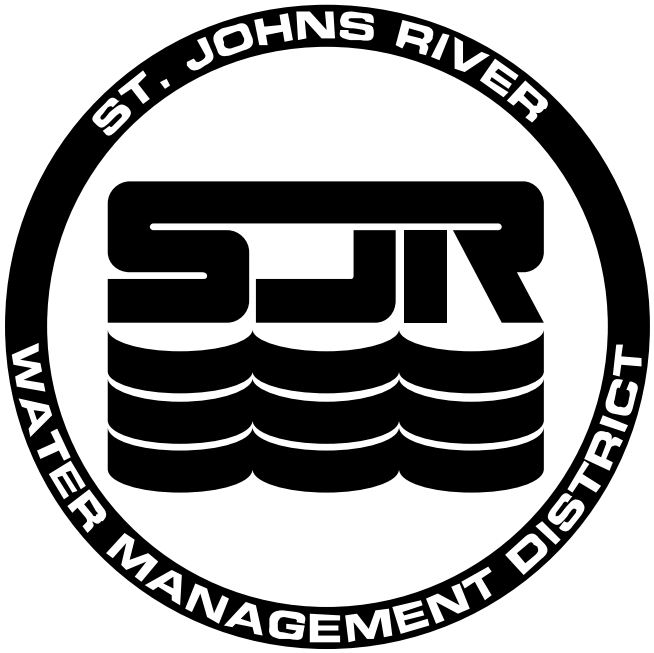
PERMIT INFORMATION MANUAL



June 1, 2018

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 Reid Street
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(386) 329-4500

ABOUT THIS MANUAL

This manual is a compilation of information that will be useful to anyone interested in the St. Johns River Water Management District's (SJRWMD) environmental resource permitting (ERP) program. It was developed as a result of the enactment of section 373.4131 of the Florida Statutes which directed the Department of Environmental Protection (DEP) and the water management districts to adopt statewide ERP rules. In SJRWMD, the relevant rules are contained in chapters 62-330, 40C-1, 40C-4, 40C-8, 40C-41, and 40C-44, F.A.C., and for mitigation banks include chapter 62-342, F.A.C. In addition, applicants are required to demonstrate compliance with the provisions of SJRWMD's Environmental Resource Permit Applicant's Handbook, which has been incorporated by reference. The SJRWMD's Handbook consists of two volumes:

- Volume I (which applies statewide and is available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09390 http://www.flrules.org/Gateway/reference.asp?No=Ref-09391 and from the District), and

- SJRWMD Volume II (included as Part A in this manual and available on the District's website at www.sjrwmd.com and at http://www.flrules.org/Gateway/reference.asp?No=Ref-09405.)

Part A of the manual contains SJRWMD Volume II which is based on, and merges many provisions of, the District's previous three applicant's handbooks: Applicant's Handbook: Management and Storage of Surface Waters (December 27, 2010), Applicant's Handbook: Regulation of Stormwater Management Systems, Chapter 40C-42, F.A.C. (December 27, 2010), and Applicant's Handbook: Agricultural Surface Water Management Systems (December 27, 2010). The October 1, 2013 version of Part A was revised on June 1, 2018.

Part B of the manual contains surface water management design aids and examples, and methodologies, that are all intended to assist applicants in designing projects (surface water management systems) that will meet their needs as well as the requisite water quality and water quantity requirements. The examples are designed to illustrate how the District's rules and aids may be used in the design of a particular project to meet these permitting requirements.

Part C of the manual contains guidance documents from DEP to the water management districts that may also be useful to applicants as they design projects for consideration by the District.

Part D contains copies of the applicable rules in chapters 62-330, 40C-1, 40C-4, 40C-8, 40C-41, and 40C-44, F.A.C., and the mitigation banking rules in chapter 62-342, F.A.C.

Part E contains copies of forms that the District has incorporated by reference in title 40C, F.A.C.

The design aids and examples and methodologies and the guidance documents in the manual are intended to provide general information only. Specific projects may involve additional or different design considerations in order to address site-specific issues. These parts of the manual do not constitute additional rule criteria.

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A. ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK, VOLUME II: FOR USE WITHIN THE GEOGRAPHIC LIMITS OF THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

June 1, 2018

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 Reid Street
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PART I
INTRODUCTION, ORGANIZATION, DEFINITIONS AND APPLICABILITY

1.0 Introduction *Revised 6/1/18*

This is Volume II of a two-volume Applicant's Handbook that is designed to assist persons in understanding the rules, procedures, standards and criteria of the environmental resource permit (ERP) program under part IV of chapter 373 of the Florida Statutes (F.S.). Within the St. Johns River Water Management District, the ERP program is governed by chapters 373, 403 and 120, F.S. and chapters 62-330, 40C-1, 40C-4, 40C-41, and 40C-44, F.A.C. This handbook volume accompanies Applicant's Handbook – Volume I (General and Environmental). Volume II and portions of Volume I are incorporated by reference in chapter 62-330, F.A.C., and are, therefore rules of the Department of Environmental Protection (DEP). In accordance with paragraph 373.4131(2)(a), F.S. (2012), they are also rules of the District.

This Volume includes:

- Design and performance standards and criteria for water quality and quantity for stormwater management systems, including alternative criteria for those systems
- Explanations of standards and criteria pertaining to water flows and levels, flood protection and the design of dams
- Design and performance standards for agricultural surface water management (Chapter 40C-44, F.A.C.)
- Descriptions of drainage basins and regional watersheds
- Explanations of basin criteria (Chapter 40C-41, F.A.C.)
- Descriptions of District-specific thresholds and exemptions referenced in chapter 62-330, F.A.C.

This Volume should be used in conjunction with Volume I, which provides general background information on the ERP program including points of contact, a summary of the statutes and rules used to authorize and implement the ERP program, and forms used to notice or apply to the District for an ERP authorization, except those forms related to agricultural systems which are incorporated by reference in rules 40C-44.061 and 40C-44.101, F.A.C. Volume I also provides discussion of:

- Activities that are regulated by the ERP program
- Types of permits, permit thresholds, and exemptions
- Procedures used in the review of ERPs

- Conditions for issuance of an ERP, including a detailed discussion of the environmental criteria that are used for activities located in wetlands and other surface waters
- Erosion and sediment control practices to prevent water quality violations
- Operation and maintenance requirements and copies of maps used in implementing the provisions of the ERP program

The term "District" or "SJRWMD" where used in this Volume shall apply to the Department of Environmental Protection, the St. Johns River Water Management District or a delegated local government as applicable in accordance with the division of responsibility specified by the operating agreement incorporated by reference in subsection 62-330.010(3), F.A.C., except where a specific agency is otherwise identified. In cases where conflicting or ambiguous interpretations of the information in this Volume result in uncertainty, the final determination of appropriate procedures to be followed will be made by reference to chapters 120 and 373, and chapters 40C-1, 40C-4, 40C-41, 40C-44 and 62-330, F.A.C.

References to a section or subsection shall include all parts of the section or subsection unless otherwise specified.

1.1 Organization *Revised 6/1/18*

This Volume is divided into eight parts:

Part I – Introduction, Organization, Definitions and Applicability
Part II – General Criteria
Part III – Stormwater Quantity/Flood Control
Part IV – Stormwater Quality
Part V – Best Management Practices
Part VI – Basin Criteria
Part VII - Agricultural Surface Water Management Systems
Part VIII – Appendices

1.2 District-Specific Thresholds

1.2.1 Background

Rule 62-330.020 sets forth the thresholds for when an environmental resource permit must be obtained under part IV of chapter 373. Subsection (2) of this Rule requires a person to obtain an environmental resource permit before constructing, altering, operating, maintaining, removing, or abandoning any new project that, by itself or in combination with an activity conducted after October 1, 2013, cumulatively results in "[a]ny project exceeding the thresholds in section 1.2 (District-specific thresholds) of the applicable Volume II" unless the

proposed project is governed by subsection 62-330.020(1), F.A.C. [62-330.020(2)(i), F.A.C.]

Subsections 1.2.2 and 1.2.3 of this Volume set forth the District-specific thresholds for activities within the St. Johns River Water Management District.

The District encourages applicants to consult section 2.0 of Volume I which contains definitions of important terms such as “project” and “activity”.

1.2.2 Activities in the Wekiva Riparian Habitat Protection Zone

A permit under chapter 62-330 is required for any activity that is located wholly or partially within the Wekiva River Hydrologic Basin’s Riparian Habitat Protection Zone (RHPZ) described in paragraph 40C-41.063(3)(e), F.A.C. When an activity requires a permit pursuant to this subsection, the review for determining compliance with all relevant permitting requirements will be conducted in accordance with rule 62-330.054.

1.2.3 Agricultural Surface Water Management Systems *Revised 6/1/18*

A permit under chapter 62-330, F.A.C., is required for the alteration, maintenance and operation of certain existing agricultural surface water management systems and for the construction, maintenance and operation of certain new agricultural surface water management systems, in accordance with chapter 40C-44, F.A.C. (Environmental Resource Permits: Regulation of Agricultural Surface Water Management Systems). These systems are described in rule 40C-44.041, but are also described in this subsection and in Part VII of this Volume.

Agricultural operations that are required to obtain a permit shall satisfy the requirements of the District in terms of the quality of water discharged from the system, by implementing the performance standards and water quality practices described in Part VII of this Volume.

A permit for an agricultural system is required under this subsection and chapter 40C-44, F.A.C., if the activity exceeds any of the following thresholds:

(a) The activity incorporates pumped discharges from an existing agricultural surface water management system, when:

(1) the pumps are stationary or portable facilities, and

(2) the pump(s) have a capacity, either individually or cumulatively, of 10,000 GPM or greater. [40C-44.041(1)(a), F.A.C.]

(b) The activity causes or contributes to a violation of state water quality standards in waters of the state, when:

(1) the discharge is pumped or gravity drained, and

(2) the District has considered the following information on a case-by-case basis:

a. water quality monitoring data collected by the District or other agency,

b. the size of the agricultural operation and the amount of stormwater and associated wastewater reaching waters of the state, relative to the size and nature of the immediate drainage basin,

c. the means of conveyance of stormwater and associated wastewater to waters of the state,

d. characteristics of the site including the slope, vegetation, rainfall and other factors related to the likelihood or frequency of discharge of stormwater and associated wastewater to waters of the state,

e. the status, results and recommendations of available basin-specific studies, including those conducted as part of a Surface Water Improvement and Management Plan or pursuant to chapter 62-40, F.A.C., and

f. the existence of mixing zones, variances or site specific alternative criteria granted by DEP pursuant to chapters 62-4 and 62-302, F.A.C. [40C-44.041(1)(b), F.A.C.]

(c) An applicant proposes construction, maintenance and operation of new agricultural surface water management systems, or alteration of existing systems, which:

(1) drain an agricultural area greater than 2 acres;

(2) are below thresholds described in paragraphs 62-330.020(2)(a) and (e), F.A.C.;

(3) serve a project with a total land area less than 40 acres; and

(4) do not provide for the placement of 12 or more acres of impervious surface which constitutes 40 or more percent of the total land area. [40C-44.041(2), F.A.C.]

When construction or alteration of an agricultural surface water management system that requires a permit pursuant to this subsection also requires a permit because it exceeds one or more thresholds listed in paragraphs 62-330.020(2)(a),(b), (c), (e),(f),(g),(h), or (j), F.A.C., or in subsection 1.2.2 of this Volume, the review for determining compliance with all relevant permitting requirements will be conducted in accordance with rule 62-330.054.

When construction or alteration of an agricultural surface water management system requires a permit solely pursuant to this subsection or paragraph 62-330.020(2)(d), F.A.C., the permit application for such activity shall be filed, and shall be reviewed and acted upon, in accordance with chapter 40C-44, F.A.C., and Part VII of this Volume. The District encourages applicants to contact the District's Agricultural Assistance Team to assist them in completing such permit applications.

1.3 District-Specific Exemptions

1.3.1 Background

Rule 62-330.051(1) exempts from permitting under chapter 62-330, F.A.C., activities that are conducted in conformance with the District-specific exemptions in Section 1.3 of Volume II applicable to the location of the activity. However, if an activity is not exempt and requires an individual ERP under chapter 62-330, F.A.C., rule 62-330.054 requires the application for the individual ERP to be prepared, submitted, reviewed and acted upon in accordance with subparagraphs 62-330.054(2)(a), (b) and (c), F.A.C., *except as otherwise provided by the ERP rules*.

Consistent with these rules, the District has established one District-specific exemption from permitting and one District-specific exemption from certain provisions of chapter 62-330, F.A.C. More specifically, subsection 1.3.2 of this Volume sets forth a District-specific exemption from permitting within the St. Johns River Water Management District while subsection 1.3.3 exempts certain agricultural systems from certain requirements in chapter 62-330, F.A.C.

1.3.2 Existing Systems

The District's rules in chapters 40C-4, 40C-40, and 40C-41, F.A.C. became effective on December 7, 1983. Before December 7, 1983, rules authorized under part IV, chapter 373, F.S. were implemented in the Upper St. Johns River and the Ocklawaha River basins as shown in Figure 1.3-1. The rules adopted on December 7, 1983 superseded all previous rules. The date of implementation is important in determining whether a

permit is required and the effective dates for the District's permitting programs are described in rule 40C-4.031. Certain systems are not required to be permitted until they are to be altered, removed, or abandoned. These systems are identified in the paragraph below.

Specifically exempted from permitting under chapter 62-330 for the purpose of construction, operation, and maintenance are:

(a) Each system or phase of a phased system which is located in the areas described in the Upper St. Johns River Basin or the Ocklawaha River Basin as depicted in Figure 1.3-1, except agricultural operations, which:

(1) Was constructed and operating under the provisions of a valid District permit on December 7, 1983; or

(2) Was not required to obtain a permit prior to December 7, 1983, and was:

a. Constructed and operating prior to December 7, 1983; or

b. Being constructed on December 7, 1983, and was completed and operating by June 7, 1984; or

c. Under construction on December 7, 1983, and which had complied with the regulations of the Florida Department of Environmental Regulation and the appropriate local governmental agency.

(3) Was constructed and operating as of March 2, 1974 for the Upper St. Johns River Basin as described in Figure 1.3-1; or

(4) Was constructed and operating as of January 1, 1975 for the portion of the Oklawaha River Basin as described in Figure 1.3-1.

(b) Each system or phase of a phased system which is located in the Lower St. Johns River Basin as described in Figure 1.3-1 and section 373.069(2)(c), F.S. (Supp. 1976), except agricultural operations, and which was:

(1) Constructed and operating prior to December 7, 1983; or

(2) Being constructed on December 7, 1983, and was

completed and operating on June 7, 1984; or

(3) Under construction on December 7, 1983, and which had complied with the regulations of the Florida Department of Environmental Regulation and the appropriate local governmental agency and was completed December 7, 1984.

(c) The exemptions listed in paragraphs (a) and (b) above apply only to those systems or phases of a phased system as such systems are set forth in its plans, specifications and performance criteria prepared and existing as of December 7, 1983 and to the extent:

(1) Construction of such system is completed, within the applicable time frames, in accordance with such plans, specifications and performance criteria; and

(2) Such system is maintained and operated in a manner consistent with such plans, specifications and performance criteria.

(d) The exemptions listed in paragraphs (a), (b) and (c) above shall not apply to those systems or phases of a phased system which on December 7, 1983 have been abandoned or removed or have ceased to operate as set forth in such system's plans, specifications and performance criteria.

(e) Those systems or phases of a phased system exempted by paragraphs (a), (b) and (c) above shall not be required to obtain a permit for construction, operation or maintenance.

(1) Any alteration of such system, or a portion thereof (including the rebuilding of such system if it has ceased to operate as set forth in such system's plans, specifications and performance criteria), shall require that a permit be obtained for such alteration, which permit shall include an authorization to alter as well as an authorization to operate and maintain such alteration. For purposes of this subsection, the following are not considered to be alterations, and consequently are not required to be permitted:

a. The relocation of pumps, provided that the pump is not moved out of the immediate vicinity of its existing location, not to another drainage basin or subbasin, and operation of the pump at the new location will not result in increased adverse impacts

to the water resource.

b. The installation of driveway and road inlets and pipes with a diameter of less than 60 inches or equivalent size within an existing surface water management system, provided that the pipe or inlet will not increase the volume of water discharged, and causes no upstream or downstream flooding.

c. The change of the location of a drainage system's secondary or tertiary drainage ditches provided that the total linear length and cross-sectional dimensions of the ditches are not changed.

d. Roadways not located in wetlands may be widened provided that fill material is not obtained by excavating ditches next to the roadway, and provided that the roadway is otherwise constructed in accordance with accepted engineering practices. Roadways not located in wetlands may be increased in height provided that the elevation of the existing centerline road grade is above the 10-year flood elevation, and provided that no increase in upstream flooding is caused.

(2) Any abandonment or removal of such system or portion thereof, shall require that a permit be obtained for such abandonment or removal.

(3) The activities in subparagraphs (e)(1)a. through d. are also exempt from permitting when conducted by agricultural operations.

(f) The amendments to subsections 10.7.2, 10.7.4, 10.7.5., 16.1.3 and 16.1.5, Applicant's Handbook: Management and Storage of Surface Waters, effective September 25, 1991, shall not apply to each system for which the District has issued an individual or general permit pursuant to Chapter 40C-4 or 40C-40, F.A.C., prior to September 25, 1991. This subsection applies only to the project area and plan approved in the referenced permit; however, where the referenced permit authorizes construction of a master system for drainage and flood control, this subsection shall apply to the project area served by the master system and to the plan approved in the referenced permit.

(g) The amendments to subsections 10.7.2, 10.7.4, 10.7.5, 16.1.3 and

16.1.5, Applicant's Handbook: Management and Storage of Surface Waters, effective September 25, 1991 shall not apply to each system for which the District has issued, pursuant to Chapter 40C-4, F.A.C., and prior to September 25, 1991, both a conceptual approval permit and at least one permit authorizing construction consistent with the conceptual approval permit. This subsection applies only to the project area and plan approved in the referenced conceptual approval permit.

(h) The permitting threshold set forth in subparagraph 40C-4.041(2)(b)8., F.A.C., as it existed on September 25, 1991, incorporated by reference in 40C-4.091(1)(a), F.A.C., and contained in Appendix D of this Volume, regarding isolated wetlands and the amendments to subsections 10.7.2, 10.7.4, 10.7.5, 16.1.3 and 16.1.5, Applicant's Handbook: Management and Storage of Surface Waters, effective September 25, 1991 shall not apply to each system for which the District has issued a permit pursuant to Chapter 40C-42, F.A.C., prior to September 25, 1991. This subsection applies only to a system which did not require a permit pursuant to Chapter 40C-4 or 40C-40, F.A.C., prior to September 25, 1991 and only to the project area and the plan approved in the referenced permit.

(i) The amendments to section 10.3.2 of the Applicant's Handbook: Management and Storage of Surface Waters effective February 27, 1994, shall not apply to any general or individual permit application pursuant to Chapter 40C-4 or 40C-40, F.A.C., which is complete prior to February 27, 1994.

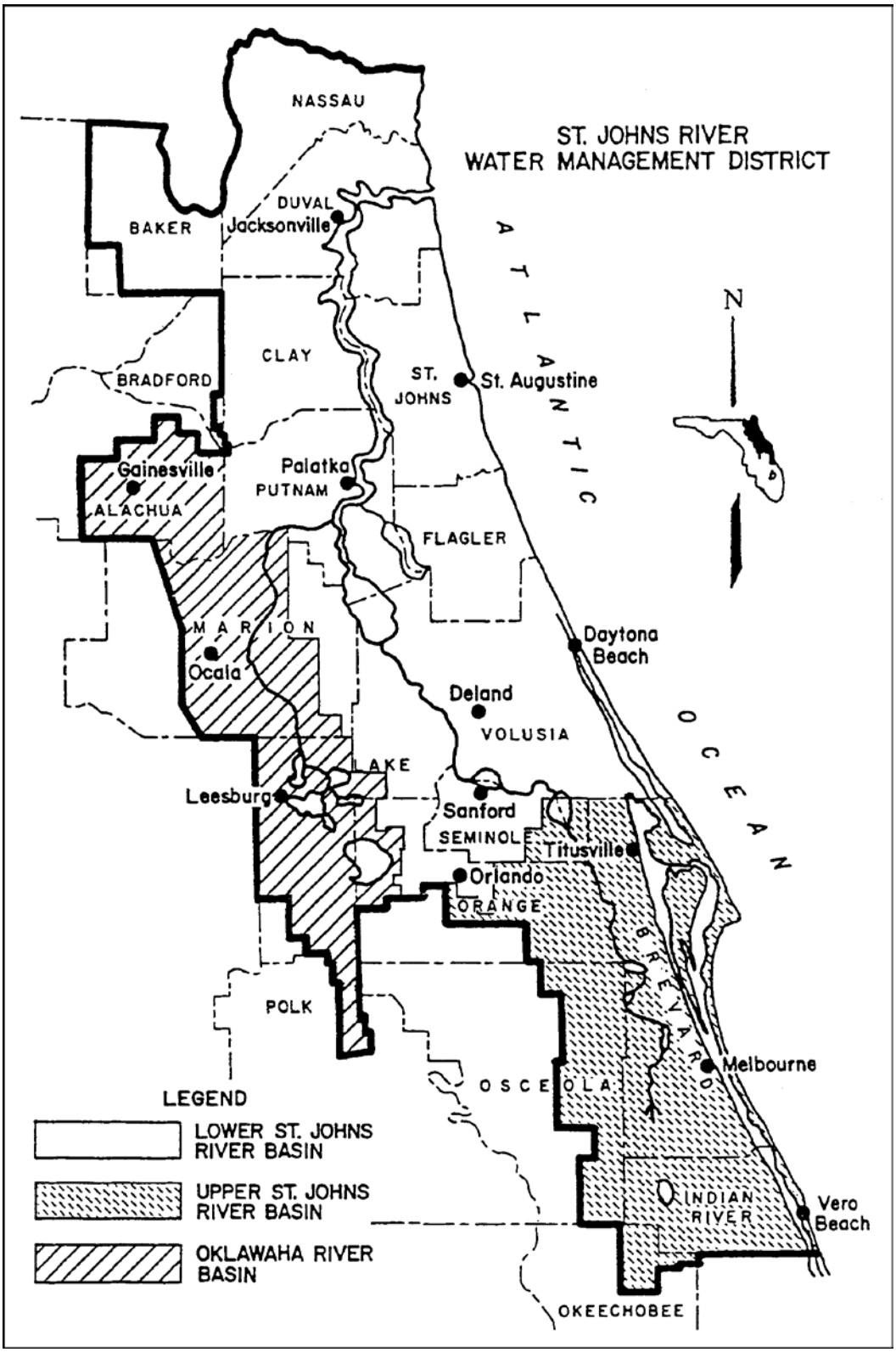


Figure 1.3-1 Areas within the District Having Differing Effective Dates for Implementation of Management and Storage of Surface Water Rules

1.3.3 Agricultural Surface Water Management Systems *Revised 6/1/18*

Each system that requires an individual permit solely pursuant to section 1.2.3 of this Volume or paragraph 62-330.020(2)(d), F.A.C., shall be exempt from the requirements in rules 62-330.060, 62-330.062, 62-330.090(1),(4) and (6), 62-330.301, 62-330.302, 62-330.310, 62-330.311, 62-330.315, 62-330.320, 62-330.340, and 62-330.350. Permit applications for such systems shall be filed, reviewed and acted upon in accordance with chapter 40C-44, F.A.C., and Part VII of this Volume. Once authorized, such systems shall be constructed, operated and maintained in accordance with 40C-44, F.A.C., and Part VII of this Volume.

