. Everglades BMP Permit Program", amended July 1997, incorporated by reference herein, generally provides reasonable assurance that methods to measure water quantity will be reasonably accurate, however, other alternatives may be proposed by the applicant and authorized by the District. A copy of the "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C., Everglades BMP Permit Program, is available on the District's website (www.sfwmd.gov/rules), or from the South Florida Water Management District Clerk, 3301 Gun Club Road, West Palm Beach, FL 33406, 1(800) 432-2045, ext. 6436 or (561) 682-6436, upon request;

(c) A schedule to install equipment and implement the monitoring plan no later than 30 days after issuance of the permit; and

(d) Other site specific information required by Appendix B3.1 (incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.).

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.464 Limiting Conditions for the Permit Basin Discharge Monitoring Program.

For those applicants proposing to implement the Permit Basin Discharge Monitoring Program, the District-approved monitoring plan will be incorporated into a modified General Permit and the following limiting conditions shall be met in addition to the conditions indicated in Rule 40E-63.444, F.A.C. These limiting conditions will be attached to the General Permit.

(1) The discharge (quantity and quality) monitoring plan shall provide reasonable assurance that the annual water discharge and total phosphorus load are accurately documented.

(2) The approved discharge monitoring plan shall be incorporated by reference and made part of this permit;

(3) The equipment shall be installed and the monitoring shall start no later than 30 days after the permit issuance date. Within 60 days after the permit issuance date, the permittee shall contact the District to verify that installation of the monitoring equipment is complete and to schedule an inspection;

(4) The permittee shall implement the discharge monitoring plan in accordance with the permit and shall submit to the District any proposed modification of the plan by submitting an application to modify the permit for review and approval prior to implementation.

(5) The location of sample collection shall be such that water sampled is representative of all water from the monitored area that discharges off-site.

(6) All water quality sample collection, preservation, handling, transport, and chain-of-custody documentation shall be conducted in accordance with an approved Comprehensive Quality Assurance Plan as specified in the approved discharge monitoring plan. All laboratory analyses shall be conducted by a laboratory with proper certification for the specified parameter (e.g. phosphorus);

(7) In the event that water quality automatic sampling equipment becomes inoperable for any reason, grab samples shall be temporarily taken on a daily basis during flow events and composited for a maximum of 14 days for total phosphorus analysis. Reasonable effort must be made to render the automatic sampling equipment operable within 14 days;

(8) Monitoring conditions may be reduced or adjusted upon submission of data and/or studies that provide the basis for such, reasonably demonstrating that equivalent data will be obtained with

the reduction or adjustment in monitoring;

(9) The District will provide at least one week notice to the permittee of the intent to conduct a quality assurance field audit of the sampling collection procedures;

(10) The water quantity and quality data shall be submitted to the District no later than 60 days from the last day of the sampling period being reported. Water quantity and quality data shall be submitted to the District in an approved electronic format on a monthly basis.

(11) All flow quantity discharged from the property shall be calculated using a method proposed by a Florida-registered Professional Engineer in a Calibration Report approved by the District. A Calibration Report shall be required for each pump, culvert or other discharge structure. The report shall also quantify uncontrolled off-site discharges, such as overland sheet flow. Each Calibration Report shall contain, at a minimum: data collection methodology, instrumentation and procedures; the actual field data collected; the basis for the full operating range represented by the data; the methodology for development of the calibration equation; operational information needed to calculate flow with a temporary backup methodology to be used if the primary equipment becomes inoperable; and the final calibration equation and primary method for calculating the flow. Any modification to the approved calibration shall require an application to modify the existing permit.

(12) During periods of off-site discharge, water quality composite samples shall be collected by automatic sampler, preserved, and the composite sample shall be: a) removed from the sample collection site and delivered to the laboratory no later than 21 days from the time the first individual sample was taken and, b) analyzed for total phosphorus no later than 28 days from the time the first individual sample was taken.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373,453, 373.4592(4)(f) FS. History—New 11-9-10.

40E-63.470 C-139 Basin Works of the District Permit Compliance.

Rulemaking Authority 373.044, 373.083, 373.085, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History—New 1-24-02, Repealed 11-9-10.

**APPENDIX A1
DESCRIPTION****REGULATED PORTION OF EVERGLADES AGRICULTURAL AREA
BASINS PALM BEACH, BROWARD AND HENDRY COUNTIES**

Indicated below are the approximate boundaries of the Everglades Agricultural Area (EAA) basins included in the regulated acreage of the EAA represented by the base period water quality and flow dataset described in Appendix 3:

S-5A BASIN (Palm Beach County)

Beginning at the intersection of the center line of the South Florida Water Management District's Levee 8 Right of Way with the north line of Section 22, Township 41 South, Range 38 East, thence, bear westerly along said north line of said Section 22 and the north lines of Sections 21, 20 and 19, Township 41 South, Range 38 East, and the north line of Section 24, Township 41 South, Range 37 East, to the Northwest (NW) corner of said Section 24;

Thence, southerly along the west line of said Section 24 to the Southwest (SW) corner of said Section 24;

Thence, westerly along the south lines of Sections 23 and 22, Township 41 South, Range 37 East, to the intersection thereof with the center line of the South Florida Water Management District's Levee Dike 9 Right of Way;

Thence, southwesterly along said center line of said Levee Dike 9 Right of Way to the intersection thereof with the west line of Section 4, Township 42 South, Range 37 East;

Thence, southerly along said west line of said Section 4 and the west lines of Sections 9, 16, 21, 28 and 33, Township 42 South, Range 37 East, to the intersection thereof with the line between Townships 42 South and 43 South, said point being also the Southwest (SW) corner of said Section 33;

Thence, easterly along said line between said Townships 42 South and 43 South, being also the south line of said Section 33 and the south lines of Sections 34, 35 and 36, Township 42 South, Range 37 East, and the south lines of Sections 31, 32 and 32, Township 42 South, Range 38 East, to the Northeast (NE) corner of Section 4, Township 43 South, Range 38 East;

Thence, southerly along the east line of said Section 4 to the Southeast (SE) corner of said Section 4;

Thence, easterly along the south line of Section 3, Township 43 South, Range 38 East, to the Southeast (SE) corner of said Section 3;

Thence, southerly along the east lines of Sections 10, 15, 22 and 27, Township 43 South, Range 38 East, to the Southeast (SE) corner of said Section 27;

Thence, westerly along the south line of said Section 27 to the Northwest (NW) corner of Section 34, Township 43 South, Range 38 East;

Thence, southerly along the west line of said Section 34 to the intersection thereof with the line between Township 43 South and Government Lots 3 and 4, said point being also the Southwest (SW) corner of said Section 34;

Thence, southerly along the southerly extension of said Section 34 to the intersection thereof with the center line of State Road 80 (U.S. 441) Right of Way;

Thence, easterly along said center line of said State Road 80 (U.S. 441) Right of Way to the intersection thereof with the west line of the East one-half (E1/2) of Section 3, Township 44 South, Range 38 East;

Thence, southerly along the west line of said East one-half (E1/2) of said Section 3, and the west line of the East one-half (E1/2) of Section 10, Township 44 South, Range 38 East, to the Southwest (SW) corner of said East one-half (E1/2) of said Section 10;

Thence, easterly along the south line of said Section 10 to the Northwest (NW) corner of Section 14, Township 44 South, Range 38 East;

Thence, southerly along the west line of said Section 14 and the west line of Section 23, Township 44 South, Range 38 East, to the Southwest (SW) corner of said Section 23;

Thence, easterly along the south line of said Section 23 and the south line of Section 24, Township 44 South, Range 38 East, to the intersection thereof with the line between Ranges 38 East and 39 East, said point being also the Southeast (SE) corner of said Section 24;

Thence, southerly along said line between said Ranges 38 East and 39 East, being also the east lines of Sections 25 and 36, Township 44 South, Range 38 East, to the intersection thereof with the line between Townships 44 South and 45 South, said point being also the Southeast (SE) corner of said Section 36;

Thence, easterly along said line between said Townships 44 South and 45 South, being also the south lines of Sections 31, 32 and 33, Township 44 South, Range 39 East, to the Southeast (SE) corner of said Section 33;

Thence, northerly along the east line of said Section 33 and the east lines of Sections 28, 21 and 16, Township 44 South, Range 39 East, to the Northeast (NE) corner of said Section 16;

Thence, easterly along the south lines of Sections 10 and 11, Township 44 South, Range 39 East, to the Southeast (SE) corner of said Section 11;

Thence, northerly along the east line of said Section 11 to the Northwest (NW) corner of the South one-half (S1/2) of Section 12, Township 44 South, Range 39 East;

Thence, easterly along the north line of said South one-half (S1/2) of said Section 12 to the intersection thereof with the center line of the South Florida Water Management District's Levee 7 Right of Way;

Thence, northeasterly and easterly along said center line of said Levee 7 Right of Way to the intersection thereof with the center line of said Levee 8 Right of Way;

Thence, northerly and northwesterly along said center line of said Levee 8 Right of Way to the intersection thereof with the north line of Section 22, Township 42 South, Range 39 East;

Thence, westerly along said north line of said Section 22 and the north line of Section 21, Township 42 South, Range 39 East, to the Northwest (NW) corner of said Section 21;

Thence, northerly along the east line of Section 17 and the east line of Section 8, Township 42 South, Range 39 East, to the intersection thereof with the center line of said Levee 8 Right of Way;

Thence, northwesterly along said center line of said Levee 8 Right of Way to the POINT OF BEGINNING.

S-6 BASIN and the East Portion of the S2 BASIN (Palm Beach County)

Beginning at the Southwest (SW) corner of Section 16, Township 43 South, Range 37 East, thence, bear easterly along the south line of said Section 16 and the south lines of Sections 15, 14 and 13, Township 43 South, Range 37 East, to the Southeast (SE) corner of said Section 13;

Thence, northerly along the east line of said Section 13 and the east lines of Sections 12 and 1, Township 43 South, Range 37 East, to the intersection thereof with the line between Townships 42 South and 43 South, said point being also the Northeast (NE) corner of said Section 1;

Thence, easterly along said line between said Townships 42 South and 43 South, being also the north lines of Sections 6, 5 and 4, Township 43 South, Range 38 East, to the Northeast (NE) corner of said Section 4;

Thence, southerly along the east line of said Section 4 to the Southeast (SE) corner of said Section 4;

Thence, easterly along the north line of Section 10, Township 43 South, Range 38 East, to the Northeast (NE) corner of said Section 10;

Thence, southerly along the east line of said Section 10 and the east lines of Sections 15, 22 and 27, Township 43 South, Range 38 East, to the Southeast (SE) corner of said Section 27;

Thence, westerly along the south line of said Section 27 to the Southwest (SW) corner of said Section 27;

Thence, southerly along the west line of Section 34, Township 43 South, Range 38 East, to the intersection thereof with the line between Township 43 South and Government Lots 3 and 4, said point being also the Southwest (SW) corner of said Section 34;

Thence, southerly along the southerly extension of said Section 34 to the intersection thereof with the center line of State Road 80 (U.S. 441) Right of Way;

Thence, easterly along said center line of said State Road 80 (U.S. 441) Right of Way to the intersection thereof with the west line of the East one-half (E1/2) of Section 3, Township 44 South, Range 38 East;

Thence, southerly along the west line of said East one-half (E1/2) of said Section 3 and the west line of the East one-half (E1/2) of Section 10, Township 44 South, Range 38 East, to the Southwest (SW) corner of said East one-half (E1/2) of said Section 10;

Thence, easterly along the south line of said Section 10 to the Northwest (NW) corner of Section 14, Township 44 South, Range 38 East;

Thence, southerly along the west line of said Section 14 and the west line of Section 23, Township 44 South, Range 38 East, to the Southwest (SW) corner of said Section 23;

Thence, easterly along the south line of said Section 23 and the south line of Section 24, Township 44 South, Range 38 East, to the intersection thereof with the line between Ranges 38 East and 39 East, said point being also the Southeast (SE) corner of said Section 24;

Thence, southerly along said line between said Ranges 38 East and 39 East, being also the east lines of Sections 25 and 36, Township 44 South, Range 38 East, to the intersection thereof with the line between Townships 44 South and 45 South, said point being also the Southeast (SE) corner of said Section 36;

Thence, easterly along said line between said Townships 44 South and 45 South, being also the south line of said section 36 and the south lines of Sections 31, 32, 33 and 34, Township 44 South, Range 39 East, to the intersection thereof with the center line of the South Florida Water Management District's Levee 7 Right of Way;

Thence, southerly along said center line of said Levee 7 Right of Way to the intersection thereof with the center line of the South Florida Water Management District's Levee 6 Right of Way;

Thence, southwesterly along said center line of said Levee 6 Right of Way to the intersection thereof with the north line of Section 30, Township 46 South, Range 39 East;

Thence, westerly along the north line of said Section 30 and the north lines of Sections 25 and 26, Township 46 South, Range 38 East, to the Northwest (NW) corner of the East one-half (E1/2) of said Section 26;

Thence, southerly along the west line of said East one-half (E1/2) of said Section 26 to the Southwest (SW) corner of said East one-half of said Section 26;

Thence, westerly along the south line of said Section 26 and the south line of Section 27, Township 46 South, Range 38 East, to the Southwest (SW) corner of said Section 27;

Thence, northerly along the west line of said Section 27 and the west lines of Sections 22, 15 and 10, Township 46 South, Range 38 East, to the Northwest (NW) corner of the South one-half (S1/2) of said Section 10;

Thence, westerly along the north line of the South one-half (S1/2) of Section 9, Township 46 South, Range 38 East, to the Northwest (NW) corner of said South one-half (S1/2) of said Section 9;

Thence, northerly along the west line of said Section 9, the west line of Section 4, Township 46 South, Range 38 East, and Government Lot 4, to the intersection thereof with the line between Township 45 South and the Government Lots, said point being also the Northwest (NW) corner of said Government Lot 4;

Thence, westerly along said line between said Townships 45 South and 46 South, being also the south lines of Sections 32 and 31, Township 45 South, Range 38 East, to the intersection thereof with the line between Ranges 37 East and 38 East, being also the Southwest (SW) corner of said Section 31;

Thence, northerly along said line between said Ranges 37 East and 38 East, being also the west line of said Section 31 and the west lines of Sections 30 and 19, Township 45 South, Range 38 East, to the Southeast (SE) corner of Section 13, Township 45 South, Range 37 East;

Thence, westerly along the south line of said Section 13 to the Southwest (SW) corner of said Section 13;

Thence, northerly along the west line of said Section 13 to the Southeast (SE) corner of Section 11, Township 45 South, Range 37 East;

Thence, westerly along the south line of said Section 11 and the south line of Section 10, Township 45 South, Range 37 East, to the Southwest (SW) corner of said Section 10;

Thence, northerly along the west line of said Section 10, the west line of Section 3, Township 45 South, Range 37 East, and the west lines of Sections 34, 27 and 22, Township 44 South, Range 37 East, to the Northwest (NW) corner of said Section 22;

Thence, easterly along the north line of said Section 22 to the Northeast (NE) corner of said Section 22;

Thence, northerly along the east line of Section 15, Township 44 South, Range 37 East, to the Northeast (NE) corner of said Section 15;

Thence, westerly along the north line of said Section 15 and the north lines of Sections 16 and 17, Township 44 South, Range 37 East, to the center line of County Road 827A Right of Way;

Thence, northerly along said center line of said County Road 827A Right of Way to the intersection thereof with the center line of State Road 80 Right of Way;

Thence, northerly and northeasterly along said center line of said State Road 80 Right of Way to the intersection thereof with the center line of South Florida Water Management District's Hillsboro Canal Right of Way;

Thence, northwesterly along said center line of said Hillsboro Canal Right of Way to the intersection thereof with the center line of the South Florida Conservancy District's Lateral 1-1N Right of Way;

Thence, southwestwesterly along said center line of said Lateral 1-1N Right of Way to the south line of Section 1, Township 44 South, Range 36 East;

Thence, westerly along the south line of said Section 1 and the south line of Section 2, Township 44 South, Range 36 East, to the intersection thereof with the center line of the South Florida Water Management District's North New River Canal Right of Way;

Thence, northerly along said center line of said North New River Canal to the intersection thereof with the center line of said Hillsboro Canal Right of Way;

Thence, westerly along said center line of said Hillsboro Canal Right of Way to the intersection thereof with the center line of South Florida Water Management District's Levee Dike 2 Right of Way;

Thence, northeasterly along said center line of said Levee Dike 2 Right of Way to a point, said point being 100 feet southwestwesterly of the center line of the South Florida Water Management District's Structure 12;

Thence, South 52° 00' 00" East (bearing and distance are based on the description of East Shore Drainage District) to the intersection thereof with a line that is 100 feet south of, and parallel to, the south lines of the North one-half (N1/2) of Section 7 and the North one-half (N1/2) of Section 8, Township 43 South, Range 37 East, said intersection point is 4,700 feet west of the east line of said Section 7;

Thence, easterly along said line 100 feet south of said south lines of said North one-half (N1/2) of said Sections 7 and 8, to the east line of said Section 8;

Thence, southerly along said east line of said Section 8 and the west line of Section 16, Township 43 South, Range 37 East, to the Southwest (SW) corner of said Section 16, and the POINT OF BEGINNING.

S-7 BASIN and the West Portion of the S2 BASIN (Palm Beach and Broward Counties)

Beginning at the Northeast (NE) corner of Section 15, Township 44 South, Range 37 East, thence, bear southerly along the east line of said Section 15 to the Southeast (SE) corner of said Section 15;

Thence, westerly along the south line of said Section 15 to the Northwest (NW) corner of Section 22, Township 44 South, Range 37 East;

Thence, southerly along the west line of said Section 22, the west lines of Sections 27 and 34, Township 44 South, Range 37 East, and the west lines of Sections 3 and 10, Township 45 South, Range 37 East, to the Southwest (SW) corner of said Section 10;

Thence, easterly along the south line of said Section 10 and the south line of Section 11, Township 45 South, Range 37 East, to the Southeast (SE) corner of said Section 11;

Thence, southerly along the west line of Section 13, Township 45 South, Range 37 East, to the Southwest (SW) corner of said Section 13;

Thence, easterly along the south line of said Section 13 to the intersection thereof with the line between Ranges 37 East and 38 East, said point being also the Southeast (SE) corner of said Section 13;

Thence, southerly along said line between said Ranges 37 East and 38 East, being also the west lines of Sections 19, 30 and 31, Township 45 South, Range 38 East, to the intersection thereof with the line between Township 45 South and the Government Lots, said point being also the Southwest (SW) corner of said Section 31;

Thence, easterly along said line between said Township 45 South and the Government Lots, said line being also the south line of said Section 31 and the south line of Section 32, Township 45 South, Range 38 East, to the Southeast (SE) corner of said Section 32;

Thence, southerly along the east line of Government Lot 5, Sections 5 and 8, Township 46 South, Range 38 East, to the Southeast (SE) corner of the North one-half (N1/2) of said Section 8;

Thence, easterly along the south line of the North one-half (N1/2) of Section 9, Township 46 South, Range 38 East, to the Southeast (SE) corner of said North one-half (N1/2) of said Section 9;

Thence, southerly along the west lines of Sections 10, 15, 22, 27 and 34, Township 48 South, Range 38 East, to the intersection thereof with the line between Townships 46 South and 47 South, said point being also the Southwest (SW) corner of said Section 34;

Thence, easterly along said line between said Townships 46 South and 47 South, being also the south line of said Section 34, to the Northeast (NE) corner of Section 4, Township 47 South, Range 38 East;

Thence, southerly along the east line of said Section 4 to the Southeast (SE) corner of said Section 4;

Thence, easterly along the north lines of Sections 10 and 11, Township 47 South, Range 38 East, to the intersection thereof with the center line of the South Florida Water Management District's Levee 6 Right of Way;

Thence, southwesterly along said center line of said Levee 6 Right of Way to the intersection thereof with the center line of the South Florida Water Management District's Levee 5 Right of Way, said intersection point being in Broward County;

Thence, westerly along said center line of said Levee 5 Right of Way, said course being in Broward County, to the intersection thereof with the east line of Section 28, Township 47 South, Range 37 South;

Thence, northerly along said east line of said Section 28 and the east lines of Sections 21 and 16, Township 47 South, Range 37 East, to the Northeast (NE) corner of the South one-half (S1/2) of said Section 16, said point being in Palm Beach County;

Thence, westerly along the north line of said South one-half (S1/2) of said Section 16 to the Northwest (NW) corner of said South one-half (S1/2) of said Section 16;

Thence, northerly along the west line of said Section 16 to the Northwest (NW) corner of said Section 16;

Thence, westerly along the south lines of Sections 8 and 7, Township 47 South, Range 37 East, to the intersection thereof with the line between Ranges 36 East and 37 East, said point being also the Southwest (SW) corner of said Section 7;

Thence, northerly along said line between said Ranges 36 East and 37 East, being also the west line of said Section 7 and the west line of Section 6, Township 47 South, Range 37 East, to the intersection thereof with the line between Townships 46 South and 47 South, said point being also the Northwest (NW) corner of said Section 6;

Thence, westerly along said line between said Townships 46 South and 47 South, said line being also the south line of Section 31, Township 46 South, Range 37 East, to the intersection thereof with the line between Ranges 36 East and 37 East, said point being also the Southwest (SW) corner of said Section 31;

Thence, northerly along said line between said Ranges 36 East and 37 East, being also the west line of said Section 31 and the west lines of Sections 30 and 19, Township 46 South, Range 37 East, to the intersection thereof with the line between Townships 46 South and 47 South, said point being also the Southeast (SE) corner of Section 36, Township 46 South, Range 36 East;

Thence, westerly along said line between said Townships 46 South and 47 South, being also the south line of said Section 36 and the south lines of Sections 35 and 34, Township 46 South, Range 36 East, to the Southwest (SW) corner of said Section 34;

Thence, northerly along the west line of said Section 34 and the west lines of Sections 27 and 22, Township 46 South, Range 36 East, to the Northwest (NW) corner of said Section 22;

Thence, easterly along the north line of said Section 22 to the Southeast (SE) corner of Section 15, Township 46 South, Range 36 East;

Thence, northerly along the east line of said Section 15 and the east line of Section 10, Township 46 South, Range 36 East, to the Northeast (NE) corner of said Section 10;

Thence, westerly along the north line of said Section 10 to the Southwest (SW) corner of Section 3, Township 46 South, Range 36 East;

Thence, northerly along the west line of said Section 3 to the intersection thereof with the line between Townships 45 South and 46 South, said point being the Northwest (NW) corner of said Section 3;

Thence, westerly along said line between said Townships 45 South and 46 South, being also the south lines of Sections 33, 32 and 31, Township 45 South, Range 36 East, to the intersection thereof with the line between Ranges 35 East and 36 East, said point being also the Southwest (SW) corner of said Section 31;

Thence, northerly along said line between said Ranges 35 East and 36 East, being also the west line of said Section 31 and the west lines of Sections 30 and 19, Township 45 South, Range 36 East, to the Northwest (NW) corner of said Section 19;

Thence, easterly along the north line of said Section 19 to the Southeast (SE) corner of Section 18, Township 45 South, Range 36 East;

Thence, northerly along the east line of said Section 18, the east lines of Sections 7 and 6, Township 45 South, Range 36 East, and the east lines of Sections 31, 30, 19 and 18, Township 44 South, Range 36 East, to the intersection thereof with the south Right of Way line of the Florida East Coast Railway, said point lies 94.5 feet south of the Northeast (NE) corner of said Section 18;

Thence, North 89° 57' 00" East (the following bearings and distances are based on the description of Southshore Drainage District) along said south Right of Way line of said Florida East Coast Railway, a distance of 15,915.8 feet to a point, said point being 50 feet east of, and 81.6 feet south of, the Northeast (NE) corner of Section 15, Township 44 South, Range 36 East;

Thence, South 00° 07' 00" West along a line 50 feet east of, and parallel to, the east line of said Section 15, a distance of 2561 feet, more or less, to the intersection thereof with the south line of the North one-half (N1/2) of Section 14, Township 44 South, Range 36 East;

Thence, easterly along said south line of said North one-half (N1/2) of said Section 14 to the intersection thereof with the west Right of Way line of the South Florida Water Management District's North New River Canal;

Thence, northerly along said west Right of Way line of said North New River Canal to the intersection thereof with northeasterly edge of the Old Okeechobee State Levee;

Thence, northwesterly along said northeasterly edge of said Old Okeechobee State Levee to the intersection thereof with the center line of the South Florida Water Management District's Levee Dike 2 Right of Way;

Thence, northeasterly along said center line of said Levee Dike 2 Right of Way to the intersection thereof with the center line of the South Florida Water Management District's Hillsboro Canal Right of Way;

Thence, easterly along said center line of said Hillsboro Canal Right of Way to the intersection thereof with the center line of the South Florida Water Management District's North New River Canal Right of Way;

Thence, southerly along said center line of said North New River Canal Right of Way to the intersection thereof with the south line of Section 2, Township 44 South, Range 36 East;

Thence, easterly along said south line of said Section 2 and the south line of Section 1, Township 44 South, Range 36 East, to the intersection thereof with the center line of the South Florida Conservancy District's Lateral 1-1N Right of Way;

Thence, northeasterly along said center line of said Lateral 1-1N Right of Way to the intersection thereof with the center line of said Hillsboro Canal Right of Way;

Thence, southeasterly along said center line of said Hillsboro Canal Right of Way to the intersection thereof with the center line of State Road 80 Right of Way;

Thence, southwesterly and southerly along said center line of said State Road 80 Right of Way to the intersection thereof with the center line of County Road 827A;

Thence, southerly along said center line of said County Road 827A to the intersection thereof with the north line of Section 17, Township 44 South, Range 37 East;

Thence, easterly along the north line of said Section 17 and the north lines of Sections 16 and 15, Township 44 South, Range 37 East, to the Northeast (NE) corner of said Section 15, and the POINT OF BEGINNING.

S-3 BASIN and S-8 BASIN (Palm Beach and Hendry Counties)

Beginning at the Northeast (NE) corner of Section 19, Township 45 South, Range 36 East, thence, bear westerly along the north line of said Section 19 to the intersection thereof with the line between Ranges 35 East and 36 East, said point being also the Northwest (NW) corner of said Section 19;

Thence, southerly along said line between said Ranges 35 East and 36 East, said line being also the west line of Section 19 and the west lines of Sections 30 and 31, Township 45 South, Range 36 East, to the intersection thereof with the line between Townships 45 South and 46 South, said point being also the Southwest (SW) corner of said Section 31;

Thence, easterly along said line between said Townships 45 South and 46 South, being also the south line of said Section 31 and the south lines of Sections 32 and 33, Township 45 South, Range 36 East, to the Southeast (SE) corner of said Section 33;

Thence, southerly along the east line of Section 4, Township 46 South, Range 36 East, to the Southeast (SE) corner of said Section 4;

Thence, easterly along the south line of Section 3, Township 46 South, Range 36 East, to the Southeast (SE) corner of said Section 3;

Thence, southerly along the east lines of Sections 10 and 15, Township 46 South, Range 36 East, to the Southeast (SE) corner of said Section 15;

Thence, westerly along the south line of said Section 15 to the Northeast (NE) corner of Section 21, Township 46 South, Range 36 East;

Thence, southerly along the east line of said Section 21 and the east lines of Section 28 and 33, Township 46 South, Range 36 East, to the intersection thereof with the line between Townships 46 South and 47 South, said point being also the Southeast (SE) corner of said Section 33;

Thence, westerly along said line between said Townships 46 South and 47 South, being also the south line of said Section 33, the south lines of Sections 32 and 31, Township 46 South, Range 36 East, and the south lines of Sections 36 and 35, Township 46 South, Range 35 East, to the intersection thereof with the center line of South Florida Water Management District's Miami Canal Right of Way;

Thence, southeasterly along said center line of said Miami Canal Right of Way to the intersection thereof with the south line of Section 11, Township 47 South, Range 35 East;

Thence, westerly along the south line of said Section 11 and the south line of Section 10, Township 47 South, Range 35 East, to the Southwest (SW) corner of said Section 10;

Thence, northerly along the west line of said Section 10 to the Northwest (NW) corner of said Section 10;

Thence, easterly along the north line of said Section 10 to the Northeast (NE) corner of said Section 10;

Thence, northerly along the east line of Section 3, Township 47 South, Range 35 East, and the east line of Section 34, Township 46 South, Range 35 East, to the Northeast (NE) corner of said Section 34;

Thence, westerly along the north line of said Section 34 to the Northwest (NW) corner of said Section 34;

Thence, northerly along the west line of Section 27, Township 46 South, Range 35 East, to the Northwest (NW) corner of said Section 27;

Thence, easterly along the north line of said Section 27 to the intersection thereof with said center line of said Miami Canal Right of Way;

Thence, northwesterly along said center line of said Miami Canal Right of Way to the intersection thereof with the north line of Section 22, Township 46 South, Range 35 East;

Thence, westerly along said north line of said Section 22 and the north line of Section 21, Township 46 South, Range 35 East, to the Northwest (NW) corner of said Section 21;

Thence, southerly along the west line of said Section 21 to the Southwest (SW) corner of said Section 21;

Thence, westerly along the south lines of Sections 20 and 19, Township 46 South, Range 35 East, to the intersection thereof with the line between Ranges 34 East and 35 East, said point being also the line between Palm Beach and Hendry Counties;

Thence, southerly along said line between said Ranges 34 East and 35 East, and said line between said Palm Beach and Hendry Counties, to the intersection thereof with the center line of the South Florida Water Management District's Levee 3 Right of Way;

Thence, westerly, northwesterly and northerly along said center line of said Levee 3 Right of Way, said course and the following courses being in Hendry County, to the intersection thereof with the center line of the South Florida Water Management District's Levee 2 Right of Way;

Thence, northerly along said center line of said Levee 2 Right of Way to the intersection thereof with the center line of the South Florida Water Management District's Levee 1 Right of Way;

Thence, northerly along said center line of said Levee 1 Right of Way to the intersection thereof with the center line of the South Florida Water Management District's Levee 1 East Right of Way;

Thence, easterly along said center line of said Levee 1 East Right of Way to the intersection thereof with the east line of Section 10, Township 44 South, Range 34 East;

Thence, northerly along said east line of said Section 10 and the east line of Section 3, Township 44 South, Range 34 East, to the Northwest (NW) corner of the South one-half (S1/2) of Section 2, Township 44 South, Range 34 East;

Thence, easterly along the north line of said South one-half (S1/2) of said Section 2, the north line of the South one-half (S1/2) of Section 1, Township 44 South, Range 34 East, (the following courses are in Palm Beach County), and the north line of the South one-half (S1/2) of Section 6, Township 44 South,

Range 35 East, to the intersection thereof with the east/west center line of the Seaboard Coast Line Railroad Right of Way;

Thence, easterly and southeasterly along said east/west center line of said Seaboard Coast Line Railroad Right of Way to the intersection thereof with said center line of said Miami Canal;

Thence, northeasterly and northerly along said center line of said Miami Canal Right of Way to the intersection thereof with the center line of State Road 80 (U.S. 27) Right of Way;

Thence, northeasterly, easterly and southeasterly along said center line of said State Road 80 (U.S. 27) to the intersection thereof with the east line of Section 6, Township 44 South, Range 36 East;

Thence, southerly along said east line of said Section 6, to a point, said point being 75 feet north of the Southeast (SE) corner of said Section 6;

Thence, westerly along a line 75 north of, and parallel to, the south line of said Section 6 to a point, said point being 75 feet north of, and 30 feet east of, the Southwest (SW) corner of said Section 6 (bearing and distances are based on the description of Southshore Drainage District);

Thence, South 45° 00' 00" East, to the intersection thereof with the east line of Section 7, Township 44 South, Range 36 East, said intersection point is 105.8 north of the Southeast (SE) corner of said Section 7;

Thence, southerly along the east line of said Section 7, the east lines of Sections 18, 19, 30 and 31, Township 44 South, Range 36 East, and the east lines of Sections 6, 7 and 18, Township 45 South, Range 36 East, to the Northeast (NE) corner of Section 19, Township 45 South, Range 36 East, and the POINT OF BEGINNING.

Indicated below are the approximate boundaries of the Everglades Construction Project diversion basins for Lake Okeechobee discharges not included in the original regulated acreage of the EAA represented by the base period water quality and flow dataset described in Appendix 3. The Diversion Project drainage areas became regulated under this Chapter upon completion and operation of their associated diversion structures. Upon the effective date of this rule amendment, the original EAA base period water quality and flow data dataset will be adjusted using an acreage adjustment factor to account for these areas as described next. Note that the boundaries and diversion basin acreages described in this Appendix are approximate and may differ from those described in permits issued in accordance with Chapter 40E-63, F.A.C., for which more detailed and accurate drainage information is submitted by permit applicants and approved by the District at the time of permit issuance. Where there are differences, the District will make a determination as to accuracy of the permitted acreage.

CLOSTER FARMS DIVERSION BASIN (Palm Beach County)

Beginning at the intersection of the center line of the LD-2 Levee with the North line of Section 26, Township 42 South, Range 36 East; thence, Southerly along the center line of the LD-2 Levee to the South line of Section 36.

Continue in Township 43 South, Range 36 East:

Thence, continue southerly along the center line of the LD-2 Levee to the north line of Section 12;

Thence, east along the north line of said Section 12 and the north line of Section 7 Township 43S Range 37E, to the east right of way line of State Road 715;

Thence, southerly along said Easterly right of way line of State Road 715 to the centerline of the easterly extension of the existing road on the south side of Paul Rardin County Park;

Thence, easterly along said extension of the existing road to a point in the center line of an existing Levee near the center of Section 7;

Thence, Northerly along the center line of said existing levee through Sections 7, 8 and 5 to the North line of said Section 5.

Continue in Township 42 South, Range 37 East:

Thence, continue along the center line of said existing levee through Sections 31 and 30, to the North line along Section 30;

Thence, Westerly to the Northwest corner of said Section 30.

Continue in Township 42 South, Range 36 East:

Thence, Westerly along the North line of Sections 25 and 26, to the intersection with the center line of LD-2 Levee and the POINT OF BEGINNING.

The above described lines approximate drainage divides, comprising the actual boundary of this basin. The drainage divides were mapped from U.S.G.S. 7 ½ minute quadrangle maps. This basin boundary description is for basin boundary determination only and is not to be used for land conveyances.

EAST BEACH WATER CONTROL DISTRICT DIVERSION BASIN (Palm Beach County)

Beginning at a point on the east beach of Lake Okeechobee in Palm Beach County, Florida, where the section line dividing Section 4 and Section 9, Township 42 South, Range 37 East, intersects the (east right of way boundary line of the Federal Lake Okeechobee Levee);

Thence, in a southwesterly direction along the east right of way boundary of said Federal Levee to a point where the said right of way boundary intersects the section line dividing Section 23 and Section 26, Township 42 South, Range 36 East, (and the South Florida Water Management District levee);

Thence, due east along (the South Florida Water Management District Levee) and the section lines dividing Sections 23 and 26 and Sections 24 and 25, Township 42 South, Range 36 East, to a point of intersection with the east shore of Pelican Bay (being a point of the South Florida Water Management District Levee);

Thence, southerly along the said shore line of Pelican Bay (and the South Florida Water Management District Levee) to a point of intersection with the township line dividing Township 42 South and Township 43 South and (the East Shore Water Control District Levee);

Thence, east along the said Township line (and the levee separating the East Shore Water Control District) to a point being the intersection with the section line dividing Section 32 and Section 33, Township 42 South, Range 37 East (and the Levee separating the East Unit of the Pahoee Water Control District);

Thence, north along (the levee separating the East Unit of the Pahokee Water Control District and) the section lines dividing Sections 32 and 33, Sections 29 and 28, Sections 20 and 21, Sections 17 and 16 and Sections 8 and 9 of Township 42 South, Range 37 East to the POINT OF BEGINNING.

EAST SHORE WATER CONTROL DISTRICT DIVERSION BASIN (Palm Beach County)

Beginning at a point, being in the Center Line of the south boundary levee of the Pahokee Water Control District and being the northeast corner of Township 43 South, Range 37 East;

Thence, running south along the range line and the east boundaries of Sections 1, 12 and 13 to the Southeast corner of said Section 13;

Thence, running west along the south boundaries of Sections 13, 14, 15 and 16 to the Southwest corner of said Section 16, being a point of inter-section with the West boundary levee of Pump Unit No. 6, South Florida Conservancy District;

Thence, running north along the west boundaries of Sections 16 and 9, being the center line of the said South Florida Conservancy District levee, to a point being 100 feet south of the West quarter corner of said Section 9;

Thence, running west along a line 100 feet south of, and parallel to the East and West quarter section line of Sections 8 and 7 to a point being 4,700 feet west of the East boundary of Section 7 and being a point of intersection;

Thence, running northwesterly along a line which bears 52 degrees west to a point being the intersection with the center line of the U.S. Army Corps of Engineers Lake Okeechobee Levee, said point of intersection being 100 feet southwest of the center line of the Federal Levee Culvert No. 12;

Thence, running at right angles along the center line of said Federal Levee a distance of 200 feet, to a point of intersection;

Thence, running at right angles to the center line of said Federal Levee along a line which bears south 52 degrees east to a point of intersection;

Thence, running east along a line 100 feet north of and parallel to, the East and West quarter section line of Sections 7 and 8, to a point being the intersection with the center line of the South Florida Water Management District's Lake shore levee;

Thence, running northerly along the meander line of the said South Florida Water Management District Levee to a point of intersection with the North boundary of Section 5, being the center line of the South boundary levee of the East Beach Water Control District and the Pahokee Water Control District;

Thence, running east along the Township line and the North boundaries of Sections 5, 4, 3, 2, and 1, being the center line of said Pahokee Water Control District to the POINT OF BEGINNING.

SOUTH FLORIDA CONSERVANCY DISTRICT DIVERSION BASIN (Palm Beach and Hendry Counties)

A parcel of land in Sections 13, 14, 23, 24, 25, 26, 35 and 36 Township 43 South, Range 34 East, Sections 19, 30 and 31 Township 43 South, Range 35 East, Sections 1 and 2 Township 44 South, Range 34 East and Section 6 Township 44 South, Range 35 East; said parcel being a portion of the South Florida Conservancy District and particularly described as follows:

Begin at the intersection of the North line of Section 19 Township 43 South, Range 35 East and the Southerly right of way of State Road 80;

Thence, Westerly along the Southerly right of way of State Road 80 to the intersection of old U.S. 27, thence Easterly along the North right of way of State Road S-80A (old U.S. 27) to the intersection of the center line of North-South half section line of Section 13,

Thence, South on said North-South half section line through Sections 13 and 24, to a point 25 feet North of the center of Section 24, Township 43 South, Range 34 East,

Thence, West along a line 25 feet North and parallel to the East-West half section line in Section 24 and 23 to the West line of Section 23.

Thence, South along the West line of Sections 23 and 26, Township 43 South, Range 34 East; thence West along the North line of Section 34, a distance of 50 feet, thence South along a line 50 feet West of and parallel to the West line of Sections 35 and 2, Township 44 South, Range 34 East, to the half section line of Section 2, Township 44 South, Range 34 East;

Thence, East along the half section line of Sections 2 and 1, Township 44 South, Range 34 East;

Thence, East along the half section line of Section 6 Township 44 South, Range 35 East, which is the common boundary between South Florida Conservancy District and Ritta Drainage District to the East line of said Section 6;

Thence, North along the East line of said Section 6 and the East line of Sections 31, 30 and 19 Township 43 South, Range 35 East to the South right of way line of USED L-D2; Thence Northerly along said South right of way line of USED L-D2 to the north line of said Section 19;

Thence, Westerly along the north line of said section 19 to the intersection with the South line of State Road 80 and the POINT OF BEGINNING.

SOUTH SHORE DRAINAGE DISTRICT DIVERSION BASIN (Palm Beach County)

Commence at point being the intersection of the west right-of-way line of the Everglades Drainage District's North New River Canal with the east and west half section line of Section 14, Township 44 South, Range 36 East;

Thence, west along the aforesaid half section line of Section 14, 3,722 feet, more or less, to a point whence the quarter corner between Section 14 and Section 15, Township 44 South, Range 36 East, bears west 50 feet distant;

Thence, north $0^{\circ} 7'$ east along a line parallel to and 50 feet east of the section line between the aforesaid Section 14 and Section 15, a distance of 2,561 feet, more or less, to a point being the intersection with the South boundary of Florida East Coast Railway right-of-way, said point lying 50 feet east, and 81.6 feet south of the section corner common to Sections 10, 11, 14 and 15, Township 44 South, Range 36 East; said point also being the POINT OF BEGINNING;

Thence, south $89^{\circ} 57'$ west along the south boundary of the Florida East Coast Railway right-of-way, a distance of 15,915.8 feet, more or less, through Sections 15, 16, and 17 to a point on the section line between Sections 17 and 18, said point lying 94.5 feet south of the section corner common to Sections 7, 8, 17, and 18, Township 44 South, Range 36 East;

Thence, north $0^{\circ} 5'$ east along said section line between Sections 17 and 18 and Sections 7 and 8 to a point on the section line between Sections 7 and 8, said point being 105.8 feet north of the section corner common to Sections 7, 8, 17, and 18, Township 44, Range 36 East;

Thence, north $45^{\circ} 00'$ west diagonally through Section 7, Township 44 South, Range 36 East, 7,431 feet, more or less, to a point lying 75 feet north and 30 feet east of the section corner common to Sections 1 and 12, Township 44 South, Range 35 East, and Sections 6 and 7, Township 44 South, Range 36 East (the above-described line being parallel to and 75 feet distant from a true northwest diagonal line through the aforesaid Section 7);

Thence, south $89^{\circ} 21'$ west along a line parallel to and 75 feet north of the section line between Section 1 and Section 12, Township 44 South, Range 35 East, a distance of 5,227 feet, more or less, to a point whence the corner of Sections 1, 2, 11, and 12, Township 44 South, Range 35 East, bears $45^{\circ} 00'$ west 105.8 feet distant;

Thence, continue south $89^{\circ} 21'$ west to the north right of way line of said Florida East Coast Railway right of way;

Thence, northwest along said north right of way line of the Florida East Coast Railway to the East right of way line of South Florida Water Management District's Levee 25;

Thence, northeasterly and northerly along said East right of way line of South Florida Water Management District's Levee 25 to the north line of State Road 80;

Thence, continue North on the East right of way line of South Florida Water Management District's Levee 25 to the South right of way line of Federal Levee L-D2;

Thence, East on the South right of way line of said (Federal Levee) L-D2 to the intersection with a line that is 75 feet east of the east line of said Section 2, Township 44 South, Range 35 East;

Thence, along the south boundary of the aforesaid Federal Levee right-of-way, more particularly described as follows:

(a) North $88^{\circ} 44'$ east, a distance of 5,229 feet, more or less, to a point being on the range line between Sections 31 and 36, Township 43 South, Ranges 35 and 36 East;

(b) Thence, north $88^{\circ} 44'$ east, a distance of 2,222 feet, more or less, to a point;

(c) Thence, south $63^{\circ} 03'$ east, a distance of 1,428 feet, more or less, to a point being on the township line between Section 31 and Section 6, Townships 43 and 44 South, Range 36 East;

(d) Thence, south $62^{\circ} 54'$ east, a distance of 2,022 feet, more or less, to a point being on the section line between Section 5 and Section 6, Township 44 South, Range 36 East;

(e) Thence, south $58^{\circ} 52'$ east, a distance of 6,115 feet, more or less, to a point being on the section line between Sections 4 and 5, Township 44 South, Range 36 East;

(f) Thence, south $58^{\circ} 52'$ east, a distance of 1,820 feet, more or less, to a point;

(g) Thence, south $76^{\circ} 25'$ east, a distance of 881 feet, more or less, to a point on the section line between Section 4 and Section 9, Township 44 South, Range 36 East;

(h) Thence, south $76^{\circ} 25'$ east, a distance of 1,904 feet, more or less, to a point;

(i) Thence, south $86^{\circ} 45'$ east, a distance of 1,034 feet, more or less, to a point on the Section line between Section 9 and 10, Township 44 South, Range 36 East;

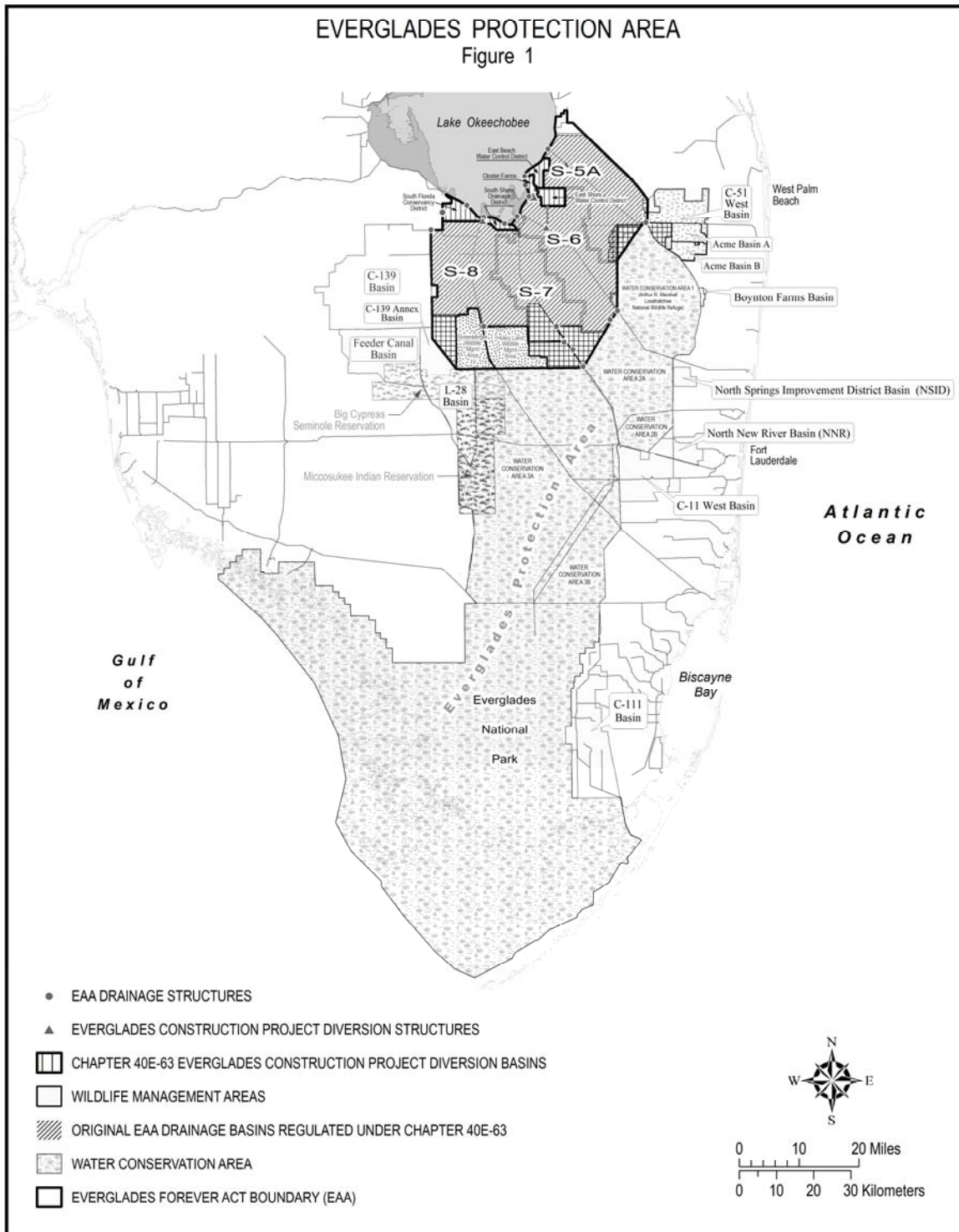
(j) Thence, south $86^{\circ} 45'$ east, a distance of 2,603.3 feet, more or less, to a point, being the intersection of the south boundary of the Federal Levee right-of-way with the South boundary of the Everglades Drainage District's Lake Okeechobee Levee;

(The above-described boundaries are in common with the South Shore Drainage District Plan of Reclamation dated July 1, 1935)

Thence, south to the north right of way line of state road 80;

Thence, southeasterly along said north right of way line of state road 80 to the said south boundary of the Florida East Coast Railway right of way;

Thence, west along said south boundary of the Florida East Coast Railway right of way to the POINT OF BEGINNING.



Typical Best Management Practices For The EAA Basin

NUTRIENT CONTROL PRACTICES

Examples:

Calibrated soil test.

Banding fertilizer for vegetable production instead of broadcasting it.

Prevention of fertilizer spills and the direct spreading of fertilizer into drainage ditches.

WATER MANAGEMENT PRACTICES

Examples:

Minimizing water table fluctuation in vegetable and sugar cane fields.

Retention of drainage on-farm could reduce P losses. This requires the ability of farm drainage systems to keep water continuously moving from field to field and to use some limited ditch or canal storage.

Retention of vegetable field drainage water in sugar cane or fallow lands.

PARTICULATE MATTER AND SEDIMENT CONTROL

Examples:

Aquatic cover crop for off-season vegetable production and fallow rotation of sugar cane.

Coordinated farm cropping patterns are a necessary part of BMP's 4-7. associated with water management practices and control of particulate matter in the discharge. This BMP refers to changing the cropping pattern of vegetables, sugar cane, fallow flooding, etc. on a farm so that the optimum use of the above BMP's can be accomplished.

PASTURE MANAGEMENT

Examples:

Reduced phosphorus in cattle feed.

Carefully located watering and feeding sites.

Management plans for grazing rotation and temporary holding areas.

OTHER BMPS

Any other practice proposed by an applicant that the District determines may reduce phosphorus loads discharged from the property may be proposed for consideration. The proposal shall include, at minimum, a description of the BMP and how it will be implemented, the BMP's applicability to the specific crop and soil, a description of how implementation will be documented, and a description of any training that may be necessary.

APPENDIX A3 EAA BASIN COMPLIANCE

INTRODUCTION

This Appendix sets forth the procedures the District shall follow to determine whether the entire EAA Basin has met the goal of reducing total phosphorus (TP) discharged by 25 percent, under any set of hydrologic conditions that could arise, after implementation of BMPs as described in Part I of Chapter 40E-63, F.A.C., The first determination was for the period, May 1, 1995 through April 30, 1996, and annually thereafter. The annual determination requires calculation of TP load leaving the structures from the EAA (locations shown in Table A1). The load calculation must include phosphorus carried into Lake Okeechobee through backpumping and adjust for pass-through flows released from Lake Okeechobee and other sources to Stormwater Treatment Areas, the Holey Land, Water Conservation Areas and the Lower East Coast.

Load is the amount of phosphorus carried past a monitoring point by the movement of water. Data on water quality concentration and water quantity (flow) are required to calculate the phosphorus load discharged from a monitoring point. Data on water quality and quantity at the EAA structures are available from several sources – the District, the U. S. Army Corps of Engineers, and the U.S. Geological Service. Several methods of collecting the data are also used. Accordingly, the best method of data collection and source of data to use in a load calculation must be identified.

