

Rules of the South Florida Water Management District

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



Effective: November 9, 2010

On **November 16, 2010** minor corrections were made and incorporated to Chapter 40E-63 which did not require rulemaking. Since the effective date reflects a rule adopted through rulemaking, the effective date of November 9, 2010 will remain.

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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, Sec. 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 S-5A, S-6, S-7 and S-8 Basins Palm Beach, Broward and Hendry Counties", dated January 2001.

(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 January 2001, 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 January 2001.

(5) "Appendix A3.2 – Flow Computation Methods Used to Calculate EAA Basin Flows", dated January 2001, providing applicable mathematical formulas for calculating flow rates through water management structures.

(6) "Appendix A4 – EAA Basin Farm Scale Allocation", dated January 2001, 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 01, 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 Ch. 40E-63, F.A.C.", dated May, 1992.

(11) The documents listed in subsections (1) through (10) are hereby incorporated by reference, are published by the District and are available on the District's website (sfwmd.gov) or from the District at 3301 Gun Club Road, West Palm Beach, FL 33406, (561)686-8800, upon request.

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

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" of Chapter 40E-63, F.A.C., which is published by reference and incorporated into this Chapter.

(2) The EAA is generally described as: 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" of Chapter 40E-63, 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.

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

The following Works of The District within the Everglades Agricultural Area Basin are or have been used for calculating compliance with the phosphorus load reduction objectives of the Everglades program: 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.

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-63.108 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.

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.

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 (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 (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 Ch. 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., Ch. 17-40, F.A.C. 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., Ch. 17-40, F.A.C. 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 subsections 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 subsections (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 subsection 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 subsections (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 Ch. 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.

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), (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.

40E-63.201 Scope.

(1) The Everglades Forever Act, in Section 373.4592(4)(b), F.S., (Everglades water supply and hydroperiod improvement and restoration) directs the district generally to correct hydroperiod problems in the Everglades ecosystem by improving water quantity reaching the Everglades, increasing the total quantity of water flowing through the system, reducing wasteful discharges of fresh water to tide, and directing the timing and distribution of water to maximize the natural balance. The Act recognizes that water supply management of the Everglades watershed is complex and subject to legal mandates of both state and federal law.

(2) To achieve this directive, several interrelated programs and projects are likely to be involved:

providing water supply to the Everglades National Park, urban areas, agricultural areas, and Florida Bay; review by the federal government of the Lake Okeechobee regulatory releases; adoption and implementation of minimum flows and levels for the Everglades Protection Area; and implementation of the Lower East Coast Water Supply Plan. Even though interrelated, each program and project is subject to individual technical, legal and administrative requirements. Complete implementation of the hydroperiod improvements could ultimately require data collection, research, analysis, report drafting, plan preparation, rule adoption, operational changes and structural improvements.

(3) The District has already begun work on several programs and projects related to hydroperiod restoration. Completion dates can be expected to vary according to the complexity of the applicable technical, legal and administrative requirements. Complete implementation may take several years and, even then, be subject to refinement for many years as additional data and analysis become available. The District intends to coordinate the various hydroperiod restoration programs and projects as they evolve over time. Accordingly, the initial implementation activities may be amended or superceded by subsequent implementation activities. In the event the Governing Board initiates operational changes in releases from Lake Okeechobee designed specifically and exclusively to address environmental water needs in the Everglades Protection Area, the replacement water delivery schedule prepared under Subpart A of this Part shall be considered pursuant to subsection 40E-63.225(5), F.A.C., or pursuant to Section 120.54(1)(c) and (d), F.S. rule development proceedings to determine whether amendments to Subpart A of this Part are necessary to meet the requirements of Section 373.4592(4)(b), F.S. All changes will be conducted in accordance with the appropriate requirements of the Administrative Procedures Act, Ch. 120, F.S.

(4) This Part contains rules adopted by the District to implement the water supply and hydroperiod improvement and restoration component of the Everglades Program, either by including them in a Subpart or referencing their location elsewhere in District rules.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History—New 11-26-95.

40E-63.211 Purpose.

This Subpart implements the Everglades Forever Act requirements that the District develop a model to quantify the amount of water to be replaced as a result of reductions of flow to the Everglades Protection Area from BMP implementation and publish a notice of rulemaking on the model no later than July 1, 1995. The timing and distribution of the replaced water is to be directed to maximize the natural balance of the Everglades Protection Area. This Subpart is based on the best information available at the present time. Amendments to incorporate new methodology or to coordinate better with other programs, plans or rules can be expected and shall be made in accordance with Ch. 120, F.S.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History—New 11-26-95.

40E-63.212 Definitions.

(1) "Averaging period" means the current water year and the four preceding water years, i.e., the five water years prior to the beginning of a release period on October 1.

(2) "Base period" means the 10 year period from October 1978 – September 1988.

(3) "Current water year" means the year beginning October 1 and ending September 30 for which a replacement water allocation is quantified.

(4) "Release period" means the five months immediately following a current water year during which the replacement water allocation calculated for that year is released. The release period begins on October 1.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History—New 11-26-95.

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

(1) This section outlines the model to be used to calculate the volume of water needed to compensate for reductions in runoff from the EAA resulting from implementation of BMPs pursuant to Ch. 40E-63, F.A.C. Replacement water volumes refer to flows reaching the Water Conservation Areas or Stormwater Treatment Areas. Replacement water volumes do not include any flows released for urban water supply or agricultural water supply.