PART II – GENERAL CRITERIA

2.0 Criteria for Evaluation – Reasonable Assurance *Revised 6/1/18*

Except as provided in section 1.2.3 of this Volume, an applicant for an individual permit must provide reasonable assurance that the proposed activities will meet the criteria in rules 62-330.301 and 62-330.302, F.A.C. More specifically, under 62-330.301, F.A.C., an applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a project within SJRWMD:

(a) Will not cause adverse water quantity impacts to receiving waters and adjacent lands (62-330.301(1)(a), F.A.C.);

(b) Will not cause adverse flooding to on-site or off-site property (62-330.301(1)(b), F.A.C.);

(c) Will not cause adverse impacts to existing surface water storage and conveyance capabilities (62-330.301(1)(c), F.A.C.);

(d) Will not adversely impact the value of functions provided to fish and wildlife and listed species by wetlands and other surface waters (62-330.301(1)(d), F.A.C.);

(e) Will not adversely affect the quality of receiving waters such that the water quality standards set forth in Chapters 62-4, 62-302, 62-520, and 62-550, F.A.C., (incorporated by reference in 40C-4.091(1)(c)) including the antidegradation provisions of paragraphs 62-4.242(1)(a) and (b), F.A.C., subsections 62-4.242(2) and (3), F.A.C., and Rule 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in subsections 62-4.242(2) and (3), F.A.C., will be violated (62-330.301(1)(e), F.A.C.);

(f) Will not cause adverse secondary impacts to the water resources (62-330.301(1)(f), F.A.C.);

(g) Will not adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to section 373.042, F.S., (62-330.301(1)(g), F.A.C.);

(h) Will not cause adverse impacts to a Work of the District established pursuant to Section 373.086, F.S. (62-330.301(1)(h), F.A.C.);

(i) Will be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed (62-330.301(1)(i), F.A.C.);

(j) Will be conducted by a person with the financial, legal and administrative capability of ensuring that the activity will be undertaken in accordance with the terms and conditions of the permit, if issued (62-330.301(1)(j), F.A.C.); and

(k) Will comply with the applicable special basin or geographic area criteria in Chapter 40C-41, F.A.C. (62-330.301(1)(k), F.A.C.);

The provisions in this Volume and in Volume I explain how applicants may provide the requisite reasonable assurance to demonstrate compliance with these criteria within SJRWMD. In certain instances, an applicant for an individual permit that involves an agricultural surface water management system will be governed solely by Chapter 40C-44, F.A.C. and Part VII of this Volume. (See subsection 62-330.054(2), F.A.C. and subsections 1.2.3 and 1.3.3 of this Volume) Therefore, the District recommends that applicants whose projects involve an agricultural surface water management system that only exceeds the thresholds set forth in section 1.2.3 of this Volume initially consult Part VII of this handbook.

2.1 Definitions *Revised 6/1/18*

The following definitions are used by the District to clarify its intent in implementing its permitting programs pursuant to part IV, chapter 373, F.S.

(a) “Compensating treatment” means treatment for water quality in an offsite location when physical conditions do not allow for treatment on-site equivalent to that otherwise required by Chapter 62-330, F.A.C., and this Volume.

(b) "Control Device" or "Bleed-down Device" means that element of a discharge structure which allows the gradual release of water under controlled conditions.

(c) "Control Elevation" means the lowest elevation at which water can be released through the control device or withdrawn by a stormwater harvesting system.

(d) "Detention with filtration" or "Filtration" means the selective removal of pollutants from stormwater by the collection and temporary storage of stormwater and the subsequent gradual release of the stormwater into surface waters in the state through at least 2 feet of suitable fine textured granular media such as porous soil, uniformly graded sand, or other natural or artificial fine aggregate, which may be used in conjunction with filter fabric and/or perforated pipe.

(e) "Detention" or "To Detain" means the collection and temporary storage of stormwater with subsequent gradual release of the stormwater.

(f) "Direct Discharge" means, for purposes of this Volume, either a point or nonpoint discharge which enters Class I, Class II, Outstanding Florida Waters (OFWs), or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting without an adequate opportunity for mixing and dilution to prevent significant degradation. Examples of direct discharge include the following:

(1) Discharge without entering any other water body or conveyance prior to release to the Class I, Class II, Outstanding Florida Water, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting.

(2) Discharge into an intermittent watercourse which is a tributary of a Class I, Class II, Outstanding Florida Water, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting.

(3) Discharge into a perennial watercourse which is a tributary of a Class I, Class II, Outstanding Florida Water, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting when there is not an adequate opportunity for mixing and dilution to prevent significant degradation.

(g) "Dry Detention" means a system designed to collect and temporarily store stormwater in a normally dry basin with subsequent gradual release of the stormwater.

(h) "Effective Grain Size" means the diameter of filter sand or other aggregate that corresponds to the 10 percentile finer by dry weight on the grain size distribution curve.

(i) “Floodway” means the permanent channel of a stream or other watercourse, plus any adjacent floodplain areas that must be kept free of any encroachment in order to discharge the 100-year flood without cumulatively increasing the water surface elevation more than a designated amount (not to exceed one foot except as otherwise established by the District or established

by a Flood Insurance Rate Study conducted by the Federal Emergency Management Agency (FEMA)).

(j) “Hydrologically Sensitive Area” means wetlands and those geographical areas which are specifically designated as hydrologically sensitive areas by the Board because of the importance of the hydrology and hydraulics of the area in meeting the Legislative policy contained in section 373.016, F.S.

(k) "Intermittent Watercourse" means a stream or waterway that flows only at certain times of the year, flows in a direct response to rainfall, and is normally an influent stream except when the ground water table rises above the normal wet season level.

(l) “Littoral Zone” means in reference to stormwater management systems that portion of a wet detention pond which is designed to contain rooted aquatic plants.

(m) "Off-line" means the storage of a specified portion of the stormwater in such a manner so that subsequent runoff in excess of the specified volume of stormwater does not flow into the area storing the initial stormwater.

(n) "Perennial Watercourse" means a stream or waterway which is not an intermittent watercourse.

(o) “Permanent Pool” means that portion of a wet detention pond which normally holds water (e.g., between the normal water level and the pond bottom).

(p) "Reconstruction" means rebuilding or construction in an area upon which construction has previously occurred.

(q) "Retention" means a system designed to prevent the discharge of a given volume of stormwater runoff into surface waters in the state by complete on-site storage. Examples may include excavated or natural depression storage areas, pervious pavement with subgrade, or above ground storage areas.

(r) "Seasonal high ground water table elevation" means the highest level of the saturated zone in the soil in a year with normal rainfall.

(s) "Stormwater Discharge Facility" means a stormwater management system which discharges stormwater into surface waters of the state.

(t) "Stormwater Harvesting" means to prevent the discharge of a given volume of stormwater into surface waters of the state by deliberate application of stormwater for irrigation (such as irrigation of golf courses, cemeteries, highway medians, parks, playgrounds, school yards, retail nurseries,

agricultural lands, and residential and commercial properties) or industrial uses (such as cooling water, process water, and wash water).

(u) "Swale" means a manmade trench which:

(1) Has a top width to depth ratio of the cross-section equal to or greater than 6:1, or side slopes equal to or greater than 3 feet horizontal to 1 foot vertical.

(2) Contains contiguous areas of standing or flowing water only following a rainfall event.

(3) Is planted with or has stabilized vegetation suitable for soil stabilization, stormwater treatment, and nutrient uptake.

(4) Is designed to take into account the soil erodibility, soil percolation, slope, slope length, and drainage area so as to prevent erosion and reduce pollutant concentration of any discharge.

(v) “Traversing Work” means any artificial structure or construction that is placed in or across a stream, or other watercourse, or an impoundment.

(w) "Underdrain" means a drainage system installed beneath a stormwater holding area to improve the infiltration and percolation characteristics of the natural soil when permeability is restricted due to periodic high water table conditions or the presence of layers of fine textured soil below the bottom of the holding area. These systems usually consist of a system of interconnected below-ground conduits such as perforated pipe, which simultaneously limit the water table elevation and intercept, collect, and convey stormwater which has percolated through the soil.

(x) "Underground Exfiltration Trench" or "Exfiltration Trench" means a below-ground system consisting of a conduit such as perforated pipe surrounded by natural or artificial aggregate which is utilized to percolate stormwater into the ground.

(y) "Uniformity Coefficient" means the number representing the degree of homogeneity in the distribution of particle sizes of filter sand or other granular material. The coefficient is calculated by determining the D60/D10 ratio where D10 and D60 refer to the particle diameter corresponding to the 10 and 60 percentile of the material which is finer by dry weight.

(z) “Wet Detention” means the collection and temporary storage of stormwater in a permanently wet impoundment in such a manner as to provide for

treatment through physical, chemical, and biological processes with subsequent gradual release of the stormwater.

(aa) "Wetlands Stormwater Management System" means a stormwater management system which incorporates those wetlands described in section 10.2 of this Volume, into the stormwater management system to provide stormwater treatment.

2.2 Existing Ambient Water Quality

In instances where an applicant is unable to meet water quality standards because existing ambient water quality does not meet standards and the system will contribute to this existing condition, mitigation for water quality impacts can consist of water quality enhancement. In these cases, the applicant must implement mitigation measures that will cause net improvement of the water quality in the receiving waters for those parameters which do not meet standards. (see paragraph 373.414(1)(b), F.S. and section 8.2.3 of Volume I)

2.3 Professional Certification

All construction plans and supporting calculations submitted to the District must be signed, sealed, and dated by the appropriate registered professional (e.g., engineer, geologist, or landscape architect) as required by the relevant statutory provisions (i.e., chapters 471, 472, 481, or 492, F.S.) when the design of the project requires the services of a registered professional.

2.4 Maintenance Access

Regular maintenance is crucial to the long term effectiveness of stormwater management systems. The systems must be designed to permit personnel and equipment access and to accommodate regular maintenance activities. For example, high maintenance features such as inlets, outlets, and pumps should be easily accessible to maintenance equipment and personnel.

Legal authorization, such as an easement, deed restrictions, or other instrument must be provided establishing a right-of-way or access for maintenance of the stormwater management system unless the operation and maintenance entity wholly owns or retains ownership of the property. The following are requirements for specific types of maintenance access easements:

(a) Easements must cover at least the primary and high maintenance components of the system (i.e., inlets, outlets, littoral zones, filters, pumps, etc.).

(b) Easements for waterbodies, open conveyance systems, stormwater basins and storage areas must meet the following requirements:

1. Include the area of the water surface measured at the control elevation

2. Be a minimum of 20 feet from the edge of water at the control elevation or top of bank and include side slopes no steeper than 4H:1V

(c) Easements adjacent to water control structures must be 20 feet wide.

(d) Easements for piped stormwater conveyance must be a minimum of the width of the pipe plus 4 times the depth of the pipe invert.

(e) Access easements must be 20 feet wide from a public road or public right-of-way to the stormwater management system.

(f) As an alternative, the applicant may propose other authorization for maintenance access provided the applicant affirmatively demonstrates that equipment can enter and perform the necessary maintenance on the system.

A copy of the legal authorization must be submitted with the permit application.

2.5 Legal Authorization

Applicants which propose to utilize offsite areas not under their control to satisfy the criteria for evaluation listed in section 2.0 must obtain sufficient legal authorization prior to permit issuance to use the area. For example, an applicant who proposes to locate the outfall pipe from the stormwater basin to the receiving water on an adjacent property owner's land must obtain a drainage easement or other appropriate legal authorization from the adjacent owner. A copy of the legal authorization must be submitted with the permit application.

2.6 Public Safety

2.6.1 Basin Side Slopes

Normally dry basins designed to impound more than two feet of water or permanently wet basins must contain side slopes that are no steeper than 4H:1V out to a depth of two feet below the control elevation. As an alternative, the basins can be fenced or otherwise restricted from public access if the slopes must be steeper due to space or other constraints.

2.6.2 Basin Side Slope Stabilization

All stormwater basin side slopes shall be stabilized by either vegetation or other material to minimize erosion of the basin.

Stabilization of side slopes is necessary in order to prevent erosion due to flow velocity and runoff from the banks. Good engineering practices, taking into consideration soil characteristics, flow and drainage characteristics, shall be employed. Again, the retardation of overland runoff and soil stabilization using naturally occurring vegetation coverage shall be considered before paving, riprap, lining, energy dissipation and other structural measures are employed.

2.6.3 Control Structures

Control structures that are designed to contain more than two feet of water within the structure under the design storm and have openings of greater than one foot minimum dimension must be restricted from public access.

2.7 Tailwater Considerations

"Tailwater" refers to the water elevation (or pressure) at the final discharge part of the stormwater management system. Tailwater is an important component of the design and operation of nearly all stormwater management systems and can affect any of the following management objectives of the system:

(a) Peak discharge from the stormwater management system

(b) Peak stage in the stormwater management system

(c) Level of flood protection in the project

(d) Recovery of peak attenuation and stormwater treatment volumes

(e) Control elevations, normal water elevation regulation schedules, and ground water management

2.7.1 Tailwater for Water Quality Design *Revised 6/1/18*

For recovery of the stormwater treatment volume, stormwater management systems (except retention and exfiltration systems) must provide a gravity or pumped discharge that effectively operates (i.e., meets applicable criteria) under one of the following tailwater conditions:

(a) Maximum stage in the receiving water resulting from the mean annual 24-hour storm. This storm depth is shown on the isopluvial map in Figure

2.7.1-1. Generally, applicants utilizing this option would model the receiving waters utilizing standard hydrologic and hydraulic methods for the mean annual 24-hour storm to determine peak stages at various points of interest. Lower stages may be utilized if the applicant demonstrates that flow from the project will reach the receiving water prior to the time of maximum stage in the receiving water.

(b) Mean annual high tide for tidal areas. This elevation is the average of all the high tides for each year. This elevation may be determined from tide charts or other similar information.

(c) Mean annual seasonal high water elevation. This elevation may be determined by water lines on vegetation or structures, historical data, adventitious roots or other hydrological or biological indicators, design of man-made systems, or estimated by a registered professional using standard hydrological methods based on the site and receiving water characteristics.

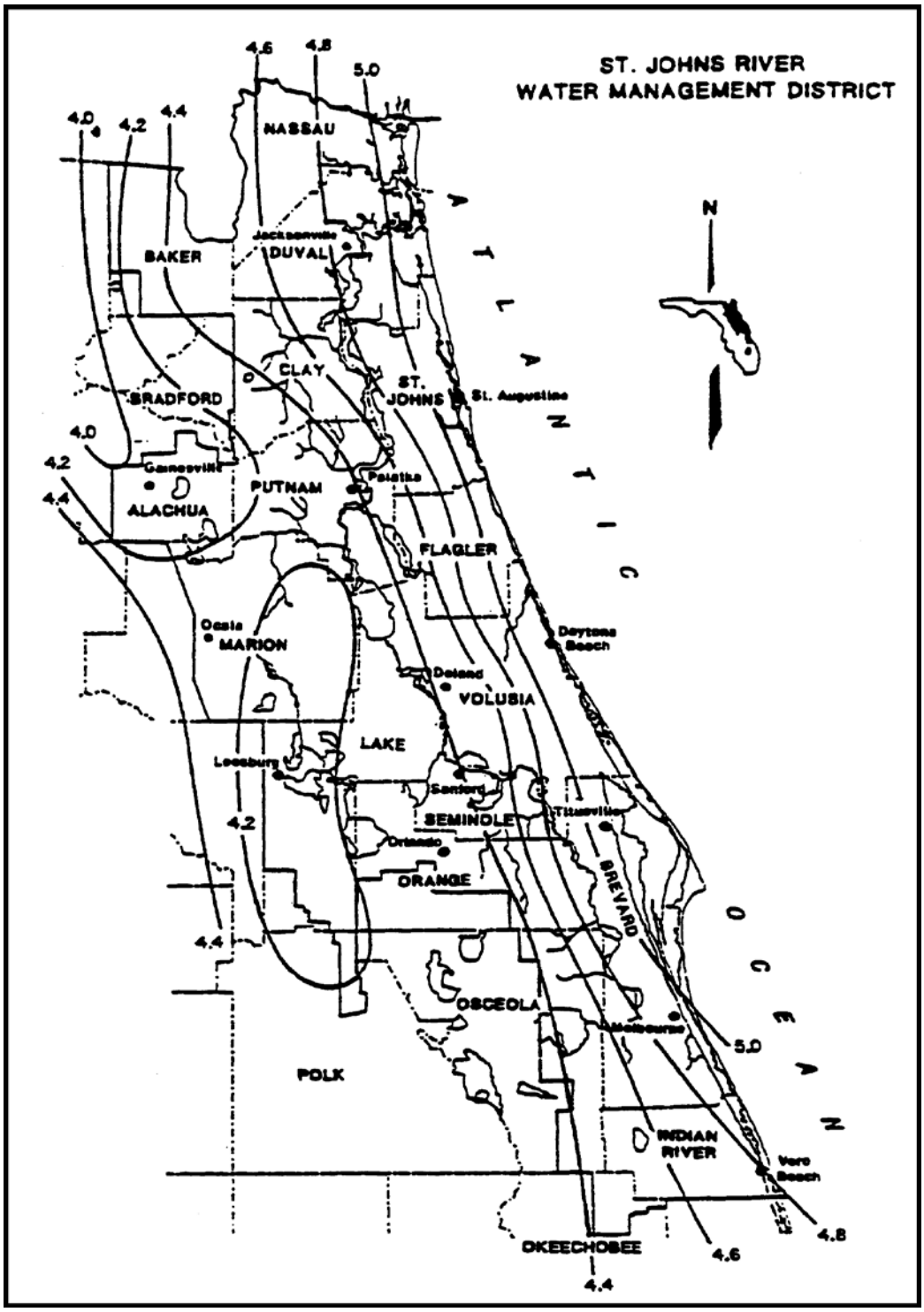


Figure 2.7.1-1 Mean Annual 24-Hour Maximum Rainfall, inches (Source: Rao, 1991)

2.7.2 Tailwater for Water Quantity Design

Receiving water stage can affect the amount of flow which will discharge from the project to the receiving water. This stage may be such that tailwater exists in portions of the project system, reducing the effective flow or storage area. Typical examples of this are illustrated in Figures 2.7.2-1 (gravity) and 2.7.2-2 (pumped).

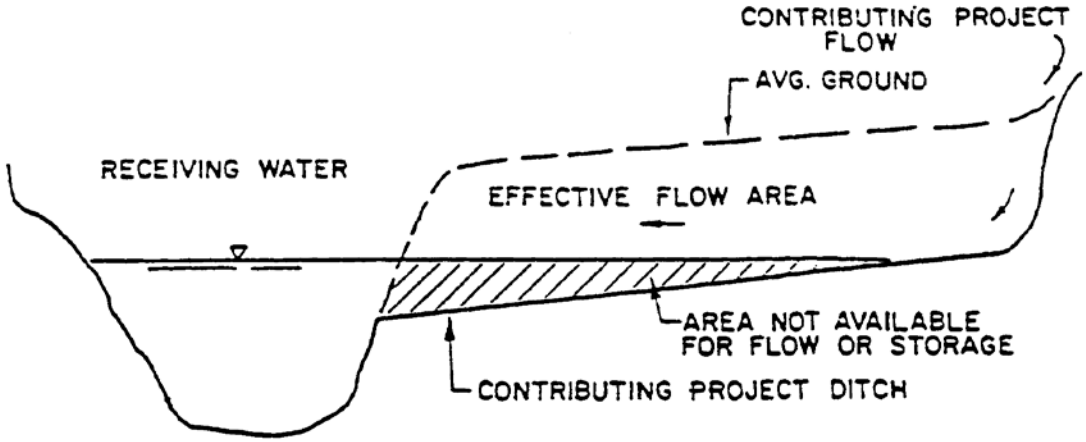


Figure 2.7.2-1

The stage in the receiving water should be considered to be the maximum stage which would exist in the receiving water from a storm equal to the project design storm. Lower stages may be used if the applicant can show that the flow from his project will reach the receiving water prior to the time of maximum stage in the receiving water.

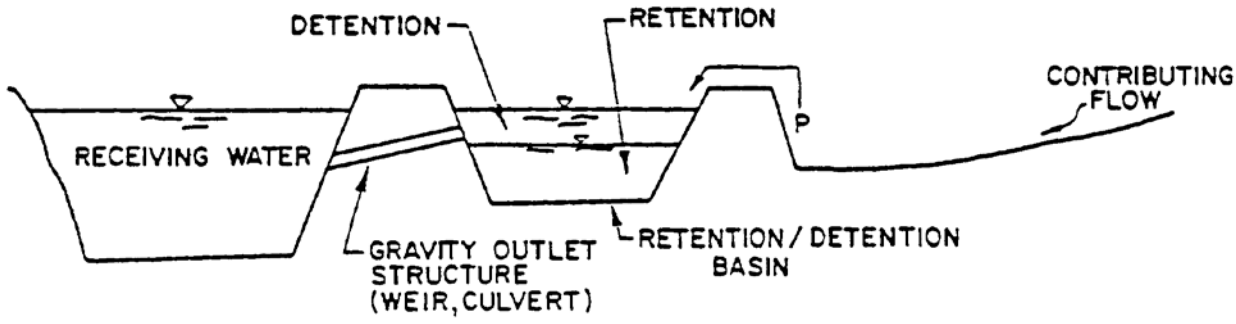


Figure 2.7.2-2

2.8 Applicant Responsibility

Except as provided in Part VII of this Volume, the applicant:

(a) must provide for an operation and maintenance entity as required in Part V of Applicant's Handbook Volume I.

(b) is responsible for converting the permit from the construction phase to the operation and maintenance phase, as required in Rule 62-330.310 and section 6.1.4 of Applicant's Handbook Volume I.

(c) is responsible for notifying the Agency of any transfer of permit, ownership, or sale, including applying to the Agency for transfer of ownership using Form 62-330.340(1) within 30 days of such transfer (Rule 62-330.340, F.A.C.)

2.9 Operation and Maintenance

Except as provided in Part VII of this Volume, all systems under this Volume must be transferred to an operation and maintenance entity as provided in Rule 62-330.340, F.A.C. and Part V of Applicant's Volume I.