The water quality and quantity collection sources and methods currently available are described below. Methods are improved as new equipment becomes available and technology changes. Annually, when the District reports the results of the determination of whether the EAA Basin has reduced total phosphorus load by 25% for the period of May 1 through - April 30, the sources and methods of data collection used in the calculation must be described and available for inspection. Any changes in methods from the prior year must be specified. Substantially affected persons will have an opportunity to request an administrative hearing. The District shall incorporate permanent changes in methods into this Appendix periodically through Chapter 120, Florida Statutes, rulemaking proceedings.

The load calculations involve detailed procedures, which have been automated by a computer program in FORTRAN language. A flow chart of the program is shown in Figure A3. The methods and equations used in the program are outlined in Appendix A3.1: FORTRAN Program for Calculating EAA Basin Flows and Phosphorus Loads (EAA Basin Compliance model), which is published by reference and incorporated into this Chapter. These methods and equations are also available electronically.

DATA COLLECTION SOURCES AND METHODS

Water Quantity – Flows

The South Florida Water Management District and the U.S. Geological Survey (USGS) compute flow at all the major water control structures in the Everglades Agricultural Area. Water control structures include pumps, gated spillways, and gated culverts. Pump stations S-2, S-3, and S-6 allow water to flow in the opposite direction of pumping by siphoning. All pump stations except S-6 have an adjacent gated spillway.

The SFWMD uses various methods to compute flow at control structures. Flow at pump stations is calculated using discharge rating equations provided by the pump manufacturer and calibrated by discharge measurements. Flow at gated spillways is calculated using formulae derived by the Corps of Engineers from the Bernoulli equation. Discharge through culverts is calculated using standard equations for weir flow, orifice flow, pipe flow, and open channel flow. Flow computation methods are outlined in Appendix A3.2, which is published by reference and incorporated into this Chapter.

The SFWMD obtains field measurements of stage and control operations through various means. Real-time stage and control operations data are collected via the telemetry system. Analog data is obtained from chart recorders. Digital data are provided by punch tapes and solid state data loggers. Pump station operators log readings of stage and control operations hourly during pumping operations. In addition, staff gauge readings, gate opening measurements, and flashboard elevation measurements are conducted by field personnel who routinely visit unmanned structures.

The SFWMD's hydrologic database stores multiple flow data sets at each structure. Each flow data set is created using a unique combination of sources of stage and control operations data. The USGS publishes one set of flow data for each structure. If convenient, the USGS presents combined flow data from different locations. The SFWMD uses the USGS's data as well as its own data to perform water budget analyses and estimation techniques to obtain a "preferred" flow data set at each structure. Table A1 shows all the flow data sets available in the SFWMD's hydrologic database (DBHYDRO).

Water Quality

A water sample collected in the field is called a "raw water sample", in differentiation with a "water sample" used in the chemistry laboratory. Current raw water sample collecting methods at different structures are listed in Table A2. All raw water samples collected in the EAA for compliance must be collected by automatic sampler. Automatic samplers must be programmed to take flow proportional composite samples. Where on-site real-time flow computation is impossible, time proportional composite samples will be taken. Grab samples must also be continued until the relationships between results from automatic and manual methods has been sufficiently established. After that time, grab samples must be taken when autosamplers are not functioning, or when necessary for other purposes.

Only a portion of a well-mixed raw water sample is used as a water sample in actual quantitative analysis of a given water quality parameter. The chemical analysis is performed by a certified laboratory using accepted standard methods. In case of change of laboratories or analytical methods, concurrent analyses shall be done until correlation between them can be established. Water quality parameters are identified by structure and collection site, project code, sample date, and serial number of the sample. The data are stored in DBHYDRO.

Rainfall

EAA rainfall is calculated from measurements at representative rainfall gauges. Rainfall gauges provide an estimate of rainfall at a "point" location. Since rainfall is expected to vary in intensity and duration over an area, rainfall data from representative gauges are area-weighted using the

Thiessen Polygon Method. Nine rainfall gauges have historically been used to estimate EAA rainfall. Daily rainfall data for each rainfall gauge are stored in the DBHYDRO database. The rainfall gauge station names, DBHYDRO identifiers and area-weights corresponding to each rainfall gauge station are listed in Table A3. EAA rainfall for the May 1 through April 30 period is calculated as the area-weighted sum of the daily rainfall measurements at each rainfall gauge.

Data Upgrades

There are three ways in which the quality and reliability of District flow data are being improved: (1) establishment of single time series of flow for each station from multiple sources of stage and control operations data, (2) verification and calibration of flow equations through intensified discharge measurements at all major EAA structures, and (3) calibration of Acoustic Velocity Meter (AVM) systems for future use as an additional source of flow data. A prioritized list of sources of stage and control operations data must be established for each flow station. Flow must be computed from the highest ranking sources. When the highest ranking source of data is missing, the next highest source must be used, and so on. This method ensures the calculation of the best flow values from all sources and minimizes missing data.

Stream gauging is being intensified to provide discharge measurements at all major EAA structures. Statistical analyses are conducted to verify or calibrate the discharge rating equations. The upgrading of stream gauging equipment, including a portable acoustic low velocity meter, as well as improved measuring techniques ensures valuable field measurements. Statistical analysis and calibration of rating equations will continue to increase the accuracy of the calculated flow values.

AVM systems are in place at most major EAA structures. Calibration of these systems is being performed by the USGS. When these systems are satisfactorily calibrated, the data are used to verify the District's flow computations. If these systems prove to be highly reliable and accurate, they may provide the highest ranking source of flow data for the prioritization of single time series.

If any upgrades in water quality sampling are undertaken in the future, concurrent samples must be taken by the existing methods to maintain data continuity, at least until the upgraded methods have been tested and documented as reliable.

DETERMINATION OF COMPLIANCE WITH 25% REDUCTION OF TOTAL PHOSPHORUS LOAD

TP load must be evaluated for compliance with the 25% TP load reduction requirement yearly as of April 30, a date which corresponds generally with the change from the dry to the wet rainfall periods. Hydrology, that is, discharge and rainfall, are dominant factors when computing TP loads. Because rainfall and stream flow are subject to large temporal and spatial variation in south Florida, the evaluation for compliance adjusts the TP load for hydrologic variability. Otherwise, the hydrologic variability could be large enough to obscure the effectiveness of BMPs to reduce TP loadings.

The adjustment for hydrologic variability includes two components:

1. A model to estimate future TP loads. The model estimates a future TP load of the EAA Basin by substituting future hydrologic conditions for the conditions that occurred during a base-period (1978 - 1988). The estimation is based on hydrologic data collected from future time period of May 1 - April 30. The estimation incorporates a calculation for the required 25% TP load reduction.

2. Accommodation for possible statistical error. This is accomplished by specifying a required level of statistical confidence in the prediction of the long-term average TP load. The 90th percentile confidence level is selected as reasonable.

Evaluation of the EAA Basin for compliance with the 25% TP load reduction requirement must be based upon the following:

1. If the actual measured TP loading from the EAA Basin (Actual TP Loading) in a future May 1 - April 30 period is less than the model TP load estimate (Target TP Loading), then the EAA Basin will be determined to be "In Compliance," that is, to have met the 25% TP load reduction requirement. After completion of the STAs or other regional projects, the actual percentage of the base period TP load which must be met to be determined "In Compliance" must be reduced to reflect land converted to STAs or regional projects no longer using the Works of the District within the EAA. However, the average unit area reduction required will be the same, both pre- and post-regional project completion.

2. If the Actual TP Loading from the EAA Basin exceeds the model TP load estimate (Target) in 3 or more consecutive May 1 - April 30 periods, then the EAA Basin will be determined to be "Not In Compliance" – that is, it will not have met the 25% load reduction requirement. If the Target is exceeded in a May 1 - April 30 period, and the District determines that the adjusted rainfall for the period exceeds 63.76 inches, the Target will be suspended for the EAA Basin will not be determined to be "Not In Compliance" for that period only. Any periods in which the Target is suspended must be excluded from the determination of whether the Target has been exceeded in 3 or more consecutive May 1 - April 30 periods, that is, the EAA Basin will be determined to be "Not In Compliance" when the Target is exceeded for 3 May 1 - April 30 periods, without an intervening May 1 - April 30 period in which the EAA Basin has been determined to be "In Compliance," even though the three periods may be interrupted by periods of suspension.

3. If the Actual TP Loading from the EAA Basin exceeds the “upper 90% confidence limit of the Target” (Limit), in any May 1-April 30 period, the EAA Basin will be determined to be "Not in Compliance," that is, it will not have met the 25% load reduction requirement. If the Limit is exceeded in a May 1 - April 30 period, and the District determines that the adjusted rainfall for the period exceeds 63.76 inches, the Limit must be suspended and the EAA Basin will not be determined to be "Not In Compliance" for that period only.

4. A determination of suspension under paragraphs 2 and 3 above determined, and a Notice of Rights to petition for a hearing under Section 120.57, Florida Statutes, and Section 373.114, Florida Statutes, shall be published in the Florida Administrative Weekly.

5. The Target and Limit must be calculated according to the following equations and explanation:

To reflect the required 25% reduction, POR TP loads are multiplied by 0.75 before performing the following regression:

$$\ln(L) = -7.998 + 2.868 X + 3.020 C - 0.3355 S$$

$$[\text{Explained Variance} = 90.8\%, \text{Standard Error of Estimate} = .183]$$

Predictors (X, C, S) are calculated from the first three moments (m_1, m_2, m_3) of the 12 monthly rainfall totals ($r_i, i=1,12$, inches) for the current year:

$$m_1 = \text{Sum} [r_i] / 12$$

$$m_2 = \text{Sum} [r_i - m_1]^2 / 12$$

$$m_3 = \text{Sum} [r_i - m_1]^3 / 12$$

$$X = \ln(12 m_1)$$

$$C = [(12/11) m_2]^{.5} / m_1$$

$$S = (12/11) m_3 / m_2^{1.5}$$

where,

L = 12-month load attributed to EAA Runoff, reduced by 25% (metric tons)

X = natural logarithm of 12-month total rainfall (inches)

C = coefficient of variation calculated from 12 monthly rainfall totals

S = skewness coefficient calculated from 12 monthly rainfall totals

The first predictor (X) indicates that load increases approximately with the cube of total annual rainfall. The second and third predictors (C & S) indicate that the load resulting from a given annual rainfall is higher when the distribution of monthly rainfall has higher variance or lower skewness. For a given annual rainfall, the lowest load occurs when rainfall is evenly distributed across months and the highest load occurs when all of the rain falls in one month. Real cases fall in between.

Compliance must be tracked by comparing the measured EAA Load with:

$$\text{Target} = \exp [-7.998 + 2.868 X + 3.020 C - 0.3355 S]$$

$$\text{Limit} = \text{Target} \exp (1.476 \text{ SE } F)$$

$$\text{SE} = .1833 [1 + 1/9 + 5.125 (X-X_m)^2 + 17.613 (C-C_m)^2 + 0.5309 (S-S_m)^2 + 8.439 (X-X_m) (C-C_m) - 1.284 (X-X_m) (S-S_m) - 3.058 (C-C_m) (S-S_m)]^{.5}$$

where,

m = subscript denoting average value of predictor in base period ($X_m = 3.866$, $C_m = 0.7205$, $S_m = 0.7339$)

Target = predicted load for future rainfall conditions (metric tons/yr)

Limit = upper 90% confidence limit for Target (metric tons/yr)

SE = standard error of predicted $\ln(L)$ for May-April interval

F = factor to reflect variations in model standard error as a function of month (last in 12-month interval), calculated from base period:

Month:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
F:	1.975	1.609	1.346	1.000	1.440	1.238	1.321	2.045	2.669	2.474	2.420	2.216

Figure A3

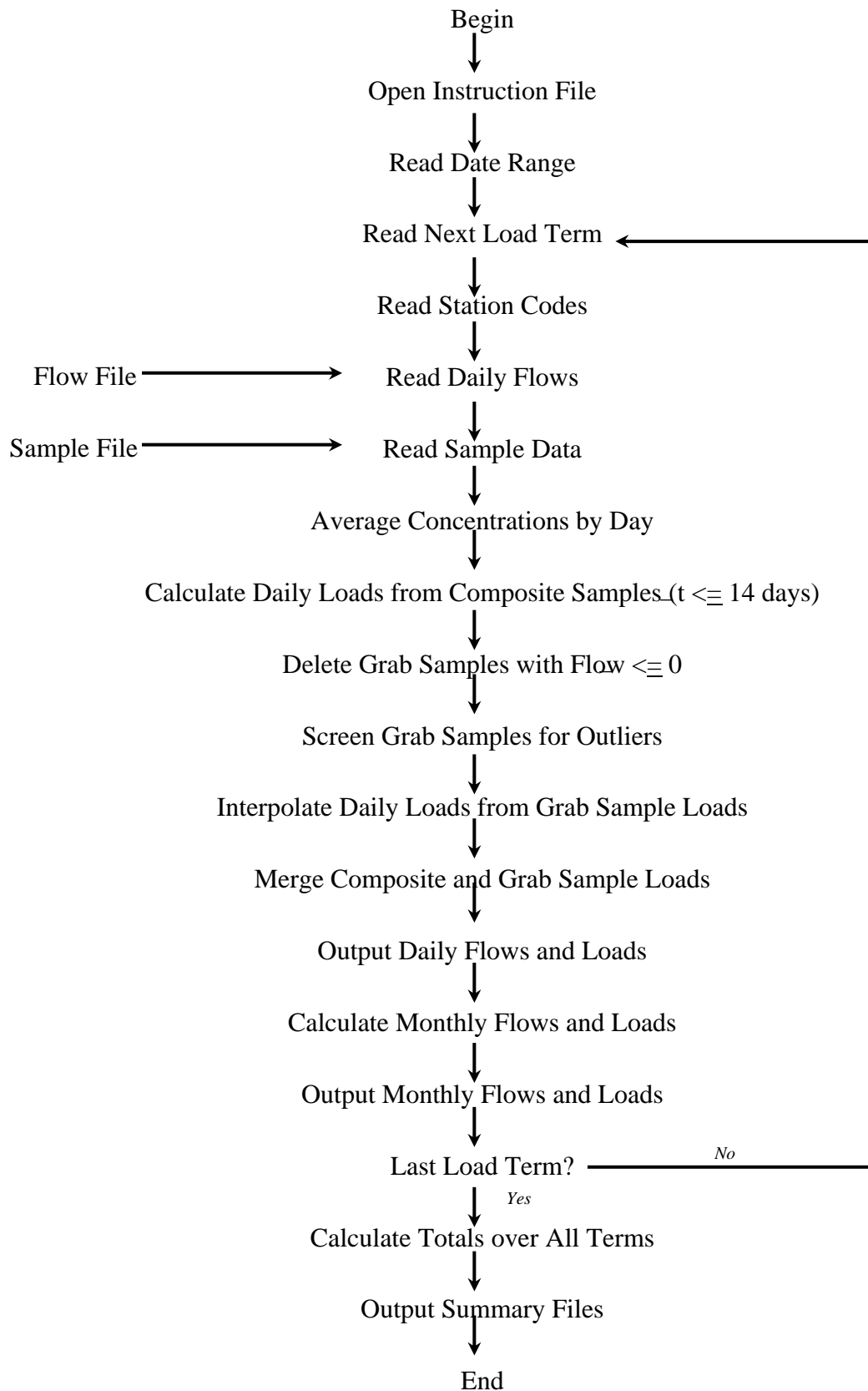


TABLE A1
EAA BASIN DRAINAGE STRUCTURES
DATABASE KEYS TO FLOW DATA TIME SERIES

Structure	Preferred¹	Effective Date²	Inactive Date³ (if applicable)
S-352 Complex	15068	Base Period	
S-2 Complex	15021	Base Period	
S-3 Complex	15018	Base Period	
S-5A Complex	15031	Base Period	
S-6	15034	Base Period	
S-7	15037	Base Period	01/08/2005
S-150	15041	Base Period	01/08/2005
S-8	15040	Base Period	01/08/2005
G-88	15196	Base Period	06/30/2000
G-136	15195	Base Period	
G-200	15736	10/28/1991	01/08/2005
G-250	16222	01/25/1994	07/10/1999

Structure	Preferred¹	Effective Date²	Inactive Date³ (if applicable)
G-600	GG955	03/06/1997	04/30/2005
G-605	H3143	11/24/1997	06/30/2000
G-606	HD889	11/24/1997	06/30/2000
G-328	J0718	04/01/2000	
G-344A	J0719	10/01/1999	07/22/2005
G-344B	J0720	10/01/1999	07/22/2005
G-344C	J0721	10/01/1999	07/22/2005
G-344D	J0722	10/01/1999	07/22/2005
G-349B	JA353	10/01/1999	07/22/2005
G-350B	JA352	10/01/1999	07/22/2005
G-410	LX270	07/17/2001	07/22/2005
G-402A	LX264	07/17/2001	01/08/2005
G-402B	LX265	07/17/2001	01/08/2005
G-402C	LX266	07/17/2001	01/08/2005
G-402D	LX267	07/17/2001	03/30/2004
G-404	LX269	05/06/2000	01/08/2005
EBPS ⁴	LX274	07/01/2001	04/30/2018
ESPS ⁴	LX273	12/20/2001	04/30/2018
G-357	LX263	03/01/2001	01/08/2005
G-204	SG578	05/01/2003	01/08/2005
G-205	SG579	05/01/2003	01/08/2005
G-206	SG580	05/01/2003	01/08/2005
G-507	SJ382	12/01/2003	07/22/2005
G-370	TA438	10/01/2003	
G-372	TA437	10/01/2003	
G-376A	TA445	02/27/2004	01/08/2005
G-376D	TA446	02/27/2004	01/08/2005
G-379A	TA449	09/17/2004	01/08/2005
G-379D	TA450	09/17/2004	01/08/2005
G-381A	TA447	06/09/2004	01/08/2005
G-381C	TA448	06/09/2004	01/08/2005
SSDD ⁴	TA459	06/01/2004	04/30/2018
SFCD ⁴	TR998	08/01/2005	04/30/2018

Structure	Preferred ¹	Effective Date ²	Inactive Date ³ (if applicable)
G-371	TS261	02/01/2006	
G-373	TS260	02/15/2006	
G-373BC	TS262	06/01/2005	07/21/2005
G-434	90327	11/01/2012	
G-435	90328	05/17/2013	
G-722	AM015	08/28/2015	
C-10 ⁴	15645	05/01/2018	
C-12A ⁴	15647	05/01/2018	
C-12 ⁴	15646	05/01/2018	
C-4A ⁴	15648	05/01/2018	
S236 ⁴	15644	05/01/2018	
EPD07 ⁴	AM706	05/01/2018	

¹ The reference numbers in the table are keys to the data sets, known as "dbkeys".

² The term "Base period" indicates that the structure was part of the EAA model boundary from October 1, 1978, through September 30, 1988. The format is Month – Day – Year.

³ A date is indicated for those structures that are inactive as of the date of this amendment. The format is Month – Day – Year.

⁴ These structures serve the Everglades Construction Project diversion basins for Lake Okeechobee discharges not included in the original regulated acreage of the EAA represented by the base period water quality and flow dataset described in Appendix 3. The Diversion Project drainage areas became regulated under this Chapter upon completion and operation of their associated diversion structures. Upon the effective date of this rule amendment, the original EAA base period water quality and flow data dataset will be adjusted using an acreage adjustment factor to account for these areas.

**TABLE A2
EAA BASIN
WATER QUALITY SAMPLING METHODS**

Structure	Collection Site	Instrument¹	Effective Date²	Inactive Date (if applicable)³
S-352	GRAVITY	G	Base Period	
S-2	PUMP	A	Base Period	
	GRAVITY	G	Base Period	
S-3	PUMP	A	Base Period	
	GRAVITY	G	Base Period	
S-5A Complex	PUMP	A	Base Period	
	GRAVITY	G		
S-6	PUMP	A	Base Period	01/08/2005
	GRAVITY	G		
S-7	PUMP	A	Base Period	01/08/2005
	GRAVITY	G		
S-150	GRAVITY	G	Base Period	01/08/2005
S-8	PUMP	A	Base Period	06/30/2000
	GRAVITY	G		
G-88	GRAVITY	G	Base Period	
G-136	GRAVITY	A	10/28/1991	01/08/2005
G-200A	GRAVITY	G	01/25/1994	07/10/1999
G-250	PUMP	A	03/06/1997	04/30/2005

Structure	Collection Site	Instrument ¹	Effective Date ²	Inactive Date (if applicable) ³
G-600	PUMP	A	11/24/1997	06/30/2000
G-606	GRAVITY	A	11/24/1997	06/30/2000
G-328	PUMP	A	04/01/2000	
G-344A	GRAVITY	A	10/01/1999	07/22/2005
G-344B	GRAVITY	A	10/01/1999	07/22/2005
G-344C	GRAVITY	A	10/01/1999	07/22/2005
G-344D	GRAVITY	A	10/01/1999	07/22/2005
G-349B	PUMP	A	10/01/1999	07/22/2005
G-350B	PUMP	A	10/01/1999	07/22/2005
G-410	PUMP	A	07/17/2001	07/22/2005
G-402A	GRAVITY	G	07/17/2001	01/08/2005
G-402B	GRAVITY	G	07/17/2001	01/08/2005
G-402C	GRAVITY	G	07/17/2001	01/08/2005
G-402D	GRAVITY	G	07/17/2001	03/30/2004
G-404	PUMP	A	05/06/2000	01/08/2005
EBPS ⁴	PUMP	A	07/01/2001	04/30/2018
ESPS ⁴	PUMP	A	12/20/2001	04/30/2018
G-357	GRAVITY	A	03/01/2001	01/08/2005
G-204	GRAVITY	G	05/01/2003	01/08/2005
G-205	GRAVITY	G	05/01/2003	01/08/2005
G-206	GRAVITY	G	05/01/2003	01/08/2005
G-507	PUMP	A	12/01/2003	07/22/2005
G-370	PUMP	A	10/01/2003	
G-372	PUMP	A	10/01/2003	
G-376A	GRAVITY	A	02/27/2004	01/08/2005
G-376D	GRAVITY	A	02/27/2004	01/08/2005
G-379A	GRAVITY	A	09/17/2004	01/08/2005
G-379D	GRAVITY	A	09/17/2004	01/08/2005
G-381A	GRAVITY	G	06/09/2004	01/08/2005
G-381C	GRAVITY	G	06/09/2004	01/08/2005
SSDD ⁴	PUMP	A	06/01/2004	04/30/2018
SFCD ⁴	PUMP	A	08/01/2005	04/30/2018
G-371	GRAVITY	G	02/01/2006	
G-373	GRAVITY	G	02/15/2006	
G-373_BC	GRAVITY	G	06/01/2005	07/21/2005
G-434	PUMP	A	11/01/2012	

Structure	Collection Site	Instrument ¹	Effective Date ²	Inactive Date (if applicable) ³
G-435	PUMP	A	05/17/2013	
G-722	GRAVITY	A	08/28/2015	
CULV10 ⁴	PUMP	G	05/01/2018	
CULV12A ⁴	PUMP	G	05/01/2018	
CULV12 ⁴	PUMP	G	05/01/2018	
CULV4A ⁴	PUMP	G	05/01/2018	
S236 ⁴	PUMP	G	05/01/2018	
EPD07 ⁴	PUMP	G	05/01/2018	

¹G = grab sample primary method

A = automatic sampler primary method, grab sample back-up

²The term “Base period” indicates that the structure was part of the EAA model boundary from October 1, 1978, through September 30, 1988. The format is Month – Day – Year.

³A date is indicated for those structures that are inactive as of the date of this amendment. The format is Month – Day – Year.

⁴These structures serve the Everglades Construction Project diversion basins for Lake Okeechobee discharges not included in the original regulated acreage of the EAA represented by the base period water quality and flow dataset described in Appendix 3. The Diversion Project drainage areas became regulated under this Chapter upon completion and operation of their associated diversion structures. Upon the effective date of this rule amendment, the original EAA base period water quality and flow data dataset will be adjusted using an acreage adjustment factor to account for these areas.

**TABLE A3
EAA BASIN
RAINFALL STATIONS**

Identifier¹	Station	Theissen Weight
15197	ALICO_R	0.0974
15198	MIAMI LO_R	0.1076
15199	SOUTH BA_R	0.0844
15200	BELLE GL_R	0.1617
15201	PAHOKEE1_R	0.1438
15202	S5A_R	0.0989
15203	S6_R	0.0763
15204	S7_R	0.0592
15205	S8_R	0.1743

¹ The identifiers are also referred to as "dbkeys".

APPENDIX A3.1
FORTRAN PROGRAM FOR CALCULATING EAA BASIN FLOWS AND
PHOSPHORUS LOADS

```
program eaatpld
c modified August, 2000 for various ECP elements
c modified may 1999 for STA-5 inflows from Miami Canal (G350B, G349B)
c modified october 1998 for STA-5 & STA-2
c modified march 1998 for STA-6
c utilizes all composite samples
c compute eaa tp load 10-96 - additional comments added 10-3-96
c useage:g
c      >eaatpld eaa.job
c eaa.job = input ascii file specifying case conditions
c subroutines in subr.for
c maximum dimensions
c number of days = 20000 = 52 + years ~(1978-2030)
c number of grab samples = 4000 per station
c number of composite samples = 4000 per station

c array dimensions increased to handle maximum of 70 terms
  integer*4 dgrab,dcomp,dlast,dbase,dbase0,d0
  character*64 title
  character*32 ofile1,ofile2,ofile3,ofile4,cfile,qfile,ofile0
  character*32 ofile5
  character*32 blank /' '/
  character*8 slab,dum8,qlab,ulab,usave(70),mname(4)
  common /a/ flowu(20000),wcomp(20000),wuse(20000),wusec(20000)
  common /b/ wgrab(20000)
  common /d/ dgrab(4000),dcomp(4000),cgrab(4000),ccomp(4000),
& x(4000),iym(700),qsave(700,70),wsave(700,70),isgn(70),
& wcsave(700,70),sumd(6),sumw(6),y(4000),prb(4000),ratio(2),
& wc(2),wg(2),ncg(2)
character*32 confile

c array definitions
c  flowu() = daily flow
c  wgrab() = daily load computed from grab samples
c  wcomp() = daily load computed from composite samples
c  wuse() = daily load used in final result
c  wusec() = daily load computed from composite samples
c  cgrab() = grab-sample concentration
c  dgrab() = grab-sample date
c  ccomp() = composite sample concentration
c  dcomp() = composite sample date
c  qsave,wsave,wcsave(month,station)
c      = storage of monthly flow, load, & composite load

c number of load calc methods
  data nmeth/3/
  data mname/'noflow','compos',' grab',' miss' /
```

```
c qfac: convert cfs*days to output units = cfs-days
  data qfac/1./

c scale factor to convert input sample concs (ppm) to (ppb)
  data sf/1000./

c factor: convert cfs*ppb to kg/day; sig: level of outliers
c   factor=24.*3600.*(0.3048**3)/1.e6
  factor=24.*3600/3.28**3/1.e6

c grab/composite ratio
c iratio = 0 compute r1 & r2 separately (original algorithm)
c iratio = 1 set r2 = r1
  data iratio/0/

c read input file [eaa.job] to get station labels and input parameters
  open(7,file=' ',status="old")

c read control parameters
  read(7,*) title,qfile,dum8,cfile,dum8,
  &nmaxc,dum8,dbase0,dum8,dbase,dum8,sig,dum8

c title = problem title
c qfile = input daily flow file
c cfile = input sample concentration file
c nmaxc = maximum duration of composite samples
c dbase0 = first day of base period yyyyymmdd = 19781001
c dbase  = last day of base period yyyyymmdd = 19910930
c sig = significance level for outlier screening in base period

cc
cc March 98 Modification - Look for Composite Samples NAFTER days beyond last flow date
cc
  nafter = nmaxc
cc
cc end of modification
cc

c read date range
  read(7,*) iymd1,dum8,iymd2,dum8,idchk,dum8
  write(*,*) 'sample date range =',iymd1,iymd2
  read(7,*) ofile0,dum8,ofile5,dum8,ofile1,dum8,ofile2,dum8,
  &   ofile3,dum8,ofile4,dum8
c output files (* = optional)
c ofile0 - sample inventory
c ofile5 - totals by term & time period (base pd & after)
c *ofile1 - daily results
c *ofile2 - monthly results for each term
c *ofile3 - monthly crosstab (term x month)
c ofile4 - monthly totals (sum of all terms)
c
```

```

        read(7,*)

c jdatei() converts yyyymmdd to julian dates (days from Jan 1, 1900)
  jdbase=jdatei(dbase)
  jymd1=jdatei(iymd1)
  jymd2=jdatei(iymd2)
  jdchk=jdatei(idchk)
  d0=jymd1-1

c open output file for sample statistics
  open(17,file=ofile0)
  write(17,171) idchk
171   format( 'QLEFT = FLOW (CFSD) BETWEEN LAST GRAB',
&   ' SAMPLE DATE WITH POSITIVE FLOW &'
&   i9, ' NOT COVERED BY COMPOSITE SAMPLE' /
&   '          COMPOSITE SAMPLES          GRAB SAMPLES' /
&   'STATION      N   DFIRST   DLAST',
&   ' NTOT NOUT NUSE   DFIRST   DLAST',
&   '  RATIO1  RATIO2    QLEFT' )

c open input flow file
  open (8, file=qfile,status='old')

c open daily output file
  if(ofile1.ne.blank) then
    open(10,file=ofile1,status="unknown")
    write(10,"(a64)") title
    write(10, 2)
  endif
  2   format('station  date  ip mth   flow',
&   '   load  cgrab  ccomp  cused c/g ratio')

c open monthly output file
  if(ofile2.ne.blank) then
    open(11,file=ofile2,status="unknown")
    write(11,*) title
    write(11,*)
&   'station mnth  days flow(csd)  load(kg) conc(ppb)
&   compos(kg)'
  endif

c nsta = number of stations (terms)
  nsta=0

c ***** for each station (term) in job file *****
  10 nsta=nsta+1

        read(7,*,end=500) ulab,slab,qlab,ipos,icomp,isgn(nsta)
c ulab = output label for mass-balance term
c slab = sample station code
c qlab = flow station code
c ipos = flow sign indicator (1 = use positive flows, -1 = use negative flows)

```

```
c icomp = composite sample indicator
c     0 = ignore composite samples
c     1 = use composite samples
c     2 = use comp. samples, force comp./grab ratio = 1.0 (option not used)
c isgn = sign of term in computing total outflow volume and load
c     1 = outflow term from EAA
c     0 = ignore term
c    -1 = inflow or thruflow term

c capitalize labels
  CALL CONCAP(SLAB,8)
  CALL CONCAP(QLAB,8)
  CALL CONCAP(ULAB,8)
  write(*,*)
  write(*,*) 'term = ',ulab
  write(*,*) 'sample station = ',slab
  write(*,*) 'flow label = ',qlab
  usave(nsta)=ulab

c ***** read daily flows for current station *****

  call flowread(8,jywd1, jywd2,qlab,nq,flowu)
c file start date must be <= jywd1
c jywd2 is adjusted to reflect end of file
c flow data set should contain no missing values

  if(nq.le.0) go to 999
  write(*,*) 'flow dates = ',kdate(jywd1),kdate(jywd2)

c ***** load sample data *****

  ngrab=0
  ncomp=0

c fixed format input
  open(16,file=cfile,status="old")
  do i=1,4
    read(16,*)
  enddo

c read next sample
  40 read(16,41,end=60) dum8,dd,tt,conc
  41 format(a8,2x,10f10.0)
  itype=jfix(tt)

c convert yymdd to days from Jan 1, 1900
  idd=dd
  jdd=jdate(dd)

c check stations
  CALL CONCAP(DUM8,8)
  if(dum8 .ne. slab) go to 40
```

```
c check date

cc modified march 1998
cc
cc  if(jdd.lt.jymd1.or.jdd.gt.jymd2) go to 40
cc  if(jdd.lt.jymd1.or.jdd.gt.jymd2+nafter) go to 40
cc
cc end of modification
cc
c check for valid sample value
  if(conc.eq.0.) go to 40

c rescale concentration and set to absolute value (negative values < detection limit)
  conc=sf*abs(conc)

c check for composite vs. grab sample
c sample dates must be in increasing order
  if(itype.eq.7.or.itype.eq.24) then
c process composite sample
  ncomp=ncomp+1
  ccomp(ncomp)=conc
  dcomp(ncomp)=jdd
  if(ncomp.gt.1.and.dcomp(ncomp).lt.dcomp(ncomp-1)) then
    write(*,*) 'compos sample out of sequence: ',idd
    stop
  endif
  else
c process grab sample
  ngrab=ngrab+1
  cgrab(ngrab)=conc
  dgrab(ngrab)=jdd
  if(ngrab.gt.1.and.dgrab(ngrab).lt.dgrab(ngrab-1)) then
    write(*,*) 'sample date out of sequence: ',idd
    stop
  endif
  endif

  go to 40

c end of sample file
60 continue
  if(ngrab.gt.0) write(*,*) 'grab samples = ',ngrab,
&      kdate(dgrab(1)),kdate(dgrab(ngrab))
  if(ncomp.gt.0) write(*,*) 'composite samples =',ncomp,
&      kdate(dcomp(1)),kdate(dcomp(ncomp))
  close(16)

c calculate average concentrations by date
  call xred(dgrab,cgrab,ngrab)
  call xred(dcomp,ccomp,ncomp)
```



```

write(*,*) 'daily-avg grab samples =      ',ngrab
write(*,*) 'daily-avg composite samples = ',ncomp

c scratch composite samples if switch indicates so
  if(icomp.le.0) ncomp=0

c assign daily flows in cfs
  do 70 j=1,nq
    if(ipos.eq.1) then
      flowu(j)=amax1(flowu(j),0.)
    else
      flowu(j)=abs(amin1(flowu(j),0.))
    endif
    wgrab(j)=0.
    wcomp(j)=0.
  70   wuse(j)=0.

c calculate loads from composite samples
  dlast=0.
  do i=1,ncomp

c date range to apply composite-sample concentration
    j2=dcomp(i)-d0
    j1=max0(1,j2-nmaxc)
    if(j1.le.dlast) j1=dlast+1
    if(j1.gt.j2) j1=j2
    do j=j1,j2
      wcomp(j)=flowu(j)*ccomp(i)*factor
    enddo
    dlast=j2
  enddo

c eliminate grab-samples collected on days with no flow
  mgrab=0
  do i=1,ngrab
    if(flowu(dgrab(i)-d0).gt.0.) then
      mgrab=mgrab+1
      dgrab(mgrab)=dgrab(i)
      cgrab(mgrab)=cgrab(i)
    endif
  enddo
  ngrabt=ngrab
  ngrab=mgrab
  write(*,*) 'grab samples on days with positive flow =',ngrab
  if(ngrab.gt.0) write(*,*) 'date range =',kdate(dgrab(1)),
&          kdate(dgrab(ngrab))

c screen base-period grab samples for outliers
c based upon log(c) vs. log(q) regression
c (Snedecor & Cochran, Statistical Methods, 1980, pp. 167-168)
  if(sig.gt.0.) then
    ngt=ngrab

```

```

110     j=0
        do i=1,ngrab
            prb(i)=1.
            if(dgrab(i).le.jdbase) then
                j=j+1
                x(j)=alog(flowu(dgrab(i)-d0))
                y(j)=alog(cgrab(i))
            endif
        end do
        call outlyr(x,y,j,sig,prb,nrej)
        if(nrej.gt.0) then
            m=0
            do 150 i=1,ngrab
                if(prb(i).gt.sig) then
                    m=m+1
                    dgrab(m)=dgrab(i)
                    cgrab(m)=cgrab(i)
                else
                    write(*,140) kdate(dgrab(i)),cgrab(i),prb(i)
140             format(' ***outlier: date =',i9,
&                 ', conc = ', f10.1, ', prob =',f8.3)
                    endif
150             continue
            ngrab=m
c repeat screen until no outliers are found
            go to 110
        endif
        ngout=ngt-ngrab
    endif

c calculate daily loads from grab samples by interpolation
    do i=1,ngrab
        x(i)=dgrab(i)-d0
    enddo
    call eint3(ngrab,x,cgrab,nq,wgrab)

cc end of mod
    do i=1,nq
        wgrab(i)=wgrab(i)*flowu(i)*factor
    enddo

c ratio = load computed from composite samples / load computed from grab samples
c calculate load ratio for days with both composite and grab samples
c calc separate ratios for base period (ratio(1)) and after (ratio(2))
    do i=1,2
        wg(i)=0.
        wc(i)=0.
        ncg(i)=0
    end do
    do 220 i=1,nq
        if(wgrab(i).gt.0.and.wcomp(i).gt.0.) then
            if(i+d0.gt.jdbase) then

```

```

                j=2
            else
                j=1
            endif
            wg(j)=wg(j)+wgrab(i)
            wc(j)=wc(j)+wcomp(i)
            ncg(j)=ncg(j)+1
        endif
220    continue
    do j=1,2
        ratio(j)=ratv(wc(j),wg(j))
c set to 1 if composite samples are ignored
c or if icomp=2
        if(icomp.le.0.or.icomp.eq.2) ratio(j)=1.
    end do
c if missing, set ratio(2)=ratio(1)
    if(ratio(2).le.0.) ratio(2)=ratio(1)

c sample inventory
    if(ncomp.le.0) then
        jc1=0
        jc2=0
    else
        jc1=dcomp(1)
        jc2=dcomp(ncomp)
    endif
    if(ngrab.le.0) then
        jg1=0
        jg2=0
    else
        jg1=dgrab(1)
        jg2=dgrab(ngrab)
    endif
c qdang = total flow between last grab sample date used and last flow date
    qdang=0.

c final load
c sumd = total days
c sumw = total load
c lq = 1 no flow, 2=composite, 3=grab
    do lq=1,5
        sumd(lq)=0.
        sumw(lq)=0.
    end do

c loop around days
    do i=1,nq
        jdd=i+d0

c wusec tracks loads computed from composite samples
        wusec(i)=0.
        if(i+d0.gt.jdbase) then

```

```
        ipd=2
    else
        ipd=1
    endif

c meth=1 no flow
    if(flowu(i).le.0.) then
        wuse(i)=0.
        meth=1

c meth=2 use composite load
    else if(wcomp(i).gt.0.) then
        wuse(i)=wcomp(i)
        wusec(i)=wcomp(i)
        meth=2

c meth=3 use grab load
    else if(wgrab(i).gt.0.) then

c iratio = 0 use separate values
c iratio = 1 use base period values only
        if(iratio.eq.0) then
            rr=ratio(ipd)
        elseif(iratio.eq.1) then
            rr=ratio(1)
        endif
        if(rr.eq.0.) rr=1.
        meth=3
        wuse(i)=wgrab(i)*rr

c diagnostic - flow after last grab sample used in calc loads
        if(jdd.gt.jg2.and.jdd.le.jdchk)
            & qdang=qdang+flowu(i)
        endif

        sumw(meth)=sumw(meth)+wuse(i)
        sumd(meth)=sumd(meth)+1.

c output daily results on days with positive flow
        if(ofile1.ne.blank.and.meth.gt.1.and
            & .flowu(i).gt.0.) then
            write(10,280) ulab,kdate(jdd),ipos,
            & meth,flowu(i),wuse(i),
            & ratv(wgrab(i),flowu(i))/factor,
            & ratv(wcomp(i),flowu(i))/factor,
            & ratv(wuse(i),flowu(i))/factor,ratio(ipd)
280          format(a8,1x,i8,i3,i3,f9.1,f9.2,3f8.1,f10.3)
        endif
    end do
c end of date loop

c log file
```

```

        write(17,172) ulab,ncomp,kdate(jc1),kdate(jc2),ngrabt,
&ngout,ngrab,kdate(jg1),kdate(jg2),
&ratiol(1),ratiol(2),qdang
172      format(1h",a8,1h",i5,2i9,3i5,2i9,2f8.4,f9.1)

        write(*,235)
235      format(' station      ncomp      ngrab',
&      '      days1      ratiol      days2      ratio2')
cc &      '      days1      ratiol      days2      ratio2 usedratio') changed 2/27/98
        write(*,245) ulab,ncomp,ngrab,ncg(1),ratiol(1),
&ncg(2),ratiol(2)
cc &ncg(2),ratiol(2),rr      changed 2/27/98
245      format(1x,a8,3i8,f8.5,i8,2f8.5)

c method summary
        write(*,305) (mname(i),i=1,nmeth)
305      format(' breakdown of load estimation methods: '/
&      ' method: ',6a10)
        do i=1,nmeth
            sumd(nmeth+1)=sumd(nmeth+1)+sumd(i)
            sumw(nmeth+1)=sumw(nmeth+1)+sumw(i)
        enddo
        write(*,"(' days% :',6f10.1)")
&(100.*ratv(sumd(i),sumd(nmeth+1)),i=1,nmeth)
        write(*,"(' load% :',6f10.1)")
&(100.*ratv(sumw(i),sumw(nmeth+1)),i=1,nmeth)

        m=0
        nk=3

        kd= kdate(jymd1)/100

        do k=1,nk
            x(k)=0.
        enddo
        mm=0
        do i=1,nq
            jd=kdate(i+jymd1-1)/100
            if(jd.ne.kd) then
c output monthly totals for current station
                m=m+1
                cc=ratv(x(2),x(1))*qfac/factor
                if(ofile2.ne.blank)
&                write(11,350) ulab,kd,mm,(x(k),k=1,2),cc,x(3)
350                format(a8,i8,i4,2f10.1,f10.1,f10.1)
                qsave(m,nsta)=x(1)
                wsave(m,nsta)=x(2)
                wcsave(m,nsta)=x(3)
                iym(m)=kd
                do k=1,nk
                    x(k)=0.
                enddo

```

```

        mm=0
        kd=jd
    endif
    mm=mm+1
    x(1)=x(1)+flowu(i)*qfac
    x(2)=x(2)+wuse(i)
    x(3)=x(3)+wusec(i)
end do

m=m+1
if(ofile2.ne.blank) then
    cc=ratv(x(2),x(1))*qfac/factor
    write(11,350) ulab,kd,mm,(x(k),k=1,2),cc,x(3)
endif
iym(m)=kd
qsave(m,nsta)=x(1)
wsave(m,nsta)=x(2)
wcsave(m,nsta)=x(3)

c end loop around stations
go to 10

c end of station list
500 continue

c weighted sum over all stations
usave(nsta)='Total'
do i=1,m
    qsave(i,nsta)=0.
    wsave(i,nsta)=0.
    wcsave(i,nsta)=0.
    do j=1,nsta-1
        qsave(i,nsta)=qsave(i,nsta)+qsave(i,j)*isgn(j)
        wsave(i,nsta)=wsave(i,nsta)+wsave(i,j)*isgn(j)
        wcsave(i,nsta)=wcsave(i,nsta)+wcsave(i,j)*isgn(j)
    end do
end do

c output monthly cross-tab
if(ofile3.ne.blank) then
    open(12,file=ofile3,status="unknown")
    write(12,"(a64)") title
    write(12,*) 'flows in cfs-days'
    write(12,"(a6,2x,50a10)") 'month',(usave(i),i=1,nsta)
    do 530 i=1,m
530        write(12,"(i6,50f10.1)") iym(i),(qsave(i,k),k=1,nsta)
        write(12,*)
        write(12,*) 'loads in kg'
        write(12,"(a6,2x,50a10)") 'month',(usave(i),i=1,nsta)
        do 540 i=1,m
540        write(12,"(i6,50f10.1)") iym(i),(wsave(i,k),k=1,nsta)
        close(12)

```

```

endif

c output totals before & after base period
  if(len_trim(ofile5).gt.0) then
c convert cfsd to kac-ft
  qqfac=24.*3600./43560./1000.
  open(12,file=ofile5)
  write(12,39) title,dbase
  do i=1,nsta
    x(1)=0.
    x(2)=0.
    y(1)=0.
    y(2)=0.
    tb=0
    ta=0
    do j=1,m
      if(iym(j).gt.dbase/100) then
        k=2
        ta=ta+1
      else
        k=1
        tb=tb+1
      endif
      x(k)=x(k)+qsave(j,i)
      y(k)=y(k)+wsave(j,i)
    enddo
    ta=ta/12
    tb=tb/12
    write(12,38) usave(i),isgn(i),
&    qqfac*x(1)/tb,y(1)/tb,ratv(y(1),x(1))*qqfac/factor,
&    qqfac*x(2)/ta,y(2)/ta,ratv(y(2),x(2))*qqfac/factor
  enddo

38    format(1h",a8,1h",i4,2(2f12.3,f10.1))
39    format(a64/'Yearly Averages for Each Term & Time Period'/
&    '          In Base Period <=',i8,8x,
&    '          After Base Period'/
&    'Term      Sign Flow(kaf/y)  Load(kg/y)  Conc(ppb) '
&    ' Flow(kaf/y) Load(kg/y)  Conc(ppb)')
  endif

c output monthly totals across all stations
  if(ofile4.ne.blank) then
    open(13,file=ofile4)
    write(13,"(a64)") title
    write(13,*) 'totals'
    write(13,567)
567    format('month flow(cfsd)  load(kg) conc(ppb)',
&    ' grab(out) comp(out) grab(in)  comp(in) comp(%)')

c loop around months
  do k=1,4

```

```

        y(k)=0.
    end do
    do i=1,m
        do k=1,4
            x(k)=0.
        enddo
        do j=1,nsta-1
            if(isgn(j).lt.0) then
c grab & composite inflows
                x(3)=x(3)+wsave(i,j)-wcsave(i,j)
                x(4)=x(4)+wcsave(i,j)
            elseif(isgn(j).gt.0) then
c grab & composite outflows
                x(1)=x(1)+wsave(i,j)-wcsave(i,j)
                x(2)=x(2)+wcsave(i,j)
            endif
        enddo
c composite as % of total absolute value
        x(5)=ratv(x(2)+x(4),x(3)+x(4)+x(1)+x(2))*100.
        write(13,560) iym(i),qsave(i,nsta),wsave(i,nsta),
&         ratv(wsave(i,nsta),qsave(i,nsta))*qfac/factor,
&         (x(k),k=1,5)
560         format(i6,2f12.1,5f10.1,f8.1)
c sum over all months
        do k=1,4
            y(k)=y(k)+x(k)
        enddo
        qsave(m+1,nsta)=qsave(m+1,nsta)+qsave(i,nsta)
        wsave(m+1,nsta)=wsave(m+1,nsta)+wsave(i,nsta)
        wcsave(m+1,nsta)=wcsave(m+1,nsta)+wcsave(i,nsta)
    enddo
    y(5)=ratv(y(2)+y(4),y(3)+y(4)+y(1)+y(2))*100.
    write(13,570) qsave(m+1,nsta),wsave(m+1,nsta),
&         ratv(wsave(m+1,nsta),qsave(m+1,nsta))*qfac/factor,
&         (y(k),k=1,5)
570         format('/total ',2f12.1,5f10.1,f8.1)
        close(13)
    endif
999 close(10)
end

```

```

subroutine flowread(ifile,ibdate,iedate,clab,nq,values)

```

```

c modified March 2017 to include C10, C12, C12A, C4A, S236 and epd07
c modified Feb 2016 for A-1 FEB outflow structure g722
c modified Sept 2004 for STA3/4 inflows and outflows
c modified June 2004 for addition of g507, g204-g206
c modified August 2000 for various ECP elements
c reads daily flows - modified for STA-6 march 1998
c modified for STA-2 & STA-5 may 1999
c missing values not allowed in flow file
character*8 clab

```



```

character*8 labs(70)
real values(1)

c these labels correspond to flow station labels in control file
  data labs /"s5a+s5aw", "hgs5", "wpbthru", "s6",
&          "s2/s6", "hilthru", "s7", "s150",
&          "s2/s7", "thrulake", "thrus7", "thrus150",
&          "s8", "s3", "g88", "g136",
&          "holey", "miathru", "g250", "g600",
&          "g605", "g606", "g344a", "g344b",
&          "g344c", "g344d", "g328", "g349b",
&          "g350b", "ebps", "esps", "g410",
&          "g402a", "g402b", "g402c", "g402d",
&          "g404", "g357", "g204", "g205",
&          "g206", "g507", "g370", "g372",
&          "g376abc", "g376def", "g379abc", "g379de",
&          "g381ab", "g381cdef", "ssdd", "sfcd",
&          "g371", "g373", "g373bc", "g434",
&          "g435", "g722thru", "c10", "c12a",
&          "c12", "c4a", "s236", "epd07"/

c number of daily flows in input file
  data nqin /70/
  rewind ifile
  do i=1,4
    read(ifile,*)
  enddo
  nq = 0
  do I=1,nqin
    call CONCAP(LABS(I),8)
  enddo
90 read(ifile,222,end=100) dd,qhgs5,qs5as5aw,qs2,
&qs6, qs7, qs150, qs3, qs8, qg88, qg136, qholey,
&qg250,qg600,qg605,qg606,qg344a,qg344b,
&qg344c,qg344d,qg328,qg349b,qg350b,
&qebps,qesps, qg410,qg402a,
&qg402b, qg402c, qg402d,qg404, qg357,qg204,qg205,
&qg206, qg507, qg370, qg372, qg376a, qg376d, qg379a,
&qg379d, qg381a, qg381c, qssdd, qsfcd, qg371,
&qg373, qg373bc, qg434, qg435, qg722,
&qc10, qc12a,qc12,qc4a,qs236,qepd07

c Modify East Beach, South Florida and South Shore flows to account for the portion of
c these basins that was previously in the EAA.

  qebps = 0.813 * qebps
  qssdd = 0.966 * qssdd
  qsfcd = 0.799 * qsfcd

222 format(100f10.0)

```

```

c convert yymmdd to julian
  jfdate=jdate(dd)
  if(jfdate.lt.ibdate) then
    goto 90
  elseif(jfdate.gt.iedate) then
    return
  elseif(nq.eq.0.and.jfdate.ne.ibdate) then
    write(*,*) 'flow file starting date too late: ',jfdate
    stop
  elseif(nq.gt.0.and.jfdate-jflast.ne.1) then
    write(*,*) 'flow file dates out of sequence: ',jfdate
    stop
  endif
  nq=nq+1
  jflast=jfdate

c split s2 outflow between s6 (hillsboro qs2h) and S7 (nnriver qs2n) basins
  qs2n =(qs2 / (1.534769))
  qs2h = qs2 - qs2n

c Adds STA3/4 outflows to total North New River inflows
c by adding g722 as an inflow to EAA

  qin = amax1(0., qs2n) - amin1(0.,qs7) - amin1(0., qs150)
  & + amax1(0.,qg376a) + amax1(0.,qg376d) + amax1(0.,qg379a)
  & + amax1(0.,qg379d) + amax1(0.,qg722)

c total flow thru in north new river canal
c Combines G370 flow through to S7 (9/28/04)
c Add G371 to flow through term for WY06

  ft = amin1(qin, amax1(0., qs7)+amax1(0., qs150))+ amax1(0., qg370)-
  & amax1(0.,qg376a) - amax1(0.,qg376d)-amax1(0.,qg379a)-
  & amax1(0.,qg379d)+ amax1(0., qg371) + amax1(0.,qg434)
  & + amax1(0.,qg435))

  do i = 1, nqin
    if(clab .eq. labs(i)) then
      ind = i
      go to 200
    endif
  end do
  write(*,*) 'flow station label not found:', clab
  stop
  go to 29
200 goto (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,
  &20,21,22,23,24,25,26,27,28,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,
  &45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65), ind

c s5a+s5aw outflow
1 x = qs5as5aw