(2) The model is based upon hydrologic data collected during the base period. Procedures for calculating EAA runoff and rainfall are as follows:

(a) Total EAA Runoff is calculated from daily flow measurements obtained from the District's data base. The data base identifiers are listed in the following table:

SEE FLORIDA ADMINISTRATIVE CODE FOR "TABLE 1 - RUNOFF"

1. The EAA Runoff equation is:

$$\begin{aligned} \text{Runoff} = & - \text{Minimum} (0, S3 + G88 + \\ & G136 - S8 - G200) \\ & - \text{Minimum} (0, S2 - S6 - S7 - S150) \\ & - \text{Minimum} (0, HGS5 - S5A5AW - G250) \end{aligned}$$

2. The volume of EAA Runoff discharged to the South (Water Conservation Areas) is calculated from daily flow measurements using the following equation:

$$\begin{aligned} \text{Runoff to} & = \text{Runoff} + \text{Minimum} (0, S3) + \text{Minimum} (0, S2) + \text{Minimum} (0, \\ \text{South} & \text{HGS5}) \end{aligned}$$

3. The data used in the above equations will be adjusted by the District to account for any new inflows or outflows from the EAA developed in the future in order to ensure that replacement water volume is not affected by future reductions in the EAA contributing watershed area, including those changes caused by the construction of Stormwater Treatment Areas.

(b) EAA Rainfall is calculated from measurements obtained from the District's data base. It is calculated as the weighted sum of daily rainfall measurements at 9 rainfall monitoring stations. The data base identifiers for rainfall stations and station weights are listed on the following table:

SEE FLORIDA ADMINISTRATIVE CODE FOR "TABLE 2 - RAINFALL STATIONS"

(3) The model calculates the annual replacement water volume based upon:

(a) Volume of runoff from the EAA under base-period conditions, adjusted for variations in annual rainfall;

(b) Observed runoff reduction for the averaging period;

(c) Percentage of EAA runoff which was discharged to the Water Conservation Areas during the

averaging period;

(d) Future reductions in EAA contributing watershed area, including those due to construction of Stormwater Treatment Areas.

(4) The equations for calculating the annual replacement water volume (1000 acre-ft.) are:

Replacement Volume = Predicted Runoff × Runoff Reduction × Area Factor × Fraction South

Predicted Runoff = Total Runoff for Current Water Year Predicted from Base Period Rainfall/Runoff Regression (1000 acre-ft.)

= $-1585.6 + 53.87 \times \text{Rainfall}$

Rainfall = Total EAA Rainfall for Current Water Year (inches)

Area Factor = Factor to Account for Change in Watershed Contributing Area

= Average Area in Current Water Year/Average Area in Base Period

Average Area for Base Period

= 523,791 acres (Everglades Protection Project, Conceptual Design, February 15, 1994)

Runoff Reduction = Measured Runoff Reduction for Averaging Period

= $1 - (\text{SIGMA}) (\text{Observed EAA Runoff}) / (\text{SIGMA}) (\text{Predicted Runoff} \times \text{Area Factor})$

(SIGMA) = Sum over Averaging Period

Fraction South = Fraction of Total Runoff Discharged to South During Averaging Period

= $(\text{SIGMA}) (\text{EAA Runoff to South}) / (\text{SIGMA}) (\text{EAA Total Runoff})$

(SIGMA) = Sum over Averaging Period

(5) If measurements required to calculate the annual replacement water volume are not available due to delays in data processing, recorder malfunction, etc., values will be estimated based upon best available methods. Measurements of rainfall and runoff volume required for the above computations shall be available within 75 days of data collection.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History—New 11-26-95.

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

(1) The average annual allocation will be delivered each year in accordance with Section 373.4592(4)(b), F.S.

(2) Under typical hydrological conditions, the average annual allocation will be delivered during the replacement period according to the following fixed percentages, which are designed to produce future flows (runoff + makeup) characteristic of the seasonal distribution of flows from the EAA under more natural conditions: October 28.7%; November 22.8%; December 26.5%; January 14.9%; February 7.1%.

(3) Replacement water deliveries will be made to the Water Conservation Areas before the Stormwater Treatment Areas (STAs) are operational. Replacement water deliveries will be made to

the STAs after they are operational, except when the delivery is likely to cause hydraulic bypass around an STA or otherwise hinder its performance.

(4) Replacement water deliveries will not be made when delivery is infeasible due to conveyance constraints south of Lake Okeechobee, when individual Water Conservation Areas (or their upstream Stormwater Treatment Areas) exceed regulation schedule, or during a Level 1 Alert.

(5) Under extreme hydrological conditions, the replacement water delivery schedule shall be submitted to the Governing Board for consideration under Section 373.4592(4)(b), F.S. Extreme conditions include those under which:

(a) The replacement water allocation is likely to be discharged as a regulatory release from the Water Conservation Areas to tidewater or to cause detrimental flows to Everglades National Park; or

(b) The water level in Lake Okeechobee is at a warning stage or lower as defined in the Lake Okeechobee Water Supply Management Plan.

(6) Differences between the allocated and delivered volumes will not be carried forward from one month to the next.