2.10 Retrofits of Existing Surface Water Management Systems

(a) A stormwater retrofit project is typically proposed by a county, municipality, state agency, or water management district to provide new or additional treatment or attenuation capacity, or improved flood control to an existing stormwater management system or systems. Stormwater retrofit projects shall not be proposed or implemented for the purpose of providing the water quality treatment or flood control needed to serve new development or redevelopment.

Example components of stormwater retrofit projects are:

(1) Construction or alteration that will add additional treatment or attenuation capacity and capability to an existing stormwater management system;

(2) Modification, reconstruction, or relocation of an existing stormwater management system or stormwater discharge facility;

(3) Stabilization of eroding banks through measures such as adding attenuation capacity to reduce flow velocities, planting of sod or other vegetation, and installation of rip rap boulders;

(4) Excavation or dredging of sediments or other pollutants that have accumulated as a result of stormwater runoff and stormwater discharges.

(b) Stormwater Quality Retrofits

(1) The applicant for a stormwater quality retrofit project must provide reasonable assurance that the retrofit project itself will, at a minimum provide additional water quality treatment such that there is a net reduction of the stormwater pollutant loading into receiving waters. Examples are:

a. Addition of treatment capacity to an existing stormwater management system such that it reduces stormwater pollutant loadings to receiving waters;

b. Adding treatment or attenuation capability to an existing developed area when either the existing stormwater management system or the developed area has substandard stormwater treatment and attenuation capabilities, compared to what would be required for a new system requiring a permit under Part IV of Chapter 373, F.S.; or

c. Removing pollutants generated by, or resulting from, previous stormwater discharges.

(2) If the applicant has conducted, and the Agency has approved, an analysis that provides reasonable assurance that the proposed stormwater quality retrofit will provide the intended pollutant load reduction from the existing system or systems, the project will be presumed to comply with the requirements in **sections 4.0 through 4.5** of this Volume.

(3) The pollutants of concern will be determined on a case-by-case basis during the permit application review based upon factors such as the type and intensity of land use, existing water quality data within the area subject to the retrofit, and the degree of impairment or water quality violations in the receiving waters.

(c) Stormwater Quantity (Flood Control) Retrofits

The applicant for a stormwater quantity retrofit project must provide reasonable assurance that the retrofit project will reduce existing flooding problems in such a way that it does not cause any of the following:

(1) A net reduction in water quality treatment provided by the existing stormwater management system or systems;

(2) Increased discharges of untreated stormwater entering adjacent or receiving waters;

If the applicant has conducted, and the Agency has approved, an analysis that provides reasonable assurance that the stormwater quantity retrofit project will comply with the above, the project will be presumed to comply with the requirements in **sections 3.1 through 3.3** of this Volume.

(d) The applicant for any stormwater retrofit project must design, implement, and operate the project so that it:

(1) Will not cause or contribute to a water quality violation;

(2) Does not reduce stormwater treatment capacity or increase discharges of untreated stormwater. Where existing ambient water quality does not meet water quality standards the applicant must demonstrate that the proposed activities will not cause or contribute to a water quality violation. If the proposed activities will contribute to the existing violation, measures shall be proposed that will provide a net improvement of the water quality in the receiving waters for those parameters that do not meet standards.

(3) Does not cause any adverse water quality impacts in receiving waters; or

(4) Will not cause or contribute to increased flooding of adjacent lands or cause new adverse water quantity impacts to receiving waters.

2.11 Flexibility for State Transportation Projects and Facilities

With regard to state linear transportation projects and facilities, the District shall be governed by subsection 373.413(6), F.S. (2012).

PART III – STORMWATER QUANTITY/FLOOD CONTROL

3.0 General Flood Control Performance Criteria

Urbanization increases total runoff volume, peak discharge rates, and the magnitude and frequency of flood events. With an increase in the number of flood events a stream is subjected to, the potential for accelerated erosion of both the stream banks and channel bottom is enhanced. Proper design of detention systems to limit post-development peak discharge rates to predevelopment rates can minimize some of the stormwater effects of urbanization.

3.1 Projects That Must Meet Water Quantity Criteria

Projects that do not exceed the thresholds listed in paragraphs 3.1 (a)–(h) below shall have a rebuttable presumption that they meet the criteria for issuance in paragraphs 2.0 (a)–(c) if they are designed to meet the standards listed in subsections 3.2.1 (a) and 3.3.1. Projects that exceed any of the thresholds listed in paragraphs 3.1 (a)–(h) shall have a rebuttable presumption that they meet the criteria for issuance in paragraphs 2.0 (a)–(c) if they are designed to meet the standards in subsections 3.2.1, 3.3.1, 3.3.2, 3.4.1, 3.5.1 and 3.5.2.

(a) Is capable of impounding a volume of water of 40 or more acre-feet;

(b) Serves a project with a total land area equal to, or exceeding 40 acres;

(c) Provides for the placement of 12 or more acres of impervious surface which constitutes 40 or more percent of the total land area;

(d) Is wholly or partially located in, on, or over any wetland or other surface water.

(e) Serves a project with a total land area equal to or exceeding ten acres, when any part of the project is located within the Wekiva River Hydrologic Basin north of State Road 436, within the Econlockhatchee River Hydrologic Basin, within the Tomoka River Hydrologic Basin, or within the Spruce Creek Hydrologic Basin;

(f) Provides for the placement of one-half acre or more of impervious surface, when any of the impervious surface is located within the Wekiva River Hydrologic Basin north of State Road 436;

(g) Provides for the placement of two acres or more of impervious surface, when any of the impervious surface is located within the

Econlockhatchee River Hydrologic Basin, within the Tomoka River Hydrologic Basin, or within the Spruce Creek Hydrologic Basin; or

(h) Is wholly or partially located within the Wekiva River Hydrologic Basin's Riparian Habitat Protection Zone as described in Paragraph 40C-41.063(3)(e).

3.2 Design Standards for Flood Protection

3.2.1 Water Quantity *Revised 6/1/18*

(a) The post-development peak discharge rate must not exceed the pre-development peak rate of discharge for the mean annual 24-hour storm for systems serving both of the following:

(1) New construction area greater than 50% impervious (excluding waterbodies)

(2) Projects for the construction of new developments that exceed the thresholds in paragraphs 62-330.020(2)(b) or (c), F.A.C.

Note: Both of these conditions must be met before a project is required to comply with the peak discharge criterion. Also, projects which modify existing systems are exempt from this criterion pursuant to condition 2., above. Pervious concrete and turf blocks are not considered impervious surface for this purpose, however, compacted soils and limerock are considered impervious for purposes of this subsection.

(b) The post-development peak rate of discharge must not exceed the pre-development peak rate of discharge for the 25-year frequency, 24-hour duration storm for all areas of the District except:

(1) For those systems which discharge directly into the St. Johns River north of Lake George, the man-made portions of the Intracoastal Waterway, the Intracoastal Waterway north of the Matanzas Inlet, or the Atlantic Ocean.

(2) Where separate basin criteria have been adopted (see section 13.0 of this Volume). Projects located in areas for which separate basin criteria have been developed must meet the flood protection design standards specified by the basin criteria.

(c) The post-development volume of direct runoff must not exceed the pre-development volume of direct runoff for the 25-year

frequency, 96-hour duration storm for systems discharging to land-locked lakes which are adjacent to properties of more than one ownership. These systems shall not cause an increase in the total pre-development flood stage. This can be accomplished through retention with percolation or, if the soil conditions are not sufficient for percolation, then through detention for a duration sufficient to mitigate adverse impacts on flood stages.

(d) Systems which are within areas for which separate basin criteria have been adopted pursuant to Chapter 40C-41, F.A.C., must meet the applicable volume and rate requirements found in section 13.0 of this Volume.

3.2.2 Alternative Peak Discharge Criteria

The applicant has two options for providing reasonable assurances that the standards referenced in subsection 3.2.1 (a) and (b) are met. The applicant may make such demonstration through compliance with the criteria specified in subsection 3.2.1 (a) and (b) or applicants may propose to utilize the applicable storm event duration, or criteria specified by a local government, state agency (including FDOT), or stormwater utility with jurisdiction over the project or by use of alternative methods as may be appropriate for the specific system. However, the District must review and approve the use of the alternative criteria. Applicants proposing to use alternative criteria are encouraged to have a preapplication conference with District staff.

3.2.3 Methodologies

(a) A peak discharge analysis typically consists of generating pre-development and post-development runoff hydrographs, routing the post-development hydrograph through a detention basin, and sizing an overflow structure to control post-development discharges at or below predevelopment rates.

Peak discharge computations should consider the duration, frequency, and intensity of rainfall, the antecedent moisture conditions, upper soil zone and surface storage, time of concentration, tailwater conditions, changes in land use or land cover, and any other changes in topographic and hydrologic characteristics. Large systems should be divided into subbasins according to artificial or natural drainage divides to allow for more accurate hydrologic simulations.

The Natural Resources Conservation Service (NRCS) Curve Number Method is an example of an accepted methodology (see SJ No. 85-5: A Guide to SCS Runoff Procedures (1985) and incorporated by reference in 40C-4.091(1)(e)).

(b) The modified rational method (see Appendix C of this Volume, incorporated by reference in 40C-4.091(1)(a)) is a popular method for estimating peak runoff rates for small urban areas. The rational method gives peak discharge rates rather than a runoff hydrograph. The modified rational formula can be modified to generate a runoff hydrograph by utilizing the rainfall intensity for various increments of a design storm. Similar to the rational method, use of the modified rational hydrograph method should be limited to small drainage basins with short times of concentration. Therefore, the modified rational method shall only be used for systems meeting the following criteria:

(1) The drainage area is less than 40 acres.

(2) The predevelopment time of concentration for the system is less than 60 minutes.

(3) The post-development time of concentration for the system is less than 30 minutes.

The modified rational hydrograph method shall only be utilized for the mean annual return frequency, 24-hour duration storm.

3.2.4 Computer Programs Accepted by the District

Numerous computer programs have been written to solve the runoff hydrograph and detention basin routing calculations required in a peak discharge analysis. If the model is sound from a theoretical standpoint and the results compare favorably with those of a benchmark standard model (such as HEC-1), the program is accepted for use.

3.2.5 Aggregate Discharge

Depending on the location and design of large systems where multiple off-site discharges are designed to occur, the District may allow the total post-development peak discharge not to exceed the pre-development peak discharge for the combined discharges rather than for each individual discharge. Such a consideration shall be made only if the combined discharges meet all other requirements of chapter 62-330, F.A.C., and discharge to the same receiving water body.

3.2.6 Rainfall Intensity

In determining peak discharge rates, intensity of rainfall values shall be obtained through a statistical analysis of historical long term rainfall data or from sources or methods generally accepted as good engineering practice.

(a) Examples of acceptable sources include:

(1) USDA Soil Conservation Service, "Rainfall Frequency Atlas of Alabama, Florida, Georgia, and South Carolina for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years" January 1978; Gainesville, Florida.

(2) U.S. Weather Bureau Technical Paper No. 49.

(3) U.S. Weather Bureau Technical Paper No. 40.

(4) U.S. Department of Interior, Bureau of Reclamation, "Design of Small Dams", 2nd Edition.

(b) For a drainage basin greater than 10 square miles, the areal rainfall can be calculated from point rainfall using a method that has been well documented. The converting factor as described in U.S. Weather Bureau Technical Paper No. 49 may be used.

3.2.7 System Recovery

Where basins are designed for reducing post-development peak rate discharge and volume, the outlet and regulation schedule should be designed to provide necessary design detention and retention storage within 14 days following any storm event.

3.2.8 Upper Soil Zone Storage and Surface Storage

In most instances, the upper soil zone storage and surface storage capacities will have an effect on the pre-development and post-development peak discharges and should be considered in these computations. Any generally accepted and well documented method may be used to develop the upper soil zone storage and surface storage values.

(a) The soil zone storage at the beginning of a storm should be estimated by using reasonable and appropriate parameters to reflect drainage practices, average wet season water table elevation, the antecedent moisture condition (AMC II) and any underlying soil characteristics which would limit or prevent percolation of storm water into the entire soil column. In no case should the soil storage used in the computation exceed the difference between the maximum soil water capacity and the field capacity (i.e.,

gravitational water) for the soil columns above any impervious layer or seasonal ground water table.

(b) Surface storage, including that available in wetlands and low lying areas, shall be considered as depression storage. Depression storage shall be analyzed for its effect on peak discharge and the time of concentration. Depression storage can also be considered in post-development storage routing which would require development of stage-storage relationships; if depression storage is considered, then both pre-development and post-development storage routing must be considered.

3.3 Storage and Conveyance

3.3.1 Conveyance *Revised 6/1/18*

Projects which alter existing conveyance systems (e.g., rerouting an existing ditch) must not adversely affect existing conveyance capabilities. It is presumed a system will meet this criterion if one of the following are met:

(a) The existing hydraulic capacity is maintained in the new system. This can be accomplished by maintaining existing headwater and tailwater conditions.

(b) The applicant demonstrates that changes in flood elevation and velocities will not adversely impact upstream or downstream off-site property. For example, this criterion may be satisfied by demonstrating that there is no increase in damages to existing off-site property (e.g., roads, buildings) resulting from changes in the existing flood elevations. Also, the applicant should demonstrate that proposed velocities are non-erosive or that erosion control measures (e.g., rip-rap, concrete lined channels, etc.) are sufficient to safely convey the flow.

(c) The criterion in paragraph 3.3.2(b) is met.

3.3.2 Floodways and Floodplain Storage

Floodways and floodplains, and levels of flood flows or velocities of adjacent streams, impoundments or other water courses must not be altered so as to adversely impact the off-site storage and conveyance capabilities of the water resource. It is presumed a system will meet this criterion if the following are met:

(a) A system may not cause a net reduction in flood storage within a 10- year floodplain except for structures elevated on pilings or traversing works.

Traversing works, works or other structures shall cause no more than a one-foot increase in the 100-year flood elevation immediately upstream and no more than one tenth of a foot increase in the 100-year flood elevation 500 feet upstream. A system will not cause a net reduction in flood storage within a 10-year floodplain if compensating storage is provided outside the 10-year floodplain.

(b) A system may not cause a reduction in the flood conveyance capabilities provided by a floodway except for structure elevated on pilings or traversing works. Such works, or other structures shall cause no more than a one-foot increase in the 100-year flood elevation immediately upstream and no more than one-tenth of a foot increase in the 100-year flood elevation 500 feet upstream.

(c) An applicant may only be permitted to contravene the requirements of (a) or (b) if the applicant gives reasonable assurance that were all other persons who could impact the surface water of any impoundment, stream, or other watercourse by floodplain encroachment to exceed (a) and (b) above to the same degree as the applicant proposes, the cumulative impacts would not contravene subparagraphs 62-330.301(1)(a)-(c), F.A.C.

3.3.3 Level of Service *Revised 6/1/18*

As part of providing reasonable assurance that the criteria in paragraphs 2.0(a)-(c) will be met, the applicant must demonstrate that the elevation of any proposed streets and roadways and the first floor of any proposed building will be set at or above the elevation associated with the peak stage of the applicable design storm pursuant to section 3.1 of this Volume.

3.3.4 Floodway and Floodplain Elevation Determination

(a) The floodway and floodplain criteria contained in subsection 3.3.2 are applicable only to locations downstream of the point on a stream or watercourse where the drainage area is five square miles.

(b) The District has detailed information regarding floodplain and floodway elevations for many of the streams and water courses in its jurisdiction. The applicant is encouraged to consult with the District prior to making calculations. Other sources of information include the most recently published data from flood insurance rate studies or relevant engineering reports. If data are not available from the District, the flood insurance rate studies, or published reports, the applicant will be responsible for making determination of floodplain elevations or floodway limits using the

procedure of "Normal Depth Analysis", extrapolation of existing data, or any other acceptable technique.

3.3.5 Flow Velocity

Good engineering practices shall be employed to minimize the flow velocity to avoid transport of soil particles and other suspended solids from one location and deposition in another location. Many different measures, structural or non-structural, may be used to reduce erosion from the bottom and side slopes of a conveyance system or around the control structures. However, velocity reduction measures and re-vegetation with naturally occurring species of the area should be considered before using other methods of bottom and side slope consolidation.

3.4 Dams and Impoundments

3.4.1 Dams greater than six feet in height or which have a storage capacity of greater than 15 acre-feet of water which could be released in the event of dam failure shall have a spillway system with a capacity to pass the flow resulting from the design storm indicated in Table 3.4.1-1, without overtopping the dam unless the applicant provides analyses to show that the design flood can be stored, passed through, or passed over the dam without failure occurring.

TABLE 3.4.1-1

Hazard Classification	Storage Capacity (acre-feet)	Height (feet)	Design Storm
A	> 15	> 6	25-yr.
B	< 1000	< 40	25-yr
		40-100	1/2 PMP
		> 100	PMP
	1000-50,000	$\leq$ 100	1/2 PMP
		> 100	PMP
	50,000	> 6	PMP
C	< 1000	< 40	1/2 PMP
		$\geq$ 40	PMP
	$\geq$ 1000	> 6	PMP

3.4.2 Dams greater than six feet in height or which have a storage capacity of greater than 15 acre-feet of water which could be released in the event of dam failure shall have a spillway system capable of removing from the reservoir at least 80% of the water detained in the reservoir above the principal spillway within ten days after passage of the design storm.

3.5 Low Flow and Base Flow Maintenance

Flows of adjacent streams, impoundments or other water courses must not be decreased so as to cause adverse impacts.

3.5.1 Low Flow

(a) Only systems with both of the following conditions meet the low flow performance criteria in (b) and (c).

(1) Systems which impound water for purposes in addition to temporary detention storage. Water impounded longer than a 14-day bleed down period is considered conservation storage for benefits other than detention storage (i.e., recreation, irrigation, etc.).

(2) Systems that impound a stream or other water course which, under pre-development conditions, discharged surface water off-site to receiving water during 5-year, 30-day drought frequency conditions.

(b) Any system meeting the conditions of (a) above shall be designed with an outlet structure to maintain a low flow discharge of available conservation storage. When the conservation storage is at the average dry season design stage, the low flow discharge should equal the average pre-development surface water discharge which occurred from the project site to receiving waters during the 5-year, 30-day drought.

(c) The system shall be operated to provide a low flow discharge whenever water is impounded. However, discharge may be discontinued, if desired, during the wet season (considered as June through October) unless a water shortage condition is declared by the District. The actual discharge will vary according to the water stage in the impoundment. When conservation storage is at the average dry season design stage, the discharge will be the average 5 year, 30-day low flow. When storage is below the average dry season design stage, the discharge may be less than the average 5-year, 30-day low flow.

3.5.2 **Base Flow** *Revised 6/1/18*

It is presumed that an adverse impact will result if the system causes the ground water table to be lowered:

(a) more than an average three feet lower over the project area than the average dry season low water table; or

(b) at any location, more than five feet lower than the average dry season low water table; or

(c) to a level that would decrease flows or levels below any minimum level or flow established pursuant to section 373.042, F.S.

PART IV – STORMWATER QUALITY

4.0 Criterion

Under 62-330.301, F.A.C., an applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a project will not adversely affect the quality of receiving waters such that the water quality standards set forth in Chapters 62-4, 62-302, 62-520, and 62-550, F.A.C., will be violated.

4.1 State Water Quality Standards

State water quality standards are established by DEP and are set forth in chapters 62-4, 62-302, 62-520 and 62-550, F.A.C. Surface and ground water discharges from stormwater management systems, works, and other projects may not cause or contribute to a violation of state water quality standards.

4.1.1 Surface Water Quality Standards

State water quality standards for surface waters are contained in chapters 62-4 and 62-302, F.A.C. The standards apply at the point of mixing of discharge from the system with waters of the state.

4.1.2 Ground Water Quality Standards

State water quality standards for ground water are set forth in chapter 62-520, F.A.C. In addition to the minimum criteria, Class G-I and G-II ground water must meet primary and secondary drinking water quality standards for public water systems established pursuant to the Florida Safe Drinking Water Act, which are listed in sections 62-550.310 and 62-550.320, F.A.C., (incorporated by reference in 40C-4.091(1)(c)).

Only the minimum criteria apply within a zone of discharge, as determined in section 62-520.400, F.A.C., (incorporated by reference in 40C-4.091(1)(c)). A zone of discharge is defined as a volume underlying or surrounding the site and extending to the base of a specifically designated aquifer or aquifers, within which an opportunity for the treatment, mixture or dispersion of wastes into receiving ground water is afforded. Generally, stormwater systems have a zone of discharge 100 feet from the system boundary or to the project's property boundary, whichever is less.

4.1.3 How Standards May be Met

A showing by the applicant that a project complies with the applicable criteria in Parts II, IV, V and subsection 13.3.1 and sections 13.6 through 13.7 of this Volume and in Part IV of Volume I shall create a rebuttable presumption that the applicant has provided reasonable assurance that the proposed project meets the requirements in subsection 2.0(e) and 62-330.301(1)(e), F.A.C.