```

```
    go to 29

c hgs5 outflow
  2   x = qhgs5
      go to 29

c s5athru west palm beach canal flowthru
  3   if(qhgs5 .le. 0 ) then
        x = 0.
      else
        x = amin1(qhgs5, amax1(qs5as5aw+qg250-qebps, 0.))
      end if
      go to 29

c s6 outflow
  4   x = qs6
      go to 29

c s2/s6 s2 outflow to lake from hillsboro basin
  5   x = qs2h
      go to 29

c s6thru hillsboro canal flowthru
  6   if(qs2h .le. 0) then
        x = 0.
      else
        x = amin1(qs2h, amax1(qs6-qesps, 0.))
      end if
      go to 29

c s7 outflow
  7   x = qs7
      go to 29

c s150 outflow
  8   x = qs150
      go to 29

c s2/s7 outflow to lake from s7 basin
  9   x = qs2n
      go to 29

c thrulake - nriver flowthru from lake
 10  if(qin .eq. 0) then
        x = 0.
      else
        x = amax1(0., qs2n) * ft / qin
      end if
      go to 29

c thrus7 - nriver flowthru from s7
 11  if(qin .eq. 0) then
```

```
        x = 0.
    else
        x = -amin1(0., qs7) * ft / qin
    end if
    go to 29

c thrus150 - nnriver flowthru from s150
12  if(qin .eq. 0) then
        x = 0.
    else
        x = -amin1(0., qs150) * ft / qin
    end if
    go to 29

c s8 outflow
13  x = qs8
    go to 29

c s3 outflow
14  x = qs3
    go to 29

c g88 inflow
15  x = qg88
    go to 29

c gl36 inflow
16  x = qgl36
    go to 29

c holeyland
17  x = qholey
    go to 29

c s8 miami canal flowthru
18  if(qs3 .le. 0) then
        x = 0.
    else
        x = amin1(qs3, amax1(0.,
&    qs8-qg88-qgl36+qholey-qg606-qg605+qg349b+qg350b-qg344a-
&    qg344b-qgg344c-g344d-qg402a-qg402b-qg402c-qg402d+qg410+
&    qg404 + qg357-qg204-qg205-qg206+qg507+qg372- qg381a - qg381c-
&    qssdd - qsfcd + qg373 + qg373bc)
    endif
    goto 29

c enr inflow - eaa outflow
19  x=qg250
    goto 29

c sta6 inflow
20  x=qg600
```

```
        goto 29

c sta6 bypass
21  x=qg605
    goto 29

c sta6 outflow
22  x=qg606
    goto 29

c sta5 outflows
23  x=qg344a
    goto 29
24  x=qg344b
    goto 29
25  x=qg344c
    goto 29
26  x=qg344d
    goto 29

c sta2 supplementary inflow

27  x=qg328
    goto 29

c sta5 inflows from miami canal
28  x=qg349b
    goto 29
30  x=qg350b
    goto 29

c East Beach outflow - EAA inflow
31  x=qebps
    goto 29

c East Shore outflow - EAA inflow
32  x=qesps
    goto 29

c Rotenberger inflow - EAA outflow
33  x=qg410
    goto 29

c Rotenberger outflows - EAA inflow
34  x=qg402a
    goto 29
35  x=qg402b
    goto 29
36  x=qg402c
    goto 29
37  x=qg402d
    goto 29
```

```
c G404 outflow
 38  x=qg404
      goto 29

c G357 outflow
 39  x=qg357
      goto 29
c G204 inflow
 40  x=qg204
      goto 29
c G205 inflow
 41  x=qg205
      goto 29
c G206 inflow
 42  x=qg206
      goto 29
c G507 outflow
 43  x=qg507
      goto 29
c G370 outflow
 44  x=qg370
      goto 29
c G372 outflow
 45  x=qg372
      goto 29
c G376abc inflow
 46  x=qg376a
      goto 29
c G376def inflow
 47  x=qg376d
      goto 29
c G379abc inflow
 48  x=qg379a
      goto 29
c G379de inflow
 49  x=qg379d
      goto 29
c G381ab inflow
 50  x=qg381a
      goto 29
c G381cdef inflow
 51  x=qg381c
      goto 29
c SSDD inflow
 52  x=qssdd
      goto 29
c SFCD inflow
 53  x=qsfc d
      goto 29
c G371 outflow
 54  x=qg371
```

```
        goto 29
c G373 outflow
  55  x=qg373
        goto 29
c G373BC outflow
  56  x=qg373bc
        goto 29
c G434 outflow
  57  x=qg434
        goto 29
c G435 outflow
  58  x=qg435
        goto 29
c G722 A-1 FEB flow through
  59  if(qin .eq. 0) then
        x = 0.
      else
        x = amax1(0., qg722) * ft / qin
      end if
        go to 29
c East Beach outflow to Lake Okeechobee - New EAA outflow
  60  x=qc10
        goto 29
c Closter outflow to Lake Okeechobee - New EAA outflow
  61  x=qc12a
        goto 29
c East Shore outflow to Lake Okeechobee - New EAA outflow
  62  x=qc12
        goto 29
c South Shore outflow to Lake Okeechobee - New EAA outflow
  63  x=qc4a
        goto 29
c South Florida Conservancy outflow to Lake Okeechobee - New EAA outflow
  64  x=qs236
        goto 29
c South Florida Conservancy outflow to Industrial Canal - New EAA outflow
  65  x=qepd07
        goto 29

  29  values(nq) = x

        go to 90

  100 iedate=jfdate
        return
        end
c subroutines in subr.for

c subroutines for eaa software
c
```

```

c date functions
c
c date sequence number = number of days from Jan 1, 1900 (= Lotus 123 date)
c All reals=real*4, All integers = Integer*4
c function          inputs          returns
c idate(iy,im,id)   iy,im,id       date sequence number
c jdate(d)          yymmdd         date sequence number
c kkdate(d)         yymmdd         yyyyymmdd
c jdatei(k)         yyyyymmdd      date sequence number
c kdate(j)          date sequence  yyyyymmdd
c ddate(j)          date sequence  yymmdd
c sub yymmdd(d,iy,im,id) yymmdd      iy,im,id
c sub iyymmdd(k,iy,im,id) yyyyymmdd      iy,im,id
c idbt(k1,k2)       2 x yyyyymmdd  days between 2 dates, inclusive
c imonth(char3)     character month month number
c mday(iy,im)       iy,im         number of days in month

```

```

    function idate(iy,im,id)

```

```

        integer mdy(12)

```

```

        DATA MDY/0,31,59,90,120,151,181,212,243,273,304,334/

```

```

c returns days from Jan 1, 1900 for input iy,im,id
c year in yy format

```

```

c years

```

```

    jy=iy+1900

```

```

c if iy<50 assume turn of century

```

```

    if(iy.lt.50) jy=jy+100

```

```

    idate=0

```

```

c check for valid date

```

```

    if(im.le.0.or.im.gt.12) return

```

```

    if(id.lt.1.or.id.gt.mday(iy,im)) return

```

```

    idate=mdy(im)+(jy-1900)*365.+id+(jy-1897)/4

```

```

c add 1 day if leap year and after february

```

```

    if(mod(jy,4).eq.0.and.im.gt.2) idate=idate+1

```

```

    return

```

```

    end

```

```

    function jdate(d)

```

```

c returns date sequence number for input d in yymmdd format

```

```

    call yymmdd(d,iy,im,id)

```

```

    jdate=idate(iy,im,id)

```

```

    return

```

```

    end

```

```

    function jdatei(id)

```

```

c returns date sequence number for input id in yyyyymmdd format

```



```

j=id-19000000
jdatei=jdate(float(j))
return
end

function kkdate(d)
c returns yyymmdd for input in yymmdd
kkdate=d+19000000
if(d.le.500000.) kkdate=kkdate+1000000
return
end

function kdate(id)
c returns integer date yyymmdd for julian date id
kdate=ddate(id)
if(kdate.eq.0) then
    return
elseif(kdate.lt.500101) then
    kdate=kdate+20000000
else
    kdate=kdate+19000000
endif
return
end

function ddate(id)
c returns date in yymmdd format for input id =
c    number of days from Jan 1, 1900

    ddate=0.
    if(id.le.0) return

c first find year, roughly
    jy=id/367
13    if(idate(jy+1,1,1).le.id) then
        jy=jy+1
        goto 13
    endif

c find month
    do 10 jm=2,12
        if(idate(jy,jm,1).gt.id) goto 12
10    continue
12    jm=jm-1

c find day
    jd=id-idate(jy,jm,1)+1
```

```
ccc adjust year
      if(jy.gt.99) jy=jy-100

c compute ddate
      ddate=10000.*jy+jm*100.+jd
      return
      end

      subroutine yymmdd(date,iy,im,id)

c convert real date yymmdd to integer year yy, month, day

      iy=0
      im=0
      id=0
      iy=jfix(date/10000.)
      im=jfix((date-iy*10000.)/100.)
      id=jfix(date-iy*10000.-im*100.)
      return
      end

      subroutine iyymmdd(idate,iy,im,id)

c convert integer date to integer year, month, day

      iy=0
      im=0
      id=0
      iy=jfix(idate/10000)
      im=jfix((idate-iy*10000)/100)
      id=jfix(idate-iy*10000-im*100)
      return
      end

      function mday(iy,im)

c number of days in current month

      dimension mdy(12)
      data mdy/31,28,31,30,31,30,31,31,30,31,30,31/
      mday=0
      if(im.gt.12.or.im.lt.1) return
      mday=mdy(im)
      if(im.eq.2.and.mod(iy,4).eq.0.) mday=mday+1
      return
      end

      subroutine outlyr(x,y,n,sig,prb,nrej)
c screen for outliers - linear regression y(n) vs. x(n)
c sig = rejection significance level
```

```

c returns prb(n) = significance level for rejection
c nrej = number of screened data points
c snedecor and cochran, p. 157-158
  dimension x(1),y(1),prb(1)
  if(n.le.3) return
  sy=0.
  sy2=0.
  sx=0.
  sx2=0.
  sxy=0.
  nrej=0
  nn=n
c first compute regression
  do 100 i=1,n
    prb(i)=1.
    sy=sy+y(i)
    sx=sx+x(i)
    sy2=sy2+y(i)*y(i)
    sx2=sx2+x(i)*x(i)
    sxy=sxy+x(i)*y(i)
100  continue
  txy=sxy-sx*sy/n
  tx2=sx2-sx*sx/n
  ty2=sy2-sy*sy/n
  tx=sx/n
  ty=sy/n
  b=txy/tx2
  a=ty-b*tx
c find maximum residual
10  rmax=0.
  j=0
  do 200 i=1,n
    if(prb(i).eq.1.) then
      resid=abs(y(i)-b*x(i)-a)
      if(resid.gt.rmax) then
        j=i
        rmax=resid
      endif
    endif
200  continue
  if(j.le.0) return
c compute regression with point j excluded
  nn=nn-1
  if(nn.le.3) return
  sxy=sxy-x(j)*y(j)
  sx2=sx2-x(j)*x(j)
  sy2=sy2-y(j)*y(j)
  sy=sy-y(j)
  sx=sx-x(j)
  txy=sxy-sx*sy/nn
  tx2=sx2-sx*sx/nn
  ty2=sy2-sy*sy/nn

```

```

        tx=sx/nn
        ty=sy/nn
        b=txy/tx2
        a=ty-b*tx
        se2=(ty2-b*b*tx2)/(nn-2)
        if(se2.le.0.) return
        se=sqrt(se2)
c test residual
        resid=y(j)-b*x(j)-a
        sr=se*sqrt( 1.+1./nn + (x(j)-tx)**2/tx2 )
        t=resid/sr
        prb(j)=probt(t,nn-2)*(nn+1)
        if(prb(j).gt.sig) return
        nrej=nrej+1
        go to 10
        end

```

```

        subroutine eint3(n,e,x,ni,xi)
c interpolation
c inputs e(i),x(i),i=1,n
c output ei(i),xi(j),j=1,ni
c     ei(j)==j

```

```

        dimension x(1),e(1),xi(1)
c
        i=1
        do 100 j=1,ni
            if(j.gt.e(i)) go to 110
            xi(j)=x(i)
            go to 100
110        if(j.lt.e(n)) go to 120
            xi(j)=x(n)
            go to 100
120        if(j.le.e(i+1)) go to 125
            i=i+1
            go to 120
125        f=(j-e(i))/(e(i+1)-e(i))
            xi(j)=(1.-f)*x(i)+f*x(i+1)
100        continue
        return
        end

```

```

        subroutine xred(ix,y,n)
c replaces x() and y() with running means
c for common values of ix()
c length n
c destroys input vectors
        dimension y(1)
        integer ix(1),ixlast
        if(n.le.1) return
        ixlast=ix(1)
        m=1

```

```

    k=0
    sum=y(1)
    do 10 j=2,n
    if(ix(j).ne.ixlast) then
        k=k+1
        ix(k)=ixlast
        y(k)=sum/m
        ixlast=ix(j)
        m=0
        sum=0.
    endif
    m=m+1
    sum=sum+y(j)
10  continue
    k=k+1
    ix(k)=ixlast
    y(k)=sum/m
    n=k
    return
end
```

```

    function ratv(x1,x2)
c divide x1 by x2 or set to 0.
    if(x2.ne.0.) then
        ratv=x1/x2
    else
        ratv=0.
    endif
    return
end
```

```

    function ic8(c1,c2)
c compares strings c1 and c2
c returns 1 if they are identical
c case not significant
    character*8 c1,c2,c3,c4
c
    c3=c1
    call concap(c3,8)
    c4=c2
    call concap(c4,8)

    if(c3.eq.c4) then
        ic8=1
    else
        ic8=0
    endif
    return
end
```

```
function match(n,label,char)
```

```
c lookup char in label()
  character*8 label(1),char
  match=0
  do 10 i=1,n
  if(ic8(char,label(i)).gt.0) then
    match=i
    return
  endif
10  continue
  return
  end

  function probg(s,r,z)
c  f statistic
c  used with probf and probt
  u=2./9./s
  v=2./9./r
  q=abs((1.-v)*(z**.333333)-1.+ u)/sqrt(v*z**.6666667+u)
  if (r.lt.4) q=q*(1.+08*(q**4)/(r**3))
  probg=.5/(1.+q*(.196854+q*(.115194+q*(3.44e-04+q*.019527))))**4
  return
  end

  function probt(t,n)
c  two-tailed - modified from "some common basic programs"
  probt=1.0
  if(t.eq.0..or.n.le.0) return
  w=t*t
  if (w.lt..5) then
    s=n
    r=1.
    z=1./w
  else
    s=1.
    r=n
    z=w
  endif
20  probt=probg(s,r,z)
  if(w.lt..5) probt=1.-probt
  return
  end

  subroutine concap(string,n)
c  convert string to caps
  character*1 string(1)
  do i=1,n
  j=ichar(string(i))
  if(j.gt.96.and.j.lt.123) string(i)=char(j-32)
  enddo
  return
  end
```

```
      subroutine pquote(cin,cout)
c returns string cin enclosed in quotes
c      xxxxx ---> "xxxxx"
      character*16 cin,cout,ctemp
      character*1 cc(16)
      equivalence (ctemp,cc(1))
      cout=' '
      ctemp=cin
      n=len_trim(cin)
      cc(n+1)=' '
      write(cout,1) (cc(i),i=1,n+1)
1      format(' ',20a1)
      return
      end

      function idbt(id1,id2)
c days between id1 & id2, inclusive
      idbt=jdatei(id2)-jdatei(id1)+1
      return
      end

      function imonth(c)
c convert character month to integer month
      character*3 c
      character*3 mlab(12) /'JAN','FEB','MAR','APR','MAY','JUN',
&      'JUL','AUG','SEP','OCT','NOV','DEC' /

      imonth=0
      if(len_trim(c).le.0) return

      call concap(c,3)
      do i=1,12
          if(c.eq.mlab(i)) goto 5
      enddo
      write(*,*) 'Invalid Month =', c
      stop
5      imonth=i
      return
      end
```

APPENDIX A3.2
FLOW COMPUTATION METHODS USED TO CALCULATE EAA BASIN FLOWS

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GATED SPILLWAYS

- Parameters
- Uncontrolled Free Flow
- Uncontrolled Submerged Flow
- Controlled Free Flow
- Controlled Submerged Flow
- Over-the-top Flow

PUMPS

- Parameters
- Pump Flow
 - Constant-speed Pump
 - Variable-speed Pump
 - Variable-speed Pump with Very Variable Head
- Siphon Flow

CULVERTS

- Parameters

GATED SPILLWAYS

Parameters

- C_{cf} = discharge coefficient for controlled free flow
- C_{cs} = discharge coefficient for controlled submerged flow
- C_{ot} = discharge coefficient for over-the-top flow
- C_{uf} = discharge coefficient for uncontrolled free flow
- C_{us} = discharge coefficient for uncontrolled submerged flow
- G_o = gate opening, in feet
- g = acceleration due to gravity, 32.2ft/sec²
- H = approach head over the spillway sill, which is the difference between the upstream stage and the sill elevation, in feet
- H_g = approach head over the gate, in feet
- h = submergence head over the spillway sill, which is the difference between the downstream stage and the sill elevation, in feet
- L = length of spillway sill perpendicular to flow, in feet
- n_1 = exponent of approach head
- n_2 = exponent of submergence head
- n_3 = exponent of total head
- n_4 = exponent of gate opening
- W = width of gate, in feet

Uncontrolled Free Flow

$$Q = C_{uf} LH^{n_1}$$

Spillway
S-5AS
S-7
S-8
S-351
S-352
S-354
G-371
G-373

Uncontrolled Submerged Flow

$$Q = C_{us} L h^{n_2} (H - h)^{n_3} \sqrt{2g}$$

Spillway
S-5AS
S-7
S-8
S-351
S-352
S-354
G-371
G-373

Controlled Free Flow

$$Q = C_{cf} L G_o \sqrt{2g(H - 0.5G_o)}$$

Spillway
S-5AS
S-7
S-8
S-351
S-352
S-354
G-371
G-373

Controlled Submerged Flow

$$Q = C_{cs} L G_o^{n_4} h^{n_2} \sqrt{2g(H-h)}$$

Spillway
S-5AS
S-7
S-8
S-351
S-352
S-354
G-371
G-373

Over-the-top Flow

$$Q = C_{ot} W H_g^{1.5} \sqrt{2g}$$

Spillway
S-5AS
S-7
S-8
S-351
S-352
S-354

PUMPS

Parameters

- C = coefficient of discharge for siphon
- C₀-C₉ = coefficients of pump rating equation
- H = head, downstream stage minus upstream stage, in feet
- H_{fact} = normalizing head factor, in feet
- H_{hi} = head from affinity laws corresponding to the high rpm rating equation, in feet
- H_{lo} = head from affinity laws corresponding to the low rpm rating equation, in feet
- N = engine speed, in rpm
- N_{fact} = normalizing engine speed factor, in rpm
- N_{hi} = engine speed of high rating equation, in rpm
- N_{lo} = engine speed of low rating equation, in rpm
- N_{min} = minimum engine speed below which no discharge is possible, in rpm
- n = exponent of head for siphon
- X = normalized head parameter
- Y = normalized engine speed parameter

Pump Flow

Constant-speed Pump

A single-variable polynomial is used.

$$Q = C_0 + C_1H + C_2H^2 + C_3H^3$$

Pump
G-200A
G-200B
G-349B
G-350B

Variable-speed Pump

Interpolation of single-variable polynomials is performed. The pump affinity laws are used to obtain the adjusted head, H_{lo} :

$$H_{lo} = H \left(\frac{N_{lo}}{N} \right)^2$$

The adjusted head H_{lo} is used to compute Q_{lo} .

$$Q_{lo} = C_0 + C_1 H_{lo} + C_2 H_{lo}^2 + C_3 H_{lo}^3$$

Pump
S-5A
S-6
S-7
S-8
G-404
G-410
EBPS
ESPS
G-507
G-370
G-372
SSDD
SFCD
G-434
G-435
C-10
C-12A
C-12
C-4A
S236
EPD07

The adjusted head, H_{hi} is:

$$H_{hi} = H \left(\frac{N_{hi}}{N} \right)^2$$

The adjusted head H_{hi} is used to compute Q_{hi} .

$$Q_{hi} = C_0 + C_1 H_{hi} + C_2 H_{hi}^2 + C_3 H_{hi}^3$$

The affinity laws are used to obtain the discharge Q at engine speed N :

$$Q = Q_{lo} + (Q_{hi} - Q_{lo}) \left(\frac{N - N_{lo}}{N_{hi} - N_{lo}} \right)$$

Variable-speed Pump with Very Variable Head

A two-variable polynomial used. The normalized head and engine speed are:

$$X = \frac{H}{H_{fact}}$$

$$Y = \frac{N - N_{min}}{N_{fact}}$$

Pump
S-2
S-3

The pump discharge is:

$$Q = C_0 + C_1 X + C_2 Y + C_3 X^2 + C_4 XY + C_5 Y^2 + C_6 X^3 + C_7 YX^2 + C_8 XY^2 + C_9 Y^3$$

Siphon Flow

The siphon discharge is:

$$Q = CH^n$$

Siphon
S-6

CULVERTS

Refer to:

Fan, A. (October 1985). *A General Program to Compute Flow through Gated Culverts* (Technical Memorandum). West Palm Beach: South Florida Water Management District, West Palm Beach.

Parameters

The parameter defined here correspond to the variables defined by A. Fan.

- Barrel = barrel shaped coding, “0” = circular, “1” = box
- C = orifice flow coefficient due to inlet shape
- C_w = weir flow coefficient (flashboard)
- D = diameter of pipe culvert or height of box culvert, in feet
- G_h = height of gate, in feet
- G_{type} = gate type coding, “0” = circular, “1” = rectangular, “2” = weir
- G_w = width of gate, in feet
- IN_{el} = inlet invert elevation, in feet m.s.l. or NGVD
- K = entrance loss coefficient due to shape of gate edge
- L = length of culvert, in feet
- N = number of barrels
- n = Manning’s roughness coefficient
- OUT_{el} = outlet invert elevation, in feet m.s.l or NGVD
- r = refernece elevation for flashboard elevation, in feet m.s.l. or NGVD
- S_{wb} = total side weir length (riser or wing wall), in feet
- S_{we} = side weir crest elevation (riser or wing wall), in feet
- W = width of box culvert
- W_b = weir length (flashboard)

Culverts	Culverts
G-136	G-402A
G-88	G-402B
S-150	G-402C
S-5AE	G-402D
G-357	G-204
G-205	G-206
G-376A	G-376D
G-379A	G-379D
G-381A	G-381C
G-722	

APPENDIX A4 EAA FARM SCALE ALLOCATION

This Appendix sets forth the procedure the District will follow in the future to regulate total phosphorus (TP) loads from individual farms when the EAA Basin has been determined to be “Not In Compliance” with the Target or Limit according to the procedures set forth in Appendix A3. Within the context of the methodology described, “farm” refers to a hydrologic drainage area described by the District in the permits as a basin ID.

1. Individual permittees may participate in an Early Baseline Option to establish a base-year data set by monitoring the farm-level water quality and quantity discharge for a period of one year beginning January 1, 1993. The permittee who elects this option will be required to have approved BMPs in place by January 1, 1994. These permittees will be required to reduce their rainfall-adjusted phosphorus loading by at least 25 percent as compared to the rainfall-adjusted base-year loading. The procedure outlined in Appendix A3 will be used for rainfall adjustment.

2. The base year data will be verified for reasonableness. The determination will be based on an analysis of outliers, an analysis of consistency with existing total phosphorus data, rainfall data, and other relevant information. Permitted structures for which monitoring data are determined to be unreasonable shall be excluded from further participation in the Early Baseline Option.

3. In determining compliance in any future year, the measured EAA total basin load for the specified May 1 - April 30 period will be compared to the Target for the EAA Basin for the specified May 1 - April 30 period, calculated according to Appendix A3. The comparison is represented by the following ratio:

$$Y = \text{Target} / \text{Measured}$$

4. The Unit Area Loading (UAL) for each permitted structure and acreage tributary to it will be calculated. The calculation will be based on concentration and flow data reported by the permittee pursuant to the approved monitoring plan for the specified May 1 - April 30 period. The UAL will be calculated according to the following equation:

$$UAL_i = L_i / A_i$$

where,

$$UAL_i = \text{Unit Area Load for Farm } i \text{ (lbs/acre-year)}$$

$$L_i = \text{Load calculated by SFWMD from flow and concentration data supplied by Farm } i, \text{ plus other data obtained by SFWMD, as necessary (lbs/year)}$$

$$A_i = \text{Area of Farm } i \text{ (acres)}$$

5. The UAL will be adjusted to reflect average rainfall conditions observed in the 1979 - 1988 base period and to reflect spatial variations in rainfall among EAA subbasins in the current year. The Adjusted Unit Area Load (AUAL_i) will be based on observed rainfall in the corresponding EAA subbasin (S5A, S6, S7, or S8) in the specified May 1 - April 30 period. It will be calculated according to the following:

$$AUAL_i = UAL_i (R_{am} / R_a)^{2.868}$$

$$R_a = \exp [X + 1.053 (C-C_m) - 0.1170 (S-S_m)]$$

where,

m = subscript denoting average value of rainfall statistic in base period for EAA Subbasin containing Farm i (see attached Table)

R_{am} = base period log-mean adjusted rainfall for EAA Subbasin containing Farm i (inches, see attached Table)

R_a = Adjusted subbasin rainfall in current year (inches)

X, C, S = Values as defined in Appendix A3 and computed for each subbasin

Basin	X _m	C _m	S _m	R _{am}
EAA Total	3.866	0.7205	0.7339	47.73
S5A ¹	3.918	0.7636	0.9999	50.31
S6 ²	3.907	0.7302	0.7476	49.77
S7	3.835	0.7198	0.6112	46.27
S8 ³	3.822	0.8409	0.8409	45.68

¹Also to be used for East Beach Water Control District basin ID 50-033-02.

²Also to be used for Agricultural Lease 3420 basin ID 50-077-01, and East Shore Water Control District basin ID 50-080-01.

³Also to be used for South Shore Drainage District basin ID 50-081-02, and South Florida Conservancy District basin ID 50-010-06.

6. The AUAL for the entire EAA Basin (ALOAD, lbs/yr), including basin IDs 50-033-02, 50-077-01, 50-081-02, and 50-010-06, will be calculated according to the following:

$$ALOAD = \text{SUM} [AUAL_i * A_i]$$

7. The Farm -Level Target Load (FTLOAD, lbs/yr) will be calculated based on the assumption that the percentage reduction in total load required at the Farm scale equals the percentage reduction required at the Basin scale. The calculation will be based on the following:

$$\text{FTLOAD} = \text{ALOAD} * Y$$

8. For those permittees who elected to participate in the Early Baseline Option, compliance will be determined by adjusting both current and base year measured loads to average rainfall conditions using the procedure given in paragraph 5 above. Permittees who have achieved the 25% load reduction will be identified by comparing the adjusted load for the base year with the adjusted load for the current year.

9. Permittees who did not elect to participate in the Early Baseline Option are subject to a Maximum Unit Area Loading (MUAL, lbs/acre-yr) discharge limit, which is computed by solving the following equation:

$$\text{FTLOAD} = \text{SUM} [\text{MUAL} * A_j] + \text{SUM} [\text{AUAL}_i * A_i]$$

The first summation (j) is over all Farms with AUAL_j greater than MUAL, excluding those who have taken the Early Baseline Option and achieved a minimum 25% load reduction. The second summation is over all remaining Farms, which include (a) Farms with AUAL_i below MUAL; and (b) Farms which elected the Early Baseline Option and met the minimum 25 percent load reduction requirement.

10. Revised BMP plans will be required for all permitted structures and tributary acreages whose AUAL_j exceed MUAL. Revised BMP plans will also be required from all permittees who elected the Early Baseline Option, but did not achieve at least a 25 percent load reduction. Compliance and enforcement procedures are set forth in Rule 40E-63.145(3), (4), and (5), F.A.C.

Outline of Compliance and Enforcement Procedures in the EAA Basin

DATE	ACTIVITY	ASSOCIATED COMPLIANCE & ENFORCEMENT ACTION
Present		SFWMD and Other Agencies Authorized To Enforce Existing Regulations and Permitting Programs Applicable To EAA Basin
9/92 10/92	Due Date For Permit Applications	Begin Enforcement For Failure To Submit Application (All 40E-63.145(4) Options Available)
12/92	Early Baseline Option – Final Agency Action On Monitoring Plans	
1/1/93	Early Baseline Option – Permittees Begin Monitoring Water Quality & Quantity	Begin Enforcement Of Monitoring Plan – Water Quality & Quantity (All 40E-63.145(4) Options Available)
7/93	Final Agency Action On Permit Applications	Begin Enforcement Of Installation Of BMPs According To Plan (All 40E-63.145(4) Options Available)
10/93	Permittees Begin Monitoring Water Quality	Begin Enforcement Of Monitoring Plan – Water Quality (All 40E-63.145(4) Options Available)
1/94	Early Baseline Option – BMP Installation Complete	Begin Enforcement of BMP Operation and Maintenance (All 40E-63.145(4) Options Available)
1/94	Early Baseline Option – Baseline For Determining 25% Reduction Set Based On Data For May 1, 1993 - April 30, 1994	
1/94	Permittees Begin Monitoring Water Quantity	Begin Enforcement Of Monitoring Plan - Water Quantity (All 40E-63.145(4) Options Available)
7/1/94	District Provides Results of Early Baseline Calculations	
1/95	BMP Installation Complete	Begin Enforcement of BMP Operation & Maintenance (All 40E-63.145(4) Options Available)
4/30/96	Water Year Ends and District Begins Determination of Whether EAA Basin Is In Compliance With 25% Phosphorus Load Reduction Requirement (Appendix A3, Ch. 40E-63, F.A.C.)	

DATE	ACTIVITY	ASSOCIATED COMPLIANCE & ENFORCEMENT ACTION	
7/1/96	District Provides Results Of Appendix 40E-63-3 Evaluation	EAA Basin In Compliance	EAA Basin Not In Compliance
		A. Continuing Compliance Action In Regard To Monitoring Plans & BMP Operation (All 40E-53.145(4) Options Available) & Other Applicable Regulations	A. Continuing Compliance Action In Regard To Monitoring Plans & BMP Operation (All 40E-63.145(4) Options Available) and Other Applicable Regulations.
			B. Compliance Actions Applicable To Permittees Who Elected The Early Baseline Option:
			1. District Determines Whether Permittee Has Reduced The Baseline Load By 25%,
			2. Permittees Who Have Reduced The Baseline Load By 25% Are Not Subject To Further Compliance And Enforcement Actions, So Long The Reduction Is Maintained, Or Unless This Chapter Is Amended To Provide Otherwise,
			3. Permittees Who Do Not Meet The 25% Reduction Requirement Are Required To Submit And Implement Revised BMP Plans.
			C. Compliance Actions Applicable To All Permittees Except Those Described In Section B. Above; (40E-63.145(4) Options Not Applicable If The Following Are Implemented In Good Faith):
7/1/96			1. Notices Sent To Permittees With AUAL exceeding AUAL and MUAL Assigned,
8/15/96			2. Revised BMP Plans Due, Must Be Designed To Meet MUAL,
10/15/96			3. Final Agency Action On Revised BMP Plans,
4/30/97	Water Year Begins		

DATE	ACTIVITY	ASSOCIATED COMPLIANCE & ENFORCEMENT ACTION	
4/30/98	Water Year Ends and District Begins To Determine Whether EAA Basin In Compliance With 25% Phosphorus Load Reduction Requirement (Appendix A3, Ch. 40E-63, F.A.C.)		
7/1/98	District Provides Results Of Appendix A3, Ch. 40E-63, F.A.C., Evaluation	EAA Basin In Compliance	EAA Basin Not In Compliance
		Continuing Compliance Action In Regard To Monitoring Plans & BMP Operation (All 40E-63.145(4) Options Available) & Other Applicable Regulations	Continuing Compliance Action In Regard To Monitoring Plans, Revised BMP Plans & BMP Operation (All 40E-63.145(4) Options Available) and Other Applicable Regulations
		No Further Compliance Action In Regard to Appendix 40E-63-3 (25% Phosphorus Load Reduction Requirement)	Early Baseline Option – Permittees Who Have Not Reduced Baseline Load By 25% And Have An AUAL exceeding AUAL Are: 1. Assigned MUAL, And 2. Required To Meet It The Next Time The Basin Is Determined To Be Not In Compliance and If Not Met, Permittee Is Subject To 40E-63.145(4) Options
			Compliance Actions Applicable To All Permittees Who Have Not Elected The Early Baseline Option:
7/1/98			1. Notices Sent To Permittees With AUAL exceeding AUAL and MUAL Assigned.
			2. Permittees Not Required To Submit Revised BMP Plans In 1996 – Not Subject To 40E-63.145(4) Options.
			3. Permittees Required To Submit Revised BMP Plans In 1996 – Not Subject To 40E-63.145(4) Options If Meet MUAL Assigned In 1996.
			4. Permittees Required To Submit Revised BMP Plans In 1996 – Subject To 40E-63.145(4) Options (Including Penalties) If MUAL Assigned In 1996.

DATE	ACTIVITY	ASSOCIATED COMPLIANCE & ENFORCEMENT ACTION	
8/15/98			5. Revised BMP Plans Due, Must Be Designed To Meet MUAL.
10/15/98			6. Final Agency Action On Revised BMP Plans.
4/15/99			7. Revised BMP Installation Complete.
5/1/99	Water Year Begins		

EAA Basin Examples of Permit Modifications

Modification Fee: \$1,880	Letter Modification Fee: \$500	Administrative Update No Fee
<p>Modifications that result in a change in the conditions of the permit.</p> <p>Modifications that change the landuse.</p> <p>Modifications that have a potential for heightened public concern based on comments from the public.</p> <p>Modifications that result in the addition of acreage not previously included in an existing permit.</p>	<p>Modifications that result in a change in an existing basin boundary.</p> <p>Modifications that result in an addition of a basin to the permit (transfer of previously permitted acreage from one existing permit to another).</p> <p>Addition of a water control structure to the Water Quality Monitoring Plan.</p> <p>Modifications to the BMP Plan unless the modification of the BMP Plan is the result of a land use change, in which case it will be a Permit Modification.</p> <p>A change in the technical information in the Water Quality Monitoring Plan (e.g. identifying monitored sites, sampling methods, sample locations)</p>	<p>Deletion of an existing water control structure from the water quality monitoring plan.</p> <p>Deletion of acreage that does not affect the overall drainage plan. (e.g. land removed for district canal widening, or STA construction)</p> <p>A change to a water control structure's approved calibrated capacity.</p> <p>A change in the administrative information in the Water Quality Monitoring Plan (e.g. sampler collector, laboratory).</p> <p>A change in lessee or parcel owner (not the same as Transfer of Permit).</p> <p>A change in Early Baseline Status.</p> <p>A change in the description of associated permits.</p>

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BMP Description and Equivalent Points Reference Table

A BMP Plan meeting the requirements of Rule 40E-63.435, F.A.C., is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented during the water year across each land use (crop) area. The table below provides an array of BMPs available for selection by permittees within the C-139 Basin. However, permittees may propose alternative BMP Plans as described in Rule 40E-63.437, F.A.C.

BMP	PTS	DESCRIPTION
NUTRIENT CONTROL PRACTICES ¹		
Nutrient Application Control	2 ½	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.
Nutrient Spill Prevention	2 ½	Formal spill prevention protocols (storage, handling, transfer, and education/instruction) Pasture – Also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses).
Manage Successive Vegetable Planting to Minimize Phosphorus	2 ½	Avoid successive planting of vegetables or other crops having high phosphorus needs to avoid phosphorus build up in soils. Includes successive planting with no successive phosphorus application.
Recommended Nutrient Application based on Plant Tissue Analysis	2 ½ 5	Avoid excess application of phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific). Pastures with Bahia grass – Plant tissue analysis along with soil test is required to make nutrient application recommendation. Citrus – Results are applied to the current season phosphorus requirements.
Recommended Nutrient Application based on Soil Testing	5	Avoid excess nutrient application by determining phosphorus requirements of soil and follow standard recommendations for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added phosphorus specific to the soil and crop. The disposal or application of waste water residuals (biosolids), animal manure, or other materials containing phosphorus shall not exceed the phosphorus requirements of the crop.

¹ For purposes of this rule the term “nutrient” refers to phosphorus

BMP	PTS	DESCRIPTION
NUTRIENT CONTROL PRACTICES ¹		
Split Nutrient Application	5	More efficient plant uptake of phosphorus by applying small portions of total recommended phosphorus at various times during the growing season. Not to exceed total recommendation based on soil test.
Slow Release Phosphorus Fertilizer	5	Avoid flushing excess phosphorus from soil by using specially treated fertilizer that releases phosphorus to the plant over time.
Reduce Phosphorus Fertilization	5	Reduce the phosphorus application rate by at least 30% below the recommendations based on soil tests and development of site –specific (reduced) recommendations or application methods. Provide basis for reduction credit.
No Nutrients Imported Via Direct Land Application	20	No Application of phosphorus, in any form, to the soil for amendments or plant nutrients. (Pastures can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings.)
No Nutrients Imported Indirectly Through Cattle Feed	15	No phosphorus import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses.)
Nutrient Management Plan	5 - 25	A plan to manage the amount, source, placement, form, and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. A site management plan and budget for tracking phosphorus shall be developed. The plan shall consider all nutrient sources (including but not limited to soil residual, crop residual, animal residual (through a waste management plan), organic and chemical fertilizer, soil amendments and supplements, irrigation water quantity and timing, animal nutrient supplements) versus the required amounts of nutrients. The plan shall utilize testing, analysis, and agricultural industry standards to determine nutrient needs. At a minimum, the plan shall address the timing, placement and method of nutrient application; optimization of nutrient uptake; prevention of nutrient movement off-site; site descriptions such as aerial photographs, crop maps, and soil maps; implementation plans and schedules; sediment control BMPs; pasture management BMPs; and water quality monitoring for input into the mass balance prepared for the phosphorus budget. These actions shall be developed in accordance with Section IV, Code 590 of the United States Department of Agriculture Natural Resources Conservation Service FOTG, FL, January 2009, hereby incorporated by reference. The Plan must be approved by NRCS or a qualified technical service provider. However, other alternatives may be considered by the District with technical justification. A Nutrient Management Plan can be a component of a Conservation Plan which includes the objective of reducing phosphorus discharges on lands with cattle operations. The District will assign BMP points to each

BMP	PTS	DESCRIPTION
NUTRIENT CONTROL PRACTICES ¹		
		Nutrient Management Plan based on the relative level of treatment proposed, as evidenced by the applicant through plans, test results or other information submitted with the application.

**BMP Description and Equivalent
Points Reference Table**

BMP	PTS	DESCRIPTION
WATER MANAGEMENT PRACTICES		
½ Inch Detained	5	Delayed discharge (based on measuring daily rain events using a rain gage).
1 Inch Detained	10	
Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment by Delayed or Minimized Discharge	5	Recirculation of water inside farm boundaries to improve water quality prior to off-site discharge, includes: fallow field flood water with no direct discharge (instead dispose of via evapotranspiration, seepage, use as irrigation water); or increasing water detention using properly constructed canal berms.
Low Volume Irrigation	5	Use of low volume irrigation methods, e.g. drip irrigation, microjet irrigation.
Approved and Operational Surface Water Reservoir (Certified) ²	10	Properly permitted, constructed and maintained storage system meeting specified Environmental Resource Permit (ERP) Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems). System meets Section 5.2.1 Water Quality Criteria-Volumetric Requirements
	10	System meets Section 6.2 Water Quantity Criteria-Discharge Rate
	15	System meets Section 6.3 Water Quantity Criteria-Design Storm (Must have a valid SFWMD construction and operation permit for the surface water system.)
Temporary Holding Pond	15	Temporary agricultural activities (as described in Chapter 40E-400, F.A.C.) with a properly constructed and permitted temporary holding pond.
Overland Sheet Flow over Entire Property	15	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow drainage to the land area.
No Point Discharge of Surface Water	15	Voluntarily disabling of offsite discharge structures or other permanent means to prevent point discharge from a land area.
Tailwater Recovery System	10	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharged offsite without the system.
Precision Irrigation Scheduling	10	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).

² Surface water reservoir certification refers to a construction completion certification by a Florida licensed Professional Engineer as required in Chapter 40E-4, F.A.C., using Form 0881A for projects permitted after October 3, 1995, and Form 0881B for projects permitted prior to October 3, 1995, which are incorporated by reference in paragraph 40E-4.461(1)(b), F.A.C., and Section 10.01 of the Basis of Review for Environmental Resource Permit applications within the South Florida Water Management District, incorporated by reference in Rule 40E-4.091, F.A.C., or the current certification requirements of Chapter 40E-4, F.A.C.

Water Resources Management for Pastures	5	Combination of water conservation and management practices considering the requirements of the primary forage grasses and supplemental cattle watering. Managing surface water via pump or controlled gravity structures to detain a minimum of ¼ inch of rain within soils, wetlands canals and ditches.
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BMP Description and Equivalent Points Reference Table

BMP	PTS	DESCRIPTION
PARTICULATE MATTER AND SEDIMENT CONTROLS³		
Any 2	2 ½	<ul style="list-style-type: none"> • erosion control by leveling fields • reduce soil erosion using grassed swales and field ditch connections to laterals
Any 4	5	<ul style="list-style-type: none"> • minimize sediment transport with slow velocity in main canal near discharge structure • minimize sediment transport into canals by constructing ditch bank berms
Any 6	10	<ul style="list-style-type: none"> • minimize sediment build-up through a canal cleaning program • reduce sediments transported off-site by using field ditch drainage sumps
Any 8	15	<ul style="list-style-type: none"> • minimize sediment transport with slow field ditch drainage near pumps/structure • reduce sediments transported offsite by maintaining a sediment sump/trap upstream of drainage structure • reduce sediment transport through the use of grassed waterways • reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No phosphorus is applied to these areas. • reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport • reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment) • maintain sustainable forage growth on pasture to reduce soil erosion/range seedlings • reduce soil erosion with constructed ditch bank stabilization • reduce soil erosion with cover crops (No phosphorus applied) • maintain vegetative cover in upland areas to reduce soil erosion • reduce soil erosion with vegetation on ditch banks • minimize phosphorus from plants by aquatic weed control (phosphorus source) at main discharge locations • reduce debris and aquatic plants (phosphorus source) leaving the site by using barriers at discharge locations

³ Approved and operational surface water management reservoirs (certified) can provide a 5 BMP equivalent points toward the particulate matter and sediment control practices category, based upon maintenance and operation of the reservoir and of a sediment canal cleaning and floating aquatic vegetation barrier or equivalent at the canals connecting the reservoir discharge and the offsite discharge locations.

BMP Description and Equivalent Points Reference Table

BMP	PTS	DESCRIPTION
PASTURE MANAGEMENT ⁴		
	2 ½	High intensity area management: <ul style="list-style-type: none"> ▪ Includes restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable.
	2 ½	<ul style="list-style-type: none"> • Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches
	2 ½	<ul style="list-style-type: none"> • Provide shade structures to prevent cattle in waterways
	2 ½	<ul style="list-style-type: none"> • Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches
	5	<ul style="list-style-type: none"> • Low cattle density (1 head/2 acres, non-irrigated pasture) by providing comprehensive prescribed grazing.
	10	<ul style="list-style-type: none"> • Restrict cattle from waterways through fencing of canals in a manner that protects water quality

⁴ These pasture management BMPs can provide equivalent points towards the particulate matter and sediment control practices category.

C-139 Basin Performance Measure Methodology

INTRODUCTION

This Appendix sets forth the performance measure methodology for determining whether the C-139 Basin is meeting the annual phosphorus load requirements described within the Everglades Forever Act (EFA), Section 373.4592(4)(f)5, FS. It includes procedures the District will follow to determine whether the entire C-139 Basin has maintained discharges at or below the collective average annual phosphorus loading based proportionally on the historical rainfall during the baseline period of October 1, 1978 through September 30, 1988. The determination requires annual calculation of the phosphorus load leaving the outfall structures from the C-139 Basin (location shown in Figure B1 and listed in Table B-1). The list of outfall structures used in the annual phosphorus load calculation will be adjusted by the South Florida Water Management District (District) to account for any changes in outflow structures from the C-139 Basin, including those changes caused by construction of regional projects.

Future water year annual observed loading of phosphorus attributed to C-139 Basin for performance assessment by this methodology may be adjusted by the District to reduce basin boundary flows that are demonstrated not representative of historic conditions. Potential circumstances where the discharge attributed to C-139 Basin landowners may be reduced include discharges related to the District's operation of the regional water management system for purposes other than flood control and inflows to the historic hydrologic boundary. The District shall describe the reductions and their technical basis in an annual report.

Load is the amount of phosphorus carried past a monitoring point by the movement of water. Data on water quality concentration and water quantity (flow) are required to calculate the phosphorus load discharged from a monitoring point. Data on water quality and quantity at the C-139 Basin outfall structures are available from the District. Several methods of collecting the data are also used. Accordingly, the best method of data collection and source of data to use in a load calculation must be identified.

The water quality and quantity collection sources and methods currently available are described below. The methods are improved continuously as new equipment becomes available and technology improves. However, when new methods are introduced, existing methods of data collection are continued concurrently with the new methods for a sufficient period of time to evaluate the impact of the method change on phosphorus load calculations. When the District reports the results of the C-139 Basin collective annual phosphorus loading for the period of May 1 through April 30, annually, the sources and methods of data collection used in the calculation will be described and available for inspection. Any changes in methods from the prior year will be specified. Substantially affected persons will have an opportunity to request an administrative hearing. The District shall incorporate permanent changes in methods into this Appendix periodically through Chapter 120, Florida Statutes, rulemaking proceedings as required.

The load calculations involve detailed procedures, which have been automated by a computer program in FORTRAN language. A flow chart of the program is shown in Figure B2. The methods and equations used in the program are outlined in Appendix B2.1 which is incorporated by reference in subsection 40E-63.446(1), F.A.C., and is available on various electronic media.

DATA COLLECTION SOURCES AND METHODS

Water Quantity – Flows

The District computes flow at all of the water control structures serving the C-139 Basin. Water control structures may include pumps, gated spillways, and gated culverts.

The District's hydrologic database stores multiple flow data sets at each structure. Each flow data set is created using a unique combination of sources of stage and control operations data. The District uses its data to perform water budget analyses and estimation techniques to obtain a "preferred" flow data set at each structure. Table B-1 shows the "preferred" C-139 Basin discharge flow data sets available in the District's hydrologic database (DBHYDRO).

Water Quality

A water sample collected in the field is called a "raw water sample", in differentiation with a "water sample" used in the chemistry laboratory. Current raw water sample collecting methods at structures utilized in the C-139 Basin phosphorus load calculation are listed in Table B-2. All raw water collection sites in the C-139 Basin phosphorus load calculation shall be collected by automatic samplers, however grab samples will be taken when automatic samplers are not functioning, or when necessary for other purposes. Automatic samplers will be programmed to take flow proportional composite samples. Where on-site real-time flow computation is impossible, time proportional composite samples will be taken. For future sampling, if an improved sampling method is proposed to replace existing sampling methods, existing methods will be continued concurrently until the relationship between results from existing and proposed methods have been established. The establishment of these relationships shall be based on an amount and quality of data that is sufficient to be statistically valid. When determining whether the data set is sufficient, at minimum the following shall be considered: the length of the period over which data was collected; the quality assurance of the data; and the number of events in the period.

Only a portion of a well-mixed raw water sample is used as the water sample in the actual quantitative analysis of a given water quality parameter. The chemical analysis is performed by a certified laboratory using accepted standard methods. In the event the District changes laboratories or analytical methods, concurrent analyses shall be conducted until a correlation can be established. Water quality parameters are identified by structure and collection site, project code, sample date, and serial number of the

sample. The data are stored in data base WQDMAIN.

Data Upgrades

There are three ways in which the quality and reliability of District flow data are being improved: (1) establishment of single time series of flow for each station from multiple sources of stage and control operations data, (2) verification and calibration of flow equations through intensified discharge measurements at all major C-139 Basin structures, and (3) calibration of acoustic velocity meter systems for future use as an additional source of flow data.

A prioritized list of sources of stage and control operations data are established for each flow station. Flow will be computed from the highest ranking sources. When the highest ranking source of data is missing, the next highest source will be used, and so on. This method will ensure the calculation of the best flow values from all sources and will minimize missing data.

Stream gauging has been utilized to provide discharge measurements at all major C-139 Basin structures. Statistical analyses verify or calibrate the discharge rating equations. Statistical analysis and calibration of rating equations will continue to increase the accuracy of the calculated flow values. When new or substantially different methods or techniques are proposed for measuring discharge at any of the sites listed in Table B-1, an analysis will be done to determine the relationships between the existing method and the proposed method prior to implementing the proposed change.

If any upgrades in water quality sampling are undertaken in the future, concurrent samples will be taken by the existing methods to maintain data continuity, at least until the upgraded methods have been tested and documented as reliable in accordance with the procedures described under "Water Quality" above.

ANNUAL PERFORMANCE DETERMINATION

With regard to BMP implementation initiated in 2001, the "Initial Compliance Determination Period" was the water year beginning May 1, 2002 and ending April 30, 2003 (WY2003). Following four years in which the C-139 Basin was determined to be "out of compliance", rulemaking was initiated in WY2007 to amend the existing Chapter 40E-63, F.A.C., to ensure that the objectives of the EFA, Section 373.4592(4)(f)5., F.S. are met. As a result, the "Initial Performance Measure Determination" period for the C-139 Basin is reset to account for additional water quality improvement activities and will be the water year beginning May 1, 2011 and ending April 30, 2012 (WY2012). The frequency of compliance determinations will be as set forth in Rule 40E-63.446, F.A.C. However, basin performance will be computed and reported on an annual water year basis, that is, annual phosphorus loads will be compared to the collective annual average phosphorus load derived for the baseline period (October 1, 1978 through September 30, 1988). This will occur annually as of April 30, a date that corresponds generally with the change from the dry to the wet rainfall periods.