(7) Replacement water will be delivered on a monthly basis before any other flows are released to the Water Conservation Areas or Stormwater Treatment Areas for environmental purposes.

Rulemaking Authority 373.044, 373.113, 373.4592 FS. Law Implemented 373.4592(4)(b) FS. History—New 11-26-95.

40E-63.301 Scope.

(1) The 1994 Everglades Forever Act (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 subparagraphs (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

subparagraphs (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 subparagraph (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 (1)-(10):

(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.

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 (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, (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, (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, (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 (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, (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, (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, F.A.C., 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, (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.

DESCRIPTION**REGULATED PORTION OF EVERGLADES AGRICULTURAL AREA
S-5A, S-6, S-7 AND S-8 BASINS
PALM BEACH, BROWARD AND HENDRY COUNTIES****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 (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, southwestery 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 southwestery 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 (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-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.

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.

EAA Basin Compliance

INTRODUCTION

This Appendix sets forth the procedures the District will follow in the future 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 installation of farm-level BMPs. The determination requires calculation of future TP load leaving the structures from the EAA (location shown in Figure A4 and listed in Table A1). The load will also include phosphorus carried into Lake Okeechobee through backpumping when this occurs. It also requires the adjustment for pass-through flows released from Lake Okeechobee to 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. The methods are improved continuously as new equipment becomes available and technology improves. However, existing methods of data collection are continued concurrently with the new methods for a substantial period of time. 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 - April 30, annually beginning in 1996, 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.

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, which is published by reference and incorporated into this Chapter. They are also available on diskette.

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 in the future for compliance will be collected by automatic sampler. 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. Grab samples will also be continued until the relationships

between results from automatic and manual methods has been sufficiently established. After that time, grab samples will 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 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 EAA structures, and (3) calibration of AVM systems for future use as an additional source of flow data.

Efforts are currently under way to establish a single time series of flow data calculated at each flow station. A prioritized list of sources of stage and control operations data will be 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 is being intensified to provide discharge measurements at all major EAA structures. Statistical analyses are under way 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 will ensure 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 will be 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 will 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

The future TP load will 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 (water years 1978 - 1988). The estimation is based on hydrologic data collected from any 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 in the model by specifying a required level of statistical confidence in the prediction of the long-term average TP load. The 90th percentile confidence level was selected as reasonable.

Evaluation of the EAA Basin for compliance with the 25% TP load reduction requirement will be based upon the following:

1. If the actual measured TP loading from the EAA Basin in a future May 1 - April 30 period is less than the model TP load estimate (Target), 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, the actual percentage of the base period TP load which must be met to be determined "In Compliance" will be reduced to reflect land taken out of agricultural production. However, the average unit area reduction required will be the same, both pre- and post-STA completion.

2. If the actual measured 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 and the EAA Basin will not be determined to be "Not In Compliance" for that period only. Any periods in which the Target is suspended will 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 three 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 measured 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 will 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 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 will 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:

$$1n(L) = -7.998 + 2.868 X + 3.020 C - 0.3355 S$$

$$[\text{Explained Variance} = 90.8\%, \text{Standard Error of Estimate} = .183]$$

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:

$$m_1 = \text{Sum} [r_i] / 12$$

$$m_2 = \text{Sum} [r_i - m_1]^2 / 12$$

$$m_3 = \text{Sum} [r_i - m_1]^3 / 12$$

$$X = 1n (12 m_1)$$

$$C = [(12/11) m_2]^{.5} / m_1$$

$$S = (12/11) m_3 / m_2^{1.5}$$

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 will be tracked by comparing the measured EAA Load with:

$$\text{Target} = \exp [-7.998 + 2.868 X + 3.020 C - 0.3355 S]$$

$$\text{Limit} = \text{Target} \exp (1.476 SE F)$$

$$\text{SE} = .1833 [1 + 1/9 + 5.125 (X-X_m)^2 + 17.613 (C-C_m)^2 + 0.5309 (S-S_m)^2 + 8.439 (X-X_m) (C-C_m) - 1.284 (X-X_m) (S-S_m) - 3.058 (C-C_m) (S-S_m)]^5$$

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 1n(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 A-1