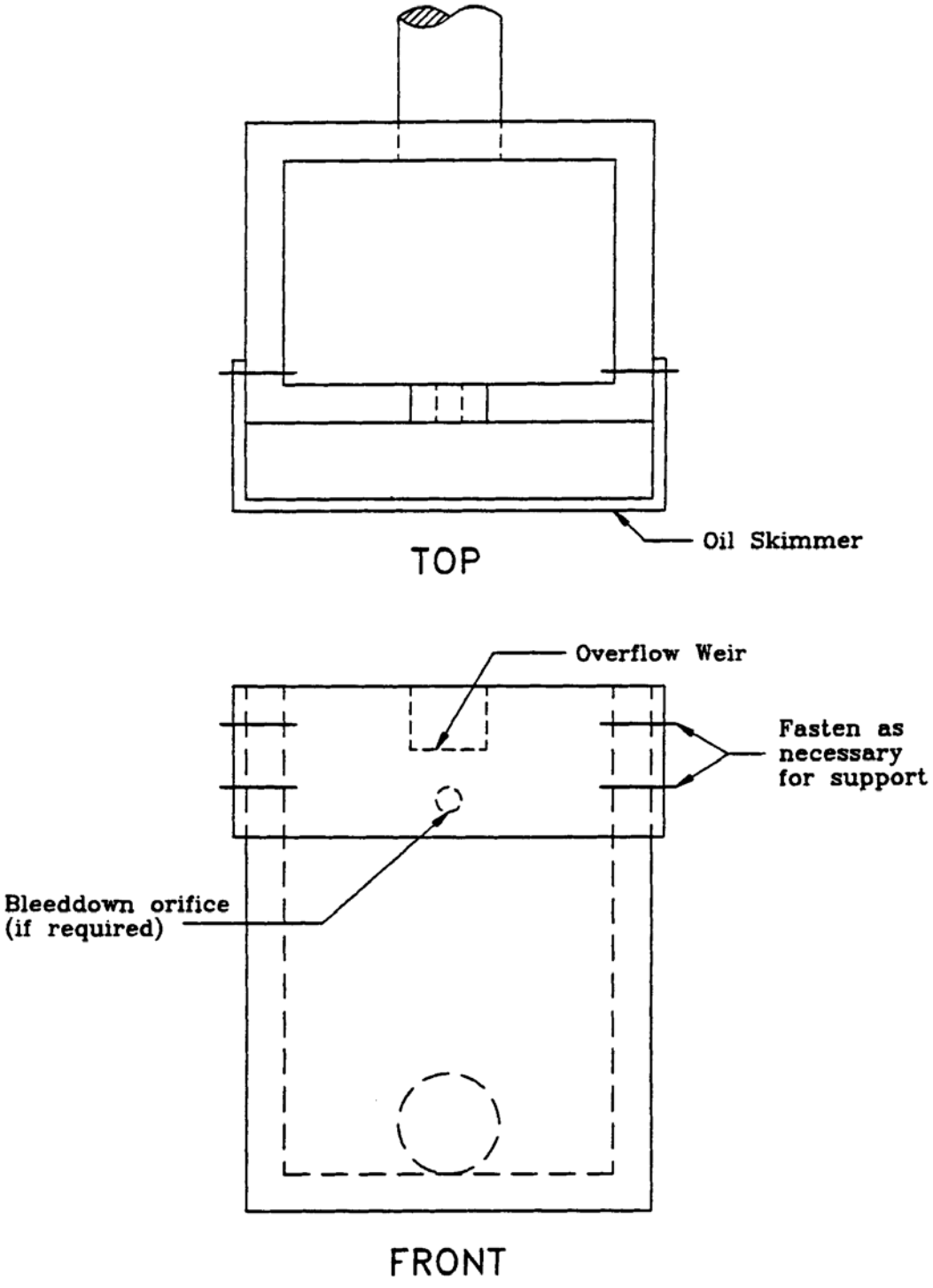
4.2 Erosion and Sediment Control Criteria for Stormwater Management Systems, Works and other Projects

Land clearing actions, including the construction of stormwater management systems or works, shall be designed, constructed, and maintained at all times so that erosion and sedimentation from the system, including the areas served by the system, do not cause or contribute to violations of applicable water quality standards in receiving waters. Further, because sedimentation of off-site lands can lead to public safety concerns, erosion and sediment controls shall be designed and implemented to retain sediment on-site. In particular, the erosion and sediment control requirements described in Part IV of Applicant's Handbook Volume I shall be followed during construction of the system.

4.3 Oil and Grease Control

Systems which receive stormwater from areas with a greater than 50 percent impervious area (excluding water bodies) or which are a potential source of oil and grease (e.g., gasoline station) must include a baffle, skimmer, grease trap or other mechanism suitable for preventing oil and grease from leaving the stormwater system in concentrations that would cause a violation of water quality standards. A typical illustration of a skimmer on an outlet structure is shown in Figure 4-1.

Figure 4-1. Oil skimmer detail for a typical outfall structure (N.T.S.)



4.4 On-Line and Off-line Stormwater Systems *Revised 6/1/18*

Pollutants in stormwater runoff from urbanized areas generally exhibit the "first flush" effect. This is the phenomenon where the concentrations of pollutants in stormwater runoff are highest during the early part of the storm with concentrations declining as the runoff continues. Substantial reductions in pollutant loads will occur when this first flush is captured and treated. Therefore, each Best Management Practice (BMP) specifies a required volume of stormwater runoff to be captured and treated (i.e., treatment volume) prior to release to surface or ground water.

There are two basic types of configurations for capturing the treatment volume: on-line and off-line systems. On-line systems (Figure 4-2) consist of a storage area which provides storage of the required treatment volume for smaller storm events and, if required, temporary detention storage for peak discharge control during larger storm events. Runoff volumes in excess of the treatment volume mix with the treatment volume in the basin and transport a portion of the pollutant mass load over the basin control structure.

Off-line treatment systems (Figure 4-3) divert the treatment volume into a basin which is designed for storage and treatment of the applicable treatment volume. Runoff volumes in excess of the treatment volume by-pass the off-line basin and are discharged to the receiving water or routed to a detention basin if peak discharge attenuation is required. A diversion box (Figure 4-4) may be utilized to divert the treatment volume to the off-line basin and route subsequent flows away from the off-line basin.

Off-line systems are generally more effective at removing pollutants than on-line systems because accumulated pollutants cannot be "flushed out" during storm events that produce runoff volumes exceeding the treatment storage volume. Consequently, on-line systems must treat a greater volume of runoff than off-line systems to reduce the likelihood of flushing accumulated pollutants out of the system and achieve the pollutant removal goals required by the Water Resource Implementation Rule (chapter 62-40, F.A.C.). Treatment volumes for each of the stormwater treatment practices described in this Volume are discussed in sections 5.0 through 12.9 of Part V of this Volume.

The treatment storage provided in an off-line system can be considered in the stage/storage calculations for peak discharge attenuation. Off-line systems should be designed to bypass essentially all additional stormwater runoff volumes greater than the treatment volume to a discharge point or other detention storage area. Of course, there will be some incremental additional storage in the off-line system associated with the hydraulic grade line at the weir structure in the typical diversion structure. This will depend on the size of the weir, but the weir should be sized to pass the design flow with minimal headwater.

Proposed off-line systems which will also serve to provide significant detention storage above the off-line treatment volume storage will be considered to function as on-line systems.

4.5 Hazardous or Toxic Substances

Systems serving a use that produces or stores hazardous or toxic substances shall be designed to have no stormwater discharge that contains such substances.

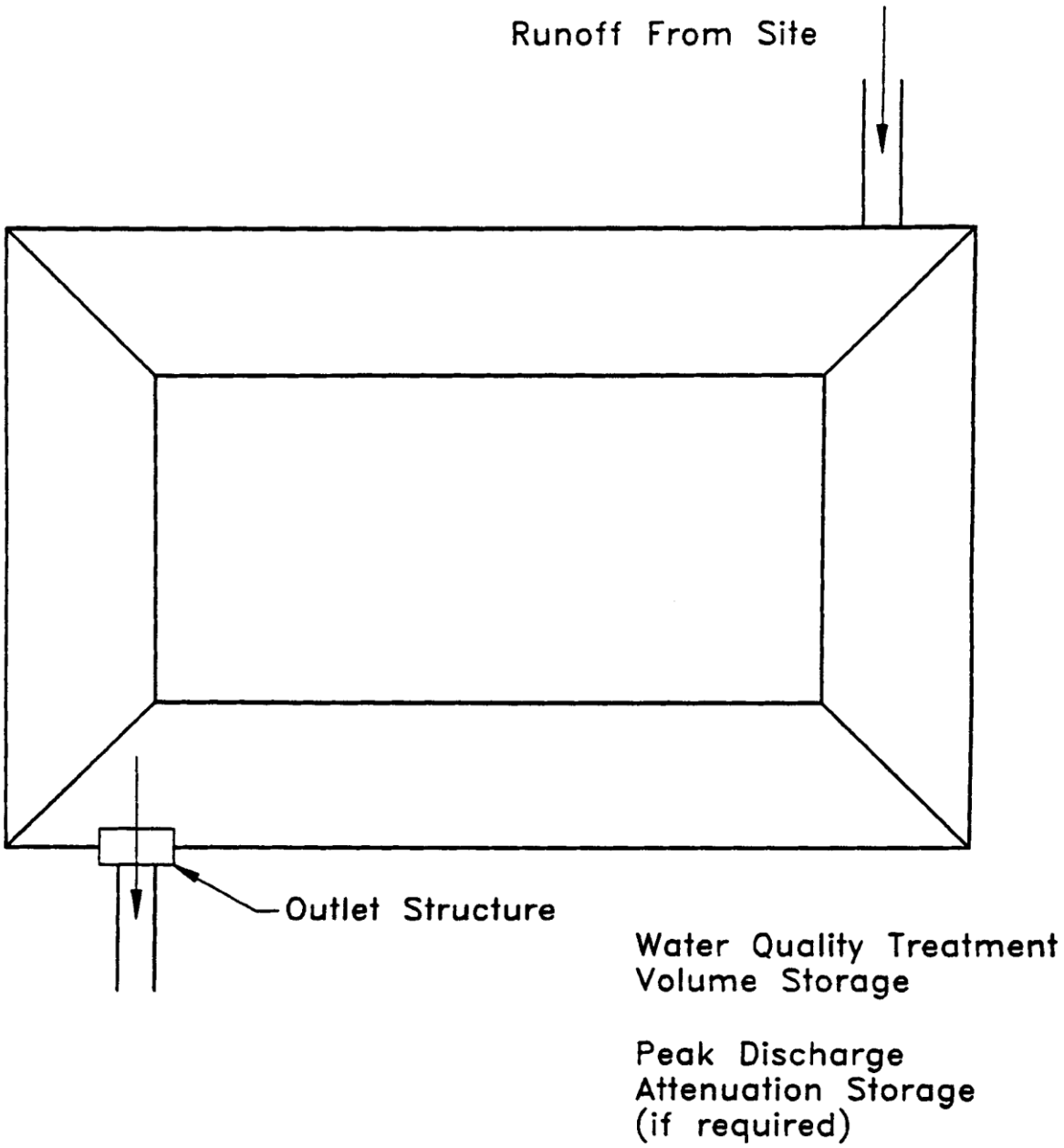


Figure 4-2. On-line treatment system

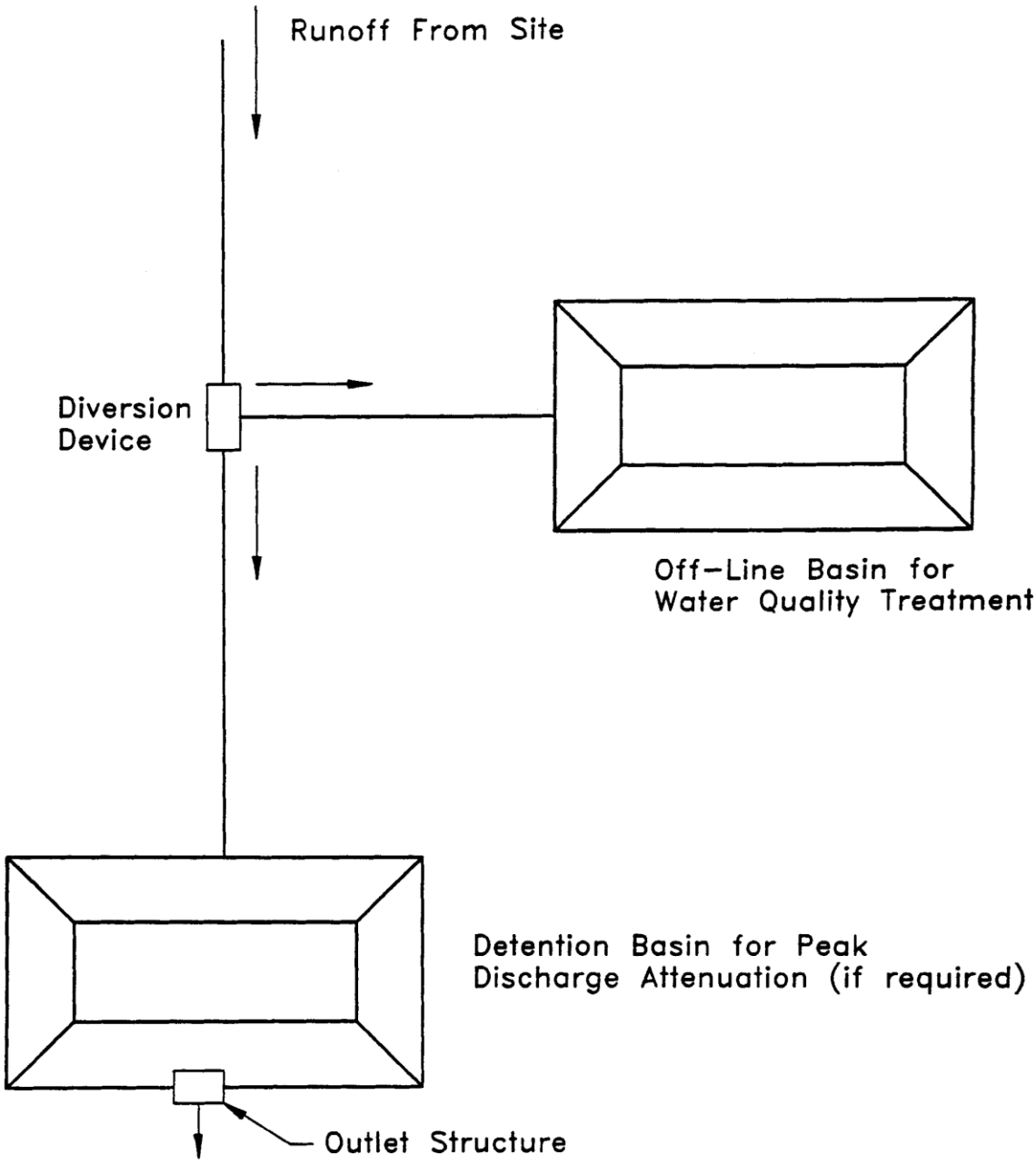


Figure 4-3. Off-line treatment system

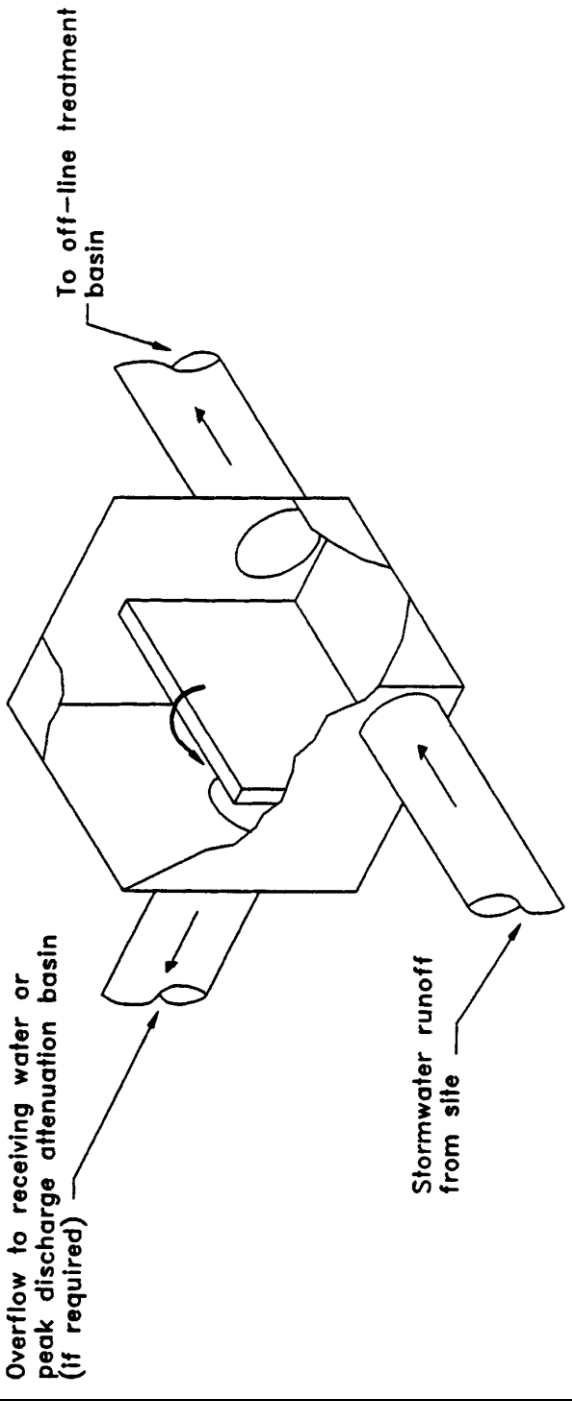


Figure 4-4. Diversion box (N.T.S.)

PART V – BEST MANAGEMENT PRACTICES

5.0 Retention System Design and Performance Criteria

5.1 Description *Revised 6/1/18*

Retention system is defined as a storage area designed to store a defined quantity of runoff, allowing it to percolate through permeable soils into the shallow ground water aquifer. Stormwater retention works best using a variety of retention systems throughout the project site. Examples of retention systems include:

- Man-made or natural depressional areas where the floor is graded as flat as possible and turf is established to promote infiltration and stabilize the basin slopes (see Figure 5-1)
- Shallow landscaped areas designed to store stormwater
- Vegetated swales with swale blocks or raised inlets
- Pervious concrete with continuous curb

Soil permeability and water table conditions must be such that the retention system can percolate the desired runoff volume within a specified time following a storm event. After drawdown has been completed, the basin does not hold any water, thus the system is normally "dry." Unlike detention basins, the treatment volume for retention systems is not discharged to surface waters.

Retention systems should not be located in close proximity to drinking water supply wells. Chapter 62-555, F.A.C., requires stormwater treatment facilities to be at least 100 feet from any public supply well. Chapter 62-532, F.A.C., identifies stormwater detention or retention basins as a “potentially moderate sanitary hazard” and includes additional setback requirements for certain wells from such basins. Chapter 40C-41, F.A.C., provides additional design features for systems constructed in Sensitive Karst Areas of the District where the drinking water aquifer is close to the land surface (see section 13.6).

Besides pollution control, retention systems can be utilized to promote the recharge of ground water to prevent saltwater intrusion in coastal areas or to maintain groundwater levels in aquifer recharge areas. Chapter 40C-41, F.A.C., contains recharge criteria for the Wekiva Recharge Protection Basin and the Tomoka River and Spruce Creek Hydrologic Basins (see sections 13.3.1 and 13.5.1). Retention systems can also be used to meet the runoff volume criteria for projects which discharge to land-locked lakes (see section 3.2 of this Volume).

There are several design and performance criteria specific to retention systems which are described below.

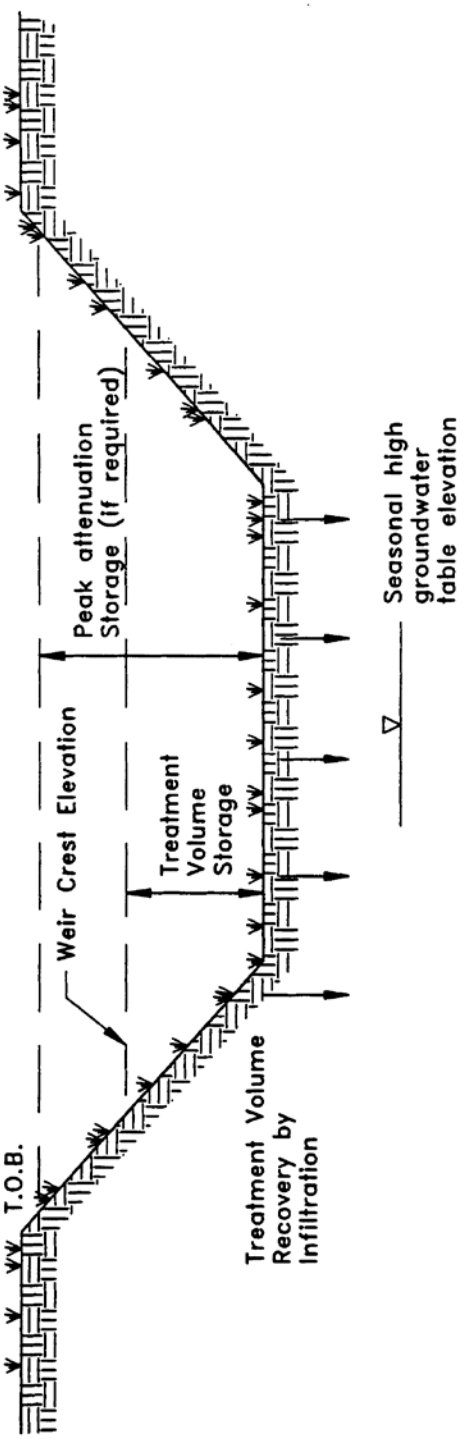


Figure 5-1. Retention (N.T.S.)

5.2 Treatment Volume

5.2.1

The first flush of runoff should be routed to the retention basin and percolated into the ground. Retention systems that discharge to Class III receiving water bodies shall provide for one of the following:

(a) *Off-line* retention of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater.

(b) *On-line* retention of an additional one half inch of runoff from the drainage area over that volume specified for off-line treatment.

(c) *On-line* retention that provides for percolation of the runoff from the three year, one-hour storm.

(d) *On-line* retention of the runoff from one inch of rainfall or 1.25 inches of runoff from the impervious area, whichever is greater, for systems which serve an area with less than 40 percent impervious surface and that contain only U.S. Department of Agriculture Natural Resources Conservation Service (SCS) hydrologic group "A" soils.

5.2.2

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting the applicant shall provide retention for one of the following:

(a) At least an additional fifty percent of the applicable treatment volume specified for off-line retention in (a), above. *Off-line* retention must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.

(b) *On-line* retention of an additional fifty percent of the treatment volume specified in (b), above.

(c) *On-line* retention of the runoff from the three-year, one-hour storm.

(d) *On-line* retention that provides at least an additional 50 percent of the runoff volume specified in (d), above, for systems which serve an area with less that 40 percent impervious surface and that contain only U.S. Department of

Agriculture Natural Resources Conservation Service (SCS) hydrologic group "A" soils.

5.3 Recovery Time

The retention system must provide the capacity for the appropriate treatment volume of stormwater specified in section 5.2 within 72 hours following a storm event assuming average antecedent moisture conditions. In retention systems, the stormwater is drawn down by natural soil infiltration and dissipation into the ground water table, evaporation, or evapotranspiration, as opposed to underdrain systems which rely on artificial methods like drainage pipes.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to saturated depending on the amount of rainfall received prior to a given point in time. Therefore, "average AMC" means the soil is neither dry or saturated, but at an average moisture condition at the beginning of a storm event when calculating recovery time for retention systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC, and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

5.4 Basin Stabilization

The retention basin should be stabilized with pervious material or permanent vegetative cover. To provide proper treatment of the runoff in very permeable soils, permanent vegetative cover must be utilized when U.S. Department of Agriculture Natural Resources Conservation Service (SCS) hydrologic group "A" soils underlie the retention basin, except for pervious pavement systems.

5.5 Retention Basin Construction

5.5.1 Overview

Retention basin construction procedures and the overall sequence of site construction are two key factors that can control the effectiveness of retention basins. Sub-standard construction methods or construction sequence can render the basin inoperable prior to completion of site development.

5.5.2 Construction Requirements

The following construction procedures are recommended to avoid degradation of retention basin infiltration capacity due to construction practices (Andreyev and Wiseman 1989):

(a) Initially construct the retention basin to rough grade by under-excavating the basin bottom and sides by approximately 12 inches.

(b) After the drainage area contributing to the basin has been fully stabilized, the interior side slopes and basin bottom should be excavated to final design specifications. The excess soil and undesirable material should be carefully excavated and removed from the pond so that all accumulated silts, clays, organics, and other fine sediment material has been removed from the pond area. The excavated material should be disposed of beyond the limits of the drainage area of the basin.