Hydrology, that is discharge and rainfall, is a dominant factor when computing phosphorus loads. Because rainfall and discharge are subject to large temporal and spatial variation in south Florida, the evaluation for performance adjusts the phosphorus load to account for hydrologic variability. In addition to annual rainfall, significant influence of intra-annual rainfall on phosphorus loads has been observed and use of a relationship based on the monthly variability of rainfall is physically justified, in addition to having the greater statistical power.

Integrating recent data reflecting changes to the operation of the water management system as well as the influence of monthly rainfall patterns to the performance measure is anticipated to improve the methodology's future representation of C-139 Basin landowners' collective annual loading of phosphorus based proportionally on rainfall. For the calibration period of WY2000-2009 utilized for regression of phosphorus load from rainfall, the mean annual phosphorus load was calculated to be 51.5 metric tons. To establish a load target that preserves the objectives of the EFA, the WY2000-2009 annual phosphorus loads were proportionally adjusted by a factor of 74.05%, such that the adjusted mean annual phosphorus load was equivalent to the baseline period mean of 38.2 mtons. The adjusted annual data from the calibration period was utilized to determine a relationship between rainfall and target load.

The adjustment for hydrologic variability includes two components:

1. A model to estimate future phosphorus loads. The model estimates a future phosphorus load from the C-139 Basin rainfall characteristics by substituting future hydrologic conditions for the conditions that occurred during the calibration period (WY2000-2009), adjusting the observed annual loads by 74.05% so the average annual phosphorus load equals the average annual phosphorus load of the baseline period (WY1980-1988). The estimation is based on hydrologic data collected for any time period of May 1 through April 30 subsequent to the calibration period. The annual adjusted rainfall range for which the model shall be applied is from 27.97 inches to 66.21 inches based upon rainfall observed during the WY1980-2009 period of record.
2. Accommodation for possible statistical error in the model. Statistical error in the model was accounted for by specifying a required level of statistical confidence in the prediction of the long-term average phosphorus load. The 90th percentile confidence level was selected as reasonable.

Evaluation of the C-139 Basin for phosphorus load performance will be based upon the following:

1. If the actual measured phosphorus loading from the C-139 Basin in a post-baseline May 1 through April 30 period is less than the model phosphorus load estimate (Target), then the C-139 Basin will be determined to meet its performance measure, that is, it will not have exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability.
2. The performance determination will be suspended if the adjusted rainfall for the

May 1 through April 30 water year is outside the range of 27.97 inches to 66.21 inches and the actual measured phosphorus loading exceeds the target in any May 1 through April 30 period. Any period(s) for which the performance determination is suspended will be excluded from the calculation of the three-year average annual phosphorus load, and will be excluded from the determination of whether the target has been exceeded in three or more consecutive May 1 through April 30 periods.

3. If the actual measured phosphorus loading from the C-139 Basin exceeds the model phosphorus load estimate (target) in three or more consecutive May 1 through April 30 periods, and if not suspended due to rainfall, then the C-139 Basin will be determined to exceed its performance measure, that is, it will have exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability.

4. If the actual measured phosphorus loading from the C-139 Basin exceeds the upper 90% confidence level of the target (herein after referred to as the Limit), in any May 1 through April 30 period and if not suspended due to rainfall, the C-139 Basin will be determined to exceed its performance measure, that is, it will have exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability.

5. The target, limit and adjusted rainfall will be calculated according to the following equations and explanation:

$$\text{Target} = \exp(-17.0124 + 4.5995 X + 3.9111 C - 1.0055 S)$$

$$\text{Explained Variance} = 74.2\%, \text{ Standard Error of Estimate} = 0.5440$$

Predictors (X, C, S) are calculated from the first three moments (m_1, m_2, m_3) of the 12 monthly rainfall totals ($r_i, i=1$ to 12, inches) for the current year:

$$m_1 = \text{Sum} [r_i] / 12$$

$$m_2 = \text{Sum} [r_i - m_1]^2 / 12$$

$$m_3 = \text{Sum} [r_i - m_1]^3 / 12$$

$$X = \ln(12 m_1)$$

$$C = [(12/11) m_2]^{0.5} / m_1$$

$$S = (12/11) m_3 / m_2^{1.5}$$

$$\text{Limit} = \text{Target} \exp(1.440 \text{ SE})$$

SE = standard error of predicted $\ln(L)$ for May-April interval

$$SE = 0.5440 [1 + 1/10 + 4.8500 (X-X_m)^2 + 8.1932 (C-C_m)^2 + 0.9247 (S-S_m)^2 + 4.5950 (X-X_m) (C-C_m) - 0.3624 (X-X_m) (S-S_m) - 4.0048 (C-C_m) (S-S_m)]^{0.5}$$

$$\text{Adjusted Rainfall} = \exp [X + 0.8503 (C - C_m) - 0.2186 (S - S_m)]$$

Where:

Target = predicted load for future rainfall conditions (metric tons/yr)

Limit = upper 90% confidence limit for Target (metric tons/yr)

Adjusted Rainfall = equivalent rainfall for mean C and S variables (inches)

X = the natural logarithm of the 12-month total rainfall (inches),

C = coefficient of variation calculated from 12 monthly rainfall totals,

S = skewness coefficient calculated from 12 monthly rainfall totals,

X_m = average value of the predictor in calibration period = 3.8434,

C_m = average value of the predictor in calibration period = 0.9087,

S_m = average value of the predictor in calibration period = 0.8200,

The first predictor (X) indicates that load increases exponentially with total annual rainfall. The second and third predictors (C & S) indicate that the load resulting from a given annual rainfall is higher when the distribution of monthly rainfall has higher variance or lower skewness. For a given annual rainfall, the lowest load occurs when rainfall is evenly distributed across months and the highest load occurs when all of the rain falls in one month. Real cases fall in between.

Figure B-1
C-139 Basin Boundary and Discharge Monitoring Locations

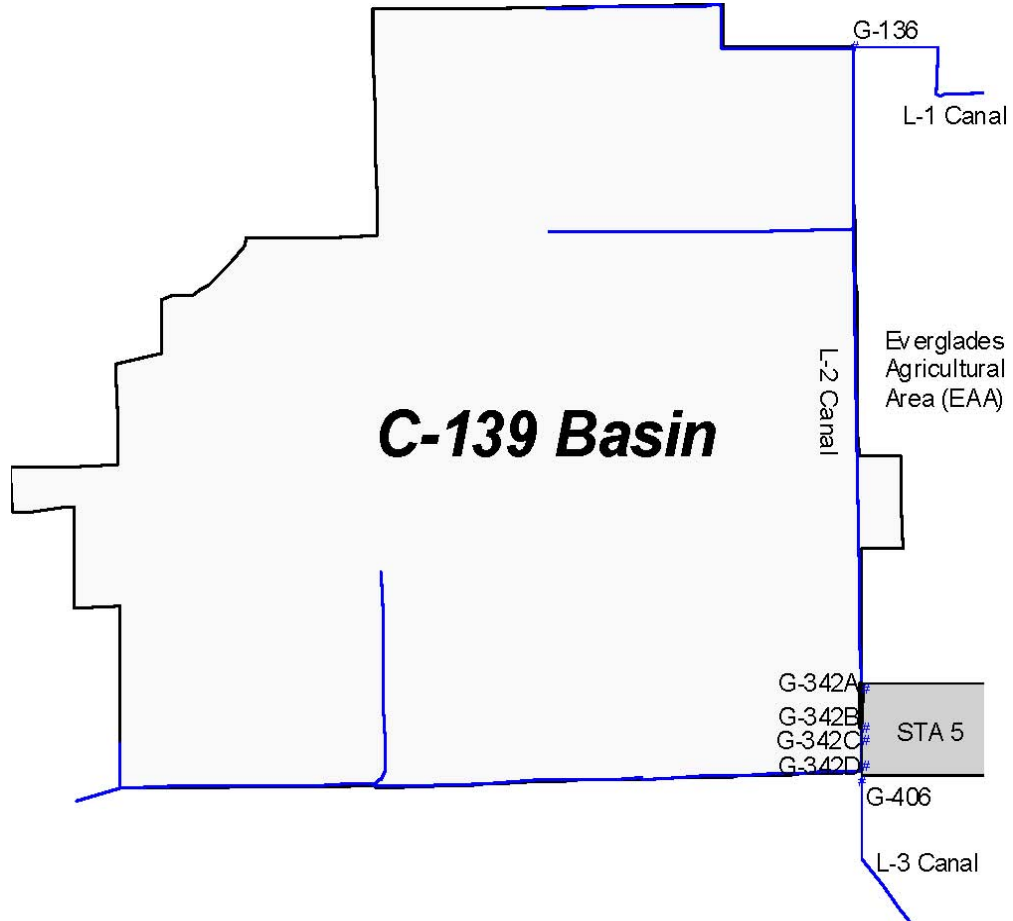


Figure B-2
Flowchart - Calculation of C-139 Basin Phosphorus Loads

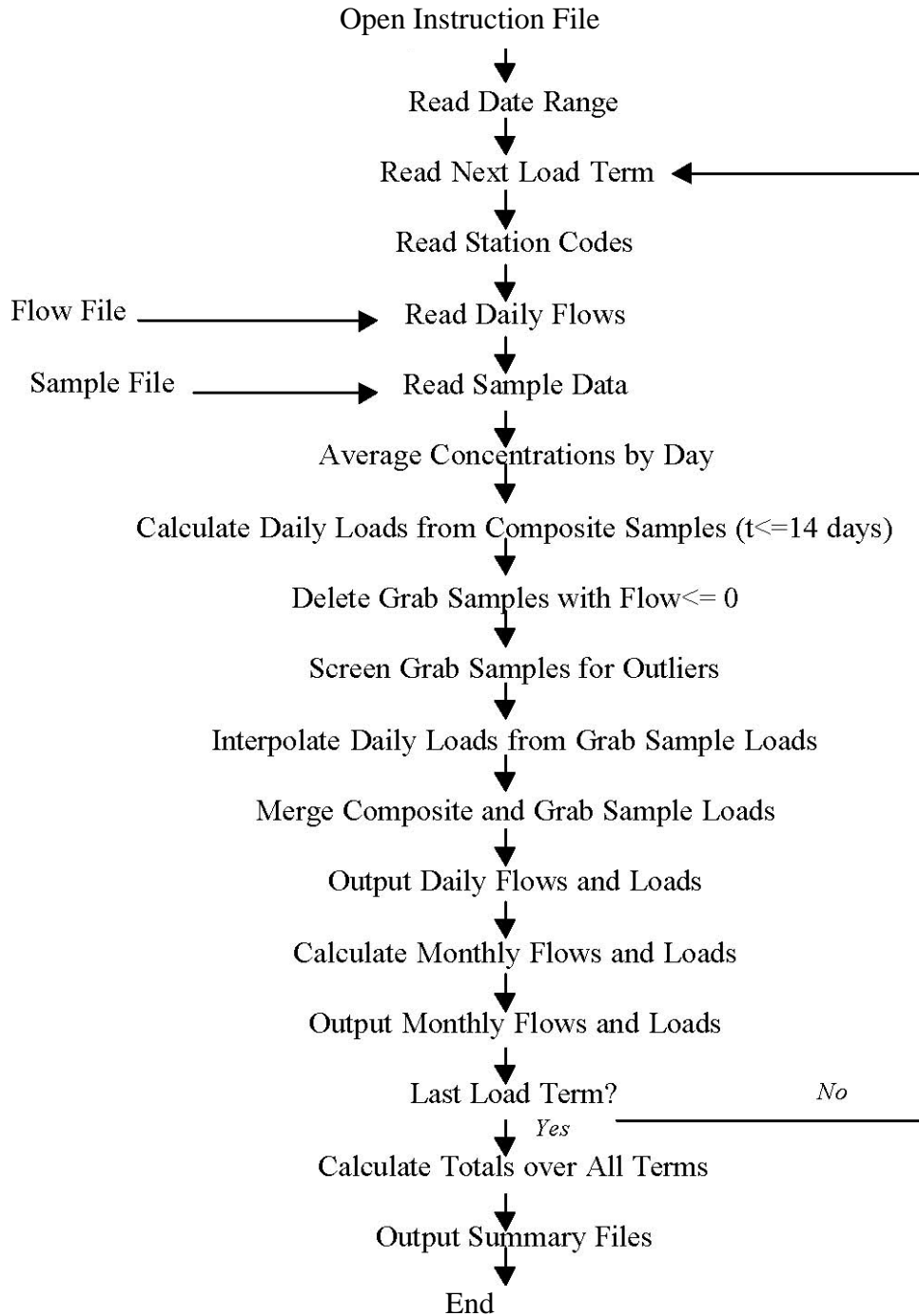
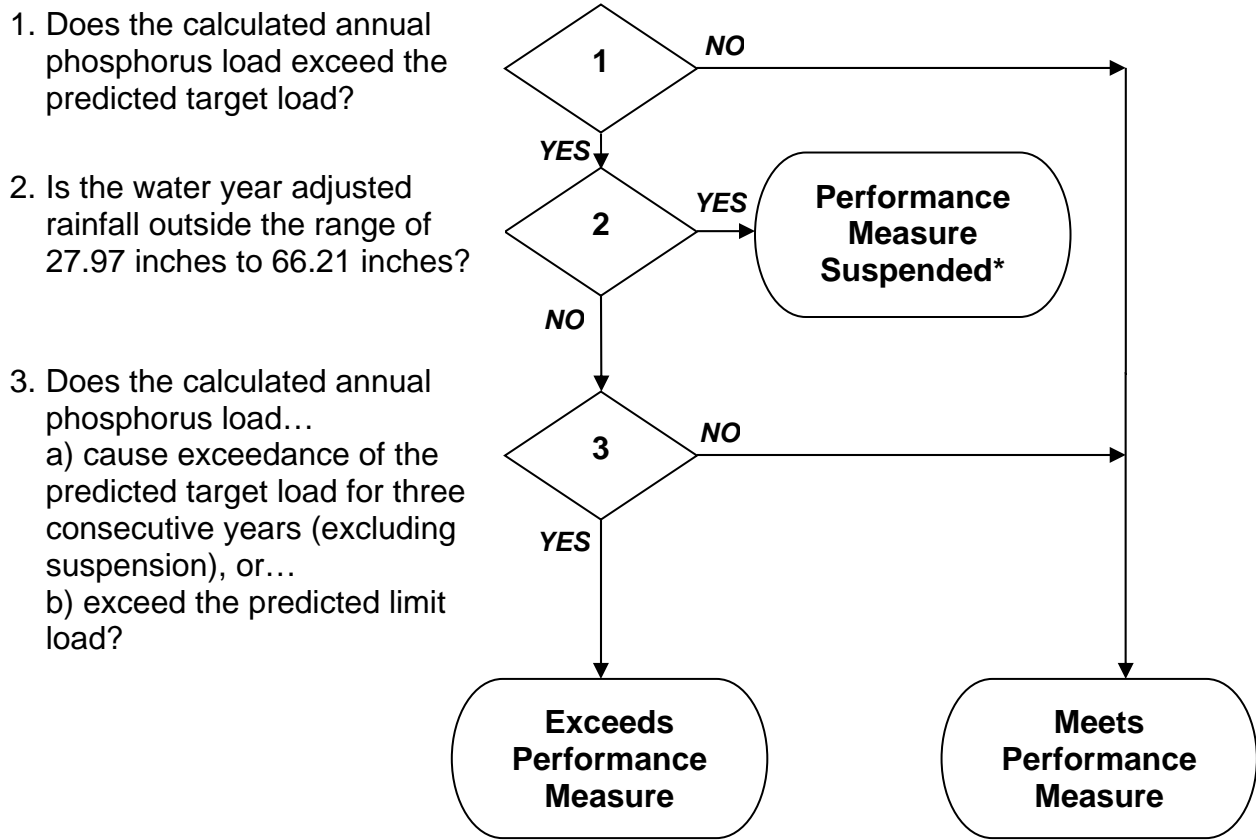


Figure B-3
Flowchart – C-139 Basin Annual Performance Determination



* If the target is exceeded in a May 1 through April 30 period, and the District determines that the adjusted rainfall for the period is outside the range of 27.97 inches to 66.21 inches, the target and limit will be suspended and the C-139 Basin will not be determined to exceed its performance measure for that period only. Any period(s) for which the target and limit is suspended will be excluded from the determination of whether the target has been exceeded in three or more consecutive May 1 through April 30 periods. That is, the C-139 Basin will exceed its performance measure when the target is exceeded for three May 1 through April 30 periods, without an intervening May 1 through April 30 period in which the C-139 Basin has been determined to meet its performance measure, even though the three periods may be interrupted by periods of suspension.

Table B-1
C-139 Basin Discharge Structures Database Keys To Flow Data Time Series

Structure	Preferred DBKEY
G-136	15195
G-342A	J6406
G-342B	J6398
G-342C	J6407
G-342D	J6405
G-406	JU789

The reference numbers in the table are keys to the data sets, known as "dbkeys".

The list of outfall structures used in the annual phosphorus load calculation will be adjusted by the District to account for any changes in outflow structures from the C-139 Basin, including those changes caused by construction of Stormwater Treatment Areas.

Table B-2
C-139 Basin Discharge Structures Current Water Quality Sampling Methods

Structure	Collection Site	Instrument*
G-136	Gravity	A
G-342A	Gravity	A
G-342B	Gravity	A
G-342C	Gravity	A
G-342D	Gravity	A
G-406	Gravity	A

* A = automatic sampler primary method, grab sample back-up

FORTRAN Program for Calculating C-139 Basin Flows and Phosphorus Loads

Program C139TPLD.FOR

```

c C139TPLD.job = input ascii file specifying case conditions
c version of EAATPLD modified for C139 Basin Calcs
c w. walker july 2000
c handles 13000 days, 500 months
c handles yymmdd or yyyyymmdd formats

      integer*4 dgrab,dcomp,d0,dlast,dbase,dbase0,qdate
      integer*4 ivalidg(10),ivalidc(10)
      character*64 title
      character*32 ofile1,ofile2,ofile3,ofile4,cfile,qfile,ofile3b
      character*32 sfile
      character*32 blank /' '/
      character*8 slab,dum8,qlab,ulab,usave(30),mname(4),cvar
      character*8 clabel(100)
      real*8 xin(100)
      common /a/ qdate(13000)
      common /ab/ flow(13000)
      common /c/ wgrab(13000),wcomp(13000)
      common /cc/ wuse(13000)
      common /b/ dgrab(1000),dcomp(1000),cgrab(1000),ccomp(1000),
& x(2000),iym(500),qsave(500,30),wsave(500,30),isgn(30),
& b(15),sb(15),stats(15),coefs(10),
& sumd(6),sumw(6),y(1000),prb(1000),ratio(3),wc(2),wg(2),ncg(2)

c      number of load calc methods
      data nmeth/3/
      data mname/'noflow','compos',' grab',' miss' /
c  qfac: convert cfs*days to output units = cfs-days
      data qfac/1./

c factor: convert cfs*ppb to kg/day
      factor=24.*3600./3.28**3/1.e6

c  read job control file
      open(7,file=' ',status="old")

c read control parameters
      read(7,*) title,qfile,dum8,cfile,dum8,
*      nmaxc,dum8,dbase0,dum8,dbase,dum8,sig,dum8,
*      iratio,dum8

c read date range & other parameters
      read(7,*) iymd1,dum8,iymd2,dum8,cvar,dum8,sf,dum8,dmax,dum8,
&      minsam,dum8

c read valid sample type codes for composite & grab samples
      read(7,*) nvalidc,(ivalidc(i),i=1,nvalidc)
      read(7,*) nvalidg,(ivalidg(i),i=1,nvalidg)

c read output file names
      read(7,*) sfile,dum8,ofile1,dum8,ofile2,dum8,ofile3,dum8,

```

```

&   ofile3b,dum8,ofile4,dum8
    read(7,*)

c extend sample interval nafter days beyond flow date range
c where nmax = maximum duration of composite sample
    nafter = nmaxc

c date sequence number for end of base period
    jdbase=jdate(dbase)
    jdbase0=jdate(dbase0)

c date sequence number range for load calcs
    jymd1=jdate(iyemd1)
    jymd2=jdate(iyemd2)

    write(*,*) title

c input flow file
    open (8, file=qfile,status='old')

c daily output file
    if(ofile1.ne.blank) then
        write(*,*) 'Daily Output File: ',ofile1
        open(10,file=ofile1,status="unknown")
        write(10,"(a64)") title
        write(10, 2)
    endif
    2      format('station  date  ip mth      flow',
&          '      load  cgrab  ccomp  cused c/g ratio')

c monthly output file
    if(ofile2.ne.blank) then
        write(*,*) 'Monthly Output File: ',ofile1
        open(11,file=ofile2,status="unknown")
        write(11,345) title
    345   format(a64/'station  date  days  flow(csd)',
&          '      load(kg) conc(ppb)')
    endif

c sample file
    if(sfile.ne.blank) then
        write(*,*) 'Sample Output File: ',sfile
        open(15,file=sfile,status="unknown")
        write(15,348) sfile,title
    348   format('Sample File: 'A32/A64/
&   ' Term  CStation Qstation  Type StartDate',
&   ' StopDate MeanFlow  Conc')
    346   format(/
&   ' Term  CStation Qstation  Type StartDate',
&   ' StopDate MeanFlow  Conc')
    347   format(3a10,A6,2i10,f10.2,f10.2)
    endif

c ***** for each station in job control file *****
    nsta=0
    10 nsta=nsta+1

```

```
c          ulab = output label for mass-balance term
c          slab=stn id in [sfile] (1st column); qlab=q stn id
c ipos = flow sign indicator (1 = use positive flows, -1 = use negative
flows)
c icomp = composite sample indicator (1=use composite samples, 0= do not
use)
c isgn = sign of term in computing total outflow (+1,0,-1)
      read(7,*,end=500) ulab,slab,qlab,ipos,
      & icomp,isgn(nsta)
      write(*,*)
      write(*,*) 'term = ',ulab
      write(*,*) 'sample station = ',slab
      write(*,*) 'flow label = ',qlab
      usave(nsta)=ulab

c read daily flow file
      call flowread(8, jynd1, jynd2,qlab,nq,qdate,flow)
c          file must contain entire data range (iynd1 to iynd2);
c          one/day with no missing dates (missing flows set=0)
      if(nq.le.0) go to 999

c check for error in date sequence
      do ni=1,nq
      if(ni.gt.1) then
          if(qdate(ni)-qdate(ni-1).ne.1) then
              write(*,*) 'flows out of sequence: ',kdate(qdate(ni))
              stop
          endif
      endif
      end do

c check flow date range
      write(*,*)'flow dates=          ',nq,
      &      kdate(qdate(1)),kdate(qdate(nq))
      if(qdate(1).ne.jynd1) go to 999
      if(qdate(nq).le.jynd2) then
          jynd2=qdate(nq)
      else
          go to 999
      endif

c add extra flow dates to allow sample record to extend beyond flow record
      do j=1,200
          qdate(j+nq)=qdate(j+nq-1)+1
      enddo

c read sample data
      d0=jynd1-1
      ngrab=0
      ncomp=0
c fixed format input
      open(16,file=cfile,status="old")
      read(16,*)
      read(16,*) nfields
      read(16,*) cmis
      read(16,'(100(a8,2x))') (clabel(i),i=1,nfields)
```

```
c locate either date format
  id=match(nfields,clabel,'YYYYMMDD')
  if(id.eq.0) then
    id=match(nfields,clabel,'YMMDD  ')
  endif
  if(id.le.0) then
    write(*,*) 'Missing Date (YMMDD or YYYYMMDD) Field'
    stop
  endif

c locate concentration field
  ic=match(nfields,clabel,cvar)
  if(ic.le.0) then
    write(*,*) 'Missing Concentration Field: ',cvar
    stop
  endif
  it=match(nfields,clabel,'TYPE  ')
  if(it.le.0) then
    write(*,*) 'Missing Sample Type Field'
    stop
  endif

40      read(16,41,end=60) dum8,(xin(i),i=2,nfields)
41      format(a8,2x,50f10.0)

c date
  idd=jfix(xin(id))
c date sequence number
  jdd=jdate(idd)

  if(jdd.le.0) then
    write(*,*) 'invalid sample date: ',idd
    stop
  endif

  itype=jfix(xin(it))
  conc=xin(ic)

c check for missing concentration value
  if(conc.eq.cmis.or.conc.eq.0.) goto 40

c check station match
  if(ic8(dum8,slab).le.0) goto 40

c check date range, including nafter days beyond calc interval
  if(jdd.lt.jymd1.or.jdd.gt.jymd2+nafter) go to 40

c rescale concentration and set to absolute value
  conc=sf*abs(conc)

c  check for composite vs. grab sample
  do j=1,nvalidc
    if(itype.eq.ivalidc(j)) goto 550
  enddo
  do j=1,nvalidg
```

```
        if(itype.eq.ivalidg(j)) goto 551
        enddo

        write(*,*) 'Skipping sample with invalid sample type code:',
&          itype
        goto 40

c composite sample
550      ncomp=ncomp+1
        ccomp(ncomp)=conc
        dcomp(ncomp)=jdd-d0
        if(ncomp.gt.1.and.dcomp(ncomp).lt.dcomp(ncomp-1)) then
            write(*,*) 'compos sample out of sequence: ',idd
            stop
        endif
        goto 40

c grab sample
551      ngrab=ngrab+1
        cgrab(ngrab)=conc
        dgrab(ngrab)=jdd-d0
        if(ngrab.gt.1.and.dgrab(ngrab).lt.dgrab(ngrab-1)) then
            write(*,*) 'sample date out of sequence: ',idd
            stop
        endif
        go to 40

60      continue

        if(ngrab.gt.0) write(*,*) 'grab samples =      ',ngrab,
&          kdate(qdate(dgrab(1))),kdate(qdate(dgrab(ngrab)))

        if(ncomp.gt.0) write(*,*) 'composite samples =',ncomp,
&          kdate(qdate(dcomp(1))),kdate(qdate(dcomp(ncomp)))
        close(16)

c calculate average concentrations by date
        call xred(dgrab,cgrab,ngrab)
        call xred(dcomp,ccomp,ncomp)
        write(*,*) 'daily-avg grab samples =      ',ngrab
        write(*,*) 'daily-avg composite samples =',ncomp

c scratch composite samples if switch indicates so
        if(icmp.le.0) then
            if(ncomp.gt.0)
&          write(*,*) 'warning: composite samples not used'
            ncomp=0
        endif

c assign daily flows in cfs
        do 70 j=1,nq
            if(ipos.eq.1) then
                flow(j)=amax1(flow(j),0.)
            else
                flow(j)=abs(amin1(flow(j),0.))
            endif
        enddo
```

```

c initialize daily load vectors
      wgrab(j)=0.
      wcomp(j)=0.
70      wuse(j)=0.

c calculate loads from composite samples
      if(ncomp.gt.0) then
        dlast=0.
        write(*,*)
        write(*,*) 'Composite Sample Listing:'
        write(*,346)
        do i=1,ncomp

c date range to apply composite-sample concentration
          j2=dcomp(i)
          j1=amax1(1.,float(dcomp(i)-nmaxc))
          if(j1.le.dlast) j1=dlast+1
          if(j1.gt.j2) j1=j2
          qavg=0.
          do j=j1,j2
            wcomp(j)=flow(j)*ccomp(i)*factor
            qavg=qavg+flow(j)
          enddo
          qavg=qavg/(j2-j1+1)

          if(sfile.ne.blank)
&          write(15,347) ulab,slab,qlab,'Comp',
&          kdate(qdate(j1)),kdate(qdate(j2)),qavg,ccomp(i)

          write(*,347) ulab,slab,qlab,'Comp',
&          kdate(qdate(j1)),kdate(qdate(j2)),qavg,ccomp(i)

          dlast=dcomp(i)
        enddo

      endif

c process grab samples
c eliminate grab-samples collected on days with no flow
      mgrab=0
      write(*,*)
      write(*,*) 'Grab Sample Listing:'
      write(*,346)

      do i=1,ngrab

        k=kdate(qdate(dgrab(i)))
        if(sfile.ne.blank)
&        write(15,347) ulab,slab,qlab,'Grab',
&        k,k,flow(dgrab(i)),cgrab(i)

        write(*,347) ulab,slab,qlab,'Grab',
&        k,k,flow(dgrab(i)),cgrab(i)

        if(flow(dgrab(i)).gt.0.) then

```

```

        mgrab=mgrab+1
        dgrab(mgrab)=dgrab(i)
        cgrab(mgrab)=cgrab(i)
    endif
enddo
ngrabt=ngrab
ngrab=mgrab
write(*,*)
write(*,*) 'grab samples on days with positive flow =',ngrab
if(ngrab.gt.0) write(*,*) 'date range =',
&         kdate(qdate(dgrab(1))),kdate(qdate(dgrab(ngrab)))

c screen base-period grab samples for outliers
c based upon log(c) vs. log(q) regression
c (Snedecor & Cochran, Statistical Methods, 1980, pp. 167-168)
if(sig.gt.0.) then

    ngd=ngrab
110    j=0
        do i=1,ngrab
            if(qdate(dgrab(i)).le.jdbase.and.
&         qdate(dgrab(i)).ge.jdbase0) then
                j=j+1
                prb(j)=1.
                x(j)=alog(flow(dgrab(i)))
                y(j)=alog(cgrab(i))
            endif
        end do
        call outlyr(x,y,j,sig,prb,nrej)
        if(nrej.gt.0) then
            m=0
            j=0
            do i=1,ngrab
                if(qdate(dgrab(i)).le.jdbase.and.
&         qdate(dgrab(i)).ge.jdbase0) then
                    j=j+1
                    if(prb(j).gt.sig) then
                        m=m+1
                        dgrab(m)=dgrab(i)
                        cgrab(m)=cgrab(i)
                    else
140                write(*,140) kdate(qdate(dgrab(i))),cgrab(i),prb(j)
&                format(' ***outlier: date =',i8,
                    ', conc = ', f10.1, ', prob =',f8.3)
                endif
            else
                m=m+1
                dgrab(m)=dgrab(i)
                cgrab(m)=cgrab(i)
            endif
        enddo
        ngrab=m
c repeat screen until no outliers are found
        go to 110
    endif
c number of outliers

```

```
ngout=ngt-ngrab
endif

c fit multiple regression for filling grab concentrations
c form: C = a0 + a1 Q

ssumq=0.
ssumw=0.
mm=0
qmin=1.e10
qmax=0.
c count samples in base period
do i=1,ngrab
  if(qdate(dgrab(i)).le.jdbase.and.
& qdate(dgrab(i)).ge.jdbase0) mm=mm+1
enddo

c set up data matrix for regression
m=0
do i=1,ngrab
  if(qdate(dgrab(i)).le.jdbase.and.
& qdate(dgrab(i)).ge.jdbase0) then
  m=m+1
  qq=flow(dgrab(i))
  ssumq=ssumq+qq
  ssumw=ssumw+qq*cgrab(i)
  qmin=amin1(qmin,qq)
  qmax=amax1(qmax,qq)
  x(m)=qq
cc x(m+mm)=cgrab(i)
  endif
enddo

c test for sufficient samples
if(m.ge.minsam) then
c regression
write(*,*)
write(*,*) 'Conc vs. Flow Regression Used to File Data Gaps'
call regre(m,x,cgrab,coefs(1),coefs(2),r2,se2,sb)
write(*,*)

else

c use longterm flow-weighted mean conc if m < nsam
156 coefs(2)=0.
if(ssumq.le.0) then
  write(*,*) 'warning - no grab samples in base pd'
  c=0.
  else
  c=ssumw/ssumq
  endif
write(*,*) 'grab sample flow wtd mean conc for base pd =',c
coefs(1)=c
endif

c calculate daily loads from grab samples by interpolation
```



```

c substitute regression estimate if time gap > dmax days
  do i=1,ngrab
    x(i)=qdate(dgrab(i))
  enddo

  if(ngrab.gt.0)
&   call eint2(ngrab,x,cgrab,nq,qdate,wgrab,flow,dmax,
&   coefs,qmin,qmax,nqe)

c count positive flow dates
  nqp=0
  do i=1,nq
    if(ngrab.eq.0) wgrab(i)=0.
    wgrab(i)=wgrab(i)*flow(i)*factor
    if(flow(i).gt.0.) nqp=nqp+1
  enddo
  write(*,161) nqp-nqe,nqe,nqp
161  format(' number of positive flow days: '/
&      ' estimated by interpolation           ',i5/
&      ' estimated by regression or flow-wtd mean',i5/
&      ' total                               ',i5)

c calculate load ratio for days with both composite and grab samples
c calc separate ratios for base period (ratio(1)) and after (ratio(2))

  do i=1,2
    wg(i)=0.
    wc(i)=0.
    ncg(i)=0
  end do

  do i=1,nq
    if(wgrab(i).gt.0.and.wcomp(i).gt.0.) then
      if(qdate(i).gt.jdbase) then
        j=2
      else
        j=1
      endif
      wg(j)=wg(j)+wgrab(i)
      wc(j)=wc(j)+wcomp(i)
      ncg(j)=ncg(j)+1
    endif
  enddo

c set scale factor for grab/composite samples
c period = 1 base period, 2=after
  do j=1,2
    ratio(j)=ratv(wc(j),wg(j))
c set to 1 if composite samples are ignored
    if(icompl.le.0) ratio(j)=1.
  end do

c combined ratio for both periods
  ratio(3)=ratv(wc(1)+wc(2),wg(1)+wg(2))

c set ratio=1 if no matching days

```

```
        if (ratio(1).le.0.) ratio(1)=1.0
c if ratio(2) missing, set ratio(2)=ratio(1)
        if(ratio(2).le.0.) ratio(2)=ratio(1)

c final load
        do lq=1,5
            sumd(lq)=0.
            sumw(lq)=0.
        end do

        do i=1,nq

            if(qdate(i).gt.jdbase) then
                ipd=2
            else
                ipd=1
            endif

c meth=1 no flow
            if(flow(i).le.0.) then
                wuse(i)=0.
                meth=1

c meth=2 use composite load
            else if(wcomp(i).gt.0.) then
                wuse(i)=wcomp(i)
                meth=2

c meth=3 use grab load
            else if(wgrab(i).gt.0.) then

c iratio = 0 use separate values
c iratio = 1 use base period values only
c iratio = 2 use 1.0 always
c iratio = 3 use values for whole record
                if(iratio.eq.0) then
                    rr=ratio(ipd)
                elseif(iratio.eq.1) then
                    rr=ratio(1)
                elseif(iratio.eq.2) then
                    rr=1.
                else
                    rr=ratio(3)
                endif
                if(rr.eq.0.) rr=1.
            meth=3
            wuse(i)=wgrab(i)*rr

        endif

            sumw(meth)=sumw(meth)+wuse(i)
            sumd(meth)=sumd(meth)+1.

c output daily results on all days
        if(ofile1.ne.blank) then
```

```

                write(10,280) ulab,kdate(qdate(i)),ipos,
&                meth,flow(i),wuse(i),
&                ratv(wgrab(i),flow(i))/factor,
&                ratv(wcomp(i),flow(i))/factor,
&                ratv(wuse(i),flow(i))/factor,ratio(ipd)
280                format(a8,1x,i8,i3,i3,f9.1,f9.2,3f8.1,f10.3)
                endif
c                date loop
                end do

c summarize ratio calculations
                write(*,235) iratio
235                format(/' grab/composite ratio option =',i3/
&                '          base-period after-base-pd   ratio'/
&                ' station ncomp ngrab days ratio days ratio   used')
                write(*,245) ulab,ncomp,ngrab,ncg(1),ratio(1),
&                ncg(2),ratio(2),rr
245                format(1x,a8,3i6,f8.5,i6,2f8.5)

c method summary
                write(*,305) (mname(i),i=1,nmeth)
305                format(/' breakdown of load estimation methods: '/
&                ' method:  ',6a10)
                do i=1,nmeth
                    sumd(nmeth+1)=sumd(nmeth+1)+sumd(i)
                    sumw(nmeth+1)=sumw(nmeth+1)+sumw(i)
                enddo
                write(*,"(' days%  :",6f10.1)")
&                (100.*ratv(sumd(i),sumd(nmeth+1)),i=1,nmeth)
                write(*,"(' load%  :",6f10.1)")
&                (100.*ratv(sumw(i),sumw(nmeth+1)),i=1,nmeth)

c calculate monthly totals
                m=0
                nk=2

c get yyyy-mm
                kym=iyim(qdate(1))
                do k=1,nk
                    x(k)=0.
                enddo
                mm=0
                do i=1,nq
                    jym=iyim(qdate(i))
                    if(jym.ne.kym.or.i.eq.nq) then

c output monthly totals for current station
                    m=m+1
                    cc=ratv(x(2),x(1))*qfac/factor
                    if(i.eq.nq) then
                        mm=mm+1
                        x(1)=x(1)+flow(i)*qfac
                        x(2)=x(2)+wuse(i)
                    endif
                    if(ofile2.ne.blank)
&                    write(11,350) ulab,kym,mm,(x(k),k=1,2),cc

```

```

350             format(a8,i8,i4,2f12.2,f10.2)
               qsave(m,nsta)=x(1)
               wsave(m,nsta)=x(2)
               iym(m)=kym
               do k=1,nk
                 x(k)=0.
               enddo
               mm=0
               kym=jym
             endif
               mm=mm+1
               x(1)=x(1)+flow(i)*qfac
               x(2)=x(2)+wuse(i)
           end do

c end loop around stations
           go to 10
c last station completed
           500             continue

c final output section....
c weighted sum over all stations
           usave(nsta)='Total'
           do i=1,m
             qsave(i,nsta)=0.
             wsave(i,nsta)=0.
c sum across stations
             do j=1,nsta-1
               qsave(i,nsta)=qsave(i,nsta)+qsave(i,j)*isgn(j)
               wsave(i,nsta)=wsave(i,nsta)+wsave(i,j)*isgn(j)
             end do
           end do

c output monthly cross-tabs

           if(ofile3.ne.blank) then
             open(12,file=ofile3,status="unknown")
             write(12,1224) title
1224             format(a64/'flows in cfs-days')
             write(12,"(a4,5x,50a12)") 'date',(usave(i),i=1,nsta)
               do 530 i=1,m
530                 write(12,"(i6,50f12.2)") iym(i),(qsave(i,k),k=1,nsta)
             close(12)
           endif

           if(ofile3b.ne.blank) then
             open(12,file=ofile3b,status="unknown")
             write(12,1225) title
1225             format(a64/'loads in kilograms')
             write(12,"(a4,5x,50a12)") 'date',(usave(i),i=1,nsta)
               do 540 i=1,m
540                 write(12,"(i6,50f12.2)") iym(i),(wsave(i,k),k=1,nsta)
             close(12)
           endif

c output monthly totals across all stations

```

```

        if(ofile4.ne.blank) then
            open(13,file=ofile4,status="unknown")
            write(13,"(a64)") title
            write(13,*) 'totals'

            write(13,567)

567      format('date      flow(cfsd)      load(kg) conc(ppb)')

c loop around months
      do k=1,4
          y(k)=0.
          end do

          do i=1,m

              write(13,560) iym(i),qsave(i,nsta),wsave(i,nsta),
&              ratv(wsave(i,nsta),qsave(i,nsta))*qfac/factor
560              format(i6,2f12.2,f10.1)

c sum over all months
              qsave(m+1,nsta)=qsave(m+1,nsta)+qsave(i,nsta)
              wsave(m+1,nsta)=wsave(m+1,nsta)+wsave(i,nsta)
              enddo

              write(13,570) qsave(m+1,nsta),wsave(m+1,nsta),
&              ratv(wsave(m+1,nsta),qsave(m+1,nsta))*qfac/factor
570              format('/total      ',2f12.2,f10.1)

                              close(13)

          endif
999      close(10)

      end

      subroutine flowread(ifile,ibdate,iedate,clab,nq,idates,values)
c read daily flows - generalized from eatpld
      character*8 labs(50),clab
      real*4 values(1)
      real*8 q(50),qmis
      integer*4 idates(1)

      rewind ifile
      read(ifile,*)
      read(ifile,*) nfields
      read(ifile,*) qmis
      read(ifile,'(100(a8,2x))') (labs(i),i=1,nfields)

      nq = 0
      iq=match(nfields,labs,clab)
      if(iq.le.0) then
          write(*,*) 'Missing Flow Field: ',clab
          stop
          endif

```

```

c locate either date format
      id=match(nfields,labs,'YYYYMMDD')
      if(id.eq.0) then
          id=match(nfields,labs,'YMMDD  ')
          endif
      if(id.le.0) then
          write(*,*) 'Missing Date (YMMDD or YYYYMMDD) Field'
          stop
          endif

      20      read(ifile,222,end=100) (q(i),i=1,nfields)
      222      format(100f10.0)

c translate date to date sequence number format
      ifdate=jdate(jfix(q(id)))
      if(ifdate.le.0.) then
          write(*,*) 'invalid flow date =',jfix(q(id))
          stop
          endif

c check date range
      if(ifdate.lt.ibdate) then
          goto 20
      else if(ifdate.gt.iedate) then
          return
      else

c stop on first missing flow
      if(q(iq).eq.qmis) return

c update flow vector
      nq=nq+1
      idates(nq)=ifdate
      values(nq) = q(iq)

c get next record
      go to 20
      endif

c end of flow file
      100 continue
      return
      end

      subroutine eint2(n,e,x,ni,ei,xi,qq,dmax,coefs,qmin,qmax,nqe)

c interpolates e,x vector at ei,xi
c e's and ei's sorted in increasing order
c substitutes regression estimate if interp interval > dmax days

      integer ei(1)
      dimension x(1),e(1),xi(1),qq(1),coefs(1)
c
      i=1

```

```

        nqe=0
        do j=1,ni
c before first sample
            if(ei(j).le.e(1)) then
            if(e(1)-ei(j).gt.dmax) then
                xi(j)=cest(qq(j),coefs,qmin,qmax,nqe)
            else
                xi(j)=x(1)
            endif
c after last sample
            elseif(ei(j).ge.e(n)) then
            if(ei(j)-e(n).gt.dmax) then
                xi(j)=cest(qq(j),coefs,qmin,qmax,nqe)
            else
                xi(j)=x(n)
            endif
c after next sample
            else
14         if(ei(j).gt.e(i+1)) then
                i=i+1
                goto 14
            endif
            d1=ei(j)-e(i)
            d2=e(i+1)-ei(j)
            if(d1.lt.0..or.d2.lt.0.) then
                write(*,*) 'interpolation failed:',d1,d2
                stop
            endif

c use regression if both dates are more than dmax days from current date
            if(d1.gt.dmax.and.d2.gt.dmax) then
                xi(j)=cest(qq(j),coefs,qmin,qmax,nqe)
            else
c interpolation
                f=(ei(j)-e(i))/(e(i+1)-e(i))
                xi(j)=(1.-f)*x(i)+f*x(i+1)
c         write(133,13) i,e(i),x(i),x(i+1),f,j,ei(j),xi(j)
c 13         format(i4,3f8.1,f8.3,2i8,3f8.1)
                endif

            endif
        enddo

        return
    end

    function cest(q,coefs,qmin,qmax,nqe)
c regression estimate - cubic equation
        dimension coefs(1)

        cest=0.
        if(q.le.0.) return

c restrict flow to range used in calibration
        qq=amin1(amax1(q,qmin),qmax)
c apply regression

```

```

    cest = coefs(1)+coefs(2)*qq
    nqe=nqe+1
    return
end

c date subroutines
c
c date sequence number = number of days from Jan 1, 1900 (= Lotus 123
date)
c All reals=real*4, All integers = Integer*4
c function          inputs          returns
c idate(iy,im,id)   iy,im,id        date sequence number
c jdate(kkkk)       yymmdd or yyyyymmdd  date sequence number
c kdate(j)          date sequence     yyyyymmdd
c sub yymmdd(d,iy,im,id) yymmdd or yyyyymmdd   iy,im,id
c mday(iy,im)       iy,im           number of days in month
c iyim(j)           date sequence     yyyyymm

    function idate(iy,im,id)

    integer mdy(12)
    DATA MDY/0,31,59,90,120,151,181,212,243,273,304,334/

c returns days from Jan 1, 1900 for input iy,im,id
c year in yy or yyyy format

c jy = year in yyyy
    jy=iy
    if(jy.lt.1900) then
        jy=iy+1900
c if iy<50 assume turn of century
        if(iy.lt.50) jy=jy+100
    endif

    idate=0
c check for valid date
    if(im.le.0.or.im.gt.12) return
    if(id.lt.1.or.id.gt.mday(jy,im)) return

    idate=mdy(im)+(jy-1900)*365.+id+(jy-1897)/4

c add 1 day if leap year and after february
    if(mod(jy,4).eq.0.and.im.gt.2) idate=idate+1
    return
end

    function jdate(j)
c returns date sequence number for input d in yymmdd or yyyyymmdd format
    call yymmdd(j,iy,im,id)
    jdate=idate(iy,im,id)
    return

```



```

        end

        function kdate(id)

c returns date in yyyymmdd format for input id =
c   number of days from Jan 1, 1900

            kdate=0.
            if(id.le.0) return

c first find year, roughly
            jy=id/367
13         if(idate(jy+1,1,1).le.id) then
                jy=jy+1
                goto 13
            endif

c find month
            do 10 jm=2,12
                if(idate(jy,jm,1).gt.id) goto 12
10         continue
12         jm=jm-1

c find day
            jd=id-idate(jy,jm,1)+1

ccc adjust year
cc         if(jy.gt.99) jy=jy-100
c translate yy to yyyy
            jy=jy+1900

c compute ddate
            kdate=10000*jy+jm*100+jd
            return
            end

        subroutine yymmdd(date,iy,im,id)

            integer*4 date
c convert integer data in yyyymmdd or yymmdd to integer year yy, month,
day

            iy=0
            im=0
            id=0
            iy=jfix(date/10000.)
            im=jfix((date-iy*10000.)/100.)
            id=jfix(date-iy*10000.-im*100.)
            return
            end

        function mday(iy,im)

c number of days in current month

```

```

        dimension mdy(12)
        data mdy/31,28,31,30,31,30,31,31,30,31,30,31/
        mday=0
        if(im.gt.12.or.im.lt.1) return
        mday=mdy(im)
        if(im.eq.2.and.mod(iy,4).eq.0.) mday=mday+1
        return
    end

    function iyim(j)
c j=date sequence number, iyim=yyyymm
        iyim=kdate(j)
        iyim=iyim/100
        return
    end

    subroutine outlyr(x,y,n,sig,prb,nrej)
c screen for outliers - linear regression y(n) vs. x(n)
c sig = rejection significance level
c returns prb(n) = significance level for rejection
c nrej = number of screened data points
c snedecor and cochran, p. 157-158
        dimension x(1),y(1),prb(1)
        if(n.le.3) return
        sy=0.
        sy2=0.
        sx=0.
        sx2=0.
        sxy=0.
        nrej=0
        nn=n
c first compute regression
        do 100 i=1,n
            prb(i)=1.
            sy=sy+y(i)
            sx=sx+x(i)
            sy2=sy2+y(i)*y(i)
            sx2=sx2+x(i)*x(i)
            sxy=sxy+x(i)*y(i)
100        continue
        txy=sxy-sx*sy/n
        tx2=sx2-sx*sx/n
        ty2=sy2-sy*sy/n
        tx=sx/n
        ty=sy/n
        b=txy/tx2
        a=ty-b*tx
c find maximum residual
10        rmax=0.
            j=0
            do 200 i=1,n
                if(prb(i).eq.1.) then
                    resid=abs(y(i)-b*x(i)-a)
                    if(resid.gt.rmax) then
                        j=i
                        rmax=resid
                end if
            end do
    end

```

```

                endif
            endif
200    continue
        if(j.le.0) return
c compute regression with point j excluded
        nn=nn-1
        if(nn.le.3) return
        sxy=sxy-x(j)*y(j)
        sx2=sx2-x(j)*x(j)
        sy2=sy2-y(j)*y(j)
        sy=sy-y(j)
        sx=sx-x(j)
        txy=sxy-sx*sy/nn
        tx2=sx2-sx*sx/nn
        ty2=sy2-sy*sy/nn
        tx=sx/nn
        ty=sy/nn
        b=txy/tx2
        a=ty-b*tx
        se2=(ty2-b*b*tx2)/(nn-2)
        if(se2.le.0.) return
        se=sqrt(se2)
c test residual
        resid=y(j)-b*x(j)-a
        sr=se*sqrt( 1.+1./nn + (x(j)-tx)**2/tx2 )
        t=resid/sr
        prb(j)=probt(t,nn-2)*(nn+1)
        if(prb(j).gt.sig) return
        nrej=nrej+1
        go to 10
    end

        subroutine xred(ix,y,n)
c replaces x() and y() with running means
c for common values of ix()
c length n
c destroys input vectors
        dimension y(1)
        integer ix(1),ixlast
        if(n.le.1) return
        ixlast=ix(1)
        m=1
        k=0
        sum=y(1)
        do 10 j=2,n
            if(ix(j).ne.ixlast) then
                k=k+1
                ix(k)=ixlast
                y(k)=sum/m
                ixlast=ix(j)
                m=0
                sum=0.
            endif
            m=m+1
            sum=sum+y(j)
10    continue

```

```

        k=k+1
        ix(k)=ixlast
        y(k)=sum/m
        n=k
        return
    end

    function ratv(x1,x2)
c divide x1 by x2 or set to 0.
    if(x2.ne.0.) then
        ratv=x1/x2
    else
        ratv=0.
    endif
    return
end

    function ic8(c1,c2)
c compares strings c1 and c2
c returns 1 if they are identical
c case not significant
    character*8 c1,c2,c3,c4
c
    c3=c1
    call concap(c3,8)
    c4=c2
    call concap(c4,8)

    if(c3.eq.c4) then
        ic8=1
    else
        ic8=0
    endif
    return
end

    function match(n,label,char)
c lookup char in label()
    character*8 label(1),char
    match=0
    do 10 i=1,n
    if(ic8(char,label(i)).gt.0) then
        match=i
        return
    endif
10    continue
    return
end

    function probt(t,n)
c two-tailed - modified from "some common basic programs"
    probt=1.0
    if(t.eq.0..or.n.le.0) return
    w=t*t
    if (w.lt..5) then
```

```

        s=n
        r=1.
        z=1./w
    else
        s=1.
        r=n
        z=w
    endif
20    probt=probg(s,r,z)
    if(w.lt..5) probt=1.-probt
    return
end

    subroutine concap(string,n)
c convert string to caps
    character*1 string(1)
    do i=1,n
        j=ichar(string(i))
        if(j.gt.96.and.j.lt.123) string(i)=char(j-32)
    enddo
    return
end

    function probg(s,r,z)
c f statistic
c used with probf and probt
    u=2./9./s
    v=2./9./r
    q=abs((1.-v)*(z**.333333)-1.+ u)/sqrt(v*z**.6666667+u)
    if (r.lt.4) q=q*(1.+08*(q**4)/(r**3))
    probg=.5/(1.+q*(.196854+q*(.115194+q*(3.44e-04+q*.019527))))**4
    return
end

    SUBROUTINE REGRE(N,X,Y,A,B,R2,SE2,SB)

C    LINEAR REGRESSION OF Y(N) ON X(N)

    DIMENSION X(1),Y(1)
    real*8 Sx,Sx2,Sy,Sy2,SXY
C

    A=0.
    B=0.
    R2=0.
    SE2=0.
    SB=0.
    IF(N.LE.2) RETURN
    SX=0.
    SX2=0.
    SY=0.
    SY2=0.
    SXY=0.
    DO 10 I=1,N
        SX=SX+X(I)
        SX2=SX2+X(I)**2

```

```

        SY=SY+Y(I)
        SY2=SY2+Y(I)**2
        SXY=SXY+Y(I)*X(I)
10    CONTINUE
        SX2=(SX2-SX*SX/N)/(N-1)
        SY2=(SY2-SY*SY/N)/(N-1)
        IF(SX2.LE.0..OR.SY2.LE.0.) RETURN
        SXY=(SXY-SX*SY/N)/(N-1)
        SX=SX/N
        SY=SY/N
        R2=SXY*SXY/(SX2*SY2)
        B=SXY/SX2
        A=SY-B*SX
        SE2=amax1((N-1)*SY2*(1.-R2)/(N-2),0.)
        ND=N-2
        SB=amax1(SE2/((N-1.)*SX2),0.)
        SB=SQRT(SB)
        TB=ratv(B,SB)
        PB=PROBT(TB,ND)
        SX2=SQRT(SX2)
        SY2=SQRT(SY2)

        WRITE(*,101) A,B,R2,SE2,SB,ND,tb,PB,SY,SY2,SX,SX2
101   FORMAT('/ REGRESSION ANALYSIS: '/
*      ' INTERCEPT          =',F12.4,
*      ' SLOPE                 =',F12.4/
*      ' R-SQUARED             =',F12.4,
*      ' MEAN SQUARED ERROR    =',F12.4/
*      ' STD ERROR OF SLOPE    =',F12.4,
*      ' DEGREES OF FREEDOM    =',I12/
*      ' T STATISTIC           =',F12.4,
*      ' PROBABILITY(>|T|)     =',F12.4/
*      ' Y MEAN                =',F12.4,
*      ' Y STD DEVIATION        =',F12.4/
*      ' X MEAN                =',F12.4,
*      ' X STD DEVIATION        =',F12.4)

RETURN
END

```

Flow Computation Methods Used to Calculate C-139 Basin Flows

PUMPS

Flow computation for such structures shall be based upon the following reference:

Imru, M. and Wang, Y. (December 2003). *Flow Rating Analysis Procedures for Pumps (Publication EMA#413)*. West Palm Beach: South Florida Water Management District, West Palm Beach.