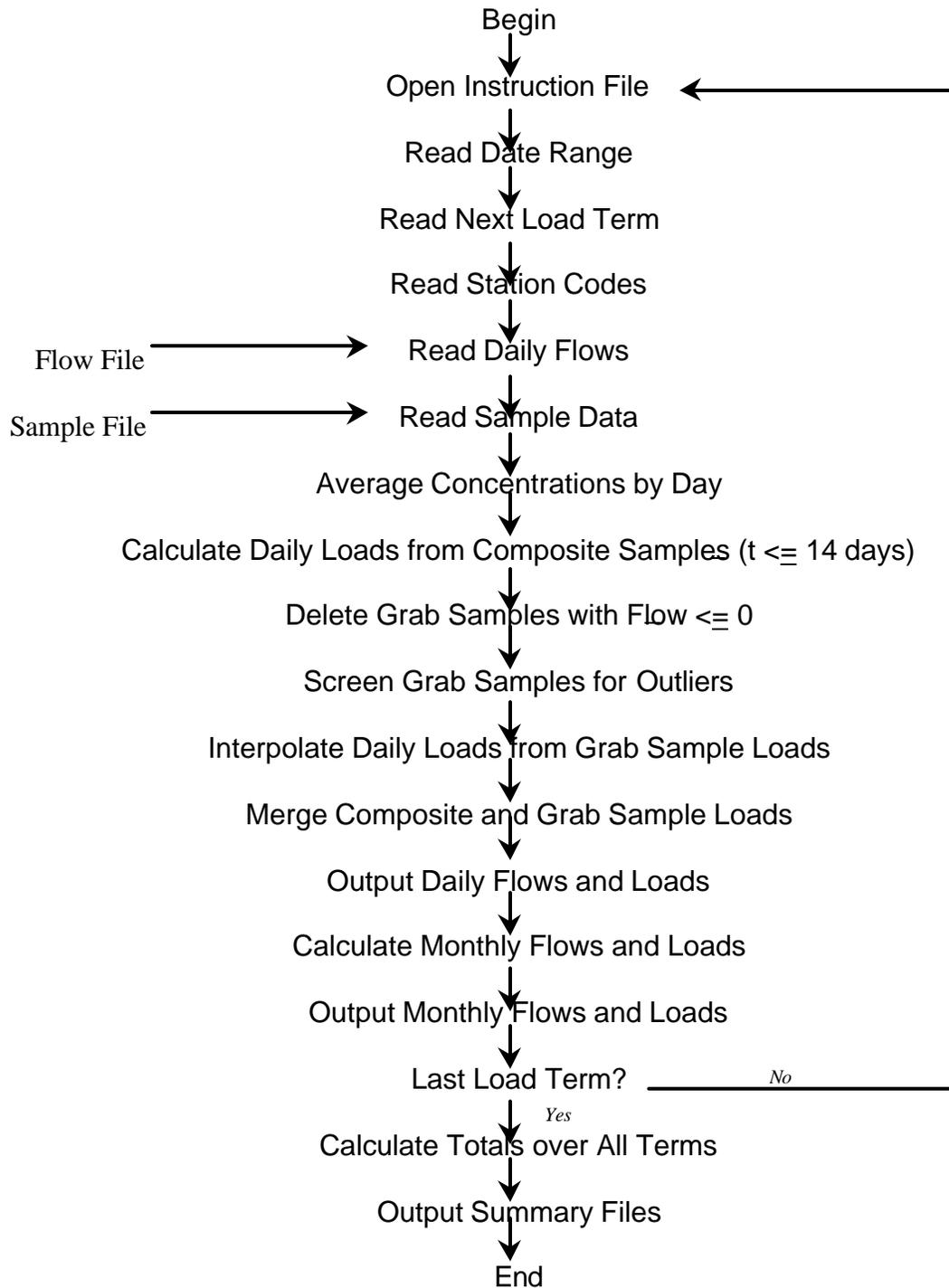


Table A-1
EAA Basin Drainage Structures Database Keys To Flow Data Time Series

Structure	Preferred
S-352 Complex	15068
S-2 Complex	15021
S-3 Complex	15018
S-5A Complex	15031
S-6	15034
S-7	15037
S-150	15041
S-8	15040
G-88	15196
G-136	15195
G-200A ⁿ	15736
G-250	16222
G-600	GG955
G-605	H3143
G-606	HD889
G-328	J0718
G-344A	J0719
G-344B	J0720
G-344C	J0721
G-344D	J0722
G349B	JA353
G350B	JA352
G-410	LX270
G-402A	LX264
G-402B	LX265
G-402C	LX266
G-402D	LX267
G-404	LX269
EBPS	LX274
ESPS	LX273

ⁿ New, flow data time series for the Holey Land pump station begins on November 25, 1991. The reference numbers in the table are keys to the data sets, known as "dbkeys".

TABLE A-2
EAA Basin Current Water Quality Sampling Methods

Structure	Collection Site	Instrument
S-352	GRAVITY	G
S-2	PUMP	A
	GRAVITY	G
S-3	PUMP	A
	GRAVITY	G
S-5A Complex	PUMP	A
	GRAVITY	G
S-6	PUMP	A
	GRAVITY	G
S-7	PUMP	A
	GRAVITY	G
S-150	GRAVITY	G
S-8	PUMP	A
	GRAVITY	G
G-88	GRAVITY	G
G-136	GRAVITY	A
G-200A	GRAVITY	G
G-250	PUMP	A
G-600	PUMP	A
G-606	GRAVITY	A
G-328	PUMP	A
G-344A	GRAVITY	A
G-344B	GRAVITY	A
G-344C	GRAVITY	A
G-344D	GRAVITY	A
G-349B	PUMP	A
G-350B	PUMP	A
G-410	PUMP	A
G-402A	GRAVITY	A
G-402B	GRAVITY	A
G-402C	GRAVITY	A
G-402D	GRAVITY	A
G-404	PUMP	A
EBPS	PUMP	A
ESPS	PUMP	A