(c) Once the basin has been excavated to final grade, the entire basin bottom should be deep raked and loosened for optimal infiltration.

(d) Finally, the basin should be stabilized according to section 5.4, above.

5.6 References

Andreyev, N.E., and L.P. Wiseman. 1989. *Stormwater Retention Pond Infiltration Analysis in Unconfined Aquifers*. Prepared for Southwest Florida Water Management District, Brooksville, Florida.

6.0 Underdrain Design and Performance Criteria

6.1 Description

Stormwater underdrain systems consist of a dry basin underlain with perforated drainage pipe which collects and conveys stormwater following percolation from the basin through suitable soil. Underdrain systems are generally used where high water table conditions dictate that recovery of the stormwater treatment volume cannot be achieved by natural percolation (i.e, retention systems) and suitable outfall conditions exist to convey flows from the underdrain system to receiving waters. Schematics of a typical underdrain system are shown in Figures 6-1 and 6-2.

Underdrain systems are intended to control both the water table elevation over the entire area of the treatment basin and provide for the drawdown of the treatment volume. Underdrains are utilized where the soil permeability is adequate to recover the treatment volume since the on-site soils overlay the perforated drainage pipes.

There are several design and performance criteria which must be met in order for a underdrain system to meet the rule requirements. The underdrain rule criteria are described below.

6.2 Treatment Volume

The first flush of runoff should be detained in a dry detention basin and percolated through the soil. Dry detention systems that discharge to Class III receiving water bodies, shall provide for either of the following treatment volumes:

(a) *Off-line* retention of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, or

(b) *On-line* retention of an additional one half inch of runoff from the drainage area over that volume specified for off-line treatment.

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting the applicant shall provide retention for either of the following:

(a) At least an additional fifty percent of the applicable treatment volume specified for off-line retention in (a), above. *Off-line* retention must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.

(b) *On-line* retention of the runoff from the three-year, one-hour storm or an additional fifty percent of the treatment volume specified in (b), above, whichever is greater.

6.3 Recovery Time

The system should be designed to provide for the drawdown of the appropriate treatment volume specified in section 6.2 within 72 hours following a storm event. The treatment volume is recovered by percolation through the soil with subsequent transport through the underdrain pipes. The system should only contain standing water within 72 hours of a storm event.

The pipe system configuration (e.g., pipe size, depth, pipe spacing, and pipe inflow capacity) of the underdrain system must be designed to achieve the recovery time requirement.

6.4 Safety Factor

The underdrain system must be designed with a safety factor of at least two unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that a lower safety factor is appropriate for the specific site conditions. Examples of how to apply this factor include but are not limited to the following:

(a) Reducing the design percolation rate by half

(b) Designing for the required drawdown within 36 hours instead of 72 hours.

6.5 Underdrain Media

To provide proper treatment of the runoff, at least two feet of indigenous soil must be between the bottom of the basin storing the treatment volume and the outside of the underdrain pipes (or gravel envelope as applicable).

6.6 Filter Fabric

Underdrain systems shall utilize filter fabric or other means to prevent the soil from moving into and clogging perforated pipe.

6.7 Inspection and Cleanout Ports

To facilitate maintenance of the underdrain system, capped and sealed inspection and cleanout ports which extend to the surface of the ground should be provided, at a minimum, at the following locations for each drainage pipe:

(a) The terminus

(b) At every 400 feet or every bend of 45 or more degrees, whichever is shorter.

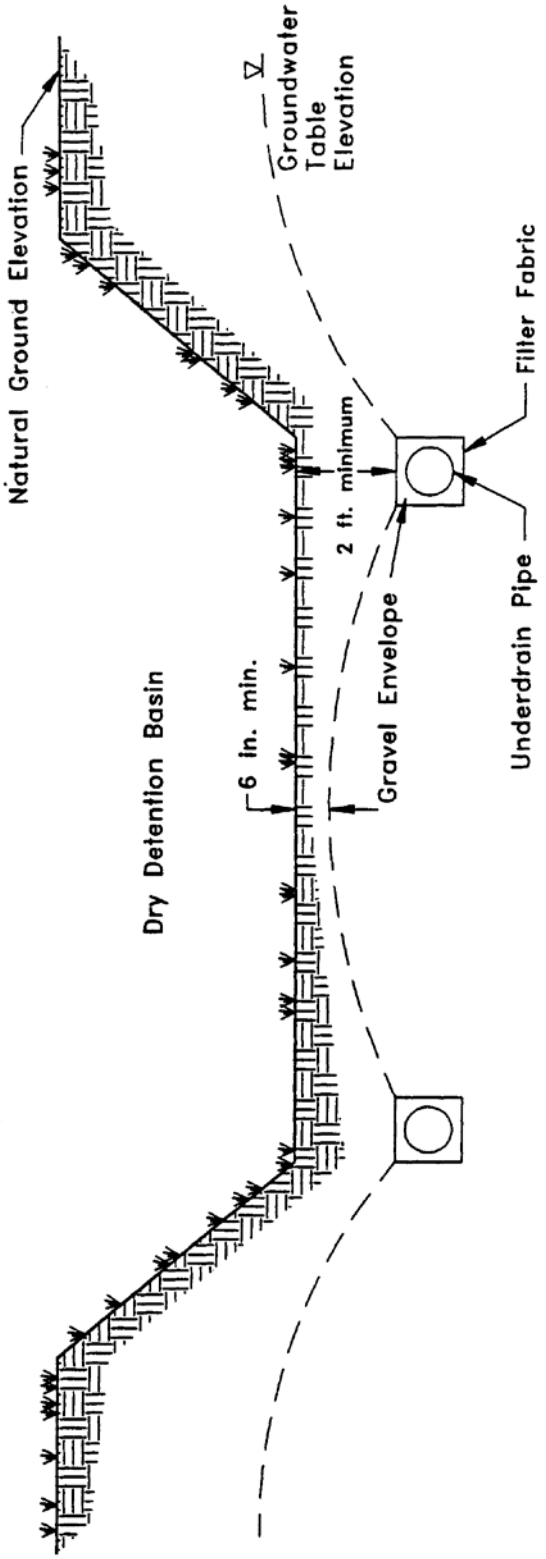


Figure 6-1. Cross-section of underdrain system (N.T.S.)

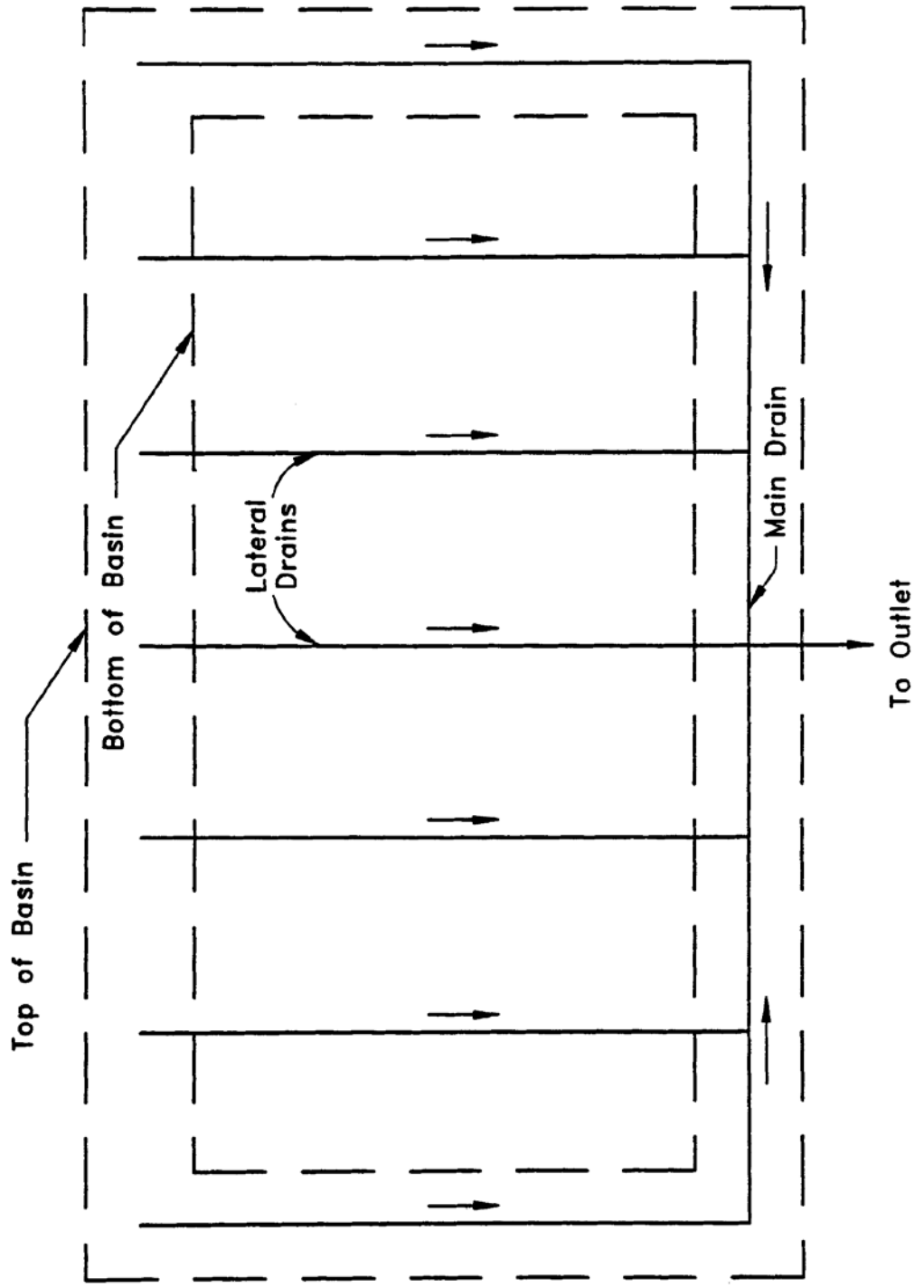


Figure 6-2. Top view of underdrain system (N.T.S.)

6.8 Basin Stabilization

The underdrain basin shall be stabilized with permanent vegetative cover and should contain standing water only immediately following a rainfall event.

6.9 References

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

7.0 Exfiltration Trench Design and Performance Criteria

7.1 Description *Revised 6/1/18*

Exfiltration trench is a subsurface system consisting of a conduit such as perforated pipe surrounded by natural or artificial aggregate which temporarily stores and infiltrates stormwater runoff (Figure 7-1). Stormwater passes through the perforated pipe and infiltrates through the trench walls and bottom into the shallow groundwater aquifer. The perforated pipe increases the storage available in the trench and helps promote infiltration by making delivery of the runoff more effective and evenly distributed over the length of the system (Livingston et al. 1988). Generally, exfiltration trench systems are utilized where space is limited and/or land costs are high (i.e., downtown urban areas).

Soil permeability and water table conditions must be such that the trench system can percolate the required stormwater runoff treatment volume within a specified time following a storm event. The trench system is returned to a normally "dry" condition when drawdown of the treatment volume is completed. Like retention basins, the treatment volume in exfiltration trench systems is not discharged to surface waters. Thus, exfiltration is considered a type of retention system.

Exfiltration trench systems should not be located in close proximity to drinking water supply wells. Chapter 62-555, F.A.C., requires stormwater treatment systems to be at least 100 feet from any public supply well. Chapter 62-532, F.A.C., identifies stormwater detention or retention basins as a “potentially moderate sanitary hazard” and includes additional setback requirements for certain wells from such basins. Chapter 40C-41, F.A.C., provides additional design features for systems constructed in Sensitive Karst Areas of the District where the drinking water aquifer is close to the land surface (see section 13.6).

Besides pollution control, exfiltration trench systems can be utilized to promote the recharge of ground water and to prevent saltwater intrusion in coastal areas, or to maintain groundwater levels in aquifer recharge areas. Chapter 40C-41, F.A.C., contains recharge criteria for the Wekiva Recharge Protection Basin and the Tomoka River and Spruce Creek Hydrologic Basins (see sections 13.3.1 and 13.5.1). Exfiltration trench systems can also be used to meet the runoff volume criteria for projects which discharge to land-locked lakes (see section 3.2.1 of this Volume).

The operational life of an exfiltration trench is believed to be short (possibly 5 to 10 years) for most exfiltration systems. Sediment accumulation and clogging by fines can reduce the life of an exfiltration trench (Wanielista et al. 1991). Total replacement of the trench may be the only possible means of restoring the treatment capacity and recovery of the system. Periodic replacement of the trench should be considered routine operational maintenance when selecting this management practice.

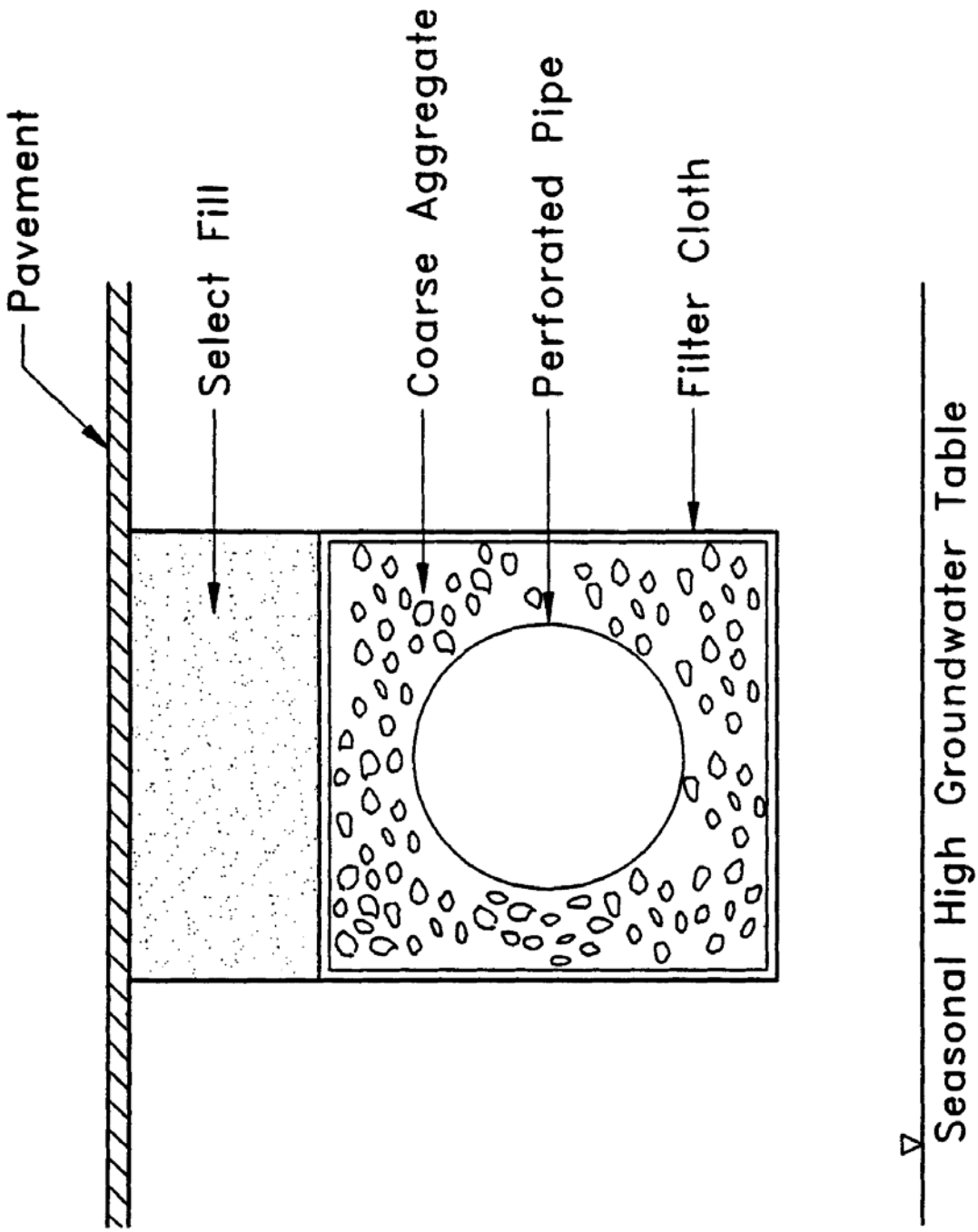


Figure 7-1. Cross-section of typical underground exfiltration trench (N.T.S.)

There are several design and performance criteria which must be met in order for an exfiltration trench system to meet the District's requirements. A description of each criterion is presented below.

7.2 Treatment Volume

The first flush of runoff should be collected in the exfiltration trench and infiltrated into the surrounding soil. For systems which discharge to Class III receiving water bodies, the exfiltration trench shall provide either of the following:

(a) *Off-line* storage of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater.

(b) *On-line* storage of an additional one-half inch of runoff from the drainage area over that volume specified for off-line treatment.

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting the applicant shall provide storage for either of the following:

(a) At least an additional fifty percent of the applicable treatment volume specified for off-line storage in (a), above. *Off-line* storage must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.

(b) *On-line* storage of the runoff from the three-year, one-hour storm or an additional fifty percent of the treatment volume specified in (b), above, whichever is greater.

Exfiltration trench systems must be designed to have the capacity to retain the required treatment volume without considering discharges to ground or surface waters.

7.3 Recovery Time

The system must be designed to provide for the appropriate treatment volume of stormwater runoff specified in section 7.2 within 72 hours following a storm event assuming average antecedent moisture conditions. The stormwater is drawn down by infiltration into the soil.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to

saturated depending on the amount of rainfall received prior to a given point in time. Therefore, "average AMC" means the soil is neither dry or saturated, but at an average moisture condition at the beginning of a storm event when calculating recovery time for exfiltration systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC, and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

7.4 Safety Factor

The exfiltration trench system must be designed with a safety factor of at least two unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that a lower safety factor is appropriate for the specific site conditions. For example, two possible ways to apply this factor are:

(a) Reducing the design percolation rate by half

(b) Designing for the required drawdown within 36 hours instead of 72 hours

7.5 Minimum Dimensions

The perforated pipe shall be designed with a 12-inch minimum pipe diameter and a three (3)-foot minimum trench width. The perforated pipe should be located within the trench section to minimize the accumulation of sediment in the aggregate void storage and maximize the preservation of this storage for stormwater treatment. To meet this goal, it is recommended that the perforated pipe be located at or within 6 inches of the trench bottom. The maximum trench width will be limited by the rate at which stormwater can effectively fill the void storage within the trench.

7.6 Filter Fabric

Exfiltration trench systems shall be designed so that aggregate in the trench is enclosed in filter fabric. This serves to prevent migration of fine materials from the surrounding soil that could result in clogging of the trench. Wanielista et al. (1991) reports that woven fabric (Mirafi 700XG) performed better in mixed sand and silty soil than non-woven fabric (Mirafi 140N). On the other hand, the 140N had higher exfiltration rates in sandy soils than the woven fabric.

Filter fabric may also be utilized directly surrounding the perforated pipe. In this instance, sedimentation of particulates will occur in the perforated pipe. Consequently, the pipe is more prone to clogging and reductions in capacity will occur more often than usual. Livingston et al. (1988) points out that while this may seem unacceptable, the pipe may be cleaned relatively easily using high pressure hoses, vacuum systems, etc. On the other hand, designs without the fabric directly surrounding the perforated pipe require complete replacement when clogging occurs.

7.7 Inspection and Cleanout Structures

Inspection and cleanout structures which extend to the surface of the ground must be provided, at a minimum, at the inlet and terminus of each exfiltration pipe. Inlet structures should include sediment sumps. These inspection and cleanout structures provide three primary functions:

(a) Observation of how quickly the trench recovers following a storm

(b) Observation of how quickly the trench fills with sediment

(c) Maintenance access to the perforated pipe

(d) Sediment control (sumps)

Standard precast concrete inlets and manholes are widely used to furnish the inspection and cleanout access.

7.8 Ground Water Table

The exfiltration trench system must be designed so that the invert elevation of the trench is at least two feet above the seasonal high ground water table elevation unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that an alternative design is appropriate for the specific site conditions.

7.9 Construction

During construction, measures should be implemented to limit the parent soil and debris from entering the trench. Wanielista (1991) reports complete failure (no exfiltration) when a 1" to 2" thickness of parent soil and stormwater solids were added to an exfiltration trench. Applicants and system designers should consult Part IV of Volume I for information on erosion and sediment control. Any method used to reduce the amount of fines entering the exfiltration trench during construction will extend the life of the system (Wanielista et al. 1991). The use of an aggregate with minimal fines is also recommended (Wanielista et al. 1991).

7.10 Alternative Designs

Wanielista et al. (1991) describes an alternative procedure for designing exfiltration trenches based on long term mass balance of an exfiltration system utilizing local rainfall conditions. Fifteen years of hourly precipitation data from six regions in Florida were used as input for the mass balance. From these simulations, design curves for exfiltration systems were developed. These curves relate the rate at which stored runoff is removed from the trench to the volume of storage within the trench. These curves can be used to design an exfiltration trench based on diversion efficiencies of 50%, 60%, 70%, 80%, 85%, 90%, and 95%. In lieu of the requirements of section 7.2, the District accepts this methodology for those areas of the District (i.e., Jacksonville and Orlando) for which the curves have been developed. Applicants designing systems which discharge to Class III receiving waters shall use the 80% curve and those that direct discharge to Class I, Class II, and Outstanding Florida Waters shall utilize the 95% curve.

7.11 References

Livingston, E.H., E. McCarron, J. Cox, and P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

Wanielista, M.P., M.J. Gauthier, and D.L. Evans. 1991. *Design and Performance of Exfiltration Systems*. Department of Civil and Environmental Engineering, University of Central Florida, Orlando, Florida.

8.0 Wet Detention Design and Performance Criteria

8.1 Description

These systems are permanently wet ponds which are designed to slowly release collected stormwater runoff through an outlet structure. A schematic of a typical wet detention system is shown in Figure 8-1.

There are several components in a wet detention system which must be properly designed to achieve the required level of stormwater treatment. A description of each design feature and its importance to the treatment process is presented below. The design and performance criteria for wet detention systems are discussed below.

8.2 Treatment Volume

For wet detention systems, the design treatment volume is the greater of the following:

(a) one inch of runoff over the drainage area

(b) 2.5 inches times the impervious area (excluding water bodies)

Additional treatment volume is required for systems which discharge directly to Class I, Class II, Outstanding Florida Waters, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting (see section 8.13 of this Volume).