GATED SPILLWAYS

Flow computation for such structures shall be based on the following reference:

Ansar, M., and Alexis, A. (2003). *Atlas of Flow Computations at District Hydraulic Structures*. Hydrology and Hydraulics Division, South Florida Water Management District, West Palm Beach, Florida.

CULVERTS

Flow computation for such structures shall be based on the following reference:

Fan, A. (October 1985). *A General Program to Compute Flow through Gated Culverts (Publication DRE#216)*. West Palm Beach: South Florida Water Management District, West Palm Beach.

Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the Permit Basin Discharge Monitoring Program

INTRODUCTION

In accordance with the Everglades Forever Act (373.4592(4)(f)5 F.S.), determinations for permittees within the C-139 Basin for remedial action, if the C-139 Basin is out of compliance for that year, shall be based on the proportional share of phosphorus loading, as set forth in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. The proportional share value will be derived as described herein from the target UAL or limit UAL depending upon the cause of non-compliance and distributed equally over the C-139 Basin area.

This Appendix establishes the procedures for calculating assigned phosphorus unit area load (assigned UAL) for sub-basins and monitored permit basins, and for calculating their corresponding proportional share of phosphorus load (proportional share UAL) based on the performance measures established in Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C. The assigned UAL and proportional share UAL will be calculated each water year. Results of the calculations will be used for determining remedial action when the C-139 Basin is determined to be out of compliance pursuant to Rule 40E-63.446, F.A.C. This Appendix will be used in conjunction with the conditions established in subsection 40E-63.446(2), F.A.C., to determine each permit basin's required remedial action.

A monitoring network has been established and shall be maintained by the District for flow and phosphorus concentration at several locations within the C-139 Basin to determine the loading from sub-basins. This sub-basin monitoring may be supplemented or optimized in the future by the District to improve representation of hydrologic drainage areas.

For those permittees electing to implement the Permit Basin Discharge Monitoring Program in accordance with the requirements of Rules 40E-63.462 and 40E-63.464, F.A.C., qualifying permittee-collected discharge monitoring data for permit basins will be considered for remedial action evaluation. For each water year the District shall calculate the observed UAL for the monitored permit basins based upon permittee submitted data. If the C-139 Basin is out of compliance, remedial action will be evaluated by the District pursuant to subsection 40E-63.446(2), F.A.C., according to whether it is determined to have not exceeded the proportional share UAL.

If the flow or concentration monitoring data during the water year is not adequate as defined herein to calculate phosphorus load, no load determination will be made for that sub-basin or permit basin. In that case, load determination shall be evaluated at the levels of monitoring for which data is adequate.

DEFINITIONS

- (1) "Assigned UAL" is the phosphorus load per unit area (lbs/acre) assigned to a sub-basin or permit basin for the water year evaluation of exceedance of the proportional share UAL. The assigned UAL incorporates all adjustments of the observed load data representing the sub-basin or permit basin described within this appendix.
- (2) "C-139 Basin Acres" is the total acreage within the C-139 Basin boundaries described in the Everglades Forever Act, Section 373.4592(16), F.S. adjusted for any identified changes to the hydrologic drainage area.
- (3) "Limit Unit Area Load (limit UAL)" in pounds per acre is the upper 90% confidence limit of the C-139 Basin Compliance model phosphorus load estimate (also known as the limit) calculated in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C., and divided by the C-139 Basin acres.
- (4) "Proportional Share UAL" in pounds per acre is the calculated maximum allowable phosphorus load in proportion to land area. The proportional share UAL shall be based on the target UAL if C-139 Basin non-compliance is based on exceedance of the target, and/or on the limit UAL if the C-139 Basin non-compliance is based on exceedance of the limit.
- (5) "Target Unit Area Load (target UAL)" in pounds per acre is the C-139 Basin Compliance model phosphorus load estimate (target) calculated in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C., and divided by the C-139 Basin acres.
- (6) "Observed Unit Area Load (UAL)" is the observed phosphorus load per unit area (lbs/acre) calculated for a sub-basin or permit basin during the water year and is determined from the data collected by the District under sub-basin monitoring or submitted by the permittee under the Permit Basin Discharge Monitoring Program.

TARGET AND LIMIT UNIT AREA LOAD DETERMINATION

The target UAL and limit UAL are determined using the results of the C-139 Basin Performance Measure Methodology calculations outlined in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. That methodology estimates C-139 Basin target and limit loads in metric tons (one metric ton equals 2,204.6 pounds). These loads are then divided by the C-139 Basin acres to determine a target UAL and limit UAL in pounds per acre.

C-139 Basin target load	=	38.26 mtons	=	84,348 lbs
C-139 Basin limit load	=	101.77 mtons	=	224,362 lbs
C-139 Basin acres	=		=	168,450 acres
target UAL	=	(84,348 / 168,450)	=	0.50 lbs/acre
limit UAL	=	(224,362 / 168,450)	=	1.33 lbs/acre

SUB-BASIN AND PERMIT BASIN OBSERVED AND ASSIGNED UAL DETERMINATION

Annually, individual daily records of flow and phosphorus load computed by the District at sub-basin monitoring sites or submitted under the Permit Basin Discharge Monitoring Program will be summarized by the District to determine the observed UAL for each sub-basin and permit basin.

The boundary of each sub-basin is determined based upon the hydrologic drainage areas contributing to the District monitoring locations. A permittee can have permit basins in different sub-basins and the remedial action required for each of their permit basins depends on the performance of each sub-basin or permit basin. The District shall prepare maps depicting the sub-basin boundaries based upon the monitoring station locations. Maps of sub-basin boundaries shall be revised by the District as necessary to account for improved information, changes to surface water drainage patterns, or changes to monitoring locations. Area adjustments for calculation of unit area loads shall be weighted to the month the change was known to occur.

In accordance with the procedures set forth in this section, for each water year the District shall: (1) determine whether monitoring deficiencies cause any sub-basins to be not eligible for UAL determination, (2) establish observed UAL values from eligible sub-basin and permit basin monitoring data, (3) account for differences between C-139 Basin, sub-basin and permit basin outlet phosphorus loads through load adjustment factors (4) compute an assigned UAL for each sub-basin and permit basin.

Missing Data

When the water year dataset contains missing daily records (flow and/or total phosphorus concentration), the District will evaluate if the missing records can be estimated and if sufficient data are available to populate those missing records in order to create a complete data set. The steps to follow by the District for each data type are as follows:

Step 1: ESTIMATE MISSING DAILY FLOW

District staff shall determine for each monitoring site the most applicable of the following estimation methods:

1. Use of adjacent or representative site data
2. Use of a stage vs. flow relationship
3. Use of a rainfall vs. runoff relationship
4. Use of a maximum calibrated capacity
5. Other technically justified estimation

Step 2: ESTIMATE MISSING TOTAL PHOSPHORUS CONCENTRATION

1. Use the total phosphorus concentration from a representative site within the permit basin if flow conditions and land use were similar during the

2. Linear interpolation of total phosphorus concentrations from adjacent sampling periods (before and after) when the missing time period is less than or equal to 21 days.
3. Use the sampled annual flow-weighted mean concentration when the missing time period is greater than 21 days.

Step 3: ESTIMATE THE PERCENT LOAD SAMPLED

1. Daily records for estimated phosphorus loads due to missing flow and/or missing total phosphorus concentration will be “flagged” as “estimated load”.
2. The percent load sampled is determined by taking the ratio of the sum of the “estimated loads” during the water year to the total annual loads for the entire water year. The ratio is subtracted from 1 and multiplied by 100 to convert to a percentage.
3. If the percent load sampled is less than 75%, proper implementation of the Permit Basin Discharge Monitoring Program was not achieved. The results of that monitoring are not eligible for a determination of not exceeding its proportional share of loading for that water year only.
4. If the percent load sampled is greater than or equal to 75% then the permit basin load determination can be made.

Sub-basin and Permit Basin Observed UAL

When all missing data for the water year has been estimated, the annual sub-basin or permit basin total load will be calculated as the sum of the daily loads (estimated and observed). Where applicable, phosphorus load flowing into a sub-basin will be accounted for based on surface water monitoring upstream and downstream of the sub-basin. The following general calculation method will be applied to annual loads for each sub-basin and permit basin:

Sub-basin load = Total annual sub-basin outflow load – inflow load

Permit basin load = Total annual permit basin outflow load – inflow load¹

¹ Permit basin inflow load such as seepage or water supply is not discounted from annual loading. In some cases, monitored runoff from adjacent areas may be discounted from annual loading. The District will determine whether a permit basin’s inflow load qualifies to be discounted from the runoff load calculation.

Observed UAL values are calculated as the annual total load divided by the associated hydrologic drainage area acreage (lbs/acre). For each water year:

Sub-basin observed UAL = Sub-basin load ÷ Sub-basin area

$$\text{Permit basin observed UAL} = \text{Permit basin Load} \div \text{Permit basin area}$$

The permit basin observed UAL is the phosphorus load per unit area determined to represent the permit basin. In the event that total phosphorus reduction is required, collective C-139 Basin and sub-basin level loads will first be evaluated relative to the proportional share UAL as described herein to determine the requirements for water quality improvement activities.

If a permit basin's discharge monitoring meets the requirements under this rule the Observed UAL shall be computed for the individual permit basin. Loads for permit basins without discharge monitoring or not meeting the monitoring requirements for the water year shall be represented by the sub-basin load. In cases where one or more permit basins within a sub-basin are issued a determination of impracticability, the remaining area's UAL shall be adjusted to exclude those permit basins with discharge monitoring required due to District impracticability determinations unless the resulting Observed UAL is larger than the sub-basin Observed UAL. For permit basins without qualifying individual monitoring data, their Observed UAL is the minimum of:

1. Sub-basin observed UAL
2. $(\text{Sub-basin load} - \text{Permit basin loads monitored for impracticability}) \div (\text{Sub-basin area} - \text{Permit basin area monitored for impracticability})$

Sub-basin and Permit Basin Load Adjustment and Assigned UAL

In conjunction with Observed UAL determinations for secondary and tertiary sub-basins, the District shall evaluate sub-basin discharge phosphorus loads in relation to C-139 Basin discharge phosphorus loads. Differences between the sub-basin and C-139 Basin discharge loads may occur, as well as variations in the flow and load estimates from monitoring data. Where no permittee discharge occurs between upstream sub-basin monitoring and C-139 Basin discharge monitoring, a load adjustment factor shall be computed by the District, contingent on successful implementation of sub-basin monitoring. If any of the contributing sub-basins did not have successful implementation of its monitoring, the mass balance adjustment cannot be made and the sub-basin load adjustment factor is one. The load adjustment factor shall be computed from loads at sub-basin monitoring stations directly upstream of C-139 Basin outlets and those C-139 Basin outlets potentially receiving those sub-basin loads. Including only the load data relevant to the area between the sub-basin monitoring and the C-139 Basin outlet(s):

$$\text{Sub-basin load adjustment factor} = \frac{\text{C-139 Basin discharge loads}}{\text{Sub-basin discharge loads}}$$

This load ratio shall be applied to the contributing upstream sub-basin and permit basin observed loads for only that water year. For sub-basins discharging load to more than one basin outlet, a weighted load adjustment factor shall be computed based on the percent load discharged in each direction. For example, a load adjustment factor less than one may indicate attenuation of load between the sub-basin and C-139 Basin

discharges. A load adjustment factor less than one would lower the Assigned UAL for those sub-basins, in this case, to account for the difference in measured loads. For each water year:

$$\text{Sub-basin assigned UAL} = \text{Sub-basin observed UAL} \times \text{Sub-basin load adjustment factor}$$

Application of a load adjustment factor can also be made on loads upstream within the sub-basin. If, for example, all permit basins representing an entire sub-basin successfully implement individual monitoring, the District shall calculate a permit basin load adjustment factor:

$$\text{Permit basin load adjustment factor} = \frac{\text{Sub-basin discharge load}}{\text{Sum of permit basin discharge loads}}$$

Both, the sub-basin and permit basin load adjustment factor are applied to a permit basin, therefore, can be a compounded factor incorporating the adjustments downstream of its discharge. The product of a permit basin's observed UAL and its load adjustment factors results in the permit basin's assigned UAL. For each water year:

$$\text{Permit basin assigned UAL} = \text{Permit basin observed UAL} \times \text{Sub-basin load adjustment factor} \times \text{Permit basin load adjustment factor}$$

PROPORTIONAL SHARE UNIT AREA LOAD DETERMINATION AND EVALUATION OF EXCEEDANCES TO THE PROPORTIONAL SHARE UAL

Once the target UAL and limit UAL are calculated for a given water year, the Proportional Share UAL is determined by evaluating whether the C-139 Basin out of compliance condition was caused by exceedance of the target, limit or both.

If the C-139 Basin is out of compliance as a result of exceeding the target three years in a row (as described in Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C., "Evaluation of the C-139 Basin for compliance...", paragraph 3):

1. the proportional share UAL is the arithmetic average of the three target UAL values calculated for the three water years (excluding any suspension due to rainfall), and
2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if the average of the three annual assigned UAL values corresponding to the three water years causing the out of compliance condition is less than or equal to the proportional share UAL.

If the C-139 Basin is out of compliance as a result of exceeding the limit in a single year (as described in Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C., "Evaluation of the C-139 Basin compliance...", paragraph 4):

1. the proportional share UAL is the same as the limit UAL calculated for that water year, and
2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if the assigned UAL for the water year in question is less than or equal to the proportional share UAL.

If the C-139 Basin is out of compliance exceeding both the target for three years and limit the current year (e.g. target, target, limit):

1. both the current water year Limit UAL and the average of the three target UAL values (excluding any suspension due to rainfall) are utilized for assessment of a proportional share UAL, and
2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if both the average of the three annual Assigned UAL values is less than or equal to the average of the three target UAL values and the current water year Assigned UAL is less than or equal to the Limit UAL.

Permit basins will be evaluated from the largest to smallest sub-basin that they belong to, and then based on their individually monitored permit basin data, if applicable. If a single sub-basin level to which a permit basin belongs is determined to meet the proportional share UAL, requirements for water quality improvement activities will be determined by the District based on subsection 40E-63.446(2), F.A.C., regardless of additional sub-basin level or permit basin monitoring results. Three tiers of sub-basins have been defined for the C-139 Basin as indicated in Table B-3, which relates each initial primary, secondary and tertiary sub-basin to its larger or smaller units.

The District shall prepare maps delineating sub-basin boundaries based upon the location of monitoring sites and the hydrologic area boundaries they represent. The boundaries of sub-basins may be adjusted in the future to account for supplemental information on field conditions or revised/additional monitoring station locations. Data for the sub-basin monitoring will be stored in the District's database, Dbhydro. Reference information for the monitoring sites upon adoption of this rule, such as flow site name, flow DBkey, water quality station name are listed in Table B-4. Example equations for computation of annual load for each sub-basin are contained in Table B-5.

Table B-3: Primary, Secondary and Tertiary Sub-basin Levels

Primary Sub-basins	Secondary Sub-basins	Tertiary Sub-basins
L1		
L3	L2	L2W
		L2E
		L2S
	DF	DFW
		DFE
	SM	SMW
		SME

The steps for evaluating the permit basins are as follows:

1. Primary sub-basins represent the largest division of hydrologic drainage areas within the C-139 Basin and will be evaluated first for not exceeding the proportional share UAL. The primary sub-basins are the L-1 and the L-3.
2. If the L-1 sub-basin exceeds the proportional share UAL, the District will evaluate the individually monitored permit basins within the sub-basin. Permit basins not individually monitored shall also be evaluated by the resulting UAL computed from sub-basin load less eligible monitored permit basins' load required due to District impracticability determinations, if available.
3. If the L-3 sub-basin exceeds the proportional share UAL, the District will evaluate the secondary sub-basins within the L-3 (L2, DF, and SM).
4. If any of the L3 secondary sub-basins exceed the proportional share UAL, the tertiary sub-basins within those secondary sub-basins will be evaluated.
5. If any of the tertiary L-3 sub-basins exceed the proportional share UAL, any individually-monitored permit basins within those tertiary sub-basins will be evaluated. Permit basins not individually monitored shall also be evaluated by the resulting UAL computed from sub-basin load less eligible monitored permit basins' load required due to District impracticability determinations, if available.
6. Permit basins in the L-3 exceeding the proportional share UAL at the primary, secondary, tertiary, and, if available, individual permit basin level, will be assigned the assigned UAL for the individual permit basin, if monitored individually. Permit basins not individually monitored shall be assigned the lesser of the assigned UAL of the smallest eligible sub-basin where they are located

and sub-basin load less eligible monitored permit basins' load required due to District impracticability determinations.

PARTICIPATION IN THE PERMIT BASIN DISCHARGE MONITORING PROGRAM

Only data submitted by deadlines specified in the permit will be considered when reviewing Permit Basin Discharge Monitoring Program submitted data for annual observed and assigned UAL determination. If the results of a Quality Assurance Audit or an on-site verification of BMP implementation by District staff indicate the submitted water quantity and quality data may not provide reasonable assurance that annual water discharge and total phosphorus load are accurately documented, the permittee submitted data shall not be considered in evaluation of remedial action requirements for the water year during which the Quality Assurance Audit or on-site verification of BMP implementation was performed.

If not required due to specific permit conditions, a permittee may elect at any time to discontinue participation in the Permit Basin Discharge Monitoring Program by submitting an application to modify their permit as outlined in Rule 40E-63.439, F.A.C. If the permittee elects to discontinue participation in the Permit Basin Discharge Monitoring Program for a period of time and then elects to resume participation, any monitoring data which may have been collected by the permittee in the interim period will not be considered in evaluation of remedial action requirements. The first opportunity for permit basin level evaluation of remedial action requirements will be after submittal of all data for the first complete water year following resumption of participation in the Permit Basin Discharge Monitoring Program.

Table B-4: C-139 Basin and Sub-basin Monitoring Stations

Flow Station		Water Quality Station Name
Name	DBKEY	
G136	15195	G136
G342A	J6406	G342A
G342B	J6398	G342B
G342C	J6407	G342C
G342D	J6405	G342D
G406	JU789	G406
G150	15520	G150
DFNBV	TP376	DF02.1TW
SMSBV	TP378	SM00.2TW
C139S1	US184	C139S1
C139S2	US185	C139S2
C139S3	US186	C139S3
C139S4	VC276	C139S4
C139S6	VN389	C139S6

* Note: The information within this table may be adjusted in the future to account for supplemental or optimized monitoring for the sub-basins.

Table B-5: Sub-basin Arithmetic Load Calculation

Name	Load Calculation (Flow Structure Name)
Primary Sub-Basins	
L1	G136 - G150
L3	G406 + G150 + G342A + G342B + G342C + G342D
Secondary Sub-Basins	
L2	C139S2 + G150
DF	DFNBV
SM	SMSBV
Tertiary Sub-Basins	
L2W	C139S4
L2E	C139S3 - C139S4 + G150
L2S	C139S2 - C139S3
DFW	C139S1
DFE	DFNBV - C139S1
SMW	C139S6
SME	SMSBV - C139S6

* Note: The information within this table may be adjusted in the future to account for supplemental or optimized monitoring for the sub-basins.

Criteria for Required Phosphorus Reductions

Intent

Since 2002, landowners in the C-139 Basin have implemented a mandatory program of BMPs for reduction of total phosphorus in discharges. BMPs for the C-139 Basin were developed using best professional judgment based on consultation with qualified stakeholder participants and academic resources on in-field studies, available pertinent literature in support of non-point source pollutant reduction potential, existing BMP manuals, and relevant models. This process is considered to be the initial verification that BMPs were reasonably expected to be effective and was the basis for adoption of these BMPs in Part IV of Chapter 40E-63, F.A.C.

When water quality problems are demonstrated, despite the appropriate implementation, operation, and maintenance of BMPs and other measures according to the adopted rules, the District shall reevaluate the BMPs and other measures and revise the rules to require implementation of modified practices or water quality improvement measures within a reasonable time period.

Requirement for the Improvement to BMP Plans

The water quality improvement strategy under this Part is to require that any additional required improvements to the BMP Plan or water quality improvement activities shall be based on their ability to achieve the percentage total phosphorus reduction levels specified by the District (required total phosphorus reductions), as necessary to affect C-139 Basin discharges to meet performance measures.

Permittees will propose additional improvements to the BMP Plan and expected reductions. These reductions may be estimated based on the most current applicable technical references or based on a monitoring program that confirms estimated total phosphorus reductions (verification plan).

Availability of Technical Information for Estimating Total Phosphorus Reductions

The Everglades Forever Act under Section 373.4592(4)(f)2 of the Florida Statutes mandates “a comprehensive program of research, testing, and implementation of BMPs that will address all water quality standards”. Under this provision, “BMPs shall be field-tested in a sufficient number of representative sites in the EAA to reflect soil and crop types and other factors that influence BMP design and effectiveness.” Section 373.4592(4)(f)6 of the Everglades Forever Act states that provision 373.4592(4)(f)2 concerning BMP research shall apply to the landowners within the C-139 Basin.

There is an ongoing and coordinated effort with the Florida Department of Environmental Protection (FDEP) and the Florida Department of Agriculture and Consumer Services (FDACS), to expand the body of knowledge regarding BMP effectiveness and total phosphorus removal efficiency of BMPs. Further, The District has established under subsection 40E-63.437(3), F.A.C., criteria by which BMP demonstration projects can serve to meet BMP equivalent point credits. Also, if the C-139 Basin is found out of compliance with water quality performance measures in the future, BMP demonstration projects with a verification plan to determine BMP effectiveness, serve as additional water quality improvement activities under Rules 40E-63.446 and 40E-63.461, F.A.C.

For the purpose of estimating total phosphorus reduction levels for proposed BMP improvements to meet the requirements of subsection 40E-63.461(3), F.A.C., the District will provide permittees, on an annual basis, with an update on applicable research, testing, modeling, and technical source information on the implementation of BMPs by the District to improve total phosphorus removal efficiency. This Part provides for a regulatory framework, schedule, and collaborative approach towards the development of this technical information to meet total phosphorus reductions requirements.

Calculation of the Required Total Phosphorus Reduction

The District will determine C-139 Basin compliance with total phosphorus load performance measures annually in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. If the C-139 Basin is deemed out of compliance with the water quality requirements of this Part, the District will calculate the required total phosphorus reduction level corresponding to each permit basin, as defined under subsection 40E-63.402(10), F.A.C., except for the situations indicated in subsection 40E-63.446(2), F.A.C. The method to estimate the percent required total phosphorus reduction level is indicated below:

1. The total phosphorus reduction levels will be based on the limit unit area load (UAL), the target UAL, the proportional share UAL and the assigned UAL derived for each permit basin pursuant to Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C., and Appendix B3.1, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.
2. If the C-139 Basin is out of compliance as a result of exceeding the target three years in a row (as described in Appendix B2, "Annual Performance Determination", paragraph number 3, incorporated by reference in subsection 40E-63.446(1), F.A.C.), the required total phosphorus reduction for each permit basin will be calculated as the percent difference between the arithmetic average of the assigned UAL values calculated on the year that non-compliance occurs and the two previous years and the proportional share UAL (excluding any suspension due to rainfall as described in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C.).

Required total phosphorus reduction level (%) = $100\% \times (\text{average (assigned UAL}_{\text{Year 1, 2, 3}}) - \text{proportional share UAL}) / \text{Average (assigned UAL}_{\text{Year 1, 2, 3}})$

3. If the C-139 Basin is out of compliance as a result of exceeding the limit in the current year (as described in Appendix B2, "Annual Performance Determination", paragraph 4, which is incorporated by reference in subsection 40E-63.446(1), F.A.C.), the required percentage total phosphorus reduction will be calculated for each permit basin as the percent difference between its assigned UAL and its proportional share UAL on the year that non-compliance occurs.

Required total phosphorus reduction level (%) = $100\% \times (\text{assigned UAL} - \text{proportional share UAL}) / \text{assigned UAL}$

4. If the C-139 Basin is out of compliance exceeding both the target for three years in a row and the limit the current year (e.g. target, target, limit), the required total phosphorus reduction shall be the greater of those calculated from (2) and (3) above.

Criteria for Approval of Improvements to BMP Plans or Water Quality Improvement Activities

Under a C-139 Basin-wide out of compliance scenario, the level of effort required for improvements to the BMP Plan may vary across permit basins based on the required total phosphorus reduction level for each one as defined under "water quality improvement activities" in subsection 40E-63.402(16), F.A.C. The total phosphorus removal efficiency of the activities described within the proposal shall aim to meet the required total phosphorus reduction for each permit basin.



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

P.O. Box 24680, 3301 Gun Club Road
Telephone (561) 686-8800

West Palm Beach, FL 33416-4680
Florida WATS 1-800-432-2045

APPLICATION FOR A WORKS OF THE DISTRICT PERMIT

PART I. GENERAL INFORMATION

GUIDANCE

Please use the booklet titled Guidance for Preparing an Application for a "Works of the District" Permit in the Everglades Pursuant to Chapter 40E-63, F.A.C. to complete the applicable sections of this application. Please discuss any questions you may have with District staff prior to application submittal.

TYPE OF PERMIT APPLICATION

This is an application for (Please check one box):

- | | |
|--|--|
| <input type="checkbox"/> new individual permit | <input type="checkbox"/> new master permit |
| <input type="checkbox"/> modification of an existing individual permit | <input type="checkbox"/> modification of an existing master permit |
| <input type="checkbox"/> renewal of an existing individual permit | <input type="checkbox"/> renewal of an existing master permit |
| <input type="checkbox"/> transfer of an existing individual permit | <input type="checkbox"/> transfer of an existing master permit |

EARLY BASELINE OPTION

Please check here if this is an application for the Early Baseline Option. (Final District action is required by December 1992 on a monitoring plan.)

RELEVANT SECTIONS AND NUMBER OF COPIES

If you are applying for a:	You should fill out	Number of copies you must submit	
		This completed form	Other items
a. new Individual Permit	Part II	4	4
b. modification of an existing Individual Permit	Part II	4	4
c. renewal of an existing Individual Permit	Part II	4	4
d. transfer of an existing Individual Permit	Part IV	4	4
e. new Master Permit	Part III	4	4
f. modification of an existing Master Permit	Part III	4	4
g. renewal of an existing Master Permit	Part III	4	4
h. transfer of an existing Master Permit	Part IV	4	4

SIGNATURE AND FEE

All applicants must sign the Application Form in the place indicated. No application shall be considered filed until the appropriate application fee is submitted.

PRE-APPLICATION MEETINGS

Pre-application meetings with Works of the District Permitting Division staff are strongly recommended in order to assist you in submitting as complete an application as possible. Division staff will coordinate with appropriate District personnel in order to address any questions you may have.

(Continued on page 2)

FOR DISTRICT USE ONLY

Application Number _____ Fee Paid _____ Receipt Number _____



PART I. GENERAL INFORMATION (continued)

GOVERNING BOARD ACTIONS

Applications for new Individual or Master Works of the District Permits will require District Governing Board action, as will renewals and most modifications of existing Individual or Master Permits. Transfers of existing Individual or Master Permits will not require Governing Board action, unless modifications or renewals are simultaneously involved. General Permits granted by adoption of Rule Chapter 40E-63, F.A.C., Part I, require no further District action.

OTHER PERMITS FROM THIS DISTRICT

If the Best Management Practices Plan submitted as part of this application proposes activities which require new or modified consumptive water use, surface water management, environmental resource, right-of-way, and/or well construction permits from the District, applications for the other permits shall be submitted concurrently with the Works of the District Permit application. Because of the inseparable nature of proposed activities related to a Works of the District Permit and those related to any other District permit, it is extremely unlikely that either this permit application or any other related District permit application will be considered complete until all necessary information for all the related applications has been provided.

The following permit application(s) is/are being submitted concurrently for activities associated with the proposed Best Management Plan(s) (please check any appropriate boxes):

- | | |
|---|--|
| <input type="checkbox"/> Surface Water Management / ERP | <input type="checkbox"/> Water Use |
| <input type="checkbox"/> Right-of-Way | <input type="checkbox"/> Well Construction |

If you have already applied for or obtained District permits covering any or all of the lands or activities in this present application, please list the District application or permit numbers below.



PART II. INDIVIDUAL PERMIT APPLICATION (NEW, MODIFICATION, OR RENEWAL)

SECTION 1. STRUCTURE INFORMATION AND CERTIFICATION

Structure Name	Total acreage served by structure
	Total number of parcels served by structure
Structure Location	Section/Township/Range
City, town, or village, if applicable	County(ies)
SFWMD Basin	Receiving District Work(s)
Owner of Structure	
Authorized agent (if applicable)	
Name	Name
Address	Address
City, state, zip	City, state, zip
Telephone ()	Telephone ()
Operator of Structure	
Name	Address
City, state, zip	Telephone ()

I hereby certify that, to the best of my knowledge, the structure listed above is owned or controlled by me and serves the area referenced in this permit application. I also certify that I will abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area owned or controlled by me, which is included in this permit application, for South Florida Water Management District inspectors or their duly authorized agents, as provided for in Chapter 40E-63.143(2)(e), F.A.C., or as otherwise provided by the issued permit.

Type or print owner name

Type or print lessee name

Signature of owner of structure (If not the owner, certify below)

Signature of lessee of structure (if applicable) (If not the lessee, certify below)

I hereby certify that I am the authorized agent of the owner.

I hereby certify that I am the authorized agent of the lessee.

Type or print name and title

Type or print name and title

Signature _____

Signature _____

Date _____

Date _____



SECTION 2. PARCEL INFORMATION AND CERTIFICATION*

Participating owners/lessees

Name of Parcel/Farm	Parcel/Farm Acreage
City, town, or village (if applicable)	County(ies)
SFWMD Basin	Receiving District Work(s)
Owner of parcel/farm	Lessee of parcel/farm (if applicable)
Name	Name
Address	Address
City, state, zip	City, state, zip
Telephone ()	Telephone ()

Section(s) or Government Lot(s)	*Tax Assessor's property control number	Acres	Township	Range	County
_____	_____	_____	_____	S _____ E	_____
_____	_____	_____	_____	S _____ E	_____
_____	_____	_____	_____	S _____ E	_____
_____	_____	_____	_____	S _____ E	_____
_____	_____	_____	_____	S _____ E	_____

CERTIFICATION

I hereby certify that, to the best of my knowledge, the total acreage listed above is owned or controlled by me. I also certify that I will abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area which is described above and included in this permit application, for South Florida Water Management District inspectors or their duly authorized agents, as provided for in Chapter 40E-63.143(2)(e), F.A.C., or as otherwise provided by the issued permit.

Type or print owner name

Type or print lessee name

Signature of owner of parcel/farm (If not the owner, certify below)

Signature of lessee of parcel/ farm (if applicable) (If not the lessee, certify below)

I hereby certify that I am the authorized agent of the owner.

I hereby certify that I am the authorized agent of the lessee.

Type or print name and title

Type or print name and title

Signature _____

Signature _____

Date _____

Date _____

(*: See bottom of page 5)

NEW PARTICIPANT **CHANGE IN CONTROLLED ACREAGE**



SECTION 3. GENERAL INFORMATION

Project engineer or consultant	Pre-application meetings (if applicable)*
Name of firm	Date(s)
Address	Location(s)
City, state, zip	Name(s) of key District staff
Telephone ()	Name(s) of project representative(s)
City, town, or village (if applicable)	

Please check that the following items are attached:

1. <input type="checkbox"/> Proof of ownership of structure	2. <input type="checkbox"/> Proof of ownership of parcel(s)/farm(s)
3. <input type="checkbox"/> Proof of lease, if applicable, of structure	4. <input type="checkbox"/> Proof of lease, if applicable of parcel(s)/farm(s)

* Use extra sheets, if necessary, to provide parcel information and certification, or to describe either pre-application meetings or any other information provided with this application.

Please check if supplying extra sheets about:

Parcel information and certification

Meetings

Other information about:



SECTION 4. TECHNICAL INFORMATION

Please check that the following items are attached:

5. Aerial photograph(s) showing the boundary of the application area
6. Location map(s)
7. Project map(s) showing the application area, including the area(s) where the BMP Plan will be implemented; and the applicable information enumerated in Part II Section 4 of the Guidance for Preparing an Application for a "Works of the District" Permit in the Everglades Pursuant to Chapter 40E-63 F.A.C.
8. Best Management Practices (BMP) Plan, including the following:
 - a. proposed BMPs
 - b. description of nutrient recovery rationale
 - c. description of infrastructure
 - d. description of water management strategies
 - e. description of differences between existing and proposed practices
 - f. proposed education and training program
 - g. BMP Plan implementation schedule
 - h. models and documents
 - i. other phosphorous sources
 - j. any relationship to other District permits
9. Water quality monitoring plan, including the following:
 - a. description of monitoring program
 - b. description of monitoring sites
 - c. description of proposed sample collection methods and schedules
 - d. description of proposed sample handling and laboratory analyses
 - e. description of data management techniques and reporting schedule
 - f. description of data review procedures
 - g. description of backup plan
10. (Optional) Early Baseline Option information, including the following:
 - a. soil types
 - b. soil phosphorous levels
 - c. crops/land uses history
 - d. planned crops
 - e. acreage and rainfall collector
 - f. (if applicable) previous BMP information



PART III. MASTER PERMIT APPLICATION (NEW, MODIFICATION, OR RENEWAL)

SECTION 1. GENERAL INFORMATION AND CERTIFICATION

Applicant	Authorized agent (if applicable)
Name of entity or group of owners	Name
Address	Address
City, state, zip	City, state, zip
Telephone ()	Telephone ()
Engineer or consultant	Pre-application meetings (if applicable)*
Name	Date(s)
Name of contact person	Location(s)
Address	Name(s) of key District Staff
City, state, zip	Name(s) of project representative(s)

I hereby certify that, to the best of my knowledge, the structures and project acreages listed above are owned or controlled by the participants and encompass the area referenced in this master permit application. I also certify that the participants have agreed to participate in this master permit application and to abide by the terms and conditions of the issued master permit. In addition, I agree to provide entry at any time to the area which is included in this permit application, for South Florida Water Management District inspectors or their duly authorized agents, as provided for in Chapter 40E-63.143(2)(e), F.A.C., or as otherwise provided by the issued permit.

Signature of applicant for master permit participants

I hereby certify that I am the applicant.

Type or print name and title

Date _____

* Use extra sheets, if necessary, to describe pre-application meetings or structures/District works included in the Master Permit Application. Please check if supplying extra sheets about meetings structures/works



SECTION 2. LEGAL AND FINANCIAL INFORMATION

Please check that the following items are attached:

1. Description of legally responsible entity or group of owners
2. Copy of enabling legislation, if applicable
3. Copy of Articles of Incorporation, if applicable
4. Copy(ies) of interlocal or other agreements or contracts between or among local governments or other public entities, if applicable
5. Copy(ies) of agreements or contracts between or among private landowners or other private entities, if applicable
6. Copy(ies) of any temporary operating permits
7. Copy(ies) of any other relevant legal documents
8. Estimate of costs of all BMP related activities, including, but not limited to: operation and maintenance, monitoring, compliance with BMP and monitoring plans
9. Identification of funding sources

SECTION 3. STRUCTURE AND PARTICIPANT INFORMATION, AND CERTIFICATION

Structure(s) included in Master Permit Application	District Work(s) included in Master Permit Application
Total acreage within Master Permit	Counties

Participants

For new permit applications, please attach 4 copies of page 9 (Certification of Participation in a Works of the District Everglades Master Permit Application) for each participant in the Master Permit Application.
 Total Number of Participants _____
 Check here that the correct number of copies of page 9 is being submitted.

For Modifications or Renewals please attach 4 copies of page 9 (Certification of Participation in a Works of the District Everglades Master Permit Application) for each new participant whose controlled acreage has changed.
 Total Number of: _____
 New Participants _____ Participants whose acreage has changed _____ Total number of participants _____
 Check here that the correct number of copies of page 9 is being submitted.

Operator of Structure	Acreage drained per applicant's structures	
Name	Structure/entity	Acreage
Address	_____	_____
City, state, zip	_____	_____
Telephone ()	_____	_____
	Total	_____



Certificate of Participation in a Works of the District Everglades Master Permit Application

Structure/Entity name:

Name of parcel/farm	Parcel/farm acreage
City, town, or village (if applicable)	County(ies)
SFWMD Basin	Receiving District Work(s)
Owner of parcel/farm	Lessee of parcel/farm (if applicable)
Name	Name
Address	Address
City, state, zip	City, state, zip
Telephone ()	Telephone ()

Section(s) or Government Lot(s)	*Tax Assessor's property control number	Acres	Township	Range	County
_____	_____	_____	_____ S	_____ E	_____
_____	_____	_____	_____ S	_____ E	_____
_____	_____	_____	_____ S	_____ E	_____
_____	_____	_____	_____ S	_____ E	_____
_____	_____	_____	_____ S	_____ E	_____

CERTIFICATION

I hereby certify that, to the best of my knowledge, the total acreage listed above is owned or controlled by me and encompasses the area referenced in this permit application. I also certify that I will abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area owned or controlled by me, which is described above and included in this permit application, for South Florida Water Management District inspectors or their duly authorized agents, as provided for in Chapter 40E-63.143(2)(e), F.A.C., or as otherwise provided by the issued permit.

Type or print owner name

Type or print lessee name

Signature of owner of parcel/farm (If not the owner, certify below)

Signature of lessee of parcel/ farm (if applicable) (If not the lessee, certify below)

I hereby certify that I am the authorized agent of the owner.

I hereby certify that I am the authorized agent of the lessee.

Type or print name and title

Type or print name and title

Signature _____

Signature _____

Date _____

Date _____

(*: See bottom of page 5)

NEW PARTICIPANT

CHANGE IN CONTROLLED ACREAGE



SECTION 4. TECHNICAL INFORMATION

Please check that the following items are attached:

11. Aerial photograph(s) showing the boundary of the application area
12. Location map(s)
13. Project map(s) showing the application area, including the area(s) where the BMP Plan will be implemented; and the applicable information enumerated in Part III Section 4 of the Guidance for Preparing an Application for a "Works of the District" Permit in the Everglades Pursuant to Chapter 40E-63 F.A.C.
14. Best Management Practices (BMP) Plan, including the following:
 - k. proposed BMPs
 - l. description of nutrient recovery rationale
 - m. description of infrastructure
 - n. description of water management strategies
 - o. description of differences between existing and proposed practices
 - p. proposed education and training program
 - q. BMP Plan implementation schedule
 - r. models and documents
 - s. other phosphorous sources
 - t. any relationship to other District permits
15. Water quality monitoring plan, including the following:
 - h. description of monitoring program
 - i. description of monitoring sites
 - j. description of proposed sample collection methods and schedules
 - k. description of proposed sample handling and laboratory analyses
 - l. description of data management techniques and reporting schedule
 - m. description of data review procedures
 - n. description of backup plan
16. (Optional) Early Baseline Option information, including the following:
 - g. soil types
 - h. soil phosphorous levels
 - i. crops/land uses history
 - j. planned crops
 - k. acreage and rainfall collector
 - l. (if applicable) previous BMP information

Application for C-139 Basin Works of the District Permit

PART I. GENERAL INFORMATION

Please use the booklet titled Guidebook for Preparing an Application for a C-139 Basin "Pollutant Source Control" Permit Pursuant to Chapter 40E-63, F.A.C., to complete the applicable sections of this application. Please discuss any questions you may have with District staff prior to application submittal.

GOVERNING BOARD ACTIONS

Applications for new, renewed, or modified General Permits or transfers of existing General Permits will not require District Governing Board action. All recommendations for denial of applications will require final action by the District Governing Board.

SECTION 1. PERMIT INFORMATION

TYPE OF PERMIT APPLICATION

This is an application for (Please check one box):

Permit Type	New	Renewal	Modification	Letter Modification	Transfer
General Permit	<input type="checkbox"/> \$250.00	<input type="checkbox"/> \$250.00	<input type="checkbox"/> \$100.00	<input type="checkbox"/> No Charge	<input type="checkbox"/> \$100.00

- *Please check if application is for any of the following:
- Alternative BMP Plan (See Part IV Section 2)
 - Discharge Monitoring Plan (See Part V)
 - Optional Activities for Incentives (See Part VI)
 - Water Quality Improvement Activities (See Part VII)
 - Impracticability (See Part VIII)

OTHER PERMITS FROM THIS DISTRICT

If the Best Management Practices Plan submitted as part of this application proposes activities that require a new District permit or a modification to an existing District permit, applications for the other permits shall be submitted concurrently with the Pollutant Source Control Permit application.

The following permit applications are being submitted concurrently (please check any appropriate boxes):

- Surface Water Management / ERP
 Water Use
 Right-of-Way
 Well Construction

If you already applied for or obtained District permits covering any or all of the lands or activities in this present application, please list the District application or permit numbers below.

FOR DISTRICT USE ONLY

Application Number _____ Fee Code _____ Fee Paid _____ Receipt Number _____

SECTION 2. APPLICANT INFORMATION

Applicant (Responsible Entity)		Authorized agent (requires letter of authorization)	
Name and Title		Name and Title	
Company Name		Company Name	
Address		Address	
City, State, Zip		City, State, Zip	
Telephone	Fax	Telephone	Fax
E-mail		E-mail	

Co-Applicant (if applicable)		Authorized agent (requires letter of authorization)	
Name and Title		Name and Title	
Company Name		Company Name	
Address		Address	
City, State, Zip		City, State, Zip	
Telephone	Fax	Telephone	Fax
E-mail		E-mail	

SECTION 3. DRAINAGE INFORMATION

Please list proposed Permit Basins (as defined in subsection 40E-63.402(10), F.A.C.), types of discharges*, and drainage acreage. Attach documentation identifying ownership or controlling entity.

Permit Basin	Discharge Type	Acreage Drained	Permit Basin	Discharge Type	Acreage Drained

*Examples: Single/multiple pump structure, open culvert, weired culvert, open channel connection, overland flow, etc.

SECTION 4. ADDITIONAL REQUIRED INFORMATION (See guidebook for details.)

For each proposed Permit Basin submit and check that the following applicable items are attached:

- Description and documentation of legally responsible entities for site operations and permit compliance.
- Documentation verifying ownership of the parcels and/or structures.
- Written contracts, leases, or agreements with landowners, lessees or other entities, where applicable.
- Written contracts, agreements, or equivalent regarding BMP implementation, and use or operation of the parcels and/or structures. This includes copies of leases for existing lessees that are not co-applicants.
- Tax assessor's parcel identification numbers for all included parcels.
- A clear delineation of the property boundaries, drainage area, general direction of flow, inflow points, and off site discharge points/locations. Also, acreage contained in the permit application, including a map which is correlated with the list of parcel owners and lessees.
- Proposed Best Management Practices (BMP) Plan.
- For shared water management systems, an executed legally binding agreement or contract regarding construction, use, maintenance and operational criteria, and BMP implementation requirements.
- Permit Application Fee Check paid to the South Florida Water Management District.

SECTION 5. CERTIFICATION BY APPLICANT (Responsible Entity)

I hereby certify that, to the best of my knowledge, the structures and project acreages listed in this application are owned or controlled by the applicant or participants, as applicable, and encompass the area referenced in this permit application. I also certify that, where applicable, the applicant or participants agree to participate in this permit application and to abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area which is included in this permit application, for South Florida Water Management District staff or their duly authorized agents, as provided for in subsection 40E-63.444(d), F.A.C., or as otherwise provided by the issued permit.

Type or print owner name

Type or print lessee name

Signature of owner of parcel/farm
(if not the owner, verify below)

Signature of lessee of parcel/farm (if applicable)
(if not the lessee, certify below)

I hereby certify that I am the authorized agent of the owner.

I hereby certify that I am the authorized agent of the lessee.

Type or print name and title

Type or print name and title

Signature

Signature

Date

Date

PART II. PROPERTY INFORMATION (To be completed for each proposed Permit Basin)

New Participant

Change in Controlled Acreage

SECTION 1. OWNER/LESSEE INFORMATION

Owner of Parcel/Permit Basin

Lessee of Parcel/Permit Basin

Name and Title

Name and Title

Company Name

Company Name

Address

Address

City, State, Zip

City, State, Zip

Telephone

Fax

Telephone

Fax

E-mail

E-mail

SECTION 2. INDIVIDUAL PARCEL/PERMIT BASIN INFORMATION (To be completed for each parcel or proposed Permit Basin)

Name of Parcel/Farm

Land Use

*Tax Assessor's
parcel identification number

Acres

Township

Range

Section(s)

County

S

E

S

E

S

E

S

E

Total Acreage

*Please use additional sheets if necessary

SECTION 3. CERTIFICATE OF PARTICIPATION (Complete Part II for the applicant and/or each participant, as applicable.)

I hereby certify that, to the best of my knowledge, the total acreage listed above is owned or controlled by me. I also certify that I will abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area which is described above and included in this permit application, for South Florida Water Management District staff or their duly authorized agents, as provided for in subsection 40E-63.444(d), F.A.C., or as otherwise provided by the issued permit.

Type or print owner name

Type or print lessee name

Signature of owner of parcel/Permit Basin
(if not the owner verify below)

Signature of lessee of parcel/Permit Basin (if applicable)
(if not the lessee, certify below)

I hereby certify that I am the authorized agent of the owner.

I hereby certify that I am the authorized agent of the lessee.

Type or print name and title

Type or print name and title

Signature

Signature

PART III. REQUEST FOR C-139 BASIN PERMIT TRANSFER

To qualify for a permit transfer, an action must be limited to changes in administrative information about a permittee. Any other changes or additions will require a permit modification.

SECTION 1. PERMITTEE SECTION

Existing Permit Number: _____

It is requested that the Permit identified above be transferred:

F R O M	Name and Title	T O	Name and Title
	Company Name		Company Name
	Address		Address
	Address		Address
	City, State, Zip		City, State, Zip
	Telephone		Telephone

The reason for this permit transfer:

A copy of the instrument effectuating the transfer of ownership, lease, interest, or control of the property is attached.

_____ Signature of permittee _____ Date

Type or print name and title

SECTION 2. TRANSFEREE SECTION (Entity Receiving The Permit)

- An application fee of one hundred dollars (\$100.00) is attached.
- A copy of the instrument establishing the applicant, corporation, agency, etc. as a legal entity, if applicable, is attached.

I hereby certify that I understand and accept all terms and conditions of the permit and any subsequent modifications to date. I also certify that the land practices remain the same, and all conditions of the permit have been satisfied. I understand that all conditions of the permit, including the legal, financial, and institutional capability to carry out all acts necessary to comply with the terms and conditions of the permit are applicable to me as the new permittee. I agree that any proposed modifications shall be applied for and approval obtained prior to such modifications.

Type or print owner name

Type or print lessee name

Signature of new owner of property
(If not the new owner, I hereby certify that I am an authorized agent of the new owner, original authorization letter attached)

Signature of new lessee of parcel/Permit Basin
(if applicable) (If not the new lessee, I hereby certify that I am an authorized agent of the new lessee, original authorization letter attached)

Date

Telephone

Date

Telephone

Address

Address

Part IV: C-139 Basin BMP PLAN

SECTION 1: COMPREHENSIVE BMP PLAN (Shaded cells indicate a BMP not applicable for a specific land use.)

BMP PLAN IMPLEMENTATION – 35 POINTS REQUIRED (Minimum 10 points Nutrient Control Practices, minimum 5 points in Particulate Matter and Sediment Controls, and minimum 5 points in Water Management Practices)

BMP	POINTS	SAND CANE	PASTURE	VEG.	SOD	CITRUS	OTHER
NUTRIENT CONTROL PRACTICES							
Nutrient Application Control	2 ½						
Nutrient Spill Prevention	2 ½						
Manage Successive Vegetable Planting	2 ½						
Plant Tissue Analysis	5						
Soil Testing	5						
Split Nutrient Application	5						
Slow Release Phosphorus Fertilizer	5						
Reduce Phosphorus Fertilization	5						
No Nutrients Imported via Direct Land Application	20						
No Nutrients Imported Indirectly through Cattle Feed	15						
Nutrient Management Plan	5-25						
PARTICULATE MATTER AND SEDIMENT CONTROLS							
Any 2	2 ½						
Any 4	5						
Any 6	10						
Any 8	15						
WATER MANAGEMENT PRACTICES							
Water Detention ½ inch	5						
1 inch	10						
Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment by Delayed or Minimized Discharge	5						
Low Volume Irrigation	5						
Approved & Operational Surface Water Reservoir (certified)	10-35						
Temporary Holding Pond (40E-400, F.A.C.)	15						
Overland Sheet Flow Over Entire Property	15						
No Point Discharge of Surface Water	15						
Tailwater Recovery System	10						
Precision Irrigation Scheduling	10						
Water Resources for Pastures	5						
PASTURE MANAGEMENT							
Restricted Placement of Feeders	2 ½						
Restricted Placement of Cowpens	2 ½						
Restricted Placement of Water	2 ½						
Provide Shade Structures away from Drainage	2 ½						
Low Cattle Density (1 head/2 acres)	5						
Restrict Cattle through Fencing of Canals	10						
TOTALS (35 POINTS)							

Incorporated by reference in subsection 40E-63.430(2), F.A.C.