G = grab sample primary method

A = automatic sampler primary method, grab sample back-up

FORTRAN Program For Calculating EAA Basin Flows and Phosphorus Loads**program eeatpld**

```
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:
c     >eeatpld eaa.job
c eaa.job = input ascii file specifying case conditions
c subroutines in subr.for
c maximum dimensions
c number of days = 12000 = 32+ years ~(1978-2010)
c number of grab samples = 2000 per station
c number of composite samples = 2000 per station

c array dimensions increased to handle maximum of 40 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(40),mname(4)
  common /a/ flowu(12000),wcomp(12000),wuse(12000),wusec(12000)
  common /b/ wgrab(12000)
  common /d/ dgrab(2000),dcomp(2000),cgrab(2000),ccomp(2000),
& x(2000),iym(400),qsave(400,40),wsave(400,40),isgn(40),
& wcsave(400,40),sumd(6),sumw(6),y(2000),prb(2000),ratio(2),
& wc(2),wg(2),ncg(2)

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
c   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
c   data iratio/0/

c read input file [eaa.job] to get station labels and input parameters
c   open(7,file=' ',status="old")

c read control parameters
c   read(7,*) title,qfile,dum8,cfile,dum8,
c   &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
cc flow date
cc
cc   nafter = nmaxc
cc
cc
cc end of modification
cc

c read date range
c   read(7,*) iymd1,dum8,iymd2,dum8,idchk,dum8
c   write(*,*) 'sample date range =',iymd1,iymd2
c   read(7,*) ofile0,dum8,ofile5,dum8,ofile1,dum8,ofile2,dum8,
c   &   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
c   read(7,*)

c jdatei() converts yyyyymmdd to julian dates (days from Jan 1, 1900)
c   jdbase=jdatei(dbase)
c   jymd1=jdatei(iymd1)
c   jymd2=jdatei(iymd2)
c   jdchk=jdatei(idchk)
c   d0=jymd1-1

c open output file for sample statistics
c   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,jymd1, jymd2,qlab,nq,flowu)
c file start date must be <= jymd1
c jymd2 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(jymd1),kdate(jymd2)

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 yymmdd 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
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
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(icompl.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
140                    write(*,140) kdate(dgrab(i)),cgrab(i),prb(i)
&                    format(' ***outlier: date =',i9,
&                            ', conc = ',f10.1, ', prob = ',f8.3)
                endif
150                continue
                ngrab=m
            enddo
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
      wusec(i)=0.
      meth=1

c meth=2 use composite load
    else if(wcomp(i).gt.0.) then
      wusec(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
    wusec(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)+wusec(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),
&ratio(1),ratio(2),qdang
172      format(1h",a8,1h",i5,2i9,3i5,2i9,2f8.4,f9.1)

      write(*,235)
235      format(' station      ncomp      ngrab',
& ' days1  ratio1  days2  ratio2')
cc & ' days1  ratio1  days2  ratio2 usedratio') changed 2/27/98
      write(*,245) ulab,ncomp,ngrab,ncg(1),ratio(1),
&ncg(2),ratio(2)
cc &ncg(2),ratio(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)-wsave(i,j)
                x(4)=x(4)+wsave(i,j)
            elseif(isgn(j).gt.0) then
c grab & composite outflows
                x(1)=x(1)+wsave(i,j)-wsave(i,j)
                x(2)=x(2)+wsave(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)
        wsave(m+1,nsta)=wsave(m+1,nsta)+wsave(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 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(37)
        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",

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```

&          "g350b",      "ebps",      "esps",      "g410",
&          "g402a",      "g402b",      "g402c",      "g402d",
&          "g404" /

c number of daily flows in input file
  data nqin /37/
  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

c Modify East Beach flows to account for portion of basin
c that was previously in the EAA.
  qebps=0.813*qebps
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 (nriver qs2n) basins
  qs2n =(qs2 / (1.534769))
  qs2h = qs2 - qs2n

c inflow to north new river canal
  qin = amax1(0., qs2n) - amin1(0.,qs7) - amin1(0., qs150)

c total flow thru in north new river canal
  ft = amin1(qin, amax1(0., qs7)+amax1(0., qs150))
  do i = 1, nqin
    if(clab .eq. labs(i)) then
      ind = i
      go to 200
    endif
  enddo
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), 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 - nnriver 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 g136 inflow
16  x = qg136
    go to 29

c holeyland
17  x = qholey
    go to 29

c s8 flowthru
18  if(qs3 .le. 0) then
      x = 0.
    else
      x = amin1(qs3, amax1(0.,
&   qs8-qg88-qg136+qholey-qg606-qg605+qg349b+qg350b-qg344a-
&   qg344b-qgq344c-g344d-qg402a-qg402b-qg402c-qg402d+qg410+
&   qg404))
    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=qq605
    goto 29

c sta6 outflow
22  x=qq606
    goto 29

c sta5 outflows
23  x=qq344a
    goto 29
24  x=qq344b
    goto 29
25  x=qq344c
    goto 29
26  x=qq344d
    goto 29

c sta2 supplementary inflow

27  x=qq328
    goto 29

c sta5 inflows from miami canal
28  x=qq349b
    goto 29
30  x=qq350b
    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=qq410
    goto 29

c Rotenberger outflows - EAA inflow
34  x=qq402a
    goto 29
35  x=qq402b
    goto 29
36  x=qq402c
    goto 29
37  x=qq402d
    goto 29

c G404 outflow
38  x=qq404
    goto 29

29  values(nq) = x

    go to 90
```

```

100  idate=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 iymmdd(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 yyyymmdd format
j=id-19000000
jdatei=jdate(float(j))
return
end

function kkdate(d)
c returns yyyymmdd for input in yymmdd
kkdate=d+19000000
if(d.le.500000.) kkdate=kkdate+1000000
return
end

function kdate(id)
c returns integer date yyyymmdd 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 cochrans, 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
```

Flow Computation Methods Used To Calculate EAA Basin Flows

TABLE OF CONTENTS

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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/sec ²
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

$$Q = C_{uf} L H^{n_1}$$

Spillway
S-5AS
S-7
S-8
S-351
S-352
S-354

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

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

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

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
C_0 - C_9	=	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

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:

$$Q = C_0 + C_1X + C_2Y + C_3X^2 + C_4XY + C_5Y^2 + C_6X^3 + C_7YX^2 + C_8XY^2 + C_9Y^3$$

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 = reference 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

EAA Basin 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.