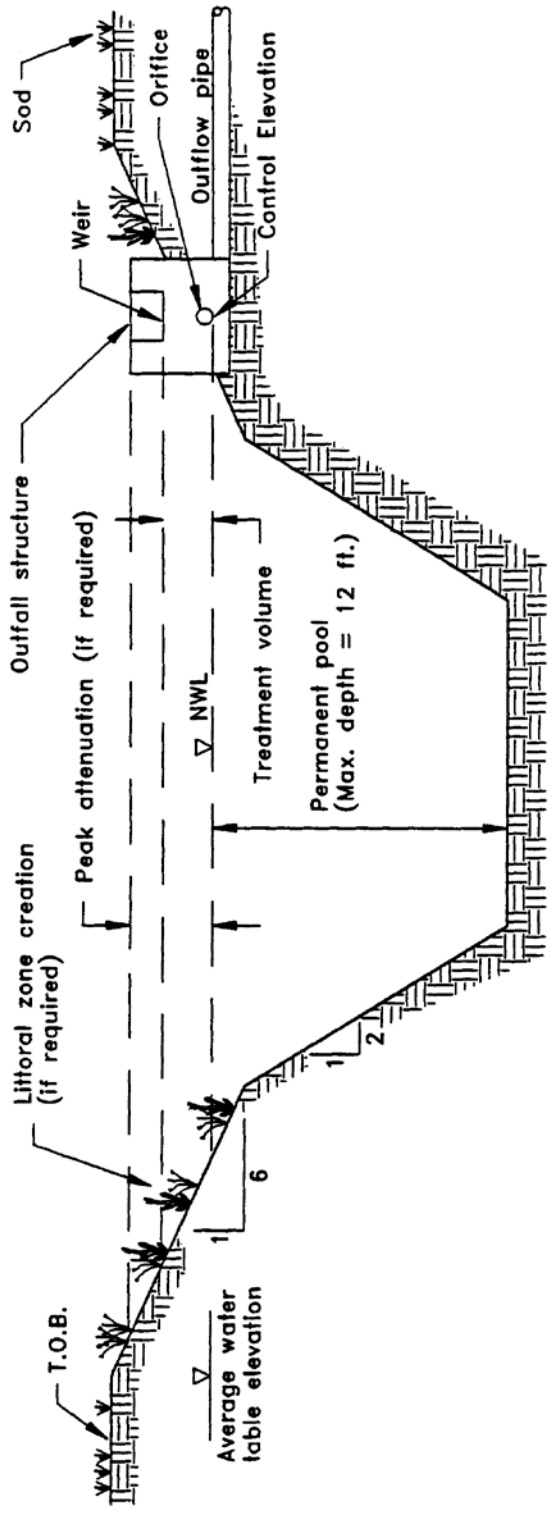


Figure 8-1. Wet detention (N.T.S.)

8.3 Recovery Time

The outfall structure shall be designed to drawdown one-half the required treatment volume within 24 and 30 hours following a storm event, but no more than one-half of this volume will be discharged within the first 24 hours.

8.4 Outlet Structure *Revised 6/1/18*

The outlet structure generally includes a drawdown device (such as an orifice, "V" or square notch weir) set to establish a normal water control elevation and slowly release the treatment volume (see Figures 8-2 and 8-3 for schematics). The design of the outfall structure must also accommodate the passage of ground water baseflows and flows from upstream stormwater management systems (see Figure 8-4).

The control elevation shall be set at or above the design tailwater elevation so the pond can effectively recover the treatment storage. Drawdown devices shall have a cross-sectional area of at least six (6) square inches and be at least two (2) inches wide. If the device is a “V” notch, the notch shall be at least twenty (20) degrees. Drawdown devices less than 6 inches wide or less than 45 degrees for "V" notches shall include a device to minimize clogging. Examples of such devices include baffles, grates, screens, and pipe elbows.

8.5 Permanent Pool

The permanent pool shall be sized to provide at least a 14-day average residence time during the wet season (June - October).

Additional permanent pool volume may be required for wet detention systems which directly discharge to Class I, Class II, or Outstanding Florida Waters (see section 8.13 of this Volume).

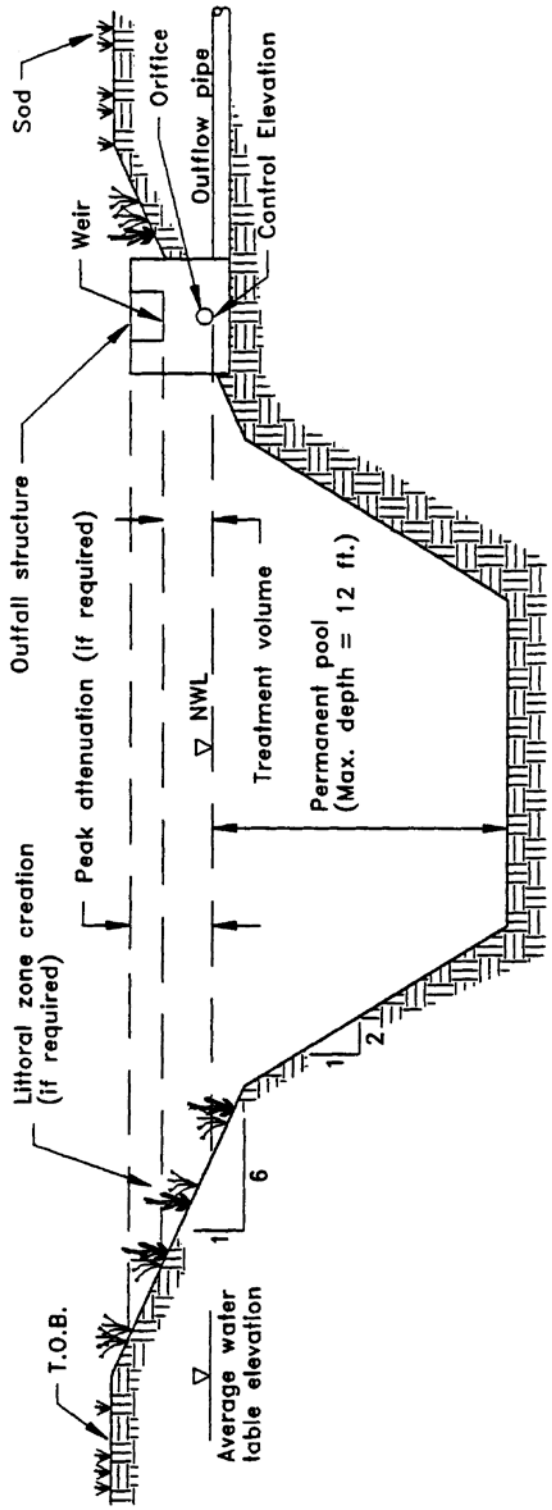


Figure 8-1. Wet detention (N.T.S.)

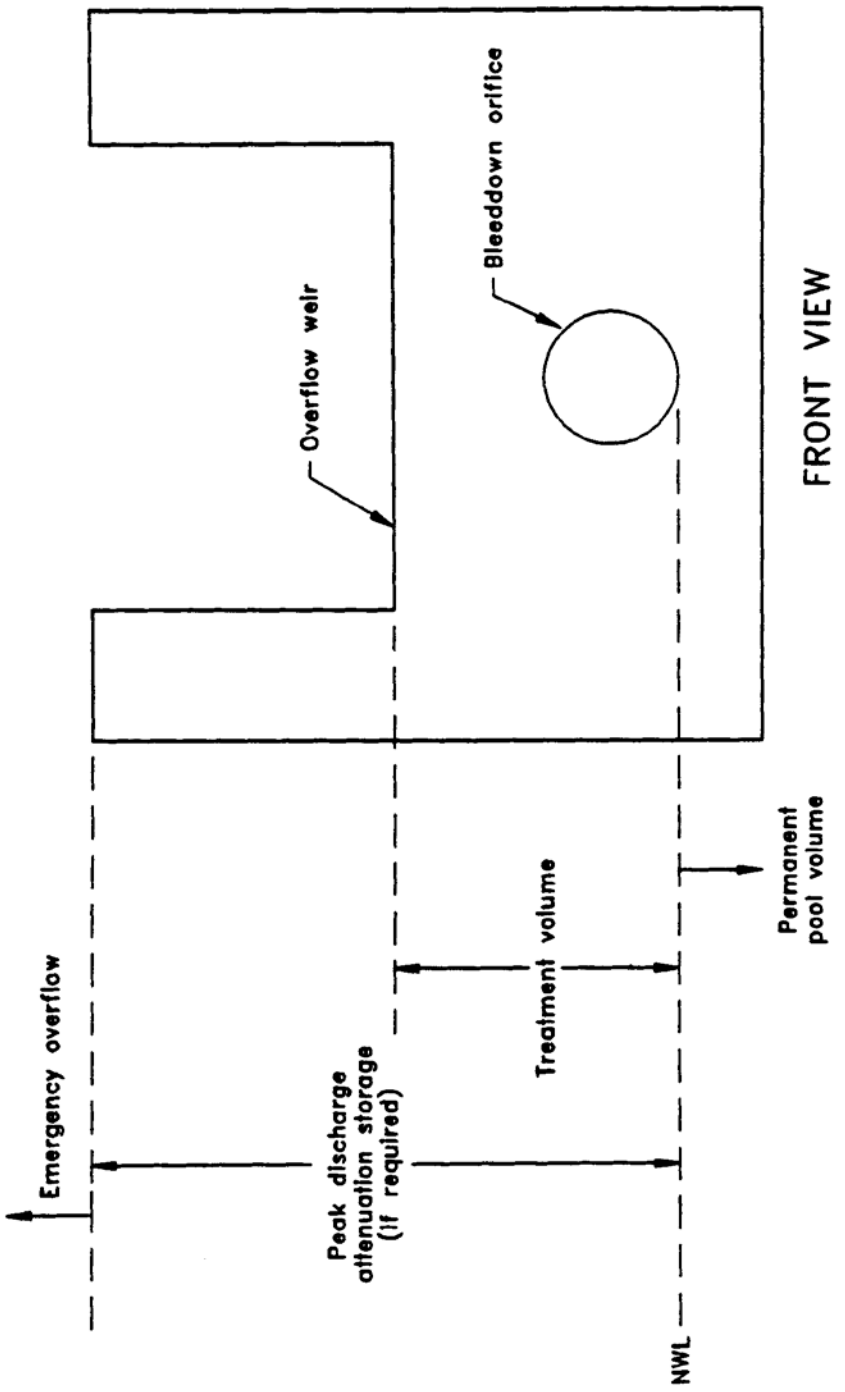


Figure 8-2. Typical wet detention outfall structure (N.T.S.)

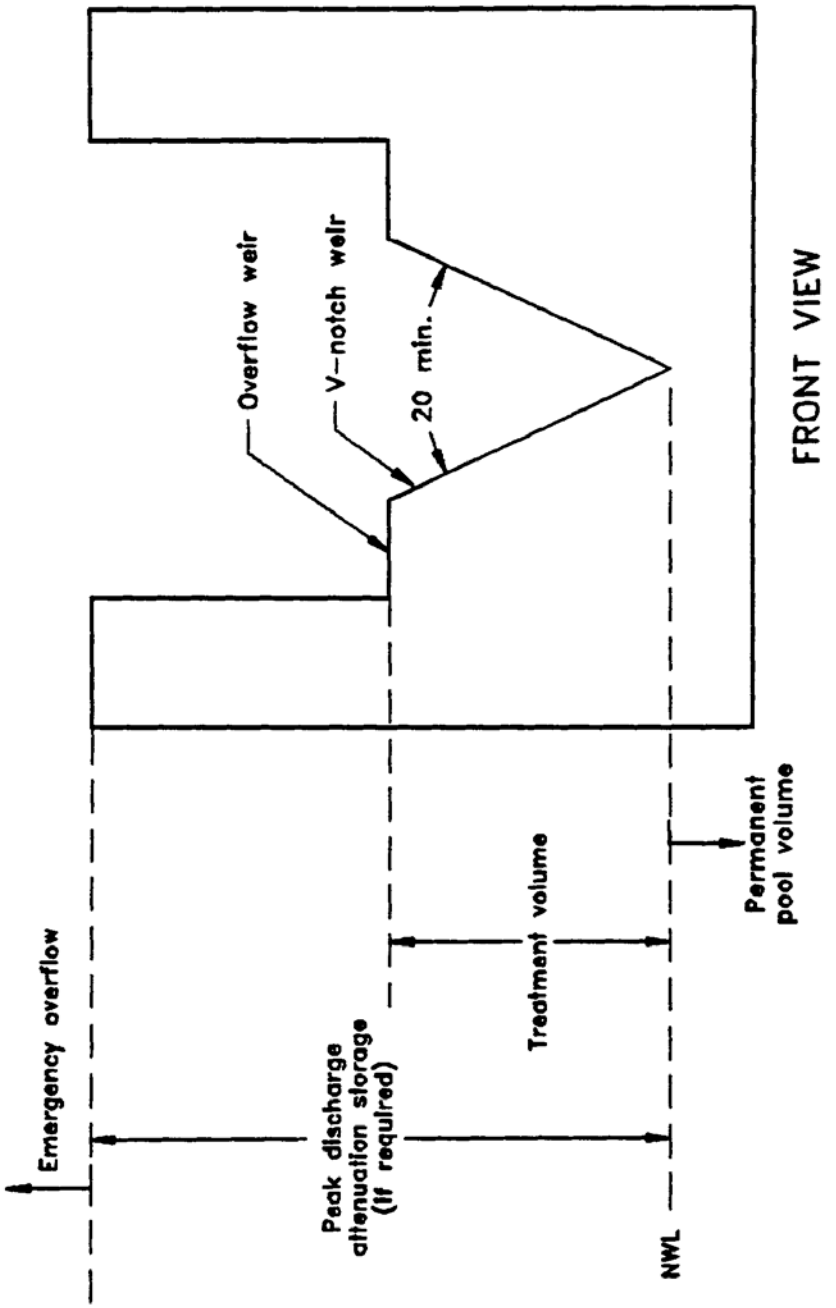


Figure 8-3. Typical wet detention outfall structure with "V"-notch weir (N.T.S.)

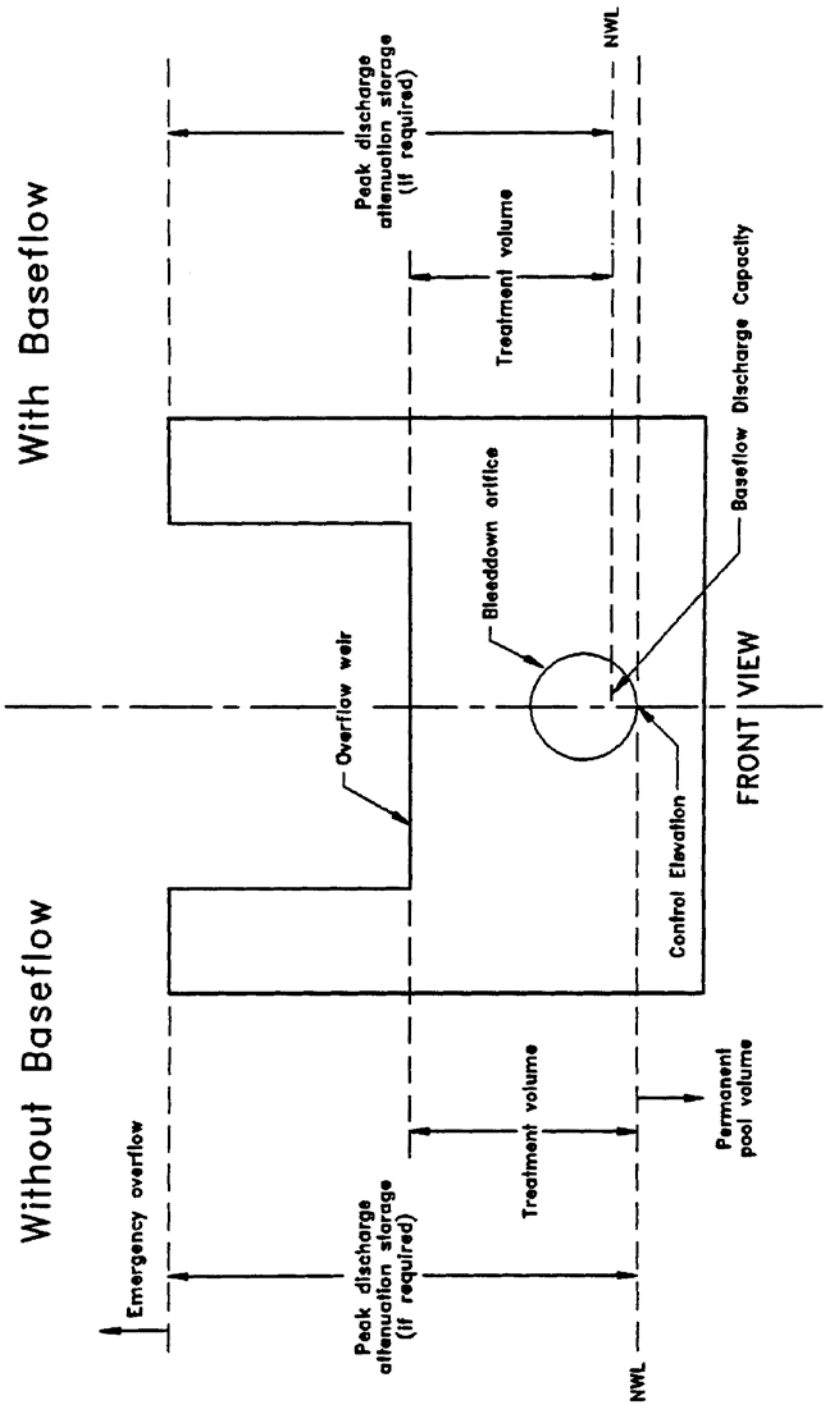


Figure 8-4. Typical wet detention outfall structure with and without baseflow conditions (N.T.S.)

8.6 Littoral Zone

The littoral zone is that portion of a wet detention pond which is designed to contain rooted aquatic plants. The littoral area is usually provided by extending and gently sloping the sides of the pond down to a depth of 2-3 feet below the normal water level or control elevation. Also, the littoral zone can be provided in other areas of the pond that have suitable depths (i.e., a shallow shelf in the middle of the lake).

The littoral zone is established with native aquatic plants by planting and/or the placement of wetland soils containing seeds of native aquatic plants. A specific vegetation establishment plan must be prepared for the littoral zone. The plan must consider the hydroperiod of the pond and the type of plants to be established. Livingston et al. (1988) has published a list of recommended native plant species suitable for littoral zone planting. In addition, a layer of muck can be incorporated into the littoral area to promote the establishment of the wetland vegetation. When placing muck, special precautions must be taken to prevent erosion and turbidity problems in the pond and at its discharge point while vegetation is becoming established in the littoral zone.

The following is a list of the design criteria for wet detention littoral zones:

(a) The littoral zone shall be gently sloped (6H:1V or flatter). At least 30 percent of the wet detention pond surface area shall consist of a littoral zone. The percentage of littoral zone is based on the ratio of vegetated littoral zone to surface area of the pond at the control elevation.

(b) The treatment volume should not cause the pond level to rise more than 18 inches above the control elevation unless the applicant affirmatively demonstrates that the littoral zone vegetation can survive at greater depths.

(c) Within 24 months of completion of the system or as specified by permit condition, 80 percent coverage of the littoral zone by suitable aquatic plants is required.

(d) Planting of the littoral zone is recommended to meet the 80% coverage requirement. As an alternative to planting, portions of the littoral zone may be established by placement of wetland top soils (at least a four inch depth) containing a seed source of desirable native plants. When utilizing this alternative, the littoral zone must be stabilized by mulching or other means and at least the portion of the littoral zone within 25 feet of the inlet and outlet structures must be planted.

8.7 Littoral Zone Alternatives

As an option to establishing and maintaining vegetative littoral zones as described in section 8.6, the applicant can provide either:

(a) An additional 50% of the appropriate permanent pool volume as required in section 8.5 or 8.13, or

(b) Pre-treatment of the stormwater prior to the stormwater entering the wet detention pond. The level of pre-treatment must be at least that required for retention, underdrain, exfiltration, or swale systems. See section 8.11 of this Volume for additional information on pre-treatment.

8.8 Pond Depth

Wet detention systems shall provide for a maximum pond depth of 12 feet and a mean depth (pond volume divided by the pond area at the control elevation) between 2 and 8 feet.

8.9 Pond Configuration

The average length to width ratio of the pond must be at least 2:1.

If short flow paths are unavoidable, the effective flow path can be increased by adding diversion barriers such as islands, peninsulas, or baffles to the pond. Inlet structures should be designed to dissipate the energy of water entering the pond. Examples of good and poor pond configurations are given in Figure 8-5.

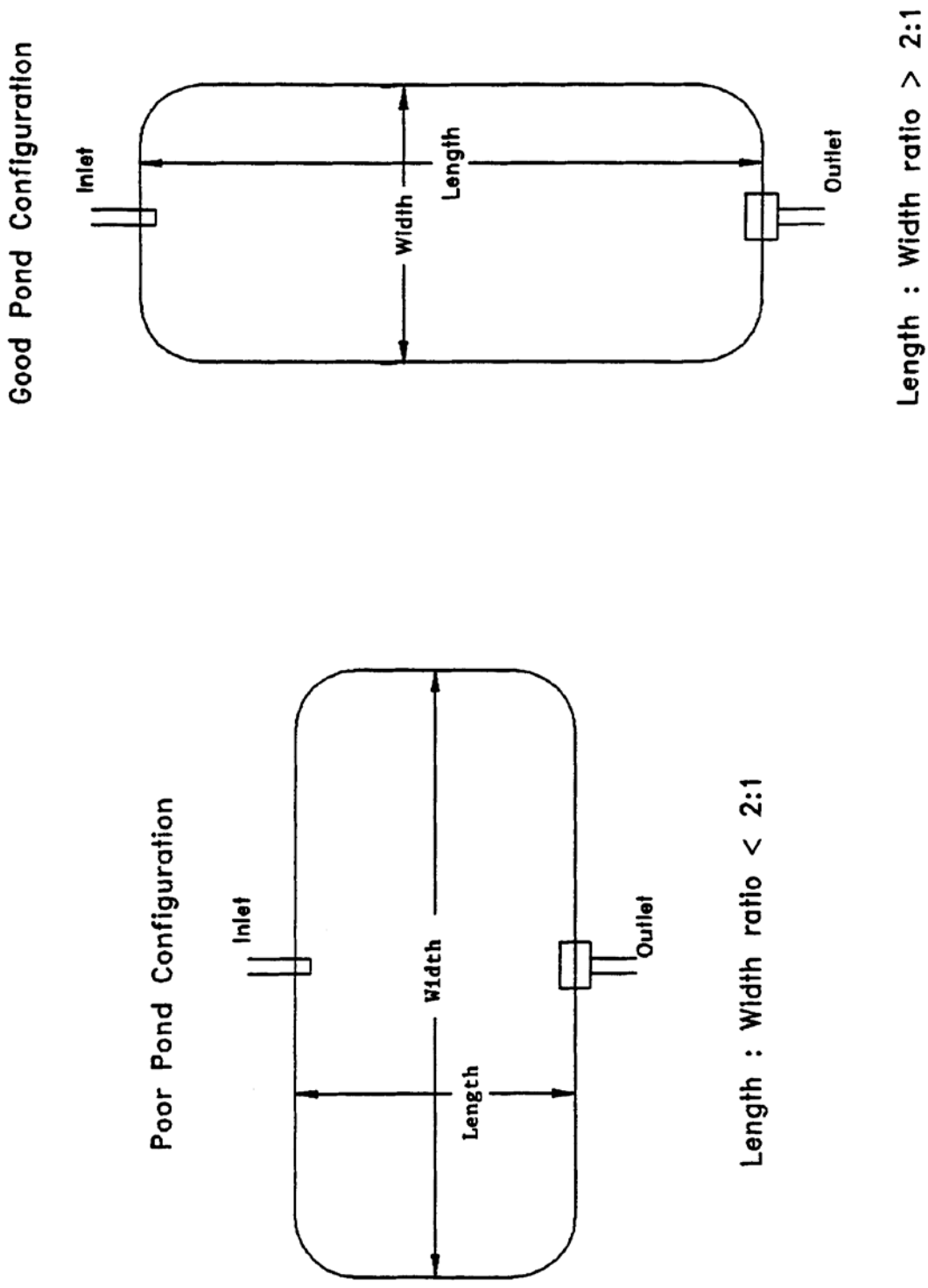


Figure 8-5. Examples of good and poor wet detention pond configurations (N.T.S.)