SECTION 2. ALTERNATIVE BMP PLAN

Please provide the information applicable to the selected alternative (I, II, III). Add sheets, as needed.

I. ALTERNATIVE TYPE BMP

Description of BMP rationale and proposed effectiveness of the BMP

Detailed explanation of proposed BMP

Schedule for implementation of BMP

PROPOSED VERIFICATION METHOD AND ASSOCIATED DOCUMENTATION

- | | | |
|--------------------------------------|--|--|
| <input type="checkbox"/> Work Orders | <input type="checkbox"/> Maps | <input type="checkbox"/> Photographs |
| <input type="checkbox"/> Receipts | <input type="checkbox"/> Manufacturer Specifications | <input type="checkbox"/> Technical documentation |
| <input type="checkbox"/> Logs | <input type="checkbox"/> Test Records | <input type="checkbox"/> Other (explain below) |

Please describe the method and how documentation will be used:

Training requirements/program description.

SECTION 2. ALTERNATIVE BMP PLAN (CONTINUATION)

II. ALTERNATIVE BMP POINTS PER CATEGORY

SITE ASSESSMENT (Assurance shall be provided that the alternative BMP Plan provides equivalent or greater reduction effectiveness than the standard approach.)

III. ALTERNATIVE BMP DEMONSTRATION PROJECT

SCOPE OF WORK (at a minimum, the proposal shall contain the demonstration or research hypothesis, implementation, technical basis and scientific methods employed, performance indicators, reporting and schedule.)

REMAINING BMP EQUIVALENT POINTS (at a minimum, 10 points in the nutrient control practices category and 5 points in the water management practices category.)

PART V. DISCHARGE MONITORING PLAN

MONITORING INFORMATION

 Optional Required (see part VIII)**Control Structure Operator****Sample Collector**

Name and Title

Name and Title

Company Name

Company Name

Address

QA Plan Holder (Name) & Field Sampling QA Plan Number

Address

Address

City, State, Zip

City, State, Zip

Telephone

Fax

Telephone

Fax

E-mail

E-mail

STRUCTURE IDENTIFICATION

Please indicate the Permit Basin name, type of discharge structure* and structure designation

* (i.e. Single/multiple pump structure, open culvert, weired culvert, open channel connection, etc.)

Check type of automatic sampler. Time Proportional/Time Weighted (TPTW) or Flow Proportional/Flow Weighted (FPFW).

Permit Basin Name	Structure Type/Description	Structure Designation (for example, Station ID)	Sampling Method	
			TPTW	FPFW

SAMPLING REQUIREMENTS

Please check that the following items have been installed or are included:

- | | |
|---|---|
| <input type="checkbox"/> Description of Rainfall Collection Equipment | <input type="checkbox"/> Description of Staff Gauge Locations |
| <input type="checkbox"/> Location of Rainfall Collection Equipment | <input type="checkbox"/> Sample Field Data Logs |
| <input type="checkbox"/> Autosamplers | <input type="checkbox"/> Description of Backup Methodology, as applicable |
| <input type="checkbox"/> Flow Calibrations | <input type="checkbox"/> Description of Flow Calculation Methodology |
| <input type="checkbox"/> Description of Field Data | |

SAMPLING LABORATORY INFORMATION

Company Name

Contact

Address

HRS Certification Number

City, State, Zip

Additional Lab/Sampler Information

Telephone

Fax

E-mail

PART VI. OPTIONAL ACTIVITIES FOR INCENTIVES

- Early Implementation of BMPs (Early BMPs) Demonstration Project with a Verification Plan

Please check and attach the following applicable items to the application:

For Early BMPs:

For Demonstration Project w/ Verification Plan

- Description of the BMP or group of BMPs that will be implemented in addition to those required Proposed Scope of Work (SOW) according to 40E-63.437(3)(a), F.A.C. requirements
- Specific methods for implementation and maintenance Assumed loading reduction levels with technical justification Verification Plan according to subsection 40E-63.461(4), F.A.C.
- Proposed loading reduction levels with technical justification F.A.C.
- Implementation Schedule

PART VII. WATER QUALITY IMPROVEMENT ACTIVITIES (WQIA)

If the C-139 Basin is determined to be out of compliance and WQIA are required, please check one of the following options:

<input type="checkbox"/> WQIA with technical documentation supporting proposed total phosphorus removal efficiency	% Required total phosphorus removal efficiency	% Proposed total phosphorus removal efficiency	
<input type="checkbox"/> WQIA with Verification Plan	% Required total phosphorus removal efficiency	% Proposed total phosphorus removal efficiency	% Total phosphorus removal for Verification Plan
<input type="checkbox"/> WQIA with total phosphorus removal efficiency based on District criteria (see Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit)	% Required total phosphorus removal efficiency	% Proposed total phosphorus removal efficiency	

DETAILED DESCRIPTION OF THE PROPOSED IMPROVEMENTS TO THE BMP PLAN (Based on the selected option. Add pages, as needed.)

PART VIII. IMPRACTICABILITY New Renewal**GENERAL INFORMATION**

Please indicate the Permit Basin, acreage and land use for which additional water quality improvement activities are proposed to be impracticable*:

Permit Basin Name*	Acreage	Land Use

*Please use additional sheets if necessary

ACTIVITIES IMPLEMENTED IN THE PERMIT BASIN(S)

Provide a detailed description of all previously implemented and current activities, and evidence that no additional BMPs or refinements to the implementation methods can be reasonably accomplished*.

PROPOSED PERFORMANCE LEVELS

The proposed expected amount of phosphorus discharge from the Permit Basin(s) is:

Permit Basin*	Annual Unit Area Loading Levels*	Basis for proposed levels*

*Please add pages, as needed.

MONITORING PLAN AND HISTORIC WATER QUALITY DATA

Please check that the following items are attached:

- Part V – C-139 Basin Discharge Monitoring Plan of this application form
- Installation and implementation schedule
- Description of the monitoring program and monitoring sites
- Description of proposed sample collection methods and schedule.
- Description of backup plan
- Description of proposed sample handling and laboratory analyses
- Description of data review procedures
- Analysis of representative water quality data for the lands requesting impracticability (minimum of five years if renewal.)



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

P.O. Box 24680
3301 Gun Club Road
West Palm Beach, FL 33416-4680

Telephone:
(407) 686-8800
Florida WATS Line:
1-800-432-2045

GUIDANCE FOR PREPARING AN APPLICATION FOR A "WORKS OF THE DISTRICT" PERMIT IN THE EVERGLADES PURSUANT TO CH. 40E-63, F.A.C.

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INTRODUCTION

The South Florida Water Management District is responsible for implementing the provisions of the Marjory Stoneman Douglas Everglades Protection Act, and for adopting and implementing an Everglades Surface Water Improvement and Management Plan. Therefore, the District is requiring that landowners obtain permits for discharges from lands which : 1) generally are served by District structures S-2, S-3, S-5A, S-6, S-7, S-8, and S-150; or 2) otherwise drain into Water Conservation Areas 1, 2A, 2B, 3A, and 3B; the Arthur R. Marshall Loxahatchee National Wildlife Refuge; and Everglades National Park. The goal of this regulatory process is to eliminate as much as possible the excess phosphorus discharging into the Everglades Protection Area.

Pursuant to Chapter 40E-63, Florida Administrative Code (F.A.C.), Part I, landowners in the Everglades Agricultural Area (EAA) are required to obtain a "Works Of The District In The Everglades" permit. Copies of Chapter 40E-63, F.A.C., are available at District Headquarters, 3301 Gun Club Road, West Palm Beach, Florida or by calling (407) 686-8800. Certain properties in the EAA may qualify for a General Permit. Section 40E-63.120, F.A.C., (General Permits For Use of Works of the District Within the Everglades) contains the conditions which a parcel must meet to qualify for a General Permit. If a property is residential, less than 40 acres in size, and not served by a central drainage system, it qualifies for a General Permit. If a property is commercial or industrial, less than five acres in size, and not served by a central drainage system, it qualifies for a General Permit. All other properties in the EAA which do not meet the conditions for a General Permit must obtain either an Individual or a Master Permit.

In general, an Individual Permit will be issued to the owner (or, in some cases, a lessee) of only one structure and to any jointly-participating owners (or lessees) of parcels which discharge to that one structure. Master Permits are required, in general, for situations involving ownership

or use of more than one structure. Before submitting an application, applicants are urged to contact District staff to resolve any questions about what type of permit application to submit.

The F.A.C. rule sections which specify the information required for the various "Works of the District in the Everglades" permit applications are as follows:

<u>Type of permit</u>	<u>F.A.C. rule section</u>	
	<u>Individual Permit</u>	<u>Master Permit</u>
new	40E-63.132	40E-63.152
modification of an existing	40E-63.140	40E-63.160
renewal of an existing	40E-63.138(2)	40E-63.158(2)
transfer of an existing	40E-63.142	40E-63.162

Landowners may seek a determination from the District as to whether a parcel lies within the EAA and a Works Of The District permit is required. Requests, including adequate supporting information, must be submitted to the District no later than June 1, 1992, for Individual Permits and July 1, 1992, for Master Permits. District staff will issue a written determination within 60 days of submission of adequate information.

Applications for Individual Permits are due on or before September 1, 1992. Applications for Master Permits are due on or before October 1, 1992.

Pursuant to Sections 40E-63.130(2)(b) and 40E-63.150(2)(b), F.A.C., the District expects applicants to make a good faith effort to complete Works Of The District In The Everglades permit applications within a reasonable time. This Guidance Booklet describes the items customarily required for an application for a new permit to be declared complete. If your application for a new permit does not contain all the items, or a valid written explanation of why certain items have been omitted, your application may be recommended for denial due to lack of completeness.

An application for a modification to an existing permit or for a renewal of an expiring permit often need not contain all the items described on the pages which follow, depending on what has been previously provided and the nature of the proposed modification or renewal. In such cases it is even more important that you, the applicant, provide a brief written explanation of why those items are not being provided.

Your application should contain:

1. 4 signed copies of the Application Form 0779; and
2. 4 copies of the items listed in this Guidance Booklet.

In order for your application to be considered filed with the District, you must submit all of the following:

1. the correct permit application processing fee; and four copies of each of these items:
2. the completed and signed application (Form 0779)
3. the aerial photograph(s)
4. the location map(s)
5. the water quality monitoring plan
6. all other required information

GUIDANCE

PART I. GENERAL INFORMATION

Part I is general instructions for preparing and submitting either an Individual or a Master Works of the District in the Everglades permit application.

Please check the appropriate box which identifies the type of permit action being requested. Rule sections 40E-63.130, F.A.C., (Individual Permit Application Requirements) and 40E-63.150, F.A.C., (Master Permit Application Requirements) contain descriptions of who has to file applications for Individual and Master Permits, respectively. To qualify for a permit transfer, an action must normally be limited to changes in information about a permittee, an owner, a lessee, an authorized agent, or a structure operator. Any other changes or additions will usually not qualify as an action for a permit transfer, but will require some other type of application. If you are uncertain as to the type of permit for which you should apply, please contact District staff and obtain clarification before you file your application.

Please check the appropriate box if you are applying to participate in the Early Baseline Option. Rule sections 40E-63.145(4), F.A.C., (Compliance and Enforcement of Individual Permits) and 40E-63.165, F.A.C., (Compliance and Enforcement of Master Permits) contain descriptions of the Option, and of the required associated data and implementation schedules. See also later sections of this document.

If the Best Management Practices Plan submitted pursuant to this Rule Chapter proposes activities which require new or modified water use, surface water management, right-of-way, and/or well construction permits from the District, applications for the other permits should be submitted at the same time the Works Of The District permit application is submitted. The permit applications for the new or modified activities should be complete by the time the

Works Of The District permit application is complete. If the applications are not complete, the proposed activities will be excluded from the Works Of The District permit. Please check the appropriate box if other District permit applications are being filed concurrently with this permit application.

If you already have applied for or obtained District permits covering any or all of the lands or activities in this present application, please list the application or permit numbers in the space provided. Enough space is available to include such things as the date(s) when you applied or when permits were issued, project names, locations, etc.

PART II. INDIVIDUAL PERMIT APPLICATION (NEW, MODIFICATION, OR RENEWAL)

In the course of developing necessary information, you may find it necessary to develop or use other items which do not conveniently fit into the approaches described below. If some other arrangement is proposed, describe it and provide appropriate clearly-identified documents. If questions arise during the course of preparing information, please discuss them with District staff before submitting the permit application.

SECTION 1. STRUCTURE INFORMATION AND CERTIFICATION

Each participating owner (and, if applicable, lessee) or authorized agent must fill in all relevant information and sign and date this section.

SECTION 2. PARCEL INFORMATION AND CERTIFICATION

Each participating owner (and, if applicable, lessee) or authorized agent must fill in all relevant information and sign and date this section. Be certain to check either "new participant" or "change in controlled acreage" at the very end of the section.

SECTION 3. GENERAL INFORMATION

If applicable, please fill in all relevant information about the primary project engineer or consultant who assisted in preparing the permit application and/or supporting documents. Also, summarize briefly any major pre-application meetings or activities involving District staff. (Use extra sheets, if necessary.)

Then check that the appropriate proofs of ownership/lease are being submitted.

1. Proof of ownership of structure - Please submit proof of ownership of the structure which discharges into the Works of the District. A recorded deed, affidavit of ownership, or executed contract for purchase customarily satisfies this requirement. Other documents may be acceptable. If the responsible operating entity is to be a public body

(such as a city or drainage district), submit documents of potential acceptance from that public body (for example: a resolution, the enabling legislation, an ordinance, or a legally-approved work plan). A simple statement from the applicant is not sufficient.

2. Proof of ownership of parcel(s)/farm(s) - Please submit proof of ownership of the parcel(s)/farm(s) included as part of this permit application. A recorded deed or affidavit of ownership customarily satisfies this requirement. Other documents - for example, an executed contract for purchase - may be acceptable.

3. Proof of lease, if applicable, of structure - If a lessee is submitting the permit application, a copy of the lease must be submitted. For the lessee to qualify as a co-applicant, the lease must have a duration of at least as long as the duration of the permit to be issued. If the lessee qualifies, the lessee must formally accept responsibility for all conditions of the permit, including implementation and operation of the BMP Plan and the monitoring plan, and submission of all required reports.

4. Proof of lease, if applicable, of parcel(s)/farm(s) - If a lessee is submitting the permit application, a copy of the lease must be submitted. For the lessee to qualify as a co-applicant, the lease must have a duration of at least as long as the duration of the permit to be issued. If the lessee qualifies, the lessee must formally accept responsibility for all conditions of the permit, including implementation and operation of the BMP Plan and the monitoring plan, and submission of all required reports.

SECTION 4. TECHNICAL INFORMATION

1. Aerial photograph(s) - Please submit the most recent publicly-available vertical aerial photograph(s) upon which the boundaries of the lands included in the permit application are identified. (One possible source of aerial photographs is the County Property Appraiser's Office, which usually has section photographs for sale at a nominal cost.) The photograph(s) should, at a minimum:

- a. be recent, and show the date taken;
- b. be at a scale suitable for use in reviewing the application (for example, 1" = 2000' maximum, 1" = 20' minimum);
- c. have a north arrow and scale indicator;
- d. show the application boundaries;
- e. be legible, not electrostatically-printed;
- f. be vertical, not oblique.

2. Location map(s) - Please submit one or more 8 1/2" x 11" detailed location sketch(es). (For example, a segment of a county road map might serve as a good base.) Sketch(es) should contain the project boundaries and enough information (major roads, north arrow, water courses, section lines, relationship to other EAA structures, etc.) to allow someone who has general familiarity with the area to locate the site both on the ground and on a map of the area.

3. Project Map(s) - Please submit map(s) of the application area, which show(s), at a minimum:

- a. a scale indicator, with a scale suitable to allow the clear depiction of the project elements contained on the remainder of this list;
- b. a north arrow;
- c. the boundary of the area included in the permit application;
- d. the boundary(ies) of the areas where the Best Management Practices Plan will be implemented and the acreages of those areas;
- e. both the existing drainage works and (if applicable) any proposed additions and modifications to those works; and identify, where appropriate:
 - (1) primary and secondary canals and ditches. If a parcel is regularly rotated through more than one use (crop rotation, periodic fallowing, etc.), please discuss each use in supporting documentation, tables, schedules, maps, etc.;

- (2) outflow pump stations;
 - (3) primary and secondary gravity outflow facilities (culverts, weirs, risers, etc.);
 - (4) publicly-owned treatment works;
 - (5) proposed flow directions;
 - (6) water quantity monitoring locations;
 - (7) water quality monitoring locations;
 - (8) District works as specified in Section 40E-63.106, F.A.C.;
- f. names, boundaries, and acreages of incorporated communities;
 - g. names, boundaries, and acreages of local drainage districts;
 - h. all drainage basins which drain from the project, with subbasins, if appropriate. Each basin and subbasin shall be named and the acreage of it provided on the map;
 - i. the boundaries of lands covered by District permits, or permit applications, and the permit or permit application number(s).

4. Best Management Practices (BMP) Plan - For any lands for which a permit is required, please provide a Best Management Practices (BMP) Plan as described in Rule 40E-63.132(6), F.A.C.

Appendix 2 to Rule Chapter 40E-63, F.A.C., contains a list of suggested Best Management Practices you may consider in the course of developing your BMP Plan. The Appendix 2 list is not all-inclusive and the items in it are not mandatory. The District understands that the planning of a successful BMP program must also include consideration of factors such as soil type, crop type, and salability of crop, among others both technical and non-technical.

Particularly for new applications, a shortage of detail about the BMP Plan could lead to either delays in processing, or, in extreme cases, a recommendation for denial due to lack of completeness. If you will not be using the BMPs listed in Appendix 2, you should first explain how or why you found those in the Appendix not feasible or not applicable. Then, describe the BMP Plan you do plan to use.

BMP information must be supplied for each crop site, or combination of crops, or farming or other land use unit. The exact nature of the information will vary, depending on which BMP or combination of BMPs is proposed, but the following would usually be expected, at a minimum:

- a. a detailed description of the proposed Best Management Practices, including location, crop type (if applicable), and acreage;
- b. nutrient recovery rationale. This should include discussion of such subjects as: why the proposed Practices were chosen (and, possibly, why certain ones were not chosen), any examples from publications which would help explain your decisions, the actual processes by which the proposed Practices will remove or reduce phosphorus, and the percent or amount of phosphorus expected to be reduced or removed;
- c. infrastructure descriptions;
- d. water management strategies, including probable timing, rates, and total volumes of offsite flows into the adjacent primary and secondary works;
- e. a detailed description of how the proposed practices both differ from existing practices and will affect works of the District;
- f. a detailed description of both the proposed education and training program, including content scheduling; and the methods for assessing effectiveness of management and operation staff to implement and monitor the approved BMP Plan;

- g. a schedule for implementing the BMP Plan by February 1, 1995, which enumerates the specific steps to be taken in implementing and monitoring the proposed BMPs;
- h. all computer models and associated relevant documentation, and any other documents (excluding those in general use and of general knowledge), including a complete list of references and a thorough bibliography. (Consultants and others preparing supporting documents should include their qualifications to prepare the items.);
- i. if there are other known or suspected sources of phosphorus within the general boundaries of the project, please submit as much information as possible about them, especially as to location and responsible entity. Again, contact District staff as early in the application process as possible;
- j. if applicable, a summary of those activities related to other District permit requirements. If a proposed BMP Plan requires a new District permit or a modification to an existing District permit, please identify which permit applications (surface water management, water use, well construction, or right-of-way) are being submitted concurrently with this application.

5. Water quality monitoring plan - Please provide a water quality monitoring plan designed to provide reasonable assurance that annual water discharges and phosphorus loads are accurately documented.

(Note to applicants who are choosing to participate in the Early Baseline Option: a District-approved monitoring plan must be implemented by May 1, 1993, and results must be submitted to the District monthly, beginning June 1, 1993 and ending with the May 1, 1994 submittal. Applicants who elect to participate in the Early Baseline Option are encouraged to complete their permit applications promptly, so that the District can take final agency action on the entire application before January 1, 1993. However, if requested by the applicant, the District will take final agency action on the monitoring plan only in December 1992, subject to the condition that subsequent final agency action on the entire permit application may include revisions to the monitoring plan.)

The plan should include, at a minimum:

- a. a description of the monitoring program, including an explanation of how the proposed program will achieve valid measurements of flow and total phosphorus concentration;
- b. a description, including a map, of all proposed monitoring locations, which shall include, at a minimum, all structures that discharge into District canals as specified in Section 40E-63.106, F.A.C.;
- c. a description of proposed sample collection methods and schedules, specifying:
 - (1) when samples will be collected (Note: If there has been no discharge during a period, no samples need to be collected);
 - (2) the depth of water at which the sample will be collected;
 - (3) consistent site location of sample collection, such as: on the upstream side of the culvert discharging to the District Canal; in the tail water of the pump, if present, etc.;

- (4) collection technique, such as automatic sampler or grab sampling (Note: automatic samplers may be configured to collect flow-proportional or time-proportional composite samples);
- (5) written specification of items (1), (2), (3), and (4) above for each sample location as identified in 5.b. above;
- (6) how samples will be treated, such as compositing versus individual analysis;
- (7) sample preservation method (Note: refrigeration during collection periods prior to pick-up is not required but acidification is);
- (8) for sites either with a single variable speed pump or more than one pump, or with most gravity-discharge structures, a flow proportional sampling method (Note: For sites with single or multiple pumps run at constant speed, a time-composite method may be used for each pump [constant volumes of water collected at set intervals as long as the pump is operating]);
- (9) how water discharges will be measured (with reasonable assurances that measurements are accurate and precise) or estimated from pump operating logs. All permitted structures, pumps, and measuring devices must be rated or calibrated. (Note: If estimated by operation logs, the pump calibration methodology and results must be certified by a Florida Professional Engineer),
- (10) identification and qualifications of individuals who will collect samples; Whether or not the discharge from a facility is within permitted limits will largely be determined from the results of the samples. It is therefore vital to the success of the plan that samples be properly collected. The qualifications for individuals selected to perform this task should include some formal instruction on proper collection techniques and the reasons

for them. The District is willing to work with EAA structure owners and other interested persons to be involved in such a formal instruction program;

- d. a description of the proposed sample handling and laboratory analyses, including:
 - (1) identification of the laboratory, with a DER-approved quality assurance/quality control (QA/QC) plan, to be used to perform the chemical analyses on the samples;
 - (2) a specified schedule for processing samples and chain of custody documentation;
 - (3) a plan for "split sampling", to furnish the District with one of each ten collected samples to ensure field and laboratory accuracy. The plan should include a method to notify District staff by telephone both that a sample (or samples) has been taken, and how and where the sample(s) may be obtained. District staff will make all reasonable efforts to pick up the sample(s) within two working days of being notified;
- e. a description of data management techniques, including a schedule for the delivery of data from the analytical laboratory to the District in electronic format on both a monthly and an annual basis. The electronic format shall be a DOS formatted 3.5 disk that contains, in ASCII, horizontal records with columns of:
 - (1) owner;
 - (2) site location including latitude and longitude;
 - (3) sample location;
 - (4) water quantity discharges (recommended units: million gallons per day);
 - (5) phosphorus concentrations (in mg/L of P), including QA/QC results;
 - (6) date (mmddyy) and time (24-hour, also known as "military") of measurements;

- (7) date(s) of discharge (mmddyy - mmddyy);
 - (8) whether samples were taken by grab or automatic techniques ("g" for grab, "t" for time-proportional, "f" for flow proportional);
 - (9) whether samples were composited ("c" for composited, "nc" if not);
 - (10) the daily phosphorus load in kilograms;
 - (11) codes for identifying how water quantity discharges and phosphorus loads were measured, estimated, or calculated;
- f. a description of data review procedures including the identification of the reports required pursuant to Subsections 40E-63.143(2)(c) and (d), F.A.C., (Limiting Conditions for Individual Permits) and a schedule for monthly and annual submission of reports. Calculations of total phosphorus loads will be made using methodology acceptable to the District and calculation techniques will be identified by monitoring location when reporting loads;
 - g. a backup plan that will be implemented for guaranteeing timely resumption of sampling if planned sampling devices or techniques become inoperable.

6. Early Baseline Option information - Those applicants who are choosing to participate in this Option need to supply all of this information:

- a. soil type data of the sort typically found in Soil Conservation Service soil survey publications;
- b. soil test results, showing total phosphorus concentrations on a parcel-by-parcel (or similar) basis. Any properly-identified results from the last five years are useful. If there are no past soil results, tests should be taken within the two months prior to the date the application is submitted. Sample locations should be selected so that results correspond to the soil types described in item a. above and the proposed land uses. In the cases where there are

extensive reaches of land with a common soil type, sufficient tests are recommended to be taken which will reasonably reflect the included acreage. Also, District staff will consider alternative soil test procedures which meet the needs of the Early Baseline phosphorus load calculation requirements;

- c. for the same parcels, a complete listing of crops or land uses for the past five years;
- d. for the same parcels, a complete best-estimate listing of typically-expected future crops for the period through December 1996;
- e. for each structure discharging to a District primary canal: the acreage served by the structure, and a description of the automatic recording rainfall collector or other similar device from which daily (or shorter interval) records of precipitation at the structure can be periodically obtained, and which must be installed near the structure. Please include a description of the area around the collector, showing that readings will not be affected by nearby features which could alter rainfall and windflow patterns.
- f. for those cases where applicants have already implemented some BMP's and are now submitting other, proposed, BMP's as part of the permit application - the District will consider calculating the baseline values to reflect the BMP's previously implemented and still in place. However, applicants must provide thorough supporting information. [Example: data from the area presently with some BMP's compared to data from a similar area (soil type and depth, crop type(s), historic uses, drainage, water quality and water quantity, etc) without BMP's.] Applicants considering this approach should consult with District staff.

PART III. MASTER PERMIT APPLICATION (NEW, MODIFICATION, OR RENEWAL)

In the course of developing necessary information, you may find it necessary to develop or use other items which do not conveniently fit into the approaches described below. If some other arrangement is proposed, describe it and provide appropriate clearly-identified documents. If questions arise during the course of preparing information, please discuss them with District staff before submitting the permit application.

SECTION 1. GENERAL INFORMATION AND CERTIFICATION

Please fill in all relevant information. The applicant for the participants must sign this section.

SECTION 2. LEGAL AND FINANCIAL INFORMATION

Please submit documentation which demonstrates that the applicant possesses the legal and financial authority and ability either to perform all the acts, or to enforce the performance of the acts, including routine operation and maintenance, necessary to implement all the terms and conditions of the permit to be issued. The documents must contain language stating how the responsible entities propose to implement BMPs and monitoring requirements. If the responsible operating entity is to be a public body (such as a city or drainage district), submit documents of potential acceptance from that public body. (A simple statement from the applicant is not sufficient.) Documents which customarily provide the information include, but are not limited to, the following:

1. a description of the legally responsible entity or group of owners;
2. any applicable enabling legislation;
3. any applicable articles of incorporation, which describe the entity's or group of owners' authority to operate and maintain the permitted project;
4. any applicable inter-local agreements with local governments or other public entities, indicating each one's consent and intent to participate, specifying the terms of participation;

5. any applicable agreements between or among private landowners or entities, indicating each one's consent and intent to participate, and specifying the terms of participation;
6. any temporary operating permits issued to such entities as municipal service taxing units; active Ch. 298, F.S., water control or drainage districts; Ch. 190, F.S., community development districts; or Ch. 170, F.S., special assessment districts;
7. any other contracts or legal documents which serve the same purposes as those described above;
8. an estimate of the costs of all Best Management Practices Plan-related activities, including, but not limited to: implementation, operation and maintenance; monitoring; and compliance with Best Management Practices and monitoring plans;
9. an identification of funding sources;
10. any other relevant information.

Any applicable documents must contain language stating how the responsible entities will deal with any new monitoring requirements, or any other items brought about by changes in land use, crop type, etc.

District staff recognizes that some of the listed documents often may not be in final form at the time of applying for a permit. However, experience has shown that, if staff can be provided early opportunities to make water-resource-related comments about draft legal documents, considerable time and applicant expense can often be saved later.

SECTION 3. STRUCTURE AND PARTICIPANT INFORMATION, AND CERTIFICATION

Each participant in the Master Permit application must provide four copies of the entirety of this section, including the "Certification of Participation in a Works of the District Everglades

Master Permit Application." The owner or an agent authorized to act for the owner must sign and date this section. If a lessee is a co-applicant, then the lessee or an agent authorized to act for the lessee must also sign and date this section. Be certain to check either "new participant" or "change in controlled acreage" at the very end of the section.

SECTION 4. TECHNICAL INFORMATION

1. Aerial photograph(s) - Please submit the most recent publicly-available vertical aerial photograph(s) upon which the boundaries of the lands included in the permit application are identified. (One possible source of aerial photographs is the County Property Appriaser's Office, which has section photographs for sale at a nominal cost.) The photograph(s) should, at a minimum:
 - a. be recent, and show the date taken;
 - b. be at a scale suitable for use in reviewing the application (for example, 1" = 2000' maximum, 1" = 20' minimum);
 - c. have a north arrow and scale indicator;
 - d. show the application boundaries;
 - e. be legible, not electrostatically printed;
 - f. be vertical, not oblique.

2. Location map(s) - Please submit one or more 8 1/2" x 11" detailed location sketch(es). (For example, a segment of a county road map might serve as a base.) Sketch(es) should contain the project boundaries and enough information (major roads, north arrow, water courses, section lines, relationship to other EAA structures, etc.) to allow someone who has general familiarity with the area to locate the site both on the ground and on a map of the area.

3. Project Map(s) - Please submit map(s) of the application area, which show(s), at a minimum:

- a. a scale indicator, with a scale suitable to allow the clear depiction of the project elements contained on the remainder of this list;
- b. a north arrow;
- c. the boundary of the area included in the permit application;
- d. the boundaries, identifiers, and acreages of any areas within the general boundary of the project which are not included in the Master Permit application;
- e. the boundary(ies) of the areas where the Best Management Practices Plan will be implemented and the acreages of those areas;
- f. both the existing works and (if applicable) any proposed additions and modifications to those works; and identify, where appropriate:
 - (1) primary and secondary canals and ditches. If a parcel is regularly rotated through more than one use (crop rotation, periodic fallowing, etc.), please discuss each use in supporting documentation, tables, schedules, maps, etc.;
 - (2) outflow pump stations;
 - (3) primary and secondary gravity outflow facilities (culverts, weirs, risers, etc.);
 - (4) publicly-owned treatment works;
 - (5) proposed flow directions;
 - (6) water quantity monitoring locations;
 - (7) water quality monitoring locations;
 - (8) District works as specified in Section 40E-63.106, F.A.C.;
- g. names, boundaries, and acreages of incorporated communities;
- h. names, boundaries, and acreages of local drainage districts;

- i. all drainage basins which drain from the project, with subbasins, if appropriate. Each basin and subbasin shall be named and the acreage of it provided on the map;
- j. the boundaries of lands covered by District permits, or permit applications, and the permit or permit application number(s).

4. Best Management Practices (BMP) Plan - For any lands for which a permit is required, please provide a Best Management Practices (BMP) Plan as described in Rule 40E-63.152(2), F.A.C.

Appendix 2 to Rule Chapter 40E-63, F.A.C., contains a list of suggested Best Management Practices you may consider in the course of developing your BMP Plan. The Appendix 2 list is not all-inclusive and the items in it are not mandatory. The District understands that the planning of a successful BMPs program must also include consideration of factors such as soil type, crop type, and salability of crop, among others both technical and non-technical.

Particularly for new applications, a shortage of detail about the BMP Plan could lead to either delays in processing, or, in extreme cases, a recommendation for denial due to lack of completeness. If you will not be using the BMPs listed in Appendix 2, you should first explain how or why you found those in the Appendix not feasible or not applicable. Then, describe the BMP Plan you plan to use.

BMP information must be supplied for each crop site, or combination of crops, or farming or other land use unit. The exact nature of the information will vary, depending on which BMP or combination of BMPs is proposed, but the following would usually be expected, at a minimum:

- a. a detailed description of the proposed Best Management Practices, including location, crop type (if applicable), and acreage;

- b. nutrient recovery rationale. This should include discussion of such subjects as: why the proposed Practices were chosen (and, possibly, why certain ones were not chosen), any examples from publications which would help explain your decisions, the actual processes by which the proposed Practices will remove or reduce phosphorus, and the percent or amount of phosphorus expected to be reduced or removed;
- c. infrastructure descriptions;
- d. water management strategies, including probable timing, rates, and total volumes of offsite flows into the adjacent primary and secondary works;
- e. a detailed description of how the proposed practices both differ from existing practices and will affect works of the District;
- f. a detailed description of both the proposed education and training program, including content scheduling; and the methods for assessing effectiveness of management and operation staff to implement and monitor the approved BMP Plan;
- g. a schedule for implementing the BMP Plan within one year of permit issuance, which enumerates the specific steps to be taken in implementing and monitoring the proposed BMPs;
- h. all computer models and associated relevant documentation, and any other documents (excluding those in general use and of general knowledge), including a complete list of references and a thorough bibliography. (Consultants and others preparing supporting documents should include their qualifications to prepare the items.);
- i. particularly in the case of Master Permit applications, if there are other known or suspected sources of phosphorus within the general boundaries of the project, please submit as much information as possible about them, especially as to location and responsible entity. Again, contact District staff as early in the application process as possible;

- j. if applicable, a summary of those activities related to other District permit requirements. If a proposed BMP Plan requires a new District permit or a modification to an existing District permit, please identify which permit applications (surface water management, water use, well construction, or right-of-way) are being submitted concurrently with this application.

5. Water quality monitoring plan - Please provide a water quality monitoring plan designed to provide reasonable assurance that annual water discharges and phosphorus loads are accurately documented.

(Note to applicants who are choosing to participate in the Early Baseline Option: a District-approved monitoring plan must be implemented by May 1, 1993, and results must be submitted to the District monthly, beginning June 1, 1993 and ending with the May 1, 1994 submittal. Applicants who elect to participate in the Early Baseline Option are encouraged to complete their permit applications promptly, so that the District can take final agency action on the entire application before January 1, 1993. However, if requested by the applicant, the District will take final agency action on the monitoring plan only in December 1992, subject to the condition that subsequent final agency action on the entire permit application may include revisions to the monitoring plan.)

The plan should include, at a minimum:

- a. a description of the monitoring program, including an explanation of how the proposed program will achieve valid measurements of flow and total phosphorus concentration;
- b. a description, including a map, of all proposed monitoring locations, which shall include, at a minimum, all structures that discharge into District canals as specified in Section 40E-63.106, F.A.C.;

- c. a description of proposed sample collection methods and schedules, specifying:
- (1) when samples will be collected (Note: If there has been no discharge during a period, no samples need to be collected);
 - (2) the depth of water at which the sample will be collected;
 - (3) consistent site location of sample collection, such as: on the upstream side of the culvert discharging to the District Canal; in the tail water of the pump, if present, etc.;
 - (4) collection technique, such as automatic sampler or grab sampling (Note: automatic samplers may be configured to collect flow-proportional or time-proportional composite samples);
 - (5) written specification of items (1), (2), (3), and (4) above for each sample location as identified in 5.b. above;
 - (6) how samples will be treated, such as compositing versus individual analysis;
 - (7) sample preservation method (Note: refrigeration during collection periods prior to pick-up is not required but acidification is);
 - (8) for sites either with a single variable speed pump or more than one pump, or with most gravity-discharge structures, a flow proportional sampling method (Note: For sites with single or multiple pumps run at constant speed, a time-composite method may be used for each pump [constant volumes of water collected at set intervals as long as the pump is operating]);
 - (9) how water discharges will be measured (with reasonable assurances that measurements are accurate and precise) or estimated from pump operating logs. All permitted structures, pumps, and measuring devices

must be rated or calibrated. (Note: If estimated by operation logs, the pump calibration methodology and results must be certified by a Florida Professional Engineer);

(10) identification and qualifications of individuals who will collect samples. Whether or not the discharge from a facility is within permitted limits will largely be determined from the results of the samples. It is therefore vital to the success of the plan that samples be properly collected. The qualifications for individuals selected to perform this task should include some formal instruction on proper collection techniques and the reasons for them. The District is willing to work with EAA structure owners and other interested persons to be involved in such a formal instruction program;

d. a description of the proposed sample handling and laboratory analyses, including:

- (1) identification of the laboratory, with a DER-approved quality assurance/quality control (QA/QC) plan, to be used to perform the chemical analyses on the samples;
- (2) a specified schedule for processing samples and chain of custody documentation;
- (3) a plan for "split sampling", to furnish the District with one of each ten collected samples, to ensure field and laboratory accuracy. The plan should include a method to notify District staff by telephone both that a sample (or samples) has been taken, and how and where the sample(s) may be obtained. District staff will make all reasonable efforts to pick up the sample(s) within two working days of being notified;

- e. a description of data management techniques, including a schedule for the delivery of data from the analytical laboratory to the District in electronic format on both a monthly and an annual basis. The electronic format shall be a DOS formatted 3.5 disk that contains, in ASCII, horizontal records with columns of:
- (1) owner;
 - (2) site location including latitude and longitude;
 - (3) sample location;
 - (4) water quantity discharges (recommended units: million gallons per day);
 - (5) phosphorus concentrations (in mg/L of P), including QA/QC results;
 - (6) date (mmddyy) and time (24-hour, also known as "military") of measurements;
 - (7) date(s) of discharge (mmddyy-mmddyy);
 - (8) whether samples were taken by grab or automatic techniques ("g" for grab, "t" for time-proportional, "f" for flow proportional);
 - (9) whether samples were composited ("c" for composited, "nc" if not);
 - (10) the daily phosphorus load in kilograms;
 - (11) codes for identifying how water quantity discharges and phosphorus loads were measured, estimated, or calculated;
- f. a description of data review procedures including the identification of the reports required pursuant to Subsection 40E-63.163(2)(a), F.A.C., (Limiting Conditions for Master Permits) and a schedule for monthly and annual submission of reports. Calculations of total phosphorus loads will be made using methodology acceptable to the District and calculation techniques will be identified by monitoring location when reporting loads.
- g. a backup plan that will be implemented for guaranteeing timely resumption of sampling if planned sampling devices or techniques become inoperable.

6. Early Baseline Option information - Those applicants who are choosing to participate in this Option need to supply all of this information:

- a. soil type data of the sort typically found in Soil Conservation Service soil survey publications;
- b. soil test results, showing total phosphorus concentrations on a parcel-by-parcel (or similar) basis. Any properly-identified results from the last five years are useful. If there are no past soil results, tests should be taken within the two months prior to the date the application is submitted. Sample locations should be selected so that results correspond to the soil types described in item a. above and the proposed land uses. Where there are extensive reaches of land with a common soil type, sufficient tests are recommended to be taken which will reasonably reflect the included acreage. Also, District staff will consider alternative soil test procedures which meet the needs of the Early Baseline phosphorus load calculation requirements;
- c. for the same parcels, a complete listing of crops or land uses for the past five years;
- d. for the same parcels, a complete best-estimate listing of typically-expected future crops for the period through December 1996;
- e. for each structure discharging to a District primary canal: the acreage served by the structure, and a description of the automatic recording rainfall collector or other similar device from which daily (or shorter interval) records of precipitation at the structure can be periodically obtained, and which must be installed near the structure. Please include a description of the area around the collector, showing that readings will not be affected by nearby features which could alter rainfall and windflow patterns.

- f. for those cases where applicants have already implemented some BMP's and are now submitting other, proposed, BMP's as part of the permit application - the District will consider calculating the baseline values to reflect the BMP's previously implemented and still in place. However, applicants must provide thorough supporting information. [Example: data from the area presently with some BMP's compared to data from a similar area (soil type and depth, crop type(s), historic uses, drainage, water quality and water quantity, etc) without BMP's.] Applicants considering this approach should consult with District staff.

PART IV. REQUEST FOR PERMIT TRANSFER (INDIVIDUAL OR MASTER PERMIT)

Please provide all relevant information, including the required legal instruments. The owner or an agent authorized to act for the owner must sign and date the application. For Individual Permits, if a lessee is a co-applicant, then the lessee or an agent authorized to act for the lessee must also sign and date the application.



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GUIDEBOOK FOR PREPARING AN APPLICATION FOR A C-139 BASIN POLLUTANT SOURCE CONTROL PERMIT



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INTRODUCTION

What is the first step in the permit renewal process?

The first step is to submit a Best Management Practices Plan (BMP) Plan for pre-approval. You must complete and submit to the District the form presented in Appendix A of this Guidebook. The BMP Plans are due no later than 30 days after the effective date of the revised Part IV of Chapter 40E-63, F.A.C. (Rule). District staff will respond no later than 30 days after receiving the BMP Plan. This enables the applicant to implement the BMP Plan while the new permit or permit renewal application is being processed, thereby reducing any potential delay of BMP implementation pending administrative processing of the application.

When are applications due under the revised rule and what shall be submitted?

Applications for new General Permits and General Permit Renewals shall be submitted to the District within 45 days of the effective date of the revised Rule. Applicants shall use Permit Application Form 1045, entitled "Application for a C-139 Basin General Permit" (application form), which is incorporated by reference in subsection 40E-63-430(2), F.A.C., or the equivalent electronic permitting application tool (www.epermitting.gov), with all required supporting documentation.

A General Permit will be issued to any operating entity or entities, owners, or lessees of the parcels identified in the permit that are singly or collectively responsible for implementing the BMP Plan for the lands specified within the permit, as applicable. Each participant to which a General Permit is issued is a co-permittee and jointly and severally liable for implementing the requirements of the General Permit.

Application Checklist

Complete applications for new General Permits and General Permit Renewals shall include the items below. The items indicated with an asterisk are required to consider the application filed (received).

- 2 signed originals of the completed permit form
- Copies of written recorded deeds, leases, certificate of participation, or agreements to demonstrate that the applicant or applicants possess the legal and financial authority and ability to carry out all acts necessary to implement all the terms and conditions of the permit
- Correct application fee in the form of a cashier's check or money order made payable to "South Florida Water Management District"*

2 copies of all items listed in the guidebook including:

- A map with clear delineation of the boundaries and acreage contained in the application. The maps shall be correlated with a list of all parcel owners and corresponding county tax identification numbers, and operators or lessees associated with the acreage at the time of application.



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- A map, aerial photograph, sketch, or drawings that shows the drainage features of the land in the application (e.g., direction of overland flow, inflow points, and off-site discharge points) for delineation of permit basins (consistent with Section 3 of the application form)
- A list of existing and pending District permits for the application area and their status
- A BMP Plan in accordance with Rules 40E-63.435 or 40E-63.437, F.A.C., as applicable (see Part IV of the application form)
- For shared water management systems, an executed legally binding agreement or contract regarding construction, use, maintenance and operational criteria, and BMP implementation requirements.

*** In the case of permit application renewals and modifications, there may be information that has not changed in comparison to the current permit or that is not applicable to the modification request. You can note "No change" or "Not applicable" for those items in the application form. If any additional information or clarification is required, the District will follow-up with you within 30 days of the day that your application was received***

Fee Schedule

	General Permit
<i>new</i>	\$250.00
<i>renewal</i>	\$250.00
<i>modification</i>	\$100.00
<i>letter modification</i>	\$0.00
<i>Transfer</i>	\$100.00

How do I modify my permit?

Indicated below are the conditions under which a permit would need to be modified and the type of application that would be required:

Letter Modifications

Applications for Letter Modifications are applicable for requesting approval for:

1. Demonstration or verification projects,
2. Early implementation of water quality improvement activities,
3. Implementing or modifying a voluntary discharge monitoring program, or
4. Water quality improvement activities in accordance with subsections 40E63.461(3) or (4), F.A.C., if the C-139 Basin is out of compliance with the water quality performance measures.

Modifications



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Permit modifications are applicable to any changes not covered under a Letter Modification. These include but are not limited to:

1. Adding acreage to a permit,
2. Adding permit basins to a permit,
3. Changes in permit basin boundaries,
4. Merging of permit basins,
5. Changes in land practice,
6. Revisions to the BMP Plan,
7. Changes in water management that affect the sub-basin monitoring program, and/or
8. Other modifications that result in a change in the conditions of the Permit.

Transfers

A request for transfer of an existing permit must be initiated no later than 30 days after any transfer, sale or conveyance of property. To qualify for a permit transfer, an action must be limited to changes in administrative information about the permittee, for example, name, address, title, etc. (Complete Part III of the Permit Application Form 1045.)

When will I need to renew my permit again?

Your permit will indicate its expiration date. Permits are generally valid for approximately a 5-year term and are all set to expire on the same date (permit renewal cycle expiration date). Permit renewals must be applied for prior to the expiration of an existing permit. If the permittee allows the permit to expire prior to applying for a permit renewal, an application for a new permit shall be required.



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APPLICATION INSTRUCTIONS

*** You may reproduce individual pages of the application form or add pages if required to submit additional information ***

PART I. GENERAL INFORMATION

Section 1. Permit Information

Identify the type of permit application. Most applications will require that the General Information, Property Information, and BMP Plan parts are completed (Parts I, II, and Section 1 of Part IV of the application form.) However, specific parts and sections need to be completed if the application includes an alternative BMP Plan, a discharge monitoring program (or plan), optional activities for incentives, water quality improvement activities, or a request for impracticability.

What other Permits might be needed?

If the proposed BMP Plan requires any changes to the existing water management system, it may be necessary to modify an existing consumptive water use, environmental resource program, surface water, right-of-way, and/or well-construction permit or apply for a new permit, where applicable. Questions about these permits or the need for one can be addressed by contacting the District at 561-686-8800 or visiting the website at www.sfwmd.gov.

Section 2. Applicant Information

The applicant or applicants are usually the responsible entity or entities that will become the permittee and/or the co-permittees' once the permit is issued. Also, an agent can be designated through an original letter of authorization from the responsible entity or entities. The name, title, company name, address, and phone number of both the applicant (and any co-applicants, if applicable) and the agent are required.

Section 3. Drainage Information

Propose permit basins, as defined in subsection 40E-63.402(10), F.A.C., that discharge offsite by names and locations (section, township, range). If there is no permit basin name, it may be identified by section/township/range, landowner name, or another naming convention.

- List the type of each off-site discharge for each permit basin. If there is no point source discharge, note this by saying "non-point" or overland flow off-site.
 - Provide the total acreage drained for each permit basin. The sum of all of the permit basins acreage should equal the total permitted acreage.
 - If a controlling discharge structure exists, please provide proof of ownership or authority to operate.
-



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Section 4. Additional Required Information

Additional documentation needed to consider the application complete includes, but is not limited to the following (copies are acceptable):

- Description of the entity legally responsible for implementation of BMPs. This may be the landowner and/or the lessee. To qualify as a co-applicant, a lessee shall provide documentation to show authority to operate, including a copy of the applicable lease agreement. The lease must be effective for the duration of the permit. The lessee shall formally accept responsibility for ensuring that all conditions of the permit are met, including BMP implementation, record keeping, reporting requirements, and field verifications, when applicable.
- Documents that verify ownership of the parcels and/or structures. A recorded deed, affidavit of ownership, or executed contract for purchase will satisfy this requirement.
- Written contracts or agreements with landowners, lessees, or other entities, as applicable, describing authority and responsibility.
- Written contracts or agreements or equivalent regarding use or operation of the parcels and structures, such as lease agreements, as applicable.
- A clear delineation of the area and acreage contained in the permit application, including maps correlated to the list of parcel owners and lessees. Maps can be aerial photographs, sketches or drawings that show the property boundaries, locations of discharge structures, primary and secondary canals and ditches, drainage flow patterns, names of individual landowners, land use, and BMP implementation.
- The BMP Plan selected from the BMP Equivalent Points Tables or Alternative BMP Plan section, specific to crop or land use for each hydrologic drainage area (farm) described in the permit.

Section 5. Certification by Applicant

Each co-applicant or authorized agent must sign and date this section.

Information required after permit issuance: Certification by Landuser:

Each lessee or operator whose lease was executed after the effective date of the amendments to this part of Chapter 40E-63, F.A.C. and is not a co-applicant must provide within 30 days after issuance of the permit a copy of the lease or sign and date a certification indicating its agreement to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto. This is not a Certificate of Participation in the permit. However, it provides assurance that the applicant possesses the legal authority to carry out all acts necessary to implement the terms and conditions of the permit, in accordance with subsection 40E-63.430(4), F.A.C. A template certification is included in Appendix F.

PART II. PROPERTY INFORMATION

The purpose of this section is to identify owners, lessees, properties, acreage, and associated property tax identification numbers. The Property Information section shall be submitted for all the properties within the boundaries of the General Permit Application.



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In the case of properties served by a Central Drainage System, Certificates of Participation in the permit shall be submitted by the entity responsible for operation of the drainage system and by individual landowners (or qualifying lessees in lieu of those landowners), except for:

1. Properties determined as inactive, or properties that are less than 40 acres in size, and
2. Properties where the following BMPs are implemented by the landowner and the property must be made available for inspection by District staff or other delegated agents within 14 days after written notice:
 - Phosphorus is only applied to correct deficiencies based on soil testing or tissue testing, or for turf and landscape areas, phosphorus is only applied to meet initial establishment and growth needs (fertilizer composition less than 2% for an application rate not to exceed 0.25 lbs P₂O₅/1000 ft² per application nor exceed 0.50 lbs P₂O₅/1,000 ft² per year, or to correct phosphorus deficiencies based on soil or tissue testing).
 - Fertilizer or other soil amendments containing phosphorus are not applied within 10 feet of any pond, stream, lake, water course, or any designated wetland.
 - Spill prevention practices for nutrients are implemented, and
 - Runoff is managed in accordance with surface water or environmental resource permits, if applicable.

Part II is required for a new application as well as a modification to a permit, as applicable. Check the applicable box as to whether this is a new participant or a participant in an existing permit (existing permit modification).

Section 1. Owner/Lessee Information

Provide the name, address, electronic mail address, and phone number of the participant, i.e. parcel owner and the lessee, if applicable.