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	3.918	0.7636	0.9999	50.31
S6	3.907	0.7302	0.7476	49.77
S7	3.835	0.7198	0.6112	46.27
S8	3.822	0.8409	0.8409	45.68

6. The AUAL for the entire EAA Basin (ALOAD, lbs/yr) 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:

$$FTLOAD = ALOAD * Y$$

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:

$$FTLOAD = \text{SUM} [MUAL * A_j] + \text{SUM} [AUAL_i * A_i]$$

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.)	

A5-1

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>

AG-1

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	Avoid excess application of phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific).
	5	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

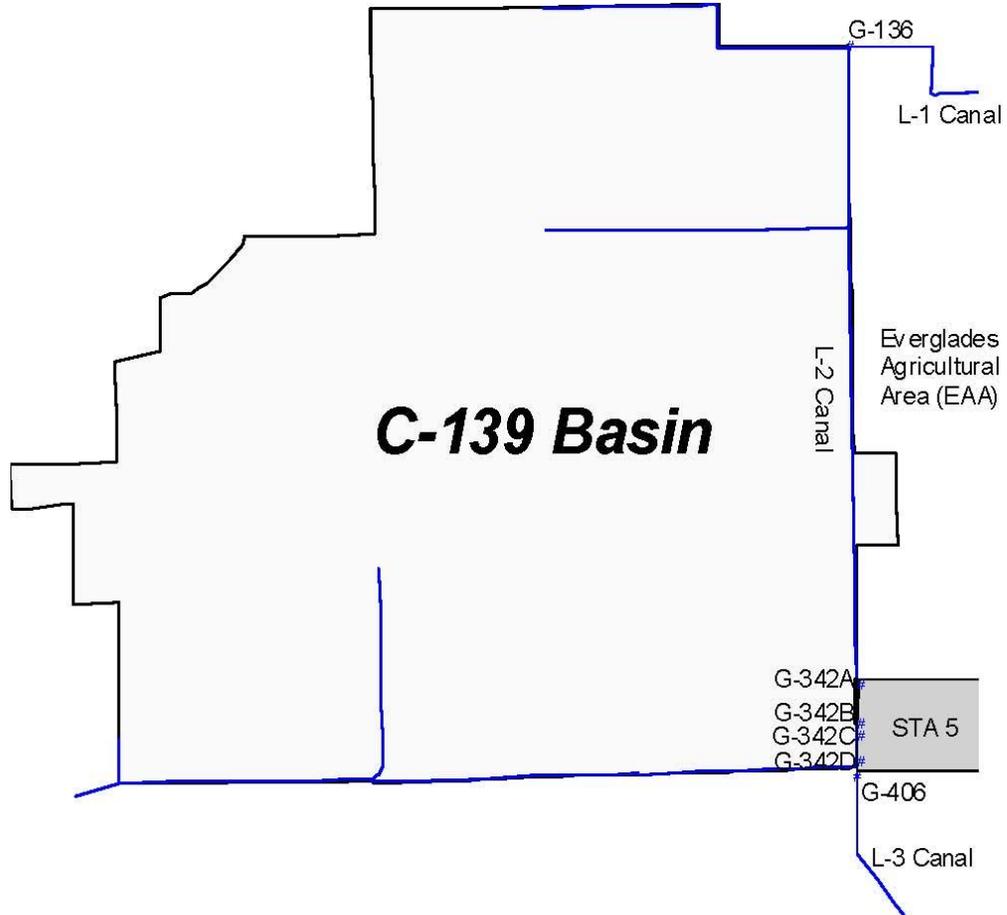


Figure B-2
Flowchart - Calculation of C-139 Basin Phosphorus Loads

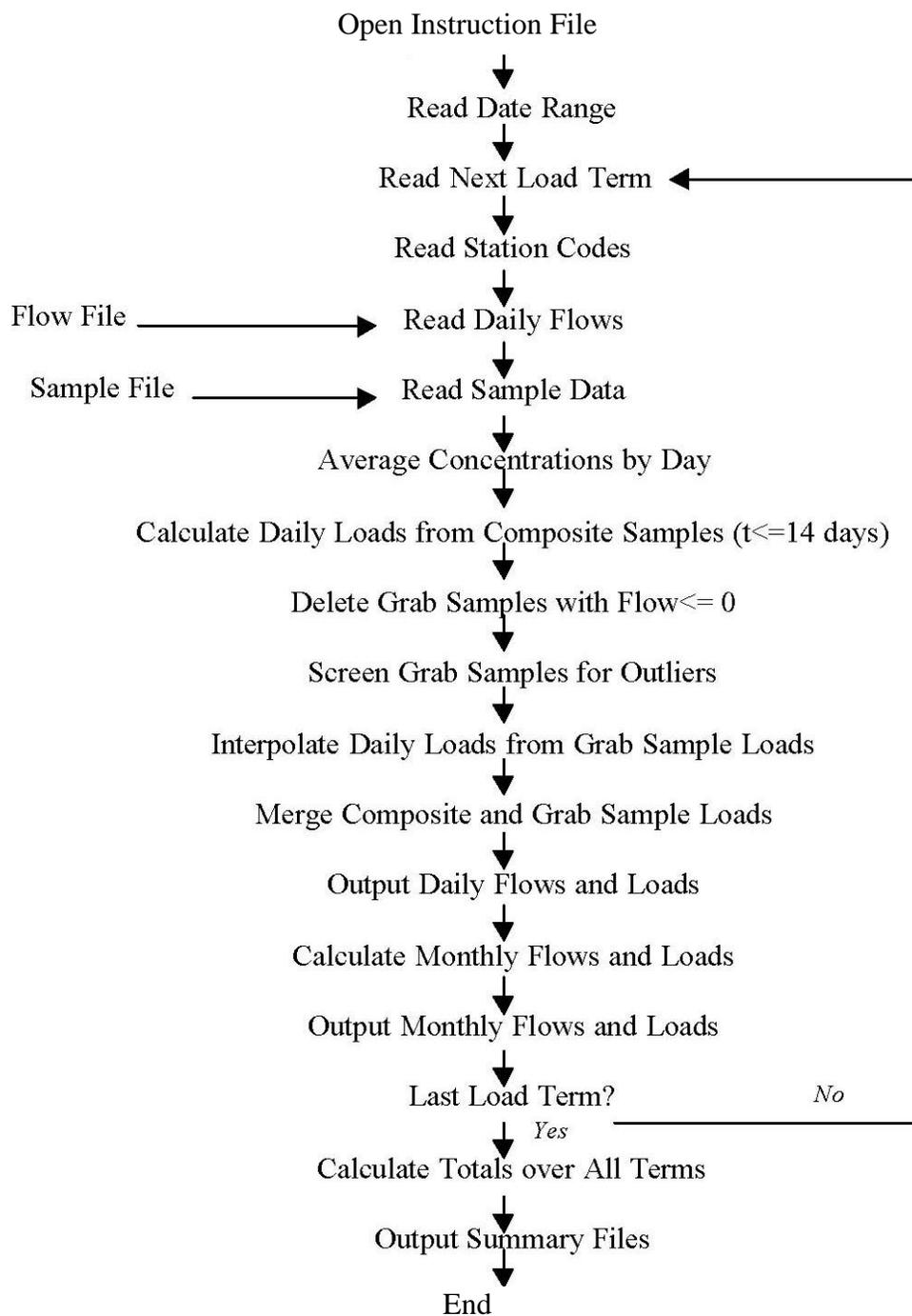
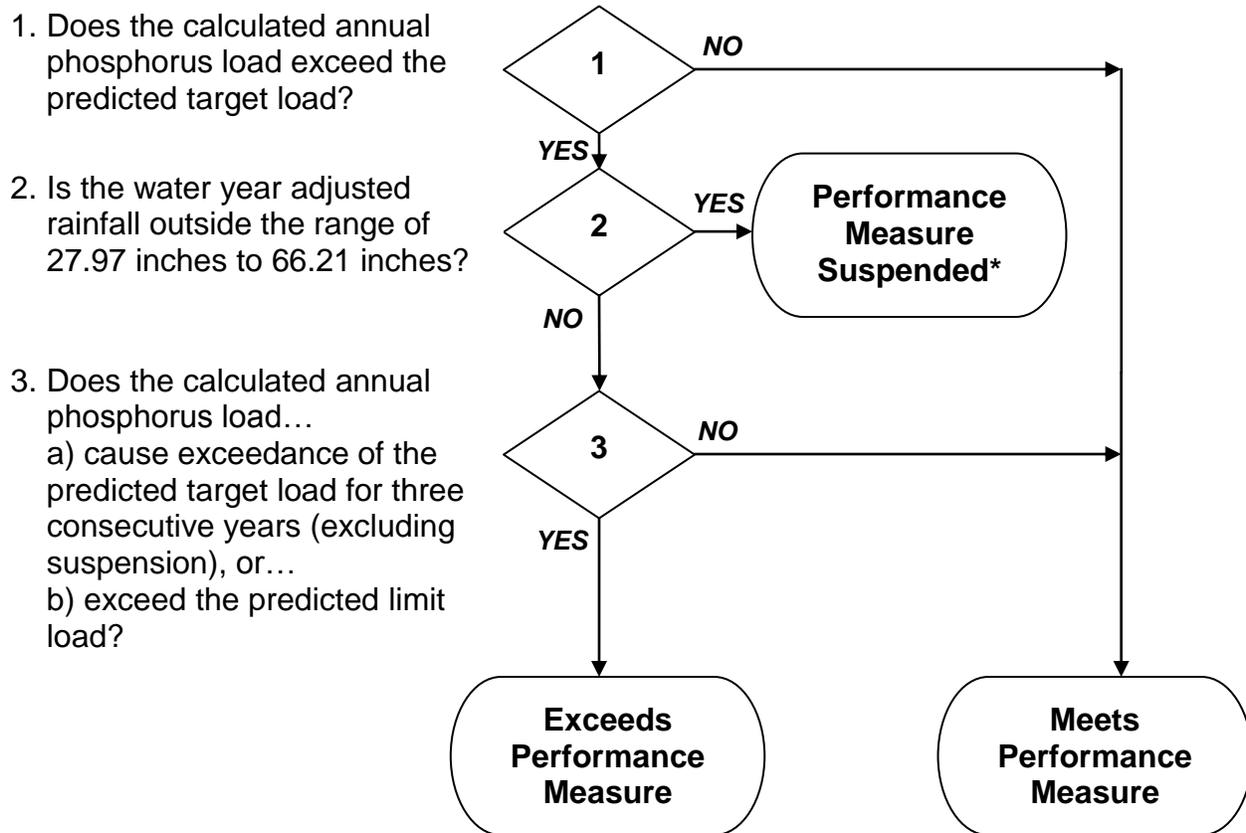