8.10 Ground Water Table

To minimize ground water contributions which may lower treatment efficiencies, the control elevation shall be set at or above the normal on-site ground water table elevation (Yousef et al. 1990). This elevation may be determined by calculating the average of the seasonal high and seasonal low ground water table elevations.

Ground water inflow (baseflow) must be considered when the control elevation is set below the normal ground water table elevation or the project utilizes underdrains (i.e., road underdrains) to control ground water conditions on-site. The design of the outfall structure must provide for the discharge of baseflow at the design normal water level in the pond. Baseflow rates must be included in the drawdown calculations for the outfall structure. Baseflow shall also be considered in the permanent pool residence time design. Establishment of the normal water level in the pond will also be influenced by baseflow conditions (see Figure 8-4).

8.11 Pre-treatment

"Pre-treatment" is defined as the treatment of a portion of the runoff prior to its entering the wet detention pond. Pre-treatment increases the pollutant removal efficiency of the overall stormwater system by reducing the pollutant loading to the wet detention pond. Pre-treatment may be used to enhance the appearance of the wet detention pond or meet the additional treatment criteria for discharges to receiving water which are classified as Class I, Class II, Outstanding Florida Waters (OFWs), or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting.

For developments where the appearance of the lake is important, pre-treatment can reduce the chances of algal blooms and slow the eutrophication process. Some types of pre-treatment practices include utilizing vegetative swales for conveyance instead of curb and gutter, perimeter swales or berms around the lake, oil and grease skimmers on inlet structures, retention storage in swales with raised inlets, or shallow landscaped retention areas (when soils and water table conditions will allow for adequate percolation).

For systems in which pre-treatment is utilized to meet the additional design criteria requirements for systems which directly discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, pre-treatment practices must meet the appropriate design and performance criteria for that BMP. Acceptable types of pre-treatment include the following:

(a) Retention systems which meet the design and performance criteria in section 5,

(b) Underdrain systems which meet the design and performance criteria in section 6,

(c) Exfiltration trench section 7, or

(d) Swales systems which meet the design and performance criteria in section 9.

Alternative pre-treatment methods will be evaluated on a case-by-case basis by the District. Applicants or system designers are encouraged to meet with District staff in a pre-application conference if alternative methods are proposed.

8.12 Pond Side Slopes

The pond must be designed so that the average pond side slope measured between the control elevation and two feet below the control elevation is no steeper than 3:1 (horizontal:vertical).

8.13 Direct Discharges to Class I, Class II, OFWs, or Shellfishing Waters

Wet detention systems which discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, must provide either:

(a) An additional fifty percent of both the required treatment and permanent pool volumes

(b) Pre-treatment of the stormwater prior to the stormwater entering the wet detention pond. The level of pre-treatment must be at least that required for retention, underdrain, exfiltration, or swale systems (see section 8.11 of this Volume).

8.14 References

Camp Dresser & McKee Inc (CDM). 1985. *An Assessment of Stormwater Management Programs.* Prepared for Florida Department of Environmental Regulation, Tallahassee, Florida.

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

Yousef, Y.A., M.P. Wanielista, L.Y. Lin, and M. Brabham. 1990. *Efficiency Optimization of Wet Detention Ponds for Urban Stormwater Management (Phase I and II).* University of Central Florida, Orlando, Florida

9.0 Swale Systems Design and Performance Criteria

9.1 Description *Revised 6/1/18*

Swales are a man-made or natural system shaped or graded to required dimensions and designed for the conveyance and rapid infiltration of stormwater runoff. Swales are designed to infiltrate a defined quantity of runoff through the permeable soils of the swale floor and side slopes into the shallow ground water aquifer (Figure 9-1). Turf is established to promote infiltration and stabilize the side slopes. Soil permeability and water table conditions must be such that the swale can percolate the desired runoff volume from the 3-year, 1-hour storm event. The swale holds water only during and immediately after a storm event, thus the system is normally "dry." Unlike retention basins, swales are "open" conveyance systems. This means there are no physical barriers such as berms or check-dams to impound the runoff in the swale prior to discharge to the receiving water.

Swale systems should not be located in close proximity to drinking water supply wells. As required by chapter 62-555, F.A.C., stormwater treatment facilities must be at least 100 feet from any public supply well. Chapter 62-532, F.A.C., identifies stormwater detention or retention basins as a “potentially moderate sanitary hazard” and includes additional setback requirements for certain wells from such basins. Additional design criteria are established for swale systems constructed in Karst Sensitive Areas of the District where the drinking water aquifer is close to the land surface (see section 13.6).

Besides pollution control, swale systems can be utilized to promote the recharge of groundwater to prevent saltwater intrusion in coastal areas, and to maintain ground water levels in aquifer recharge areas. Swales can be incorporated into the design of a stormwater management system to meet the recharge criteria for the Wekiva Recharge Protection Basin and the Tomoka River and Spruce Creek Hydrologic Basins.

Swales can also be utilized to provide pre-treatment of runoff prior to its release to another treatment BMP such as wet detention (see section 8.11) or wetlands stormwater management systems (see section 10.4). Pre-treatment reduces the pollutant loading to the downstream treatment system, increases the pollutant efficiency of the overall stormwater management system, and reduces maintenance. In some cases, pre-treatment may be used to meet the additional treatment criteria for discharges to sensitive receiving waters (Class I, Class II, and OFWs). For developments where the appearance of the downstream system (i.e, wet detention lake) is important, pre-treatment can reduce the probability of algal blooms occurring and slows the eutrophication process.

The design and performance criteria specific to swale systems are described in the following sections.

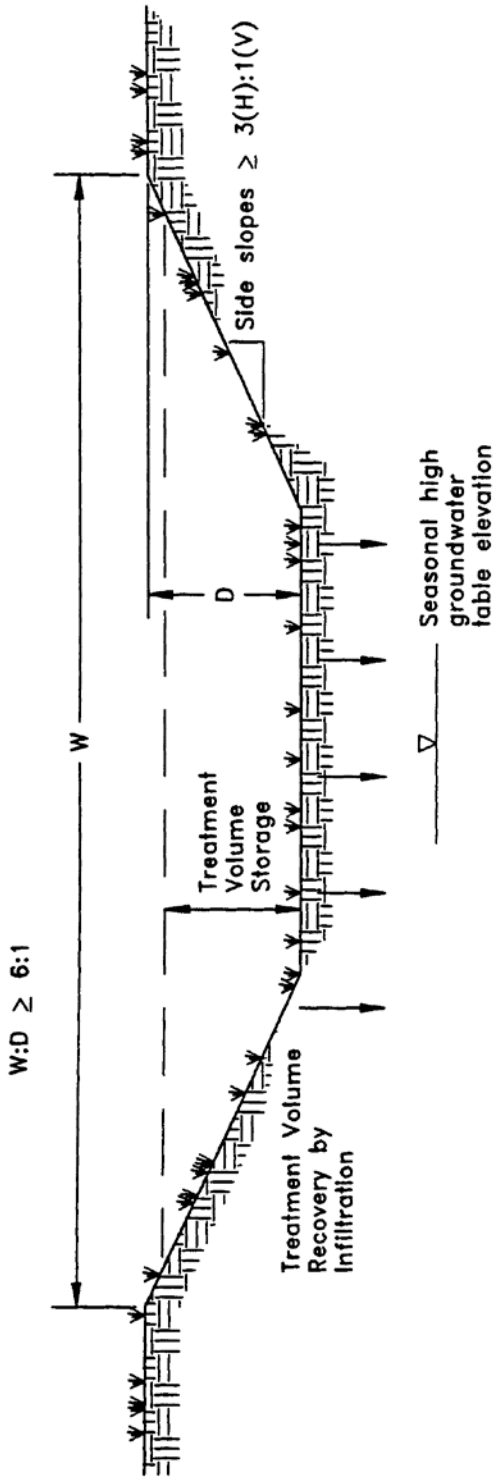


Figure 9-1. Cross-section of swale system (N.T.S.)

9.2 Treatment Volume

The runoff from the site should be routed to the swale system for conveyance and percolation into the ground. For systems which discharge to Class III receiving water bodies, the swales shall be designed to percolate 80% of the runoff from the 3-year, 1- hour storm. The remaining 20% of the runoff from the 3-year, 1-hour storm event may be discharged offsite by the swale system.

Swale systems which directly discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, shall be designed to percolate all of the runoff from the 3-year, 1-hour storm.

9.3 Recovery Time

Swale systems must provide the capacity for the specified treatment volume of stormwater and contain no contiguous areas of standing or flowing water within 72 hours following the storm event referenced in section 9.2 assuming average antecedent moisture conditions. The treatment volume must be provided by percolation through the soil, evaporation, or evapotranspiration.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to saturated depending on the amount of rainfall received prior to a given point in time. Therefore, "average AMC" means the soil is neither dry or saturated, but at an average moisture condition at the beginning of a storm event when calculating recovery time for swale systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC, and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

9.4 Dimensional Requirements

Swales must have a top width to depth ratio of the cross-section equal to or greater than 6:1 or side slopes equal to or greater than 3:1 (horizontal to vertical).

9.5 Stabilization

Swales should be stabilized with vegetative cover suitable for soil stabilization, stormwater treatment, and nutrient uptake. Also, the swale should be designed to take into account the soil errodibility, soil percolation, slope, slope length, and drainage area so as to prevent erosion and reduce pollutant concentrations.

10.0 Wetlands Stormwater Management Systems Design and Performance Criteria

10.1 Description

For wetlands stormwater management systems the District must ensure that a proposed wetlands stormwater management system is compatible with the existing ecological characteristics of the wetlands proposed to be utilized for stormwater treatment. The District must also ensure that water quality standards will not be violated by discharges from wetlands stormwater management system. To achieve these goals, specific performance criteria are set forth and described below for systems which incorporate wetlands for stormwater treatment.

10.2 Types of Wetlands that may be Utilized for Stormwater Treatment

The only wetlands which may be considered for use to provide stormwater treatment are those which are:

(a) Isolated wetlands; and

(b) Those which would be isolated wetlands, but for a hydrologic connection to other wetlands or surface waters via another watercourse that was excavated through uplands.

10.3 Treatment Volume

The system shall be part of a comprehensive stormwater management system that utilizes wetlands in combination with other best management practices to provide treatment of the runoff from the project. For systems discharging to Class III waters, treatment of the runoff from the greater of the following shall be provided:

(a) First one inch of runoff, or

(b) 2.5 inches times the impervious area.

Those systems which directly discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, shall provide an additional fifty percent of the applicable treatment volume specified above.

If the wetland alone cannot provide the treatment volume, then other best management practices shall be incorporated upstream and outside of the wetland to store the proper level of runoff. Utilization of other BMPs must not adversely affect the ability of the wetlands stormwater management system from meeting the requirements of this section.

10.4 Recovery Time

The system shall be designed to bleed down one-half the applicable treatment volume specified above between 60 and 72 hours following a storm event.

10.5 Inlet Structures

Inlet structures shall be designed to dissipate the energy of runoff entering the wetland and minimize the channelized flow of stormwater. Methods include, but are not limited to, sprinklers, pipe energy dissipators, overland flow or spreader swales.

10.6 Wetland Function

The use of wetlands for stormwater treatment must meet the criteria in section 10.0, Environmental Considerations, of the Environmental Resource Permit Applicant's Handbook, Volume I. Pre-treatment can reduce the impact of untreated stormwater upon the wetland. In addition, pre-treatment can be utilized to attenuate stormwater volumes and peak discharge rates so that the wetland's hydroperiod is not adversely altered (Livingston 1989). Swale conveyances and lakes adjacent to the wetland are typical pre-treatment practices.

10.7 Residence Time

The design features of the system should maximize residence time of the stormwater within the wetland to enhance the opportunity for the stormwater to come into contact with the wetland sediment, vegetation, and micro-organisms (Livingston 1989). This can be accomplished by several means. The inlets and outlets should be located to maximize the flow path through the wetland. Energy dissipators and spreader swales can promote overland flow and reduce the possibility of channelized flow occurring. In some instances, berms in wetlands can act as baffles to increase the flow path of surface flow through the wetland.

10.8 Monitoring

In order to establish a reliable, scientifically valid data base upon which to evaluate the performance criteria and the performance of the wetlands stormwater management system, a monitoring program may be required. Monitoring programs shall provide the District with comparable data for different types of wetlands and drainage designs. Data to be collected may include but not be limited to:

(a) Sedimentation rate

(b) Sediment trace metal concentrations

(c) Sediment nitrogen and phosphorus concentrations

(d) Changes in the frequency, abundance and distribution of vegetation

(e) Inflow and outflow water quality for nutrients, metals, turbidity, oils and greases, bacteria and other parameters related to the specific site conditions

Inflow and outflow water quality parameters will be monitored on such storm event occurrences as established by the District based on a site specific basis. The District shall eliminate the requirement to continue the monitoring program upon its determination that no further data is necessary to evaluate the performance criteria or ensure compliance with the performance criteria and applicable water quality standards.

10.9 Dredge and Fill

If the applicant proposes to dredge or fill in the wetlands used for stormwater treatment, the District in its review of the permit application shall evaluate the adverse effects of the dredging or filling on the treatment capability of the wetland.

10.10 Alternative Criteria *Revised 6/1/18*

If the applicant is unable to show compliance with the performance criteria sections 10.3 – 10.9, above, the applicant may qualify for an environmental resource permit to use a wetlands stormwater management system using alternative design and performance criteria if the applicant affirmatively demonstrates that the use of the wetlands meets the criteria in section 10.0, Environmental Resource Permit Applicant's Handbook, Volume I (General and Environmental) and the applicant complies with the requirements for issuance in section 2.0.

10.11 References

Livingston, E.H. 1989. The Use of Wetlands for Urban Stormwater Management. In *Design of Urban Runoff Quality Controls*, ed. L.A. Roesner, B. Urbonas, and M.B. Sonnen, pages 467-490. American Society of Civil Engineers. New York.

11.0 [Reserved]

12.0 Dry Detention Design and Performance Criteria

12.1 Description *Revised 6/1/18*

Dry detention systems are normally dry storage areas which are designed to store a defined quantity of runoff and slowly release the collected runoff through an outlet structure to adjacent surface waters. After drawdown of the stored runoff is completed, the storage basin does not hold any water, thus the system is normally "dry." A schematic of a typical dry detention system is presented in Figure 12-1.

Dry detention basins are similar to retention systems in that the basins are normally dry. However, the main difference between the two systems is that retention systems are designed to percolate the stored runoff into the ground while dry detention systems are designed to discharge the runoff through an outlet structure to adjacent surface waters.

Sedimentation is the primary pollutant removal process which occurs in dry detention systems. Unfortunately, only pollutants which are primarily in particulate form are removed by sedimentation. Therefore, the pollutant removal efficiency of dry detention systems is not as great as systems such as retention and wet detention which remove both dissolved and particulate pollutants. Because of the limited pollutant removal efficiency of dry detention, this BMP must only be utilized where no other BMP is technically feasible. For example, use of dry detention must be restricted to the following situations:

(a) Where high ground water table or soil conditions limit the feasibility of other BMPs such as retention, and

(b) Small drainage basins (less than 5 acres). For larger projects (greater than 5 acres) other BMPs like wet detention shall be utilized instead of dry detention.

There are several design and performance criteria which must be met in order for a dry detention system to meet the District's requirements. A description of each design criterion is presented below.

12.2 Treatment Volume

For discharges to Class III receiving water bodies, the dry detention system shall provide *off-line* detention of the first one inch of runoff or 2.5 inches of runoff from the impervious area, whichever is greater.

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, the applicant shall provide dry detention for at least an additional fifty percent of the applicable treatment volume specified for off-line dry detention in (a),

above. Off-line detention must be provided for at least the first one inch of runoff or 2.5 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.

Dry detention removes less pollutants on a per unit basis than other traditional best management practices. Therefore, dry detention systems must treat a greater volume of stormwater than the other treatment practices specified in this Volume to achieve an equivalent level of pollutant removal.

12.3 Recovery Time

The outfall structure shall be designed to drawdown one-half the required treatment volume specified above between 24 and 30 hours following a storm event.

12.4 Outlet Structure

The outlet structure shall include a drawdown device (such as an orifice, "V" or square notch weir) set to slowly release the treatment volume (see Figures 12-2 and 12-3 for conceptual schematics). In addition, the structure must include a device to prevent the discharge of accumulated sediment, minimize exit velocities, and prevent clogging. Examples of such devices include perforated risers enclosed in a gravel jacket and perforated pipes enclosed in sand or gravel (see Figure 12-5).

In addition, the control elevation shall be set at or above the design tailwater elevation so the basin can effectively recover the treatment storage.

12.5 Ground Water Table, Basin Floor, and Control Elevation

To minimize ground water contributions and ensure the basin floor is normally dry, the control elevation and basin floor shall be set at least one foot above the seasonal high ground water table elevation. Sumps may be placed up to one foot below the control elevation. The basin floor shall be level or uniformly sloped toward the control structure. The system may only contain standing water within 3 days of a storm event. Continuous standing water in the basin may also reduce the aesthetic value of the system and may promote mosquito production.

12.6 Basin Stabilization

The dry detention basin shall be stabilized with permanent vegetative cover.

12.7 Basin Configuration

The average length to width ratio of the dry detention basin must be at least 2:1. Under these design conditions, short circuiting is minimized and pollutant removal efficiency is maximized.

If short flow paths are unavoidable, the effective flow path can be increased by adding diversion barriers such as peninsulas or baffles to the basin. Examples of good and poor basin configurations are given in Figure 12-4.

12.8 Inlet Structures

Inlet structures shall be designed to dissipate the energy of water entering the basin.

12.9 Maintenance

Dry detention systems must include provisions for removal of sediment and debris from the basin and mowing and removal of grass clippings.

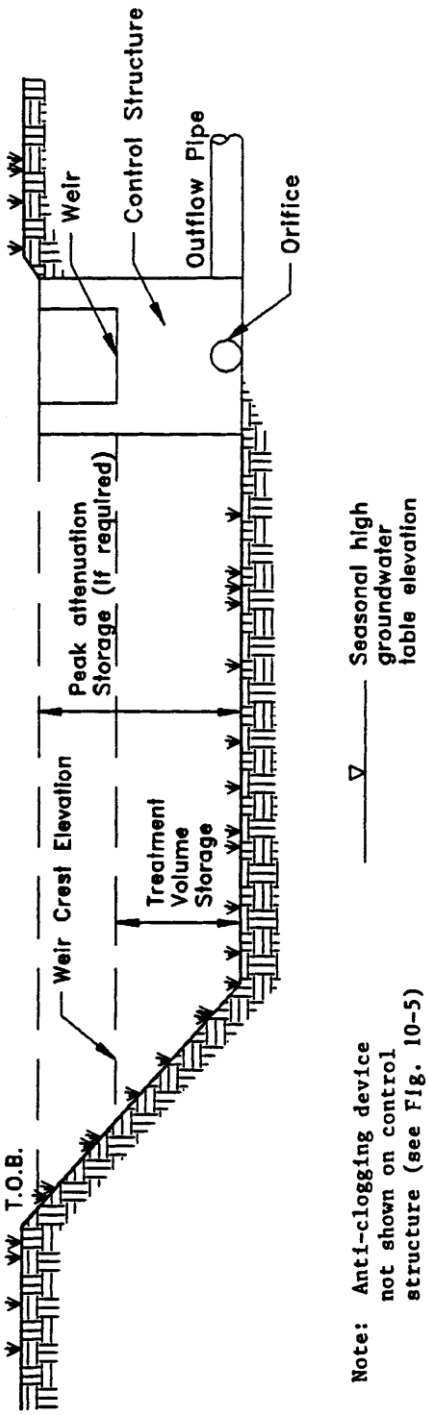


Figure 12-1 Dry detention (N.T.S.)