Section 2. Individual Parcel/Farm Information

- A separate sheet must be completed for each farm. The information in this section must correlate with the information provided in Sections 1 and 3.
 - Provide some way of identifying the farm. This can be done using the owner name, identification numbers, section/township/range, or some other designation (examples: Smith Farm 31, Smith North Farm, Farm Section 31).
 - Briefly describe the current land use (examples: all cane, cane with vegetable rotation, sod, cane with rice rotation, pasture).
 - List tax identification numbers for all parcels that make up the farm. Use additional sheets if necessary. One farm boundary may include one or more tax identification numbers. The total acreage of the parcels should match the total farm acreage.
-

Section 3. Certificate of Participation



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The certification statement, indicating that the applicant/co-applicant will abide by the conditions of the permit, must be signed and dated by each participant whether it is the owner or lessee that is applying as an applicant or co-applicant, as applicable.

PART III. REQUEST FOR C-139 BASIN PERMIT TRANSFER

To qualify for a permit transfer, the changes must be limited to administrative information about the permittee. Section 1 and Section 2 shall be completed and submitted separately, although both sections are required prior to approving the application for transfer.

All other changes or additions will require a permit modification.

Section 1. Permittee Information

This section is to be completed by the current permit holder. It requires:

- Name, address, and phone number of the current permit holder and the proposed transferee.
- Reason for the permit transfer with supporting documentation, for example: copy of a deed, lease, or contract.
- Original signature of the current permit holder and date.

Section 2. Transferee Information

This section is to be completed by the proposed transferee. It requires:

- Applicable transfer application fee and documentation.
- Original signature of the transferee and date.

PART IV. C-139 BASIN BMP PLAN

What is a BMP Plan?

A BMP Plan combines the use of various operational programs and/or physical enhancements to minimize the levels of phosphorous leaving a permit basin. For purposes of this Rule, a BMP Plan means a combination of BMPs that meets, but is not limited to, the requirements of Rule 40E-63.435 and Rule 40E-63.437, F.A.C. and any additional requirements pursuant to 40E-63.461, F.A.C.

In order to obtain a General Permit, applicants shall submit a BMP Plan for each crop or land use within each permit basin. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms; and demonstrate that a thorough approach to implementation and maintenance will be implemented. If a water management system is shared by multiple operating entities, each entity shall submit a separate BMP Plan for their land but the water management operational plan shall be consistent (e.g.,



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consistent detention or retention levels provided by structures controlled by upstream entities and the downstream discharge structure operated by the central drainage system.)

The BMP Plan is created by completing Part IV of the application form. Each BMP is assigned a certain number of "BMP equivalent points" for each crop type or land use. These "BMP equivalent points" give the landowner and/or lessee the flexibility to develop a BMP Plan best suited for site-specific geographic and crop conditions and ensures an equivalent level of BMPs between farms. The BMP Plan must identify a minimum number of BMP equivalent points for each category as follows:

Of the 35-point BMP Plan, a minimum of 20 BMP equivalent points shall meet the following criteria:

- (a) A minimum of 10 BMP equivalent points in nutrient control practices,
- (b) A minimum of 5 BMP equivalent points in water management practices,
- (c) A minimum of 5 BMP equivalent points in particulate matter and sediment control practices. Pasture management BMPs can provide equivalent points towards this category, if applicable.

Additionally, approved and operational surface water reservoirs (certified) can provide 5 BMP equivalent points toward the particulate matter and sediment control practices category, based upon maintenance and operation of the reservoir and of a sediment canal cleaning and aquatic weed control at the canals connecting the reservoir discharge and the offsite discharge locations.

When completing the BMP Plan form, please note the following:

1. The shaded cells in the table indicate the BMP is likely not applicable to the specific land use. Technical justification shall be provided if this selection is made.
2. A BMP Plan must be completed for each crop or land use within the permitted acreage.
3. The total points for each column must be the minimum required for that crop or land use.
4. The total points for each BMP category must equal or exceed the minimum required unless an alternative BMP with justification is being submitted.
5. If a proposed BMP is not described on the BMP Equivalent Points Table, Section 2 of Part IV, must be completed for an alternate BMP Plan.
6. For permit modifications or renewals after 2010, please note that the BMP Plan shall propose continuation of the approved BMP Plan and water quality improvement activities; or seek approval for an equivalent alternative through the District permit process in accordance with subsection 40E-63.435(3), F.A.C.

Alternative BMP Plan

Please provide the information described below for the selected alternative:

1. Alternative Type BMP (if the selected BMPs are not listed in Appendix B1, incorporated by reference in subsection 40E-63.435(1), F.A.C.)
 - A description of the best management practices rationale;
 - A detailed explanation of the proposed BMP;
 - A schedule for implementation of the BMP;
 - Sample documentation of the proposed BMP(s) for on-site verification; and



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- Technical basis for the reduction effectiveness of the proposed BMP (through scientific data or monitoring program)
- 2. Alternative BMP Points per Category (if the minimum number of equivalent points per BMP category as required in subsection 40E-63.435(2), F.A.C., are not met by the alternative BMP Plan)
 - A site assessment demonstrating that the alternative BMP Plan will provide an equivalent or greater reduction effectiveness using the standard approach.
- 3. Alternative BMP Demonstration Project.
 - The proposed Scope of Work (SOW) as described in paragraph 40E-63.437(3)(a), F.A.C.;
 - The BMP Plan for the remaining 15 points (demonstration project shall account for no more than 20 BMP equivalent points). This includes 10 BMP equivalent points in the nutrient control practices category and 5 BMP equivalent points in the water management practices category.

All BMP Plans shall include the following:

1. A description of the best management practice rationale;
2. An education and training program, arranged by the permittee or other educational resource, for the management and staff responsible for implementing, documenting, and monitoring the approved BMP Plan;
3. A description of records and documentation to be maintained on-site to verify BMP implementation. Examples of documentation are described on the checklist entitled "C-139 Basin Annual Report", found in the Guidebook under the Post Permit Compliance Section, Appendix B; and
4. A proposed implementation schedule. Except for BMP Plans required immediately upon revision of Part IV of Chapter 40E-63, F.A.C., implementation of new BMPs shall be completed within 90 days after the date of District approval.

PART V. C-139 BASIN DISCHARGE MONITORING PLAN

What is the Discharge Monitoring Plan?

Water discharged from the C-139 Basin is monitored by SFWMD for phosphorous load (quality and quantity). The implementation of a discharge monitoring plan upstream of District monitoring sites on permit basins is optional, except when required to confirm proposed total phosphorus reductions under a verification plan if the C-139 Basin is out of compliance; or when a determination of impracticability has been approved by the District. In the latter, the discharge monitoring plan will serve to determine compliance with permit basin specific target and limits, as approved by the District, and that there are no increasing trends.

The discharge monitoring plan shall meet specified criteria and have the plan approved by the District. These permit basin-level monitoring plans consist of daily flow measurements achieved by maintaining operation logs during discharge events, collecting and compositing permit basin discharge water samples, analyzing those samples for total phosphorus, and submitting data to the District. Additionally, a permittee may elect to collect rainfall data to



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represent site-specific conditions. The District will consider these data along with daily flow and total phosphorus data for the site. Any data collection method shall be pre-approved by the District as part of the discharge monitoring plan, or data will not be considered.

The permit basin data will be evaluated for individual compliance if the C-139 Basin is determined to be out of compliance (see Appendix B3.1, incorporated by reference in paragraph 40E-63.446(2)(a), F.A.C.) and the permit basin is within a sub-basin that has exceeded its proportional share of the total phosphorus load. A permittee implementing a permitted discharge monitoring program is not required to implement water quality improvement activities if data from the optional Discharge Monitoring Plan demonstrates that the permit basin did not exceed its proportional share of the load.

PART VI. INCENTIVES

Applicants who opt to voluntarily implement additional BMPs (early BMPs) or a BMP demonstration Project that includes a BMP performance verification plan, are not required to implement water quality improvement activities (WQIA) if the C-139 Basin is determined out of compliance. Either proposal shall be submitted with an application for a new permit, permit renewal, or as a Letter Modification. The following applicable items need to be included in the application:

Early BMPs

- Description of the BMP or group of BMPs that will be implemented in addition to those required by Rule at the time of the application (Rule 40E-63.435 or subsection 40E-63.461(3), F.A.C.).
- The specific methods for implementation and maintenance
- Technical documentation supporting the proposed loading reduction levels. The proposed loading reduction levels shall be in accordance with paragraph 40E-63.438(1)(a)2, F.A.C.
- The implementation schedule

Demonstration Plan with the Verification Plan

- Proposed Scope of Work (SOW) (as required in paragraph 40E-63.437(3)(a), F.A.C.)
- Projected phosphorus removal efficiencies (include technical supporting documentation)
- Verification plan (shall meet the criteria described in subsection 40E-63.461(4), F.A.C.). The proposal shall include (but is not limited to):
 - Please complete Part V of Form 1045 – Discharge Monitoring Plan;
 - Installation and implementation schedule;
 - Description of the monitoring program;
 - Description of the monitoring sites;
 - Description of proposed sample collection methods and schedule;
 - Description of proposed sample handling and laboratory analyses;
 - Description of data review procedures;
 - Description of backup plan if there is equipment malfunction

PART VII. WATER QUALITY IMPROVEMENT ACTIVITIES (WQIA)



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If the C-139 Basin is determined to be out of compliance and no exceptions apply, the permittee shall submit an application for a letter modification within 120 days from the District's transmittal of the notice that the C-139 Basin is not in compliance. The letter modification application shall propose WQIQs along with the proposed total phosphorus reductions to be achieved. Three options are available to estimate the proposed total phosphorus reductions:

1. Most current representative technical references such as peer reviewed or published BMP research and demonstration projects,
2. A verification plan
3. District criteria based on most current representative technical references (see Appendix D)

Once the selection has been made, the following information needs to be provided (if applicable):

- A detailed description of the proposed improvements to the BMP Plan in comparison to the current implementation practices
- The expected range of percentage total phosphorus removal efficiency
- A detailed description of the technical basis
- Indicate the technical references used (if selected option 1 above)
- A verification plan according to the requirements specified in subsection 40E-63.461(4), F.A.C. (if selected option 2 above). The proposal shall include (but is not limited to):
 - Part V of the application form – Discharge Monitoring Plan
 - Installation and implementation schedule;
 - Description of the monitoring program;
 - Description of the monitoring sites;
 - Description of proposed sample collection methods and schedule;
 - Description of proposed sample handling and laboratory analyses;
 - Description of data review procedures;
 - Description of backup plan

PART VIII. DETERMINATION OF IMPRACTICABILITY

Permittees may submit a permit modification to request review determination of impracticability for District final action. Any such request shall include:

- Permit basin name(s), acreage, and landuse(s) for which further activities are impracticable;
- A detailed description of previously implemented activities and BMPs, evidence demonstrating that no additional activities or refinements can be accomplished;
- The proposed expected total phosphorus in discharges from the permit basin(s) in comparison to the C-139 Basin's phosphorus load targets and limits;
- A discharge monitoring plan in accordance with Rule 40E-63.462, F.A.C. (to verify no increasing trends from the permit basin and compliance with proposed phosphorus load targets and limits.) The proposal shall include Part V the application form and supplementary documentation.



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APPENDIX A

BMP PRE-APPROVAL APPLICATION FORM



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PERMIT NO: _____

PERMITTEE/LANDOWNER: _____

LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.			
INDICATE CROP/LANDUSE FOR THIS REPORT:			
LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:			
NUTRIENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)			
Points	"√"	Nutrient Control Practice	Nutrient Control Practice Description
2 ½		Nutrient application control	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.
2 ½		Nutrient spill prevention	Formal spill prevention protocols (storage, handling, transfer, education/instruction). Pasture – Also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses).
2 ½		Manage successive vegetable Planting to minimize phosphorus	Avoid successive Planting of vegetables or other crops having high phosphorus needs to avoid phosphorus build up in soils. Includes successive planting with no successive phosphorus application.
2 ½ 2 ½ 5		Recommended nutrient application based on plant tissue analysis	Avoid excess application of phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific). Pastures with Bahia grass – plant tissue analysis along with soil test is required to make nutrient application recommendation. Citrus – Results are applied to the current season P requirements
5		Recommended nutrient application based on soil testing	Avoid excess nutrient application by determining phosphorus requirements of soil and follow standard recommendation for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added phosphorus specific to the soil and crop. The disposal or application of waste water residual (biosolids), animal manure, or other materials containing phosphorus shall not exceed the phosphorus requirements of the crop.
5		Split nutrient application	More efficient plant uptake of phosphorus by applying small portions of total recommended phosphorus at various times during the growing season. Not to exceed total recommendation based on soil test.
5		Slow release phosphorus fertilizer	Avoid flushing excess phosphorus from soil by using specially treated fertilizer that releases phosphorus to the plant over time.
5		Reduce phosphorus fertilization	Reduce the phosphorus application rate by 30% below standard recommendations based on soil tests and development of site-specific (reduced) recommendations or application methods. Provide basis for reduction credit.
20		No nutrients imported via direct land application	No application of phosphorus, in any form, to the soil for amendments or plant nutrients. (Pastures can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings.)
15		No nutrients imported indirectly through cattle feed	No phosphorus import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses.)
5-25		Nutrient Management Plan	A plan to manage the amount, source, placement, form, and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. A site management plan and budget for tracking phosphorus shall be developed.

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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PERMIT NO: _____

PERMITTEE/LANDOWNER: _____

LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

WATER MANAGEMENT PRACTICES BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Water Management Practice	Water Management Practice Description
5		½ inch water detention	Delayed discharge (based on measuring daily rain events using a rain gage)
10		1 inch water detention	
5		Improvements to water management system infrastructure to further increase water quality treatment by delayed or minimize discharge	Recirculation of water inside farm boundaries to improve water quality prior to off-site discharge includes: fallow field flood water with no direct discharge (instead dispose of via evapotranspiration, seepage, use as irrigation water); or increasing water detention using properly constructed canal berms.
5		Low volume irrigation	Use of low volume irrigation methods, e.g., drip irrigation, microjet irrigation.
10		Approved and operational surface water reservoir (certified) ¹	Properly permitted, constructed and maintained storage system meeting specified Environmental Resource Permit (ERP) Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems): System meets Section 5.2.1 Water Quality Criteria – Volumetric Requirements
10			System meets Section 6.2 Water Quantity Criteria – Discharge Rate
15			System meets Section 6.3 Water Quantity Criteria – Design Storm (must have a valid SFWMD construction and operation permit for the surface water system)
15		Temporary holding pond	Temporary agricultural activities (as described in Chapter 40E-400 F.A.C.) with a properly constructed and permitted temporary holding pond
15		Overland sheet flow over the entire property	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow drainage to the land area.
15		No point discharge of surface water	Voluntarily disabling of off-site discharge structures or other permanent means to prevent point discharge from a land area.
10		Tailwater recovery system	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharge off-site without the system.
10		Precision irrigation scheduling	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).
5		Water resources management for pasture	Combination of water conservation and management practices considering the requirements of the primary forage grasses and supplemental cattle watering. Managing surface water to hold water onsite, as much as possible including use of wetlands to hold water onsite (minimum of ¼-inch detention), or providing retention in canals, ditches and soils via pump or controlled gravity structures.

¹ Surface water reservoir certification refers to a construction completion certification by a Florida licensed Professional Engineer as required in Chapter 40E-4, F.A.C., using Form 0881A for projects permitted after October 3, 1995, and Form 0881B for projects permitted prior to October 3, 1995, or the current certification requirements of Chapter 40E-4, F.A.C.

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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PERMIT NO:

PERMITTEE/LANDOWNER:

LESSEE:

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

PARTICULATE MATTER AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Check at least the Minimum Number of Required Particulate Matter and Sediment Controls
2 ½ points for any 2	<input type="checkbox"/>	Erosion control by leveling fields
	<input type="checkbox"/>	Reduce soil erosion using grassed swales and field ditch connections to laterals
	<input type="checkbox"/>	Minimize sediment transport with slow velocity in main canal near discharge structure
	<input type="checkbox"/>	Minimize sediment transport into canals by constructing ditch bank berms
	<input type="checkbox"/>	Minimize sediment build-up by implementing a canal cleaning program
5 points for any 4	<input type="checkbox"/>	Reduce sediments transported offsite by maintaining field ditch drainage sumps
	<input type="checkbox"/>	Minimize sediment transport with slow field ditch drainage near discharge pumps/structure
	<input type="checkbox"/>	Reduce sediments transported offsite by maintaining a sump/trap upstream of drainage structure
10 points for any 6	<input type="checkbox"/>	Reduce sediment transport through the use of grassed waterways
	<input type="checkbox"/>	Reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No phosphorus is applied to these areas.
15 points for any 8	<input type="checkbox"/>	Reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport
	<input type="checkbox"/>	Reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment)
	<input type="checkbox"/>	Maintain sustainable forage growth on pasture to reduce erosion/range seedings
	<input type="checkbox"/>	Reduce soil erosion with constructed ditch bank stabilization
	<input type="checkbox"/>	Reduce soil erosion with cover crops (not fertilized)
	<input type="checkbox"/>	Maintain vegetative cover in upland areas to reduce soil erosion
	<input type="checkbox"/>	Reduce soil erosion with vegetation on ditch banks
	<input type="checkbox"/>	Minimize P from plants by aquatic weed control (phosphorus source) at main discharge locations
<input type="checkbox"/>	Reduce debris and aquatic plants (phosphorus source) leaving the site by using barriers at discharge locations	

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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PERMIT NO:

PERMITTEE/LANDOWNER:

LESSEE:

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

PASTURE MANAGEMENT BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Pasture Management Practice Description
2 ½		Restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable
2 ½		Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches
2 ½		Provide shade structures to prevent cattle in waterways
2 ½		Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches
5		Low cattle density (1 head/2 acres, non-irrigated pasture) by providing comprehensive prescribed grazing
10		Restrict cattle from waterways through fencing of canals in a manner that protects water quality

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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APPENDIX B

REQUIREMENTS FOR DISCHARGE MONITORING PLAN

The form and requirements for the optional discharge monitoring plan are listed in Part V of the application.

WATER QUALITY

Monitoring Requirements

All off-site discharges must be monitored for phosphorous concentrations and water quantities. During periods of off-site discharge, water quality information is obtained through use of an automatic sampler. Samples are collected and preserved, to be delivered to the laboratory no later than 21 days from the time the first sample was drawn. Composite samples are multiple samples that are mixed together to give a mean concentration during a given time period. Sample preservation is conducted by using acid in the composite sample jar prior to the collection of the first sample. Digestion of the phosphorous samples must occur within 28 days from when the first sample was drawn. If the automatic sampling equipment becomes inoperable for any reason, grab samples must be taken twice daily during flow events until the automatic sampling equipment becomes operable. Sampling methods most commonly used are as follows:

Flow-Proportional/Flow Weighted Water Samples (FPFW) – This method is best suited for gradually varying flows that can be approximated by a time function. As flow increases, the number of samples increases.

Time-Proportional/Time Weighted Water Samples (TPTW) – This method is best suited for steady flow discharge in the flow period. When a flow event is triggered, the samples are drawn based on elapsed time. For example, the sampler could be set to draw a sample of a predetermined volume at the beginning of each flow event and every two hours thereafter.

WATER QUANTITY

Monitoring Requirements

Offsite discharges must be monitored to calculate the water quantity and the total phosphorous load. To determine quantity through any structure (a structural device or hydrologic feature), the discharge system is analyzed and a method of calculation is presented to the District in a calibration methodology report for approval. A Florida-registered Professional Engineer (“P.E.”) must prepare the calibration methodology report.

Monitoring requirements for structural devices generally include, but are not limited to, recording upstream and downstream water level readings twice daily during pump discharge events, flow duration (time), pump speeds as applicable (or engine speeds including verified drive ratios), daily rainfall, weir elevations as applicable, continuous monitoring of culvert water elevations as applicable, and backup monitoring equipment. Monitoring requirements for hydrologic features (e.g., overland flow) include water table levels and rainfall, at a minimum.



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REPORTING REQUIREMENTS

Water quality and quantity data shall be submitted to the District in accordance with permit conditions in an approved electronic format. The permittee is responsible for calculating daily flow according to the permitted methodology.

Calibrations

A structural device calibration includes the data collection procedure performed in the field (methodology) and the development of the calibration equation. Water flow and canal water elevation data are collected to predict the amount of water moving through the structure. The mathematical calibration equation is then developed to predict flow for the structure under its full range of operating conditions. This equation is used to calculate flow quantity during discharge events. Accurate operation logs (see sample log next page) must be kept for inputs to calculate flows.

Various methods (theoretical calculations, models) exist to estimate flow when structural devices do not exist or are not sufficient for an actual measure of total runoff from a permit basin. Selection of the most adequate methods for each site shall be proposed by a Florida-registered P.E. This Guidebook provides an example of runoff calculation based on the use of Soil Conservation Service (SCS) Runoff Curve Number method described in the SCS technical release 55 (TR-55.)

Structural Device - Calibration Report Checklist

A Florida-registered P.E. shall submit a proposed calibration report including:

- Certification of the calibration and its applicable operating range
- Calibration field data collection methodology
- Calibration data evaluation methodology
- Description of primary and back-up instrumentation necessary to determine flow

Other information require for a calibration report includes, but is not limited to, the following:

- Structure identification (name/number)
- Pump ID (orientation/number)
- Date and reason the calibration was performed
- Date the new calibration equation becomes effective
- Type of structure/pump
- Size of pump, as applicable
- Structure configuration
- Full operating range of the structure or pump, as applicable
- Full range of static lift
- Verification of relativity of upstream and downstream water elevation instruments
- Structure elevations (i.e. pump centerlines, discharge pipe centerlines, weir elevations)
- Drive ratios, as applicable
- Actual raw field data with a minimum of 5 valid test points collected in the full operating range
- Calibration equation and basis for determination



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- Sample log (must record upstream and downstream water elevations at approximately the same time each day, pump/engine speeds, start/stop times, daily rainfall, operators initials)
- Signed and sealed engineer's certification statement

For both pumps and culverts, upstream and downstream water level elevations must be recorded during discharge events. If the discharge structure is a culvert or a weired culvert, water elevations must be continuously recorded and the weir elevation must be documented with all changes in elevation (i.e. adding/removing boards) noted and dated. If the structure is a pump, the start and stop time, upstream and downstream staff gage readings (at least twice daily at approximately the same time each day), and pump speed must be recorded. A sample pump log is included in Appendix B. Changing an engine or a drive ratio will affect calculated flows and must therefore be reported at the time the change is made. Modifications to a structure that affect the previously approved calibration must be reported to the District. The District's "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C., Everglades BMP Permit Program" (incorporated by reference in paragraph 40E-63.462(2)(d), F.A.C.), shall be used for review criteria.

Calculations

Daily flows can be determined by calculating the flow at the first daily reading and at the second daily reading. Each of these readings can then be multiplied by half of the total daily hours of operation and summed for daily flow. Other flow calculation techniques may be acceptable. The District must approve the calculation methodology in the discharge monitoring plan.

Hydrologic Features - Calibration Report Checklist

A Florida-registered P.E. shall submit a proposed calibration report including:

- Certification of the flow estimation method and its applicable operating range (e.g., sheet flow or runoff computations)
- Field data collection
- Theoretical calibration equations
- Independent variables (e.g., soils, coverage, slope, water table levels, rainfall)
- Description of primary and back-up instrumentation necessary to determine flow

Other information required for a calibration report includes, but is not limited to, the following:

- Rainfall gage specifications and location
- Staff gage specifications and location
- Actual raw field data to verify theoretical equations
- Basis for selection of the Theoretical Calibration Equations
- Sample log (must record daily water elevations at approximately the same time each day, daily rainfall, operators initials)
- Signed and sealed engineer's certification statement

Example



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Derive an equation for the estimation of daily runoff for a small permit basin where there are no ditches or canals and runoff occurs through overland sheet flow only. Please note that other methods may be proposed by the Florida-registered P.E. with technical justification.

Permit basin A is comprised of 100 acres of pasture. All runoff from the pasture flows overland to a low land area from which it discharges offsite to a canal.

A Florida-registered P.E., on behalf of the permittee, has proposed to meet this requirement via use of the SCS theoretical equation to estimate runoff based on the empirical Initial Abstraction (I_a) coefficient for small agricultural watersheds, and site-specific hydrologic soil group curves and conditions, as indicated below:

$$Q = (P - I_a)^2 / ((P - I_a) + S), \text{ if } P > I_a$$
$$Q = 0, \text{ if } P \leq I_a \text{ (Equation 1)}$$

Where:

Q = runoff (in)

I_a = initial abstraction (in) = 0.2S for typical small agricultural watersheds unless otherwise justified

P = daily rainfall (in)

S = Soil storage capability or potential maximum retention after runoff begins (in). S is related to the soil cover conditions of the basin and can be calculated using the following formula:

$$S = 1000 / CN - 10 \quad \text{(Equation 2)}$$

CN = Runoff curve number

Based on the acreage-weighted soil and cover conditions and equations (1) and (2) above, a runoff equation for the property can be defined as:

$$Q = (P - 0.2S)^2 / (P + 0.8S), \text{ if } P > 0.2S$$

$$Q = 0, \text{ if } P \leq 0.2S$$

CN = 75 (acreage-weighted based on soil and cover conditions)

$$S = 1000 / CN - 10 = 1000 / 75 - 10 = 3.33$$

$$Q \text{ (inches/day)} = (P - 0.67)^2 / (P + 2.7)$$

$$Q \text{ (MGD)} = \frac{[(P - 0.67)^2 / (P + 2.7)] * 2.7}{43.8} \text{ (Flow equation)}$$

For this example, 2 inches of rainfall in one day would result in a runoff volume of 0.381 inches (runoff coefficient of approximately 0.19).

Limitations:

This example is provided for illustration purposes only. Curve numbers define average conditions that are useful for design purposes. However, as indicated in the TR-55 caution needs to be exercised to recreate specific features of an actual storm. This is responsibility of the Florida P.E. certifying the proposed calibration equation. For instance, the initial abstraction coefficient may need to be adjusted, on the basis of continued rainfall levels that may saturate the soils, reducing initial infiltration, and surface depression storage. Use of the S value based



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on the Basis for Review for Environmental Resource Permits within the South Florida Water Management District under Section 8.4.2 Ground Storage capability may also be considered. Also, on-site verification of the applicability of theoretical equations may be required, if the areas with predominant overland sheet flow are affected by the management conditions of neighboring lands or operation of the regional system. Parameters such as water table levels, soil saturation, and accumulated rainfall may need to be considered in addition to rainfall.



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APPENDIX C POST-PERMIT COMPLIANCE

As part of permit compliance, the permittee is required to certify annually that the permitted BMPs are being implemented for the previous calendar year. The report must be submitted to the SFWMD Water Resource Regulation Department by February 1 of each calendar year. The “C-139 Annual Report – Certification of BMP Implementation” Form (hereinafter referred to as “BMP Annual Report”). The form shall be completed for each land use or farm. The permittee shall indicate on the form the BMPs that were implemented on the associated parcels for the previous calendar year.

BMP implementation includes record keeping and documents available for review by the District to demonstrate the implementation of BMPs. Examples and details are listed on the BMP Annual Report Form.

A second function of permit compliance is on-site BMP Verifications by District staff. This component is only initiated by the District if the C-139 Basin is determined to be out of compliance. The documentation described in the BMP Annual report form and any specific information indicated in the permit shall be available to District staff for review during these site visits.

Finally, for the permit basin Discharge Monitoring Program, permit compliance activities include the monthly submittal of data to the District (see Appendix B), Quality Control Audits of data, verification of calculated flow, and compliance with conditions as specified in the permit.

Comprehensive BMP Annual Report

If the C-139 Annual Report Form is not submitted by February 1 of each year, the permittee shall submit a comprehensive BMP Annual Report. The Comprehensive BMP Annual Report is a more detailed version of the BMP implementation form that follows. It includes the form and the required supporting documentation to verify the implementation of each BMP. This documentation includes all maps, copies of sample receipts, laboratory reports, etc. Examples of other acceptable documentation are listed on the form.



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PERMIT NO:

PERMITTEE/LANDOWNER:

LESSEE:

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT: Check here if there is a change to your permitted BMP Plan

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

NUTRIENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Nutrient Control Practice	Nutrient Control Practice Description	BMP Implementation Documentation
2 ½		Nutrient application control	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: <ul style="list-style-type: none"> • Fertilizer application work orders • Training protocols/ company guidelines • Attendance sheets for training • Maps indicating crop types/locations • Maps indicating fertilizer application rates and areas • Fertilizer delivery receipts • Soil test results • Plant tissue analysis results • Crop specific fertilizer recommendations <i>Field Verification</i> , when applicable, can include observation of: <ul style="list-style-type: none"> • Fertilizer banding equipment • Fertilizer loading areas • No on-site fertilizer storage
2 ½		Nutrient spill prevention	Formal spill prevention protocols (storage, handling, transfer, education/instruction). Pasture – Also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses).	
2 ½		Manage successive vegetable planting to minimize phosphorus	Avoid successive planting of vegetables or other crops having high phosphorus needs to avoid phosphorus build up in soils. Includes successive planting with no successive phosphorus application.	
2 ½		Recommended nutrient application based on plant tissue analysis	Avoid excess application of phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific).	
2 ½			Pastures with Bahia grass – plant tissue analysis along with soil test is required to make nutrient application recommendation.	
5			Citrus – Results are applied to the current season phosphorus requirements	
5		Recommended nutrient application based on soil testing	Avoid excess nutrient application by determining phosphorus requirements of soil and follow standard recommendation for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added phosphorus specific to the soil and crop. The disposal or application of waste water residual (biosolids), animal manure, or other materials containing phosphorus shall not exceed the phosphorus requirements of the crop.	
5		Split nutrient application	More efficient plant uptake of phosphorus by applying small portions of total recommended phosphorus at various times during the growing season. Not to exceed total recommendation based on soil test.	
5		Slow release phosphorus fertilizer	Avoid flushing excess phosphorus from soil by using specially treated fertilizer that releases phosphorus to the plant over time.	
5		Reduce phosphorus fertilization	Reduce the phosphorus application rate by 30% below standard recommendations based on soil tests and development of site-specific (reduced) recommendations or application methods. Provide basis for reduction credit.	
20		No nutrients imported via direct land application	No application of phosphorus, in any form, to the soil for amendments or plant nutrients. (Pastures can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings.)	
15		No nutrients imported indirectly through cattle feed	No phosphorus import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses.)	
5-25		Nutrient Management Plan	A plan to manage the amount, source, placement, form, and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. A site management plan and budget for tracking phosphorus shall be developed.	

*Indicates a BMP required for direct land application of phosphorous

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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PERMIT NO:

PERMITTEE/LANDOWNER:

LESSEE:

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.				
INDICATE CROP/LANDUSE FOR THIS REPORT:			<input type="checkbox"/> Check here if there is a change to your permitted BMP Plan	
LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:				
WATER MANAGEMENT PRACTICES BEST MANAGEMENT PRACTICES (BMP'S)				
Points	"√"	Water Management Practice	Water Management Practice Description	BMP Implementation Documentation
5		½ inch water detention	Delayed discharge (based on measuring daily rain events using a rain gage)	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable.
10		1 inch water detention		
5		Improvements to water management system infrastructure to further increase water quality treatment	Recirculation of water internal to the drainage of the farm to improve water quality prior to off-site discharge (particularly discharge from rice and vegetables), includes: fallow field flood water with no direct discharge (instead allow to "drain" via evapotranspiration, seepage, use as irrigation water)	Examples of documentation are: <ul style="list-style-type: none"> • Pump logs/staff gage readings • Pump calibration records • Rain gage readings • Work orders for reservoir construction • Permits for reservoir construction • Photographs • Maps <i>Field Verification</i> , when applicable, can include observation of: <ul style="list-style-type: none"> • Visual inspection of rain gages • Visual inspection of pump stations • Visual inspection of holding reservoirs • Observation of flooded fallow fields • Internal booster pumps • Internal culverts for rerouting of water
5		Low volume irrigation	Use of low volume irrigation methods, e.g., drip irrigation, microjet irrigation.	
10		Approved and operational surface water reservoir (certified) ¹	Properly permitted, constructed and maintained storage system meeting specified ERP Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems):	
			System meets Section 5.2.1 Water Quality Criteria – Volumetric Requirements	
10			System meets Section 6.2 Water Quantity Criteria – Discharge Rates	
15			System meets Section 6.3 Water Quantity Criteria – Design Storm	
15		Temporary holding pond	Temporary agricultural activities (as described in Chapter 40E-400 F.A.C.) with a properly constructed and permitted temporary holding pond	
15		Overland sheet flow over the entire property	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow drainage to the land area.	
15		No point discharge of surface water	Voluntarily disabling of off-site discharge structures or other permanent means to prevent point discharge from a land area.	
10		Tailwater recovery system	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharge off-site without the system.	
10		Precision irrigation scheduling	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).	
15		No direct discharge	Overland sheet flow over entire property, no direct discharge	

¹ Surface water reservoir certification refers to a construction completion certification by a Florida licensed Professional Engineer as required in Chapter 40E-4, F.A.C., using Form 0881A for projects permitted after October 3, 1995, and Form 0881B for projects permitted prior to October 3, 1995, or the current certification requirements of Chapter 40E-4, F.A.C.

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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PERMIT NO: _____

PERMITTEE/LANDOWNER: _____

LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.			
INDICATE CROP/LANDUSE FOR THIS REPORT:		<input type="checkbox"/> Check here if there is a change to your permitted BMP Plan	
LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:			
PARTICULATE MATTER AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)			
Points	"√"	Check at least the Minimum Number of Required Particulate Matter and Sediment Controls	BMP Implementation Documentation
2 ½ points for any 2	<input type="checkbox"/>	Erosion control by leveling fields	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: <ul style="list-style-type: none"> Work orders Maps Material delivery tickets Laser leveling work orders Sump Maintenance records Dredging/Canal cleaning records Culvert installation work orders Photographs As-built records Aquatic weed spraying records Grass mowing work orders <i>Field Verification</i> , when applicable, can include observation of: <ul style="list-style-type: none"> Vegetation growth in fields/on berms Cover crops Fallow fields Dredged material stockpiles Culverts with risers at connections Canal widening indicating sump areas Floating debris barriers
	<input type="checkbox"/>	Reduce soil erosion using grassed swales and field ditch connections to laterals	
	<input type="checkbox"/>	Minimize sediment transport with slow velocity in main canal near discharge structure	
	<input type="checkbox"/>	Minimize sediment transport into canals by constructing ditch bank berms	
	<input type="checkbox"/>	Minimize sediment build-up by implementing a canal cleaning program	
	<input type="checkbox"/>	Reduce sediments transported offsite by maintaining field ditch drainage sumps	
5 points for any 4	<input type="checkbox"/>	Minimize sediment transport with slow field ditch drainage near discharge pumps/structure	
	<input type="checkbox"/>	Reduce sediments transported offsite by maintaining a sump/trap upstream of drainage structure	
	<input type="checkbox"/>	Reduce sediment transport through the use of grassed waterways	
10 points for any 6	<input type="checkbox"/>	Reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No phosphorus is applied to these areas.	
	<input type="checkbox"/>	Reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport	
15 points for any 8	<input type="checkbox"/>	Reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment)	
	<input type="checkbox"/>	Maintain sustainable forage growth on pasture to reduce erosion/range seedings	
	<input type="checkbox"/>	Reduce soil erosion with constructed ditch bank stabilization	
	<input type="checkbox"/>	Reduce soil erosion with cover crops (not fertilized)	
	<input type="checkbox"/>	Maintain vegetative cover in upland areas to reduce soil erosion	
	<input type="checkbox"/>	Reduce soil erosion with vegetation on ditch banks	
	<input type="checkbox"/>	Minimize P from plants by aquatic weed control (phosphorus source) at main discharge locations	
	<input type="checkbox"/>	Reduce debris and aquatic plants (phosphorus source) leaving the site by using barriers at discharge locations	
	<input type="checkbox"/>		

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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PERMIT NO:

PERMITTEE/LANDOWNER:

LESSEE:

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

Check here if there is a change to your permitted BMP Plan

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

PASTURE MANAGEMENT BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Pasture Management Practice Description	BMP Implementation Documentation
2 ½		Restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: <ul style="list-style-type: none"> • Fencing installation work orders • Maps indicating location of feeders, cowpens, watering holes, shade structures, etc. • Cattle counts • Feed/supplement manufacturer's content labels • Rotation schedules • Photographs <i>Field Verification</i> , when applicable, can include observation of: <ul style="list-style-type: none"> • Visual inspection of fencing • Visual inspection of adjacent canals • Visual inspection of the location of feeders, cowpens, watering holes, shade structures, etc. • Visual inspection of discharge structures
2 ½		Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches	
2 ½		Provide shade structures to prevent cattle in waterways	
2 ½		Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches	
5		Low cattle density (1 head/2 acres, non-irrigated pasture) by providing comprehensive prescribed grazing	
10		Restrict cattle from waterways through fencing of canals in a manner that protects water quality	

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature



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APPENDIX D ***DISTRICT CRITERIA FOR THE CALCULATION OF TOTAL PHOSPHORUS REDUCTIONS***

1. INTRODUCTION

Water quality improvement activities (WQIA) are a combination of modifications to a BMP Plan to meet required reduction requirements if the C-139 Basin is found out of compliance. WQIAs include revising implementation methods to increase the effectiveness of existing BMPs or implement additional BMPs. The proposed effectiveness of the improvement activities shall be based on the most current applicable technical references or on a monitoring program to verify the expected effectiveness (verification plan.)

This appendix provides District criteria for the estimation of total phosphorus removal efficiency. These criteria are based on best professional judgment and technical references available at the time of issuance of the amended C-139 Basin rule. It is expected that these criteria will be revised in the future, upon new technical information on BMP performance efficiency becoming available.

2. BMP REMOVAL EFFICIENCY CRITERIA

Table D.1 describes proposed criteria to determine total phosphorus removal efficiency for those BMPs anticipated to be proposed as WQIAs based on the base level of BMP implementation required by the amended rule, and current practices based on BMP verification.

BMPs are grouped into categories for which the same criterion for determination of total phosphorus removal efficiency applies. The total phosphorus removal efficiency high-end range reflects a typical potential maximum removal from the implementation of one or more of the BMPs in each category based on C-139 Basin conditions. It does not reflect the effectiveness of any individual BMP in the category and is not additive across the category. Total phosphorus removal efficiencies above the high-end of the range for the category will be approved if supported by technical justification that is provided.

Please refer to section 3 of this appendix for guidance on how total phosphorus removal efficiency for a permit basin should be calculated. The District criteria are an initial attempt to provide a simplified method to determine total phosphorus removal efficiency in response to C-139 Basin stakeholder concerns during rule development. However, it is not applicable under all situations or outside the C-139 Basin regulatory boundaries. The District has the discretion to require that applicants submit technical sources to substantiate total phosphorus removal efficiency estimates or to base efficiencies on a water quality verification plan, if the site specific conditions deem the assumptions on which the criteria are based not applicable.

Also, note that these criteria do not replace the need for determining the actual performance of BMP implementation. Confirmatory verification can only result from actual water quality monitoring by the District or through District-approved discharge monitoring plans.



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Table D.1: Total Phosphorus Removal Efficiency Criteria

BMPs ¹	Typical High-end Total Phosphorus Removal Efficiency (percentage) ²	Criteria for Determination of Total Phosphorus Removal Efficiency ³
Nutrient Management		
Row crops		
Manage Successive Vegetable Planting to Minimize phosphorus	25%	For higher application rates: Total phosphorus removal efficiency is assumed 1:1 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 25% in phosphorus application recommendations is equivalent to a total phosphorus removal efficiency of 25%.)
Recommend Nutrient Application Based on Plant Tissue Analysis		
Split Nutrient Application		
Slow Release Fertilizer		
Reduced phosphorus Fertilization		
Sugarcane		
Recommend Nutrient Application Based on Plant Tissue Analysis	15%	9:5 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 9% in phosphorus application recommendations is equivalent to a total phosphorus removal efficiency of 5%.)
Split Nutrient Application		
Slow Release Fertilizer		
Reduced phosphorus Fertilization		
Improved Pastures		
Recommend Nutrient Application Based on Plant Tissue Analysis	15%	3:2 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 15% in phosphorus application recommendations is equivalent to a total phosphorus removal efficiency of 10%.) ⁴
Split Nutrient Application		
Slow Release Fertilizer		
Reduced phosphorus Fertilization		
No Nutrients Imported Indirectly Through Cattle Feed		
Citrus		
Recommend Nutrient Application Based on Plant Tissue Analysis	15%	5:1 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 15% in phosphorus application recommendations is equivalent to a total phosphorus removal efficiency of 3%.) ⁵
Split Nutrient Application		
Slow Release Fertilizer		
Reduced phosphorus Fertilization		



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BMPs ¹	Typical High-end Total Phosphorus Removal Efficiency (percentage) ²	Criteria for Determination of Total Phosphorus Removal Efficiency ³
Water Management Practices		
Improvements to existing water management systems by delayed or minimized discharge	40%	1:2 proportional to increased detention time or retention volume ⁶ (e.g., an increase of 50% in retention volume or detention time, is equivalent to a total phosphorus removal efficiency of 25%.)
Tailwater Recovery System		
Precision Irrigation Scheduling		
Particulate Matter and Sediment Controls		
Any combination of four (or more) additional sediment controls	20%	10% ⁷ (e.g., implementation of four or more particulate matter and sediment controls is equivalent to a total phosphorus removal efficiency of 5%)
Pasture Management		
Restricted placement of feeders, minerals, and water sources	30%	A typical reduction of 3% is assumed.
Provide shade structures to prevent cattle in waterways	10%	A typical reduction of 2% is assumed.
Alternative cattle watering sources	20%	A typical reduction of 10% is assumed.
Critical area fencing	20%	A typical reduction of 5% is assumed.
Other		
Improvements to existing water management systems to further increase water quality treatment	90%	1:1 proportional to the proposed reductions in comparison to the water year or years that the C-139 Basin was out of compliance (e.g., a reduction of 80% of TP in runoff because of edge-of-farm chemical precipitation shall be equivalent to a TP removal efficiency of 80%.)

¹Based on best professional judgment upon review of the C-139 Basin conditions. Total phosphorus removal efficiencies above the typical high-end of the range require the applicant to submit technical justification.

²Efficiencies are based on the proposed BMP being implemented for the first time. The District has the discretion to require submittal of technical justification. The proposed criteria are not applicable under all conditions.

³Proposed reductions in application rates shall consider any concurrent increases in feed or supplements.

⁴Proposed reductions in application rates shall consider any concurrent increases in foliar application.



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3. CALCULATION OF TOTAL PHOSPHORUS REMOVAL EFFICIENCY FOR A PERMIT BASIN

Table D.1 described how total phosphorus removal efficiencies could be estimated for individual BMPs when they are proposed as part of a WQIA proposal. This section explains how total phosphorus removal efficiencies of various BMPs could be combined to determine the total phosphorus removal of the WQIA proposal when more than one BMP is proposed. Indicated below are three concepts that need to be considered when estimating the total phosphorus removal efficiency:

1. The performance of BMPs that occur in sequence (a treatment train) shall consider the reductions achieved by preceding BMPs,
2. The performance of BMPs that occur in parallel are additive, and
3. When different BMPs are proposed for individual areas within the permit basin, the permittee shall consider the contribution of each area and acreage for achieving the required total phosphorus reductions (or proportional share of the load.)

Indicated below is an example describing how the default TP removal efficiencies could be applied in an area where different BMPs are proposed to meet the required TP reductions.

Example:

Permit basin A is comprised of 60 acres of row crops (Area 1), 20 acres of improved pastures (Area 2) and an above ground impoundment (AGI). All runoff is conveyed to the AGI. Feed is provided. Permit basin A does not participate in the optional individual monitoring. The C-139 Basin compliance monitoring results indicate that the C-139 Basin is out of compliance and sub-basin monitoring for the permit basin where permit basin A is located indicate that the sub-basin is exceeding its proportional share of the load by 25%. The permittee is required to submit a WQIA proposal with an expected total phosphorus reduction efficiency that is no less than 25%. The permittee proposal to meet this requirement is as follows:

BMPs Area 1	Total Phosphorus Reduction Efficiency per BMP	BMPs Area 2	Total Phosphorus Reduction Efficiency per BMP
Row crops (60 acres or 75% of contributing acreage)		Pastures (20 acres or 25% of contributing acreage)	
Reduced phosphorus fertilization in row crop areas by 20%	20%	Alternative water cattle sources	10%
		Critical area fencing	5%
Acreage weighed total phosphorus reduction efficiency per area ¹	15%		4%
Total Phosphoru reduction efficiency both areas			19%
Improvements to existing water management systems by 20%			10%
Permit Basin Reduction Efficiency [19% + 10% x (1 - 0.19)]			27%

Note that no considerations regarding the potential difference in contributions between the row crop and the pasture areas are made in this example. However, they may be reasonable based



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on how the specifics of each operation, e.g., if pastures are managed substantially less intensively than row crop areas such as nutrients not being land applied or feed not being provided. This can be done at the District's discretion.



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APPENDIX E (NEW) ***DETERMINATION OF IMPRACTICABILITY CHECKLIST***

Part VIII of the Permit Application Form can be used by applicants to request approval of a Determination of Impracticability. Among the information required in this part, applicants shall provide a detailed description of all previously implemented and current activities, and evidence that no additional BMPs or refinements to their implementation methods can be reasonably accomplished. This appendix describes the types of information, at a minimum, that the applicant shall submit as evidence. The applicant shall provide detailed descriptions for each type of information based on site-specific conditions, for District determination.

For each land use or crop, and parcels for which an application for Determination of Impracticability is submitted, the District shall consider:

1. The required and voluntary best management practices (BMPs) from Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.), that are being implemented as part of the applicant's C-139 Basin Pollutant Source Control Permit. This includes any early implementation BMPs. The District will review the status of compliance and ongoing monitoring/reporting requirements for Works of the District permit. Any areas for improvement based on prior District inspection reports will be noted.
2. The specific implementation methods of each BMP (e.g., frequency, maintenance, buffers) and how they might be optimized to improve water quality; the technical basis (documentation) for the methods utilized; and an estimation of the relative difference in water quality benefits between methods considered. Additional reporting, inspections and monitoring requirements will be required to verify and document implementation.
3. The status of compliance and ongoing monitoring/reporting requirements with District Surface Water and Environmental Resource Permits. The District review will ensure that the permittee has consistently met the requirements of the Surface Water and Environmental Resource Permits.
4. The status of compliance and ongoing monitoring/reporting requirements with other agencies permits or licenses for activities that can affect phosphorus in runoff.
5. A site assessment report provided by the applicant, as described in subsection 40E-63.437(2)¹.
6. How recently changes in the land use, crop type, surface water management system, operation, lessee, and other factors have occurred and their potential impact to the current level of optimization of BMPs and water quality improvement activities.
7. Impracticability eligibility only in cases where the applicant has:

¹ The site assessment shall evaluate phosphorus imports and transport in discharges; current BMPs and implementation methods; other practices not covered under BMPs (e.g., grazing, irrigation, nutrient and water management); and representative water quality and soil data. Water quality data that can be used for the assessment include those available from the District Sub-basin or synoptic (grab) monitoring programs, or properly collected grab samples or using field kits of adequate precision by the applicant.



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- a. participated in BMP implementation and demonstration projects, (funding may be provided by the District or other agencies, such as FDACS, 319 Grants, NRCS, etc. Recommendations based on the findings from the demonstration projects have been fully implemented.
- b. a NRCS conservation plan or FDACS Notice of Intent to implement BMPs that has been fully implemented.



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APPENDIX F (NEW) **CERTIFICATION OF LANDUSER (LESSEE OR OPERATOR)**

CERTIFICATION BY LANDUSER (LESSEE OR OPERATOR)

I hereby certify that, I have received a copy of Permit No. _____ with application No. _____, dated _____ . I agree to comply with the permit and implement the terms and conditions of the permit as it is indicated in lease. In addition, I agree to provide entry at any time to the area for South Florida Water Management District staff or their duly authorized agents, as provided for in subsection 40E-63.444(d), F.A.C., or as otherwise provided by the issued permit.

Type or print lessee name

Signature of lessee of parcel/farm (if not the lessee, certify below)

I hereby certify that I am the authorized agent of the lessee.

Type or print name and title

Signature

Date

FLOW CALIBRATION GUIDELINES

**DEVELOPED IN SUPPORT OF
CHAPTER 40E-63, F.A.C.**

EVERGLADES BMP PERMIT PROGRAM

**OCTOBER 1, 1996
(AMENDED JUNE 10, 1997)
(AMENDED JULY 24, 1997)**

**PREPARED BY:
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FOREWORD

All calibrations, re-calibrations and flow verifications submitted in compliance of the Everglades BMP Permit Program (Chapter 40E-63) shall include at a minimum:

- (1) Which pre-approved Calibration Field Data Collection Methodology was utilized
 - a. Instrumentation
 - b. Procedure
- (2) Which pre-approved calibration Data Evaluation Methodology was utilized
 - a. Flow Equation Development
 - Parabolic
 - Cubic
 - Linear
 - b. Alternative Mean Flow Rate Determination
 - c. Theoretical Equation
 - d. Flow Verification of previously accepted equation
- (3) Operating ranges of speeds (if applicable) and head differentials
- (4) Actual data collected
- (5) Final Calculations to be applied to determine flow
 - a. Flow Equation
 - b. Mean Flow Rate
 - c. Theoretical Equation
 - d. Previously Accepted Equation
- (6) Primary operational instrumentation in place (e.g. RPM sensor, RPM tachometer, water level sensor, staff gauge, data logger, log book) necessary to determine flow
- (7) Back-up instrumentation in place (e.g. RPM tachometer, staff gauge, log book) necessary to determine flow in the event the primary equipment fails
- (8) Certification or verification Statement

CALIBRATION GUIDELINES

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CALIBRATION GUIDELINES

INTRODUCTION

Chapter 40E-63 (Everglades BMP Program), F.A.C., requires permittees to submit and implement an acceptable water quality monitoring plan which provides "reasonable assurance" that annual water discharge and phosphorus load are accurately documented. Permittees within the Everglades Agricultural Area (EAA) under the Everglades BMP Program are currently required to calibrate off-site discharges from 300+ locations. Calibration information is being compiled for two purposes:

- 1) provide guidelines to permittees prior to permit renewal (January 1, 1997) for consistent application of calibration requirements, and
- 2) implement a simplified alternative calibrated flow calculation method.

Flow rates are currently being calculated using a variety of discharge equations. In response to requests by permittees, a method is being investigated that would utilize a single flow rate thereby decreasing the type of field readings and simplifying the calculations. The SFWMD assembled a group of professionals with specialized expertise in flow calibrations to further discuss and develop the feasibility of these concepts. This Flow Calibration Work Group has been acting in a peer review fashion and consists of the following individuals:

Steve Dobbs, P.E., United States Sugar Corporation
James Endres, P.E. Moving Water Industries
Richard Hall, P.E., Farmers Manufacturing Co., Inc.
Mark Howell, United States Sugar Corporation
Dean Mades, P.E., HydroScience Water Resource Consultants, Ltd.
Art Schmidt, P.E., HydroScience Water Resource Consultants, Ltd.
Pamela Smith, P.E., SFWMD
Benita Whalen, P.E., SFWMD
Andrew Wiley, Farmers Manufacturing Co., Inc.