Figure B-3
Flowchart – C-139 Basin Annual Performance Determination



* 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**

```
c C139TPLD.job = input ascii file specifying case conditions
c version of EAATPLD modified for C139 Basin Calcs
c w. walker  january 2000
c handles 13000 days, 500 months
c handles yymmdd or yyyymmdd 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,slab_g
      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/4/
      data mname/'noflow','compos',' grab',' mcomp' /
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,imisq,dum8,
*      nmaxc,dum8,dbase0,dum8,dbase,dum8,sig,dum8,
*      iratio,dum8

c read date range & other parameters
      read(7,*) iymd1,dum8,iymd2,dum8,iymfirst,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(iymd1)
    jymd2=jdate(iymd2)

    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 = composite station code
c slab_g = grab station code
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,slab_g,qlab,ipos,
  & icomp,isgn(nsta)
  write(*,*)
  write(*,*) 'term = ',ulab
  write(*,*) 'sample stations (composite, grab) = ',slab,slab_g
  write(*,*) 'flow label = ',qlab
  usave(nsta)=ulab

c read daily flow file
  call flowread(8, jymd1, jymd2,qlab,nq,qdate,flow,imisq)
c file must contain entire data range (iymd1 to iymd2);
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.jymd1) go to 999
  if(qdate(nq).le.jymd2) then
    jymd2=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=jymd1-1
  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 date range, including nafter days beyond calc interval
  if(jdd.lt.jyml.or.jdd.gt.jyml+nafter) goto 40

c rescale concentration and set to absolute value
  conc=sf*abs(conc)

c check station match - composite
  if(ic8(dum8,slab).gt.0) then

c check for valid composite type code
  do j=1,nvalidc
    if(itype.eq.ivalidc(j)) goto 550
  enddo
  endif

c check for station match - grab
```

```
        if(ic8(dum8,slab_g).gt.0) then
c   check for composite vs. grab sample
        do j=1,nvalidg
            if(itype.eq.ivalidg(j)) goto 551
        enddo
        endif
c no station match
        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(icompl.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

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_g,qlab,'Grab',
&                 k,k,flow(dgrab(i)),cgrab(i)

            write(*,347) ulab,slab_g,qlab,'Grab',
&                 k,k,flow(dgrab(i)),cgrab(i)
        enddo
```

```

        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

        ngt=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
    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

  if(ngrab.gt.0) 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 compute q-wtd-mean composite conc after base pd
  qcom=0.
  ccom=0.
  do i=1,nq
    if(qdate(i).gt.jdbase.and.wcomp(i).gt.0.) then
      qcom=qcom+flow(i)
      ccom=ccom+wcomp(i)
    endif
  enddo
  ccom=ratv(ccom,qcom)/factor
  write(*,*) 'compos conc after base pd (meth=4) =',ccom

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

    else
cc  added january 2000
c  meth=4  positive flow day with missing composite
c          but no grab samples available for interpolation
c          use q-wtd-mean conc for composite samples after base period
        meth=4
        wuse(i)=ccom*flow(i)*factor
    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 yyyymm
        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.and.kym.ge.iymfirst)
&            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 i=1,m

```

```

        if(iym(i).ge.iymfirst) then
530          write(12,"(i6,50f12.2)") iym(i),(qsave(i,k),k=1,nsta)
        endif
        enddo
        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,"(a6,3x,50a12)") 'yyyymm',(usave(i),i=1,nsta)
          do i=1,m
            if(iym(i).ge.iymfirst) then
              write(12,"(i6,50f12.2)") iym(i),(wsave(i,k),k=1,nsta)
            endif
          enddo
          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
          if(iym(i).ge.iymfirst) then
            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)
          endif
        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,idades,
&          values,imisq)
c read daily flows - generalized from eaatpld
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) then
    if(imisq.gt.0) return
    q(iq)=0.
endif

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 yyyyymmdd 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 cochrane, 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 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

- sampling period (not applicable to sub-basin monitoring).
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.

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

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	

Incorporated by reference in subsection 40E-63.430(2), F.A.C.

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)

{PRIVATE }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		<input type="checkbox"/> Optional	<input type="checkbox"/> 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.)

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.