This calibration guideline document addresses issues such as standardized methodologies for field data collection and data evaluation to produce a flow equation, changes that necessitate a re-calibration, frequency of re-calibrations, etc. This document is not intended to be a how-to-manual and therefore is not a substitute for technical knowledge required by any individual conducting a flow calibration.

~~**NOTE:** The criteria contained in this flow calibration guideline document is effective on October 1, 1996. Therefore, all proposed flow calibration methods (including those discussed in this document) and entities performing these methods will require approval from the SFWMD prior to performing calibrations after October 1, 1996. The District's calibration confirmation process is discussed in more detail under Section VII.~~

1. FLOW CALIBRATION DATA COLLECTION METHODS

The following section identifies and describes the type of data collection methods which have been used to satisfy the flow calibration requirements of chapter 40E-63. Also listed are special concerns that need to be considered when selecting a data collection method for a particular location. It should be noted that with each data collection method strict field practices, quality workmanship, equipment maintenance, and accurate record keeping are needed to ensure data reliability.

PIPE VELOCITY

1. Pitot Tube/Manometer

The rate of flow in pipelines under pressure may be computed from the conduit cross-sectional area and velocity observations made by a pitot tube. The tube consists of a right-angle bend which, when partly immersed with the bent part under water and pointed directly into the flow, indicates the velocity head of flow by the distance that the water rises in the vertical stem. Common differential pressure measuring devices for the pitot tube are the pitot-static pressure probe and the inverted U-tube manometer. The pitot-static pressure probe consists of two separate, essentially parallel parts, one for indicating the sum of the pressure and velocity heads (total Head) and the other for indicating the pressure head. Similarly, the manometer is an instrument that consists of two vertical tubes, (each part a leg of the U), one for indicating total head and the other for indicating only the pressure head. The velocity head is obtained by subtracting the static head from the total head or by measuring the vertical difference between the two (manometer). For a constant rate of flow, the velocity varies from point to point across the pipe flow area hence the need to take readings across the pipe diameter. The mean velocity is obtained by dividing the cross-sectional area of the pipe into a number of concentric, equal area rings and a central circle, measuring/calculating the velocity of each section then averaging the values. A standard ten-point system (four equal area rings and central circle) is commonly used.

KEY POINTS FOR METHOD-CONSIDERATION:

- (a) Flow should be uniform.
- (b) High flow velocities make positioning and securing the instrument difficult. Dynamic instability may also occur, causing the tube to vibrate and produce erroneous readings.
- (c) Partial pipe flow needs to be identified (measure air gap height) and flow area calculated appropriately. If the pipe is not flowing full, the change in velocity distribution must also be considered to accurately determine the average.
- (d) Low flow velocities give small head differentials and reading errors may occur which greatly affect results.
- (e) Sediment and trash may plug the small openings in the tubes.
- (f) Pitot tube data are not valid when the magnitude of manometer fluctuations is greater than 25 percent of the differential pressure which translates into a velocity variability of 10 percent.
- (g) The U.S. Geological Survey (USGS) standard 40-second minimum observation time shall be used.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

PIPE VELOCITY

2. Doppler

The Doppler Ultrasonic Flowmeter is a flow-monitoring device that utilizes the frequency shift (Doppler effect) of an ultrasonic signal to measure flow velocities. A generating crystal in the transducing sensor transmits a high frequency signal through the pipe wall into the water. This signal is reflected by suspended particles or gas bubbles in the moving fluid and is then detected by a receiving crystal located in the sensor. The difference between transmitted and detected frequencies is directly proportional to the flow velocity.

KEY POINTS FOR METHOD CONSIDERATION

- (a) Flow should be uniform
- (b) Transducers should be attached (1) at a location where the pipe is flowing full, (2) positioned near the end of a straight length of pipe that is at least 5 pipe diameters in length and (3) positioned at angles that are in accordance with the manufacturer's recommendations.
- (c) Age and condition (rust) of pipe material must be considered so that readings are not adversely affected. Some models may not have adequate signal strength for older (corroded) pipe.
- (d) Interference from vibration or noise from the pump must be considered in selecting equipment.
- (e) In general, data collected using the Doppler Ultrasonic Flowmeter become much less reliable when velocities decrease below 0.05 ft/s.
- (f) Meter must be maintained and calibrated according to manufacturer's recommendations.

3. Dye Fluorometry – Tracer Dilution and Tracer Velocity

The two types of dye-fluorometry measurements, tracer dilution and tracer velocity, could be included within the APPROACH VELOCITY section but are included under PIPE VELOCITY for they would more likely be used to measure pipe velocities. Tracer dilution methods are used for higher-velocity sections (pump lines) where mixing can be assured. Tracer velocity methods are used in low velocity sections with known geometries (culverts).

Tracer Dilution

Tracer dilution methods are based on the principle of mass balance. A tracer is introduced into the upstream channel (or pump intake) at a measurable rate and concentration, tracer concentrations are continuously measured downstream (or in the pump outfall for a period of time, and the time series of concentrations are evaluated to determine discharge. Fluorescent tracers such as Rhodamine-WT are typically measured using a fluorometer. The amount that the added tracer solution is diluted by flowing water determined.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

Dye Fluorometry – Tracer Dilution continued

KEY POINTS FOR METHOD CONSIDERATION:

- (a) Determine whether slug or continuous injection of tracer should be used and develop appropriate tracer-measurement plan.
- (b) Ensure that the tracer uniformly mixed within the sampling section. Injection manifolds may be needed to help achieve mixing.
- (c) Instrumentation must be maintained and calibrated according to manufacturer's recommendations. Care must be taken to ensure that dye-water samples are within the linear range of a fluorometer and that background fluorescence is accounted for.

Dye Fluorometry – Tracer Velocity

Tracer velocity methods depend on measuring the time it takes a conservative tracer to pass through a channel (or pipe) having a uniform and measurable geometry. The tracer is introduced to the channel at some upstream location using the slug-injection method and continuously measured at a downstream location for a period of time. Discharge is determined by dividing the volume of water located between the injection and measurement sections by the lapsed time between the centroids of time-concentration curves for each section.

KEY POINTS FOR METHOD CONSIDERATION:

- (a) A static volume of water located between the injection and measurement sections must be accurately known.
- (b) Tracer sampling must continue for a long enough period of time to accurately determine the centroid of a time concentration curve.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

APPROACH VELOCITY

4. Stream Gauging (current and electromagnetic meters)

Stream gauging is a method which measures velocities in the channel, upstream of the pump station. Two basic types of meters are generally used for stream gauging, (1) vertical-axis or vane-type current meter (Price AA) and (2) electromagnetic meter (Marsh-McBirney).

(1) A vertical axis meter consists of a wheel which rotates when immersed in flowing water and a device for determining the number of revolutions of the wheel. Water velocity is determined by counting the number of revolutions of the wheel over a given period of time. The relations between the velocity of the water and the number of revolutions of the wheel per unit of time for various velocities are determined for each instrument by U.S. Bureau of Standards and are supplied in the form of an equation from which a rating table is compiled.

(2) An electromagnetic meter operates on the principle that a voltage is induced in an electrical conductor moving through a magnetic field. For a given field strength, the magnitude of the induced voltage is proportional to the velocity of the conductor (flowing water). The sensor is equipped with an electromagnetic coil that produces the magnetic field and a pair of electrodes that measure the voltage produced by the velocity of the flowing water. The measured voltage is then processed by electronics and output as a linear measurement of velocity.

Three other types of current meters are also appropriate for measuring water velocity even though they have not yet been used to calibrate pumps for the Everglades BMP Program. These include the (1) acoustic Doppler current Profiler – ADCP, (2) Point acoustic Doppler Velocity Meter – PADVM and (3) Smart Acoustic Current Meter – SACM.

(1) & (2) The acoustic doppler current profiler (ADCP) and point acoustic doppler velocity meter (PADVM) operate on the principle of the doppler effect of sound in moving water. The meters emit a series of phase-encoded acoustic pulses at a fixed frequency along each of the narrow acoustic beams and measures the frequency shift (Doppler effect) of the return echo. The ADCP is suspended in a fixed position within the water column and continuously measures velocities at user prescribed intervals from near the channel bottom to near the water surface as the meter is moved across the channel. The PADVM measures a discrete velocity near the transducer heads and must be moved laterally and vertically within the measurement section (like a Price AA) to determine mean channel velocity. Velocities as low as 0.03 ft/s can be measured using ADCP and PADVM.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

Stream Gauging (continued)

(3) The SACM is a vector-averaging current meter. The SACM is based on the time of travel of acoustic signals sent between two pairs of transducers oriented at ninety degrees from each other. A small reflector located about an inch below the acoustic transducers reflects an acoustic pulse from one transducer to the opposite transducer. Components of the velocity vector are resolved using the velocities measured along the two acoustic paths and an internal, magnetic compass. The SACM can measure point velocities as low as 0.03 ft/s.

Please note that in addition to the constraints listed below, stream gauging will only be accepted as a calibration data collection method in situations where 100% of the flow to the pump is through the single canal being measure. Low velocities, non-uniform channels, interference from side channels, fluctuating water levels during data collection are some of the conditions that exist at the majority of sites within the EAA which make this method more difficult to perform. Gauging at a downstream control section (e.g. culvert) will not be acceptable because the majority of pump stations have a much greater capacity than the control section and therefore an amount of storage is occurring in the forebay area. Stream gauging may be considered with the following constraints but only in situation where 100% of the flow to the pump is through the single canal being measured.

- (a) Metering equipment must be used within the manufacturer's guidelines; In general, data collected using vane-type meters (such as Price AA) and the electromagnetic meters (such as Marsh-McBirney) become much less reliable when velocities decrease below 0.15 ft/s. Acoustic meters such as the ADCP, PADVM and SACM can be used to reliably measure velocities approaching 0.03 ft/s.
- (b) Eighty percent (80%) of the point velocities measured must be above the manufacturer's minimum velocity.
- (c) The two-point method and six-tenths-depth method of determining mean velocity in a vertical line shall be used. Meter measurements shall be taken at 2- and 8-tents depth if the depth of flow equals or exceeds 2 feet, otherwise at the 6-tenths depth.
- (d) No velocity measurement section shall carry more than ten percent (10%) of the flow.
- (e) The U.S. Geological Survey (U.S.G.S.) standard 40-second minimum observation time shall be used.
- (f) Approach velocity measurement sections must be taken near the pump but no closer than a main canal width from the pump station and at least a main canal width downstream from side canals in a reach characterized by uniform flow and no turbulence. Artificial and/or temporary blocking of side or tributary canals are not representative of actual field conditions and therefore will not be allowed.
- (g) Meter shall be formally calibrated according to manufacturer's criteria, annually at a minimum. Records should be kept to verify meter calibrations.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

THEORETICAL EQUATIONS

5. The use of theoretical equations to estimate gravity control structure flow does not in its self constitute a data collection method. However, some type of data collection, i.e. a field investigation and data history search of the range of water surface elevations, must be conducted to assist in the determination of which type of flow conditions (e.g. submerged weir flow, partial culvert tranquil flow throughout, etc.) exist so the appropriate theoretical equations are selected. Geometric configurations and measurements must also be know such as culvert invert elevation, length, material, diameter, gate opening, and flash board elevation if applicable. Weir equations and the U.S.G.S. source for culvert flow equations can be found within Section III. DATA EVALUATION METHODS AND FLOW EQUATION DEVELOPMENT CRITERIA.

OTHER

6. The use of any other data collection method not identified within this document will require prior approval from the SFWMD. The District's calibration confirmation process is discussed in more detail under Section VII.

II. FIELD DATA COLLECTION CRITERIA

A. Types of Flow Configurations

The various configurations of pumping stations or water control cross-sections can be classified into four different types.

Type 1 Well defined pump and pipe configuration. Well-defined pipe configurations are accessible and have a straight length of pipe at least ten times its diameter. The straight length of pipe can be on either side of the pump. Refer to **Figure 1** for a sketch of this situation. Type 1 configurations require measurement of headwater stage, tail water stage, pump speed, and average flow velocity.

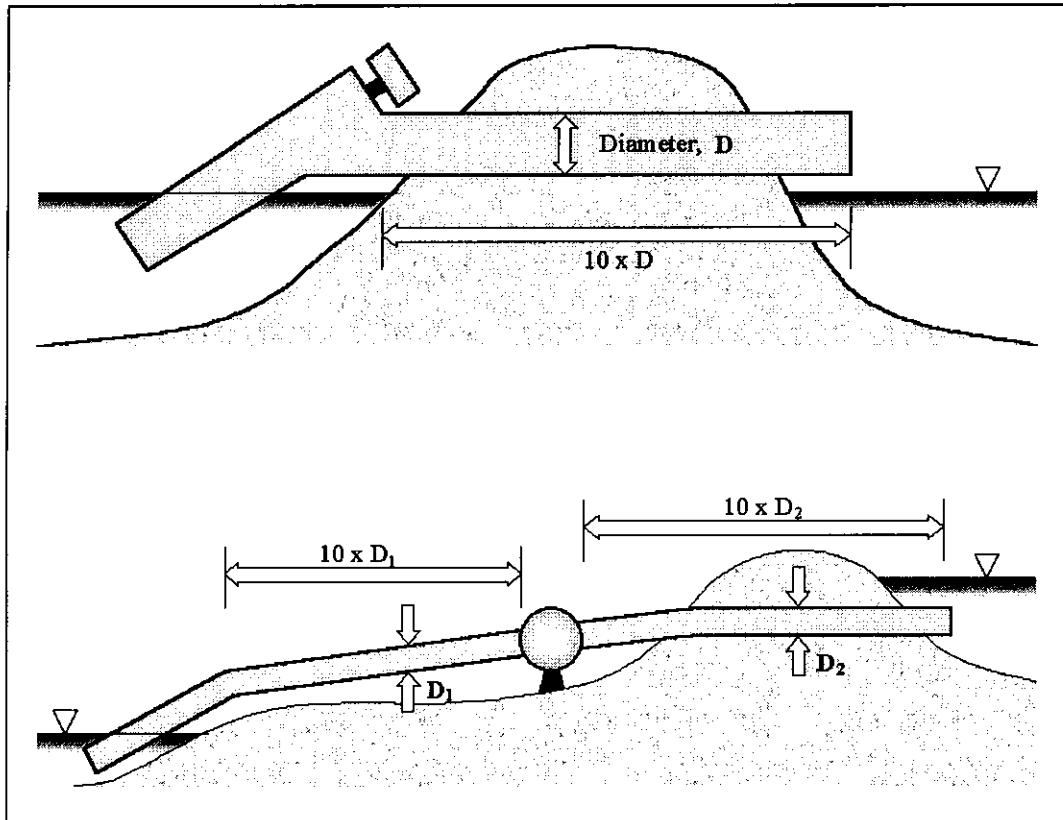


Figure 1. Examples of Type 1

(Types of Flow Configurations continued)

The two recommended methods for data point collection under Type 1 conditions are measuring pipe flow velocities and performing a mass balance by tracer-dilution methods. Stream gauging is listed as a method but note that its use is conditional (only in situations where 100% of the flow to the pump is through the single canal being measured).

- (a) Pipe Velocity. Three ways to determine the pipe flow velocity are suggested as follows. 1. Measure pipe water velocity head or static and total head (pitot tube/manometer). 2. Use an acoustic (Doppler) pipe flow velocity-measuring device. 3. Use tracer-dilution method to perform a mass balance.
- (b) Stream Gauging (current or electromagnetic meter) **CONDITIONAL**
Only if 100% of the flow to the pump through the single canal being measured.

The measurements for Type 1 configurations are headwater stage, tail water stage, and pump speed at the start and end of each flow period and any other parameters necessary to calculate flow.

Type 2 Poorly defined pump This type consists of pump configurations that do not meet Type 1 criteria (not accessible and do not have a straight length of pipe at least ten times its diameter). Figure 2 shows examples of this configuration.

A recommended method for data point collection under Type 2 conditions is performing a mass balance by tracer-dilution. Other pipe velocity measurement methods such as the pitot tube or acoustic device may be used for this type of pump configuration if proper insertion of the pitot tube or attachment of the acoustic device is possible and an appropriate number of velocity measurements are made to accurately define the entire velocity profile. Stream gauging is listed as a method but note that its use is conditional (only in situations where 100% of the flow to the pump is through the single canal being measured).

- (a) Dye Fluorometry use tracer-dilution method to perform a mass balance.
- (b) Other Pipe Velocity Methods measure pipe water velocity head or static and total head (pitot tube/manometer) or use an acoustic (Doppler) pipe flow velocity-measuring device. Note that these methods are appropriate if proper insertion or attachment of the instrumentation can be accomplished and sufficient data is collected to accurately define the entire velocity profile.
- (c) Stream Gauging (current or electromagnetic meter) **CONDITIONAL**
Only in situations where 100% of the flow to the pump is through the single canal being.

(Types of Flow Configurations continued)

The measurements for Type 2 configurations are headwater stage, tail water stage, and pump speed at the start and end of each flow period and any other parameters necessary to calculate flow.

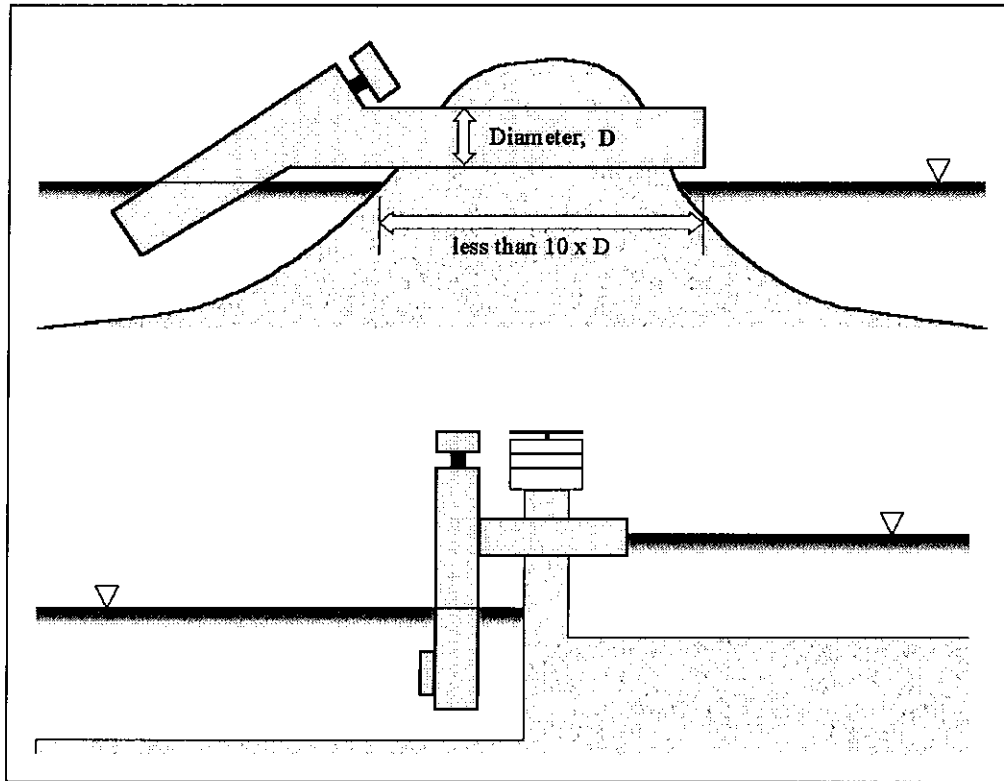


Figure 2. Examples of Type 2 – Poorly defined Pumps (pipe length less than 10 x pipe diameter)

Type 3

Vertical lift box pump

The two recommended methods for data point collection for vertical lift box pumps are performing a mass balance by tracer-dilution methods and not collecting data points but instead using a theoretical weir discharge formula. Stream gauging is listed as a method but note that its use is conditional (only in situations where 100% of the flow to the pump is through the single canal being measured).

- (a) Dye Fluorometry Use tracer-dilution method to perform a mass balance.
- (b) Theoretical Equation Use applicable weir equations.
- (c) Stream Gauging (current or electromagnetic meter) **CONDITIONAL** Only in situations where 100% of the flow to the pump is through the single canal being measured.

The measurements for Type 3 configurations using the methods described in section (a) and (c) above are head water stage, tail water stage, and pump speed at the start and end of each flow period and any other parameters necessary to calculate flow.

(Types of Flow Configurations continued)

Type 4

Gravity control sections. This type includes gravity flow through structures such as gates, weirs, and culverts. **Figure 3** displays some examples. The U.S.G.S. is an authority of streamflow measurement. Theoretical equations outlined by U.S.G.S. in their technical document titled "Measurement of Peak Discharge at Culverts by Indirect Methods" by G. L. Bodhaine (1968) are acceptable for flow computations for culvert structures. Theoretical equations for weir flow and submerged weir flow are also acceptable as outlined on Page C-IV-24 of the SFWMD's Permit Information Manual Volume IV, Part C surface Water Management System Design Aids.

The permittee also has the option of conducting field measurements to calibrate these theoretical equation. The key points and criteria previously identified under the appropriate data collection method shall be followed when taking flow measurements to calibrate theoretical equations.

- (a) Theoretical Equations For culverts: U.S.G.S. "Measurement of Peak Discharge at Culverts by Indirect Methods" by G. L. Bodhaine (1968). For weirs: Page C-IV-24 of the SFWMD's Permit Information Manual Volume IV, Part C surface Water Management System Design Aids.
- (b) Use tracer velocity method to calibrate the theoretical equation.
- (c) Stream Gauging (PADVM or SACM) to calibrate the theoretical equation.

Some geometric configurations and measurements must be known for use of theoretical equations such as culvert invert elevation, diameter, length, material, gate opening, and flash board elevation if applicable.

If the theoretical flow equation is calibrated, recorded measurements for Type 3 configurations are head and tail water stages across the control cross-section for each flow period. The length of each culvert must be at least ten times the diameter when measuring culvert flow. To use a culvert of less than ten pipe diameters in length for discharge calculation there should be sufficient justification and assurance of uniform flow.

(Types of Flow configurations Continued)

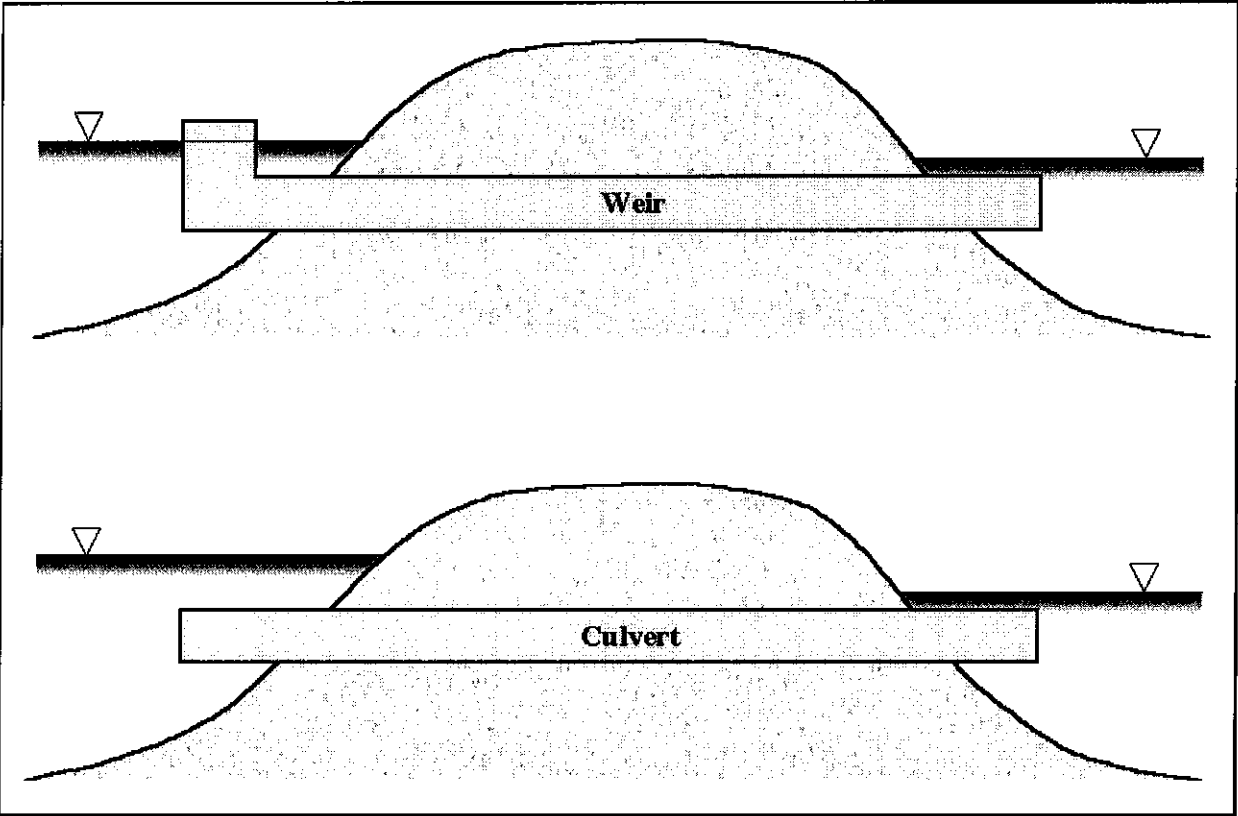


Figure 3. Examples of type 4 – Gravity Control Structures

A decision matrix worksheet is presented as Table 1. This worksheet will be used as the guide to determine if a flow calibration method is appropriate for given flow configurations.

TABLE 1 DECISION MATRIX OF APPROPRIATE DATA COLLECTION METHODS BASED ON FLOW CONFIGURATIONS

FLOW CONFIGURATIONS	PITOT	DOPPLER	TRACER-DILUTION	TRACER-VELOCITY	STREAM GAUGING	THEORETICAL EQUATION
TYPE 1 WELL DEFINED PUMP				n/a	conditional on Section 1.4 and Table 2	n/a
TYPE 2 POOR DEFINED PUMP	refer to type 2 page 9	refer to type 2 page 9		n/a	conditional on Section 1.4 and Table 2	n/a
TYPE 3 VERTICAL LIFT BOX PUMP	n/a	n/a		n/a	conditional on Section 1.4 and Table 2	
TYPE 4 GRAVITY CONTROL CROSS-SECTION	n/a	n/a	n/a		conditional on Section 1.4 and Table 2 and limited to PADVM or SACM	

Shading indicates method is not appropriate (n/a) or use of method is conditional on other criteria.

B. Types of Canal Configurations

The various configurations of canals can be classified into four different types. Breakdown of canal configurations is for the stream gauging data collection method only. All other methods used are located at the pump or control structure. Approach velocity measurement sections should be located far enough upstream (typically a main canal width) from the pump to avoid turbulence effects, at least a main canal width downstream from side canals, and close enough to the pump so that the lag time to achieve equal pump and canal discharges when pumping conditions (lift and/or speed) change are minimal.

- Type 1 Uniform main canal cross-section and no side canals within two main canal widths of pump station.
- Type 2 Non-uniform main canal cross-section (varying depth or width) and no side canals within two main canal widths of pump station. Note that stream gauging may be performed at a non-uniform section but greater care must be taken when measuring depths and subdividing the measurement section.
- Type 3 side or tributary canals within two main canal widths of pump station (refer to Figure 4).
- Type 4 Pump discharge forebay with increasing stages/storage occurring (refer to Figure).

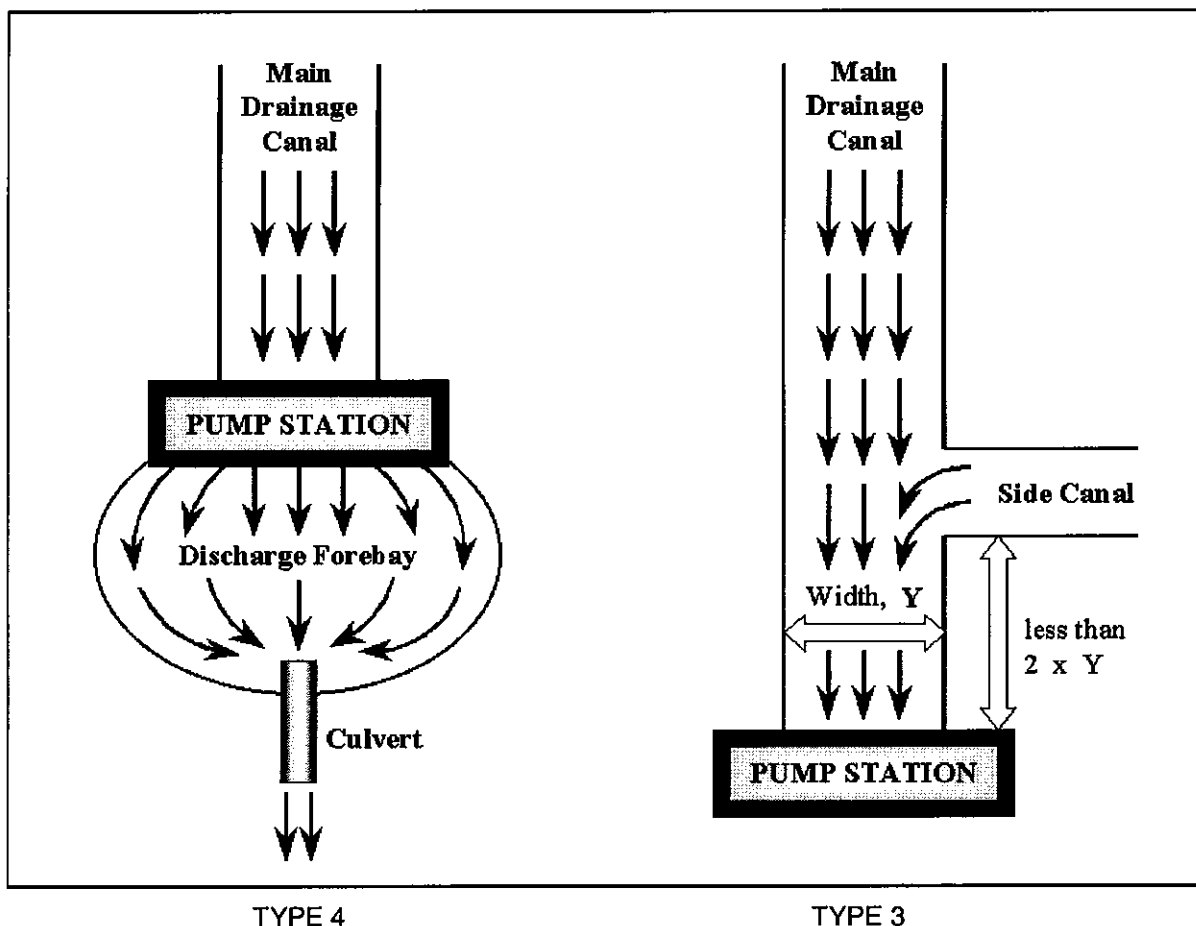


Figure 4. Examples of Canal Configurations which are **NOT** appropriate for stream gauging

A decision matrix worksheet is presented as Table 2. this worksheet will be used as the guide to determine if stream gauging is appropriate for given canal configurations.

TABLE 2 DECISION MATRIX FOR ACCEPTABLE CANAL CONFIGURATIONS TO STREAM GAUGE

CANAL CONFIGURATIONS	ALLOWABLE (conditional on Section 1.4)
TYPE 1 UNIFORM CROSS-SECTION AND NO SIDE CANALS WITHIN TWO MAIN CANAL WIDTHS OF PUMP STATION	
TYPE 2 NON-UNIFORM CROSS-SECTION	
TYPE 3 SIDE CANALS WITHIN TWO MAIN CANAL WIDTHS OF PUMP STATION	n/a
TYPE 4 PUMP DISCHARGE FOREBAY WITH CONTROL SECTION	n/a

Shading indicates method is not appropriate (n/a)

(DATA COLLECTION CRITERIA CONTINUED)

C. Minimum Data Collection Criteria

For all types of data collection methods, the head water stage, tail water stage (centerline of pipe if outlet is unsubmerged), pump speed, and elapsed speeds remain the same during the measurement. Water surface elevations at a minimum must be recorded at the start and the end of each measurement (measurements should verify that flow is stable). the rotational speed of the pump may be measured by a tachometer mounted on the pump or engine. If a tachometer is mounted on the engine, the ratio of the engine speed to the pump speed must be known. The engine speed will typically be greater than the pump speed. All structures should be rated for the range of water stages and pump speeds expected during operation.

1. Operation Range
If the structure is existing, data history research shall be done to determine actual operating conditions (head differentials and pump speeds) for the structure.
2. Minimum number of data points required for calibration.

FOR PUMPS:

Minimum of 5 data points which cover 2' of change in head differential or 25% of operating head differential range. Test speeds shall fully cover the operating speeds expected based upon documented observation.

Note that greater than 2' of head differential or greater than 25% of the operating head differential range may be necessary in situations where there is less certainty of pump performance. In order to obtain 25% or more of the operating head differential range, a discharge valve or other mechanism may need to be installed to artificially create the necessary head conditions in the field for collection of data points.

FOR GRAVITY CONTROL STRUCTURES:

If a permittee elects to calibrate a theoretical equation, at a minimum, two data points are required with a minimum head differential equal to or exceeding 0.1 foot of head differential.

3. At a minimum, water stages shall be collected at the beginning and end of each measurement.

III. DATA EVALUATION METHODS AND FLOW EQUATIONS DEVELOPMENT CRITERIA

Once the calibration field data points have been obtained, an analysis is performed to develop a flow equation. In the case of gravity control structures using uncalibrated theoretical equations to calculate flow, a field investigation is conducted to determine which type of flow conditions exist so the appropriate theoretical equations are selected.

PUMP FLOW EQUATIONS

Static head and pump speed (if a variable speed power unit is used) are the variables in the flow equation. Various types of flow equations which were previously submitted are graphically presented in **Figure 5** and discussed in more detail below. These equation forms have been used in the past to adequately describe the data points collected and will be the only types accepted in the future unless approval can be obtained from the SFWMD.

A. Types of Flow Equations

1. Parabolic (equation type that describes a typical axial flow pump curve)
$$Q = [A*(FIELD\ RPM/RPM) - B*HD^C(RPM/FIELD\ RPM)^{2C-1}] * 1000$$
2. Cubic (equation type that describes an axial flow pump operated at speed less than 75% of design)
$$Q=B*(FIELD\ RPM/RPM)[A-((RPM/FIELD\ RPM)^{2*HD-C})/(((RPM/FIELD\ RPM)^{2*HD-C})^{.333})]$$
3. Linear (slope from the manufacturer's curve, transposed over the calibration data points)
$$Q = ((A*(FIELD\ RPM/RPM)^2-HD)/C)+(B*FIELD\ RPM/RPM)$$

where A,B,C are coefficients

Q = flow, gpm

HD = static head differential

FIELD RPM = actual pump or engine speed

RPM = calibration pump or engine speed

B. Minimum Equation Development Criteria

All developed pump flow equations must meet the following criteria and all calibration submittals shall provide documentation which indicate this criteria has been met.

1. Flow equations should exhibit standard axial flow pump principles (e.g. increasing head differential – decreasing flow rate; increasing pump speed – increasing flow rate).
2. Application of Affinity Laws: Head differentials must also be converted when using the Affinity Laws to convert multiple speed data points to a single speed.
3. Predicted flow from discharge equation shall be within $\pm 10\%$ of tested flows.
4. R^2 should be > 0.85
5. For linear equations, slope from the portion of the manufacturer's curve through normal head differential range can be used only if it is the actual pump curve (not similar pump curve) and no alterations have been made to the pump.
6. For parabolic equations, "A" coefficient (zero head differential must be positive); "B" coefficient must be positive so as head differential increases, flow decreases and "C" coefficient for axial flow pumps should be between 1.5 and 3.0.

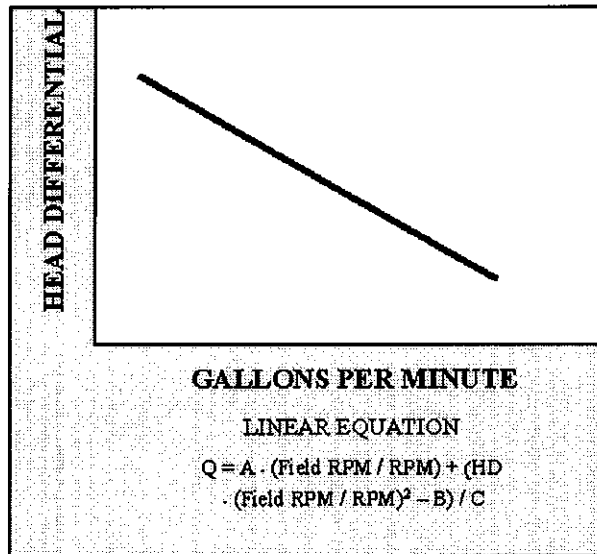
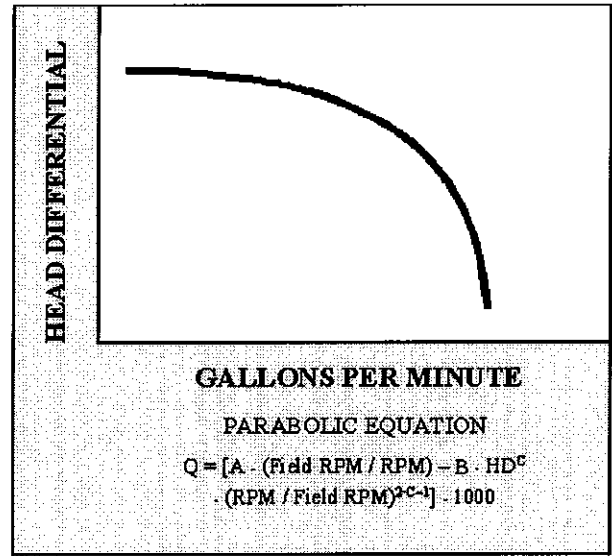
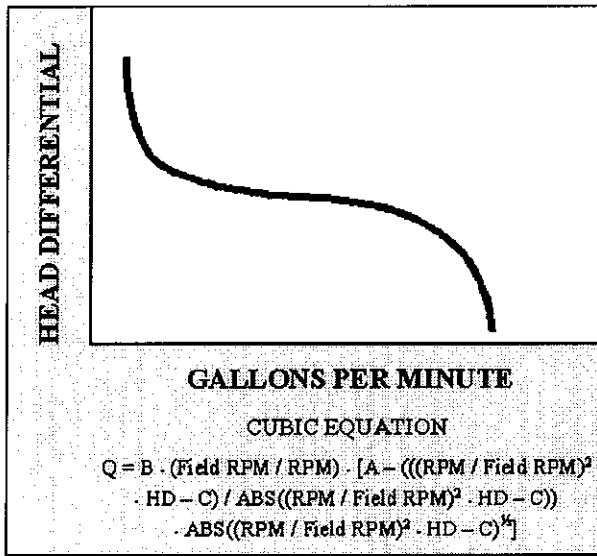


Figure 5. Types of Flow Equations

(DATA EVALUATION METHODS AND FLOW EQUATIONS DEVELOPMENT CRITERIA)

GRAVITY FLOW THEORETICAL EQUATIONS

Selection of the appropriate theoretical equations for uncalibrated flow estimation relies on accurate data collection. Peak upstream and downstream water surface elevations, structure geometry and canal geometry are some of the information obtained in the field survey. Weir equations that may be appropriate are listed below. Appropriate culvert flow equations can be found in the USGS document identified below.

Weir Flow (submerged & unsubmerged)

- (a) For Vertical lift box pumps and flashboard risers, a rectangular sharp-created weir discharge equation (Page C-IV-24 of the SFWMD's Permit Information Manual Volume IV, Part C Surface Water Management System Design Aids) may be appropriate.

$$Q_F = 3.13LH_1^{1.5}$$

Rectangular sharp-crested weir – unsubmerged

Q_F = free flow, cfs

L = weir length, feet

H_1 = upstream head above crest, feet

$$Q_S = Q_F [1 - (H_2/H_1)^{1.5}]^{0.385}$$

Rectangular sharp-crested weir – submerged

Q_S = submerged flow, cfs

H_2 = downstream head above crest, feet

- (b) The head H_1 should be measured at least $2.5H_1$

Culvert Flow (full & partial)

- (a) The U.S. Geological Survey (U.S.G.S.) an authority of streamflow measurement. empirical equations outlined by U.S.G.S. in their technical document titled "Measurement of Peak Discharge at Culverts by Indirect Methods" by G.L. Bodhaine (1968) shall be used for culvert flow. Culvert flow has been classified into six types on the basis of the location of the control section and the relative height of the headwater and tailwater elevations. Justification of which type(s) of flow regime exist is required.

GRAVITY FLOW CALIBRATED THEORETICAL EQUATIONS

- (a) If the permittee elects to obtain field measurements to calibrate the theoretical discharge equation (flow data will be collected to determine a coefficient of discharge for the culvert structure), the tested flows shall be within $\pm 10\%$ of the flows predicted by using the appropriate theoretical discharge equation.

IV. FIELD INSTRUMENTATION AND RECORD KEEPING

The minimum field instrumentation required for both pump and gravity control structures is identified below. The environmental conditions existing in the EAA coupled with the use of electronic water level sensors necessitates that a strong maintenance program be implemented to ensure that accurate head differentials are being measured. Therefore, a sensor maintenance and calibration program is required to be included with any flow calibration using electronic water level sensors. The maintenance and calibration program for the sensors will document that the sensors will be formally calibrated quarterly (minimum) and informally checked and verified bi-weekly on the regularly scheduled sampling trip.

A. Pumps

Continuous stage and speed recording devices or manual readings of staff gages and pump speed recorded in a logbook is required. Manual readings are required at a minimum of twice per day during discharge.

B. Gravity Connections

Gravity connections with multiple control structures (culverts, weir, etc.) and culverts greater than 36 inches in diameter shall have continuous stage recording devices with readings taken at least every 15 minutes (readings may be averaged over a period of one hour). Backup instrumentation shall consist of additional continuous stage recording device or manual readings taken at least twice daily.

Gravity connections with a single control structure (culvert, weir, etc.) and culvert diameter less than or equal to 36 inches are required, at a minimum, to record manual readings twice per day during discharge.

V. RE-CALIBRATION OR FLOW VERIFICATION

It is acknowledged that discharge from the pumps located in the Everglades Agricultural Area will normally decrease over time. The amount of change in discharge will vary with pump type, size, normal maintenance and frequency of operation. Because Chapter 40E-63 requires that discharge be accurately measured, pumps will be required to periodically verify flow measurement accuracy or be re-calibrated. In an effort to recognize that the change in discharge is correlated with frequency of operation, the period for flow verification or re-calibration will be based upon days of structure operation (days of structure operation versus pump operation since discharge values are submitted to the District by structure). Re-calibrations or flow verifications will be required after approximately one and one-half years of pump operation/use (550 days of pump operation). Re-calibrations have the opportunity to be somewhat simplified if the new data collected indicates that previously certified flow equation or flow value is still valid (flow verification).

Calibrations of new pumps and re-calibrations of repaired or relocated pumps shall be performed by Florida registered Professional Engineers. Flow verifications of pumps that one and one-half years of pump operation since the last calibration may be performed by a registered Professional Engineer or other qualified entity that have received District confirmation (described in Section VII). Re-calibrations shall follow the calibration criteria previously outlined. Flow verification shall follow the data collection criteria previously outlined. If the data collected for a flow verification is not within $\pm 10\%$ of the predicted flow from the previously accepted discharge equation, a re-calibration to develop a new discharge equation is required.

- A. Required Frequency – After approximately one and one-half years of pump operation (550 days of pump operation) ~~not to exceed eight (8) nine (9) calendar years~~, based on data submitted to the District.
- B. Circumstances Warranting More Frequent Calibration
 - 1. If the bowl area and/or impeller of the pump is modified, a re-calibration is required.
 - 2. If a pump is relocated, a re-calibration is required.
 - 3. A replacement pump for the primary pump under repair will require calibration if it is at that location for a period greater than 4 weeks.

VI. ALTERNATIVE DETERMINATION

A. Introduction

Various permittees requested that the District investigate alternative calibration methods based on their observations that there was very little change in flow rate over normal operating conditions. In response to requests by permittees, an alternative flow determination method has been investigated that would utilize a single mean flow rate.

A brief description of the SFWMD's investigation of the feasibility or appropriateness of a mean flow rate calibration follows. Data from several pumps were reviewed. For a comprehensive analysis, the pumps chosen currently use either a linear, cubic or parabolic discharge equation. Median head differentials were calculated from all of the actual historical field data for that particular pump. Days of discharge were randomly chosen and flows were calculated using the median head condition. The total flow using the median head condition was compared to the total flow calculated using the actual head conditions for the same event. Of the pumps chosen, the pumps currently using a linear or parabolic equation showed the best correlation for using a median flow rate (< 7% difference in total flow). The pumps currently using the cubic equation resulted in greater than 25% difference in total flow.

Based on the correlations noted above, it appears that the use of a mean flow rate may be suitable for some pumps but each pump will have to be reviewed for its appropriateness of using this method. Therefore it has been determined that the mean flow rate calibration will be an option to the permittees.

B. Description of Procedure and Criteria

The following procedures and criteria must be followed and met for the Alternative Flow Determination Method to be accepted.

1. Criteria for selection of data collection method still apply.
2. Calibration entity and pump operator evaluate previous flow calculations to determine if structure currently exhibits small changes in flow rates over normal operating head differentials.
3. Calibration entity and pump operator evaluates median head differential from previous head differential conditions experienced.
4. Pump operator indicates the high and low operation speed (if diesel engine, single speed if electric) that will only be used.
5. Entity obtains two data points at the median head condition for each speed (high and low).
 - If the 2 data points are within 10% of each other, then an average of the data points is calculated.
 - If the 2 data points are not within 10% of each other, then a check measurement shall be taken to confirm the 10% criteria has not been met. If the 10% criteria can not be met, this alternative method will not be accepted.
6. Flow rate(s) are certified as the mean flow rates(s) for the pump.

(ALTERNATIVE FLOW DETERMINATION CONTINUED)

C. Benefits

- No stage readings are required for flow calculations therefore less instrumentation is needed.
- Daily flow calculations are simplified by using a flow rate and time of operation (no equation).
- Fewer field data points are required and only at normal conditions.
- Verifying flow for BMP field inspections would be simplified.
- Obtaining results of calibrations should take less time (no equation to be developed).

Note: One potential drawback of the use of a median flow rate is the overestimation of discharge if the actual static head differentials encountered during operation are consistently greater than the calculated median head differential.

**VII. ADVANCE CALIBRATION OR FLOW VERIFICATION METHODOLOGY
CONFIRMATION/APPROVAL**

Any entity ~~after October 1, 1996~~, proposing to perform a calibration, re-calibration or flow verification for the requirements of Chapter 40E-63, F.A.C., is required to receive advance District Confirmation/Approval. Confirmation will consist of two processes; (1) submittal of a detailed proposed calibration or flow verification methodology for District staff's review and approval and (2) field observation of the entities data collection procedures and data manipulation. The District will provide a conceptual review within 7 business days of receipt of a calibration, re-calibration or flow verification submittal.

Appendix A

Implementation of the 550 Day Pump Re-Calibration Tracking Process

Background

The intent was to develop a method to track the amount of pump operation that would not require permit individuals to invest more time, effort, and money to track and record this information. Data is currently submitted to the district which provides the million of gallons pumped per day. Days with no pumping are reported as zero.

Tracking the hours of pump operation would be too costly and require:

- purchase, installation, and maintenance of hours meters installed on each pump (meters on each pump not on each engine – it is common to move and remove engines)
- additional record keeping by the permittee;
- additional submittal of information to the SFWMD.

SFWMD staff did not select the 550-day time period lightly or in a vacuum. the SFWMD has the unique benefit of having a database containing over 278,000 daily flow records from all the 40E-63 permit structures within the EAA. Given the approach of minimizing the impact to permittees as described above, the SFWMD discussed with a group of technical professionals who have advanced knowledge on pump calibrations, flow measurements, and flow conditions in the EAA, the appropriate frequency for re-calibration. As an advance to these discussions, District staff discussed “normal” operating conditions, times, and years with several growers as well as pump manufacture and repair specialists. The result of these discussions was that pumps operating under the conditions in the EAA would decline 10-15% from their calibration after less than 4 to 5 years of normal operation (recommended ranges included 1 to 8 years for calibration). District staff conducted a frequency analysis of EAA submitted pump data. The District opted to error on the side of the growers and examined the re-calibration return frequency of 5 to 6 years based upon normal operating conditions. The frequency analysis revealed that approximately 500 days of pump operation (based upon daily records submitted to the District) indicated that 75% of the single pump discharge stations in the EAA would fall into the 5 to 6 year pump re-calibration frequency. Again, in an interest to error on the side of the permittee, the return frequency of 550 days was selected. The 550-day counter DOES NOT represent 13,200 hours of pumping (550 days x 24 hours/day)

As of April 1997, the 40E-63 program has been operating for over 4 calendar years. Only four out of over 300 structures have reached the 550-day count. Keep in mind that this includes two extremely wet years with pumping well above normal frequency and duration.

Implementation

The SFWMD will conduct a simple count each month based upon the daily flow data submitted by the permittees. The owners/operators of any structure which are identified as approaching the 550 days of operation will be notified. If the discharge structure has multiple pumps, only the pump(s) which have reached the 550-day count would be required for re-calibration. Below are two examples.

Example 1. A four-pump station is identified as reaching the 550-day count. The owner identifies the station as operating as follows:

Pump A	Pump B	Pump C	Pump D
567 days	320 days	200 days	2 days

Only Pump A would be required to be re-calibrated. The District would reset the counter to begin counting from 320 days since that was the next highest level of operation.

Example 2. A four-pump station is identified as reaching the 550-day count. The owner identifies the station as operating as follows:

Pump A	Pump B	Pump C	Pump D
200 days	220 days	150 days	0 days

No pumps would require re-calibration at that time. The District would reset the counter to begin counting from 220 days since that was the next highest level of operation.

VIII. CERTIFICATION

All calibrations or re-calibrations performed by a Florida registered Professional engineer shall contain the following **Pump Calibration Certification Statement**:

Assuming that no alterations are made to the system and the system is operated within the normal range identified, in my professional judgment, the calibration methodology, instrumentation, procedure, data collection and interpretation, and final flow equation or flow value will be sufficient to quantify the discharge as described in Chapter 40E-63, Florida Administrative Code (F.A.C.).

All flow verifications shall contain the following **Flow Verification Statement**:

Assuming that no alterations are made to the system and the system is operated within the normal range identified, in my technical opinion, the data collected verifies that discharges are continuing to be sufficiently quantified by the previously developed flow equation as described in Chapter 40E-63, Florida Administrative Code (F.A.C.).