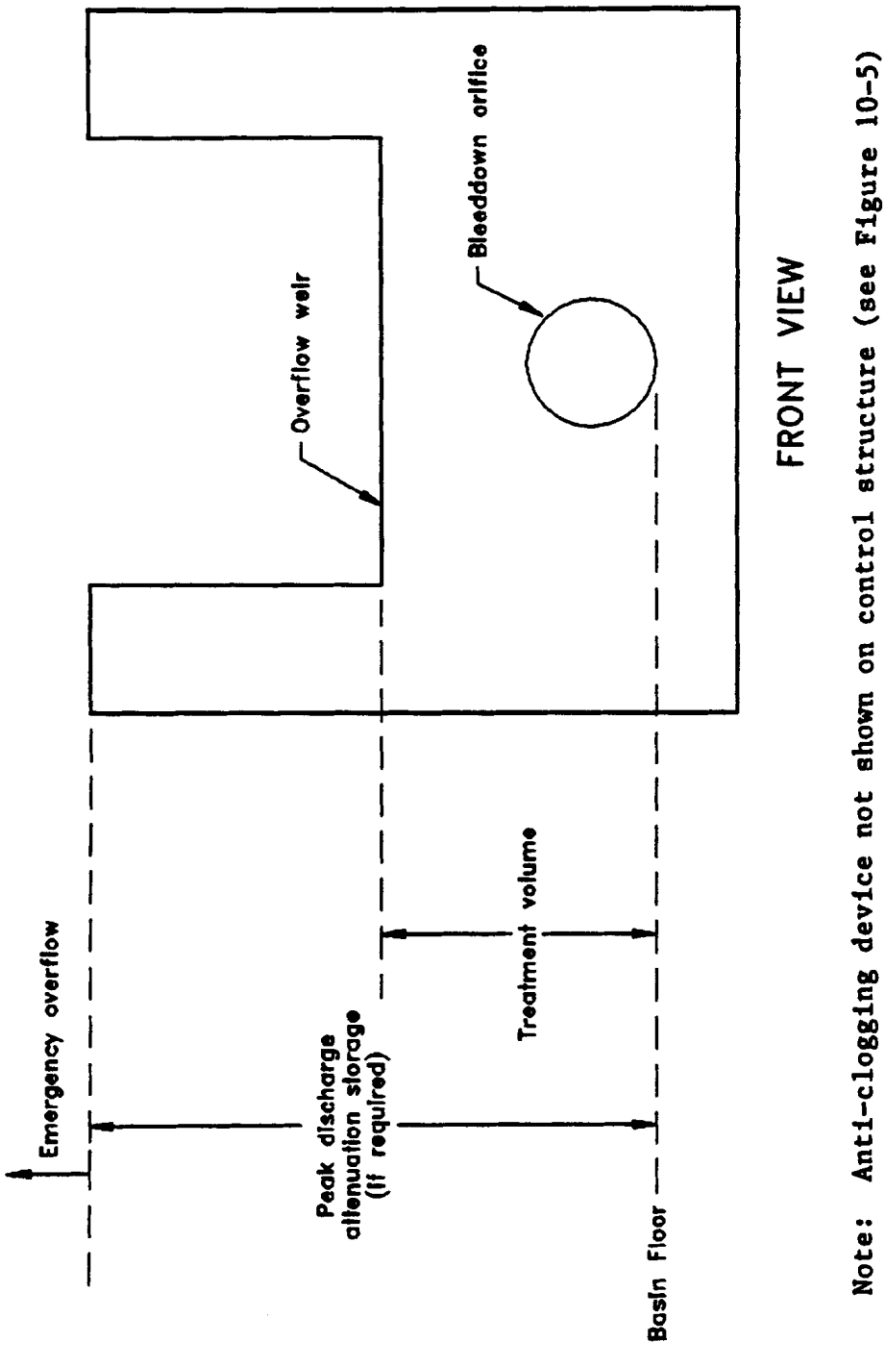


Figure 12-2. Typical dry detention outfall structure with orifice (N.T.S.)

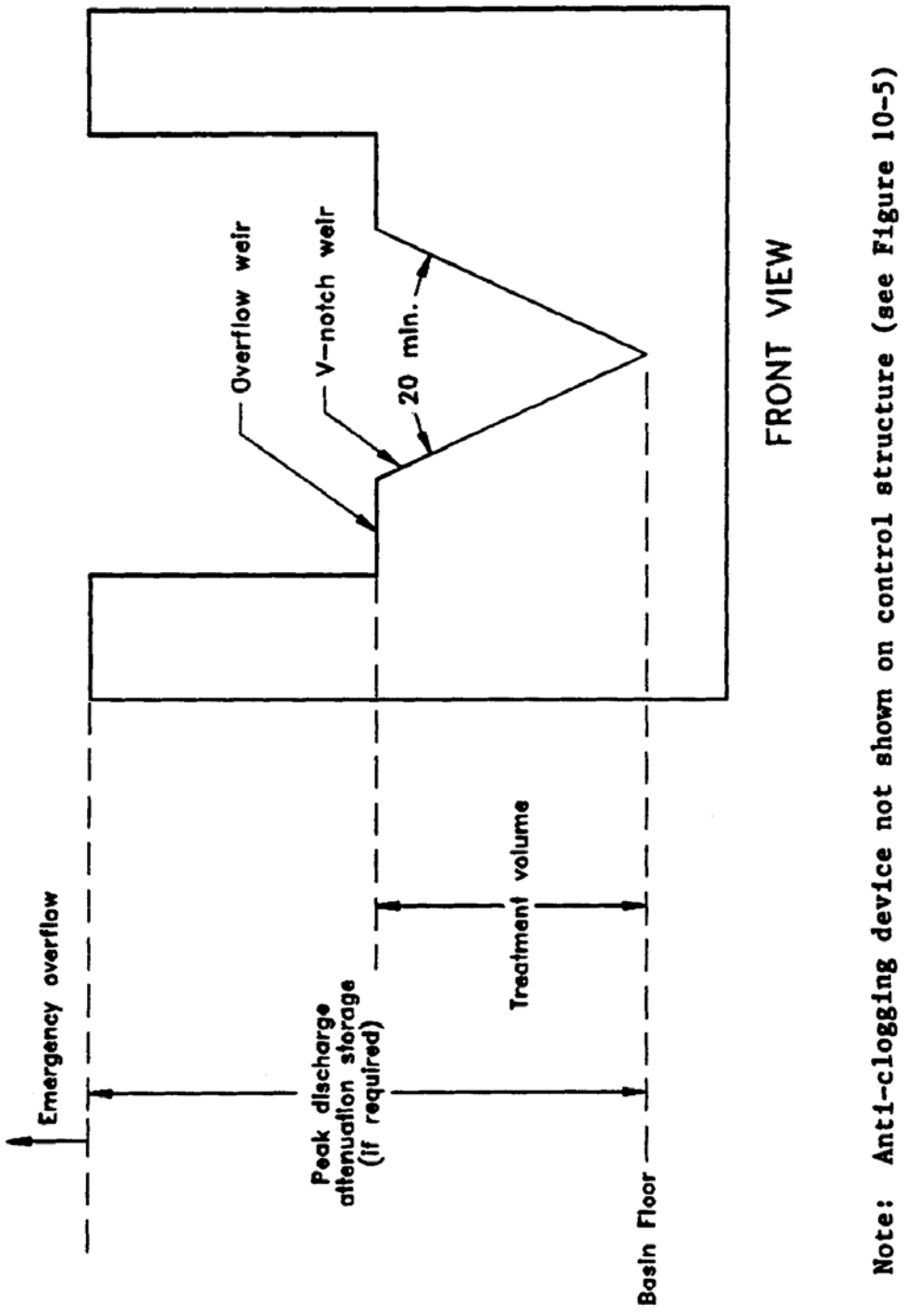


Figure 12-3. Typical dry detention outfall structure with “V”-notch weir (N.T.S.)

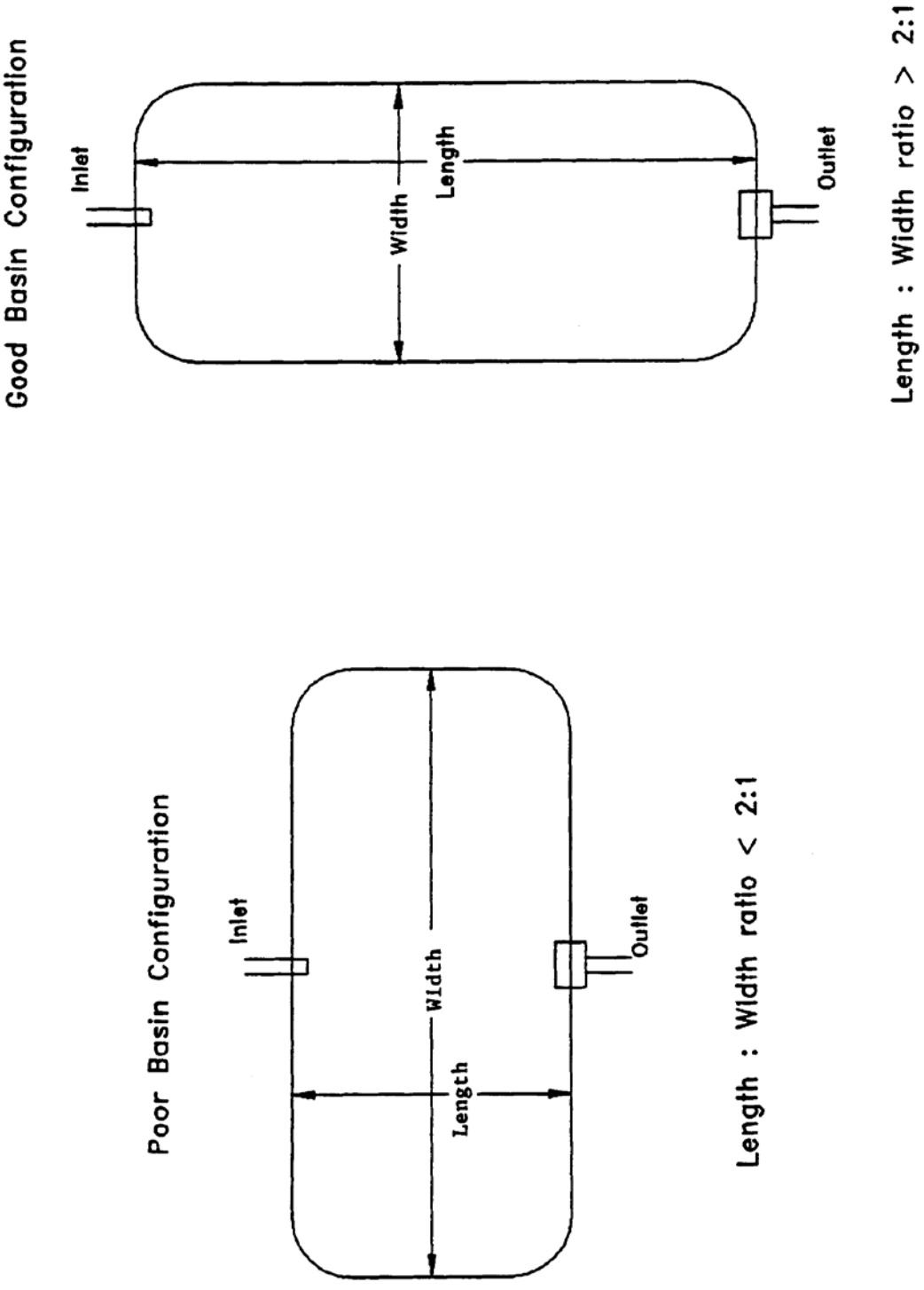


Figure 12-4. Examples of good and poor dry detention pond configurations (N.T.S.)

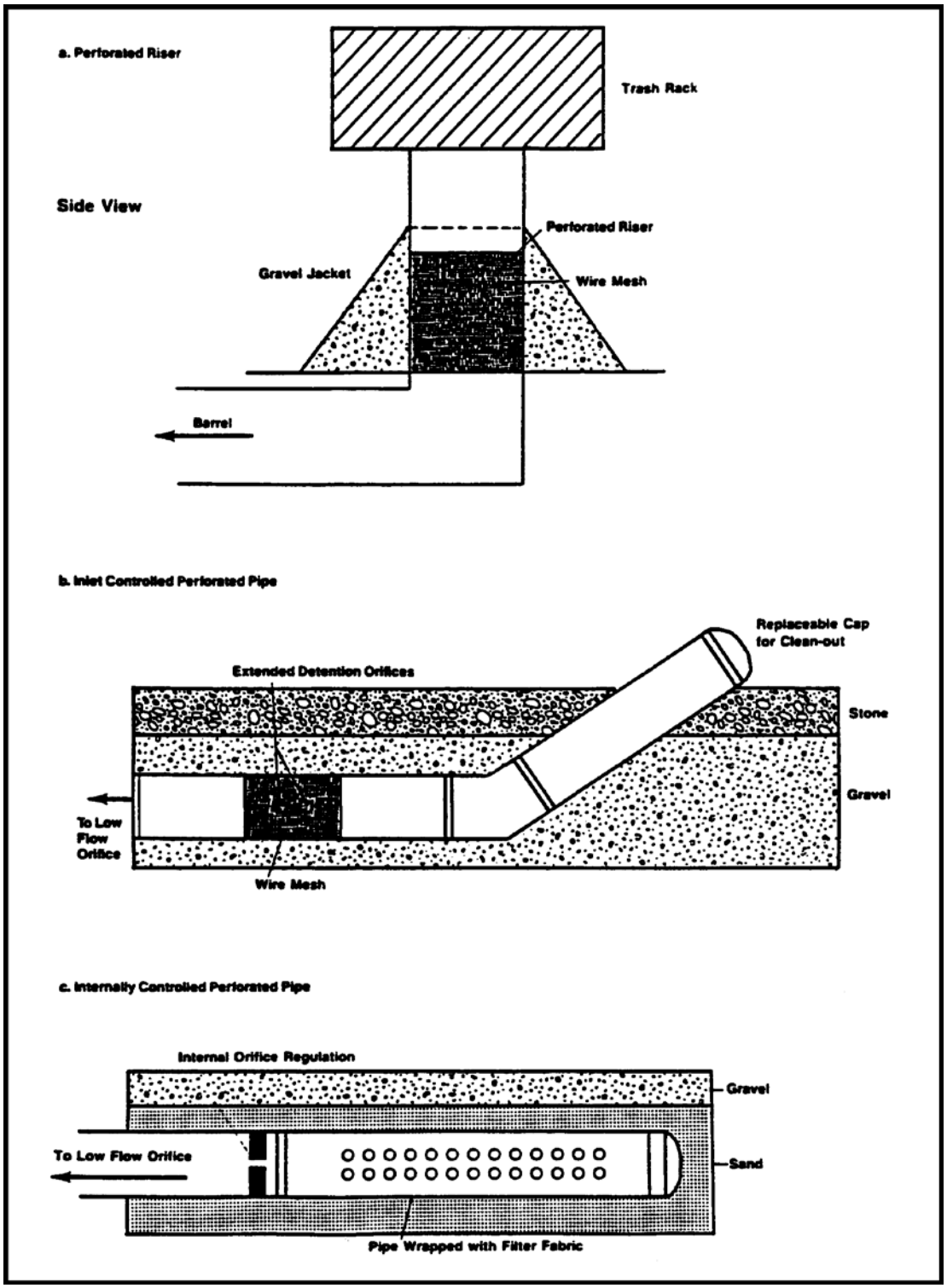


Figure 12-5. Devices to prevent clogging in dry detention control structures (Source: Schueler, T.R. 1987. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMP's. Metropolitan Washington Council of Governments, Washington, D.C.)

PART VI – BASIN CRITERIA

13.0 Basin Criteria *Revised 6/1/18*

Chapter 40C-41, F.A.C., and this section establish additional criteria which are to be used in reviewing applications for permits in certain hydrologic basins. These basins are:

(a) Upper St. Johns River Hydrologic Basin

(b) Ocklawaha River Hydrologic Basin

(c) Wekiva River Hydrologic Basin

(d) Wekiva Recharge Protection Basin

(e) Econlockhatchee River Hydrologic Basin

(f) Tomoka River Hydrologic Basin

(g) Spruce Creek Hydrologic Basin

(h) Sensitive Karst Areas Basin

(i) Lake Apopka Hydrologic Basin

See Figure 13.0-1 for a description of the areas contained within the Upper St. Johns River Hydrologic Basin, the Ocklawaha River Hydrologic Basin, the Wekiva River Hydrologic Basin, the Econlockhatchee River Hydrologic Basin, the Tomoka River Hydrologic Basin and the Spruce Creek Hydrologic Basin. See Figures 13.0-2, 13.0-3, and 13.0-4 for a description of the areas contained within the Sensitive Karst Areas Basin. See Figure 13.0-5 for a description of the areas contained within the Lake Apopka Hydrologic Basin. A legal description of the Hydrologic Basin boundaries is available in Appendix B.

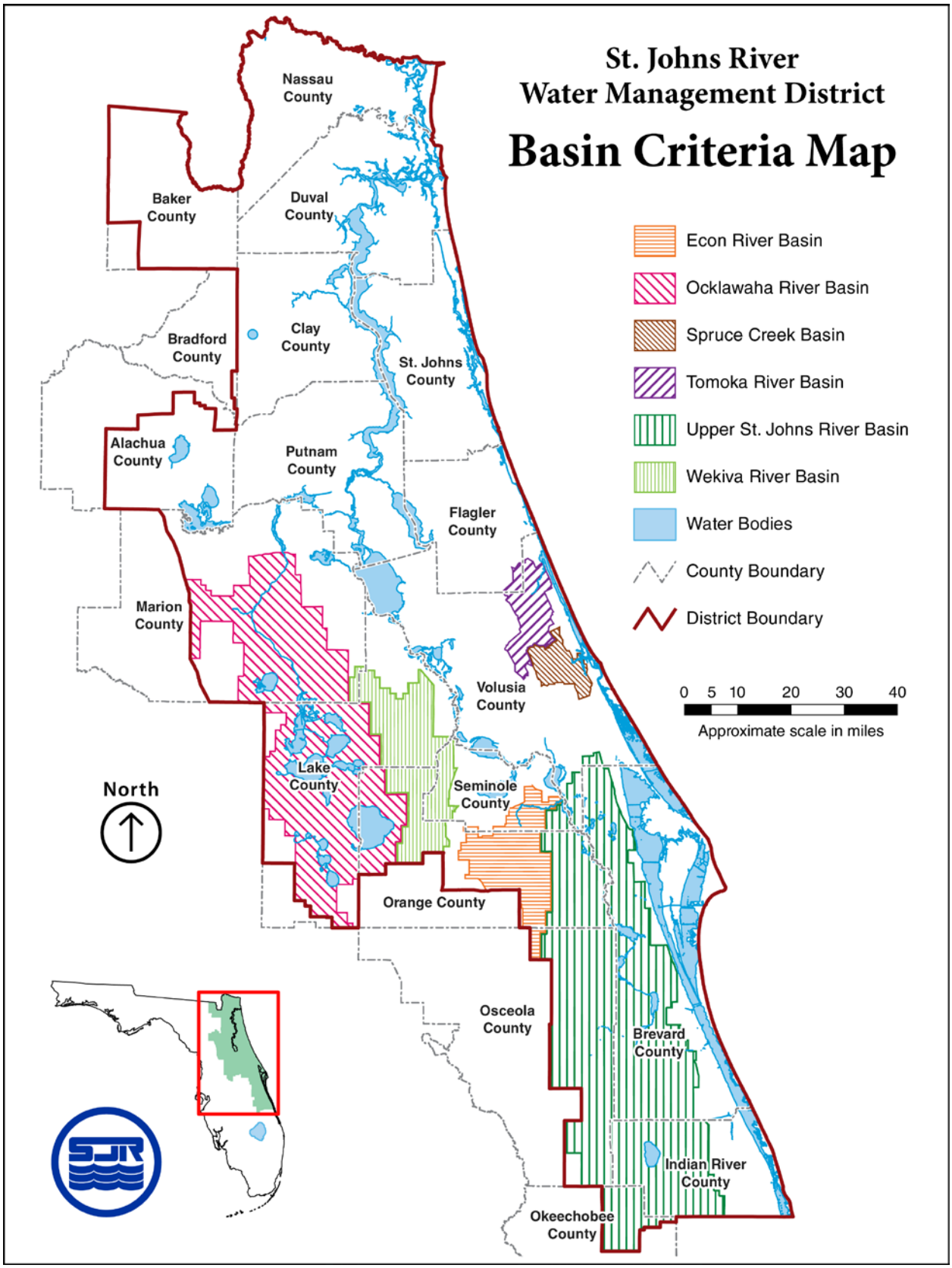


Figure 13.0-1 Basin Criteria Map

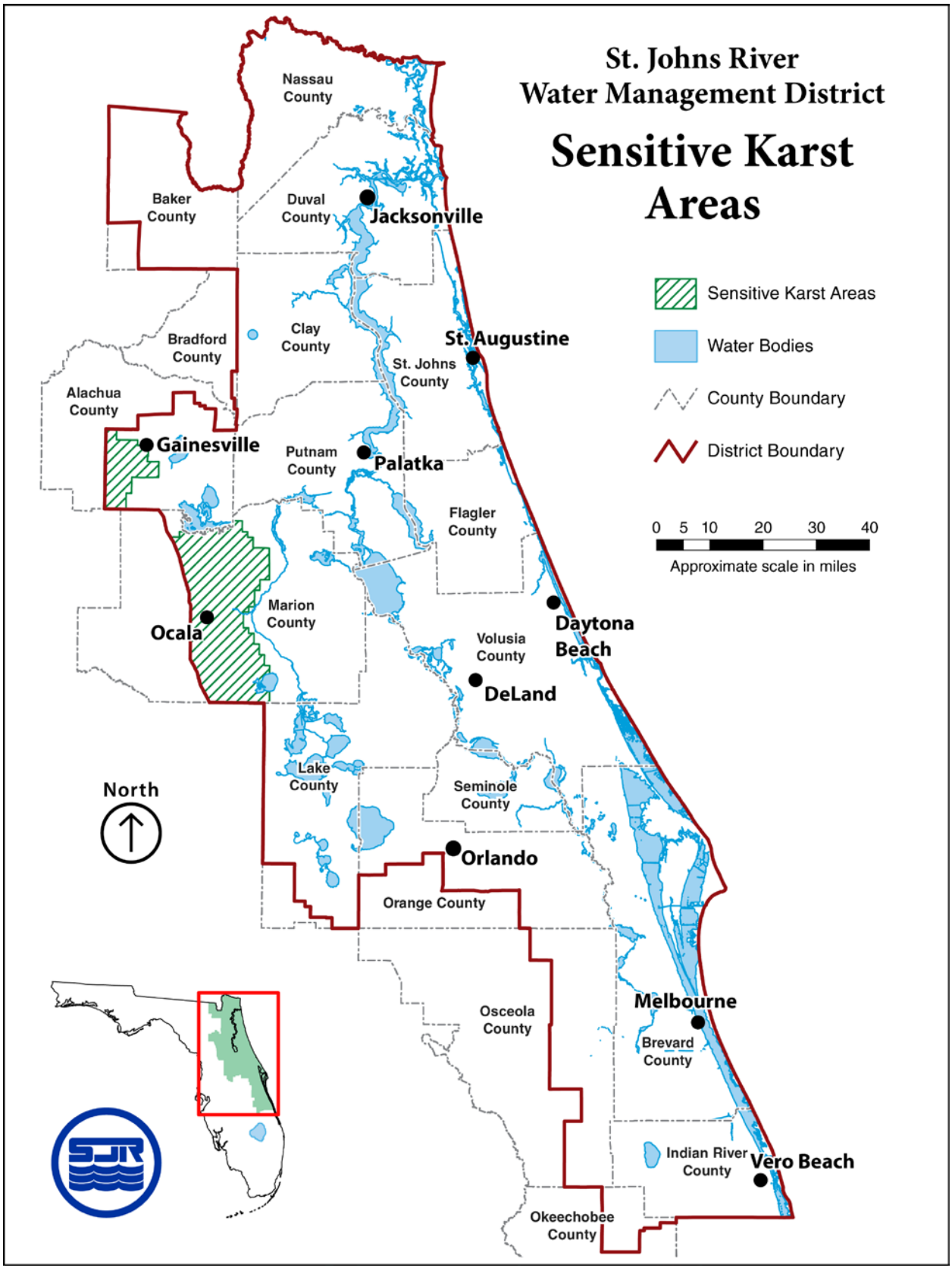


Figure 13.0-2 Sensitive Karst Areas in the St. Johns River Water Management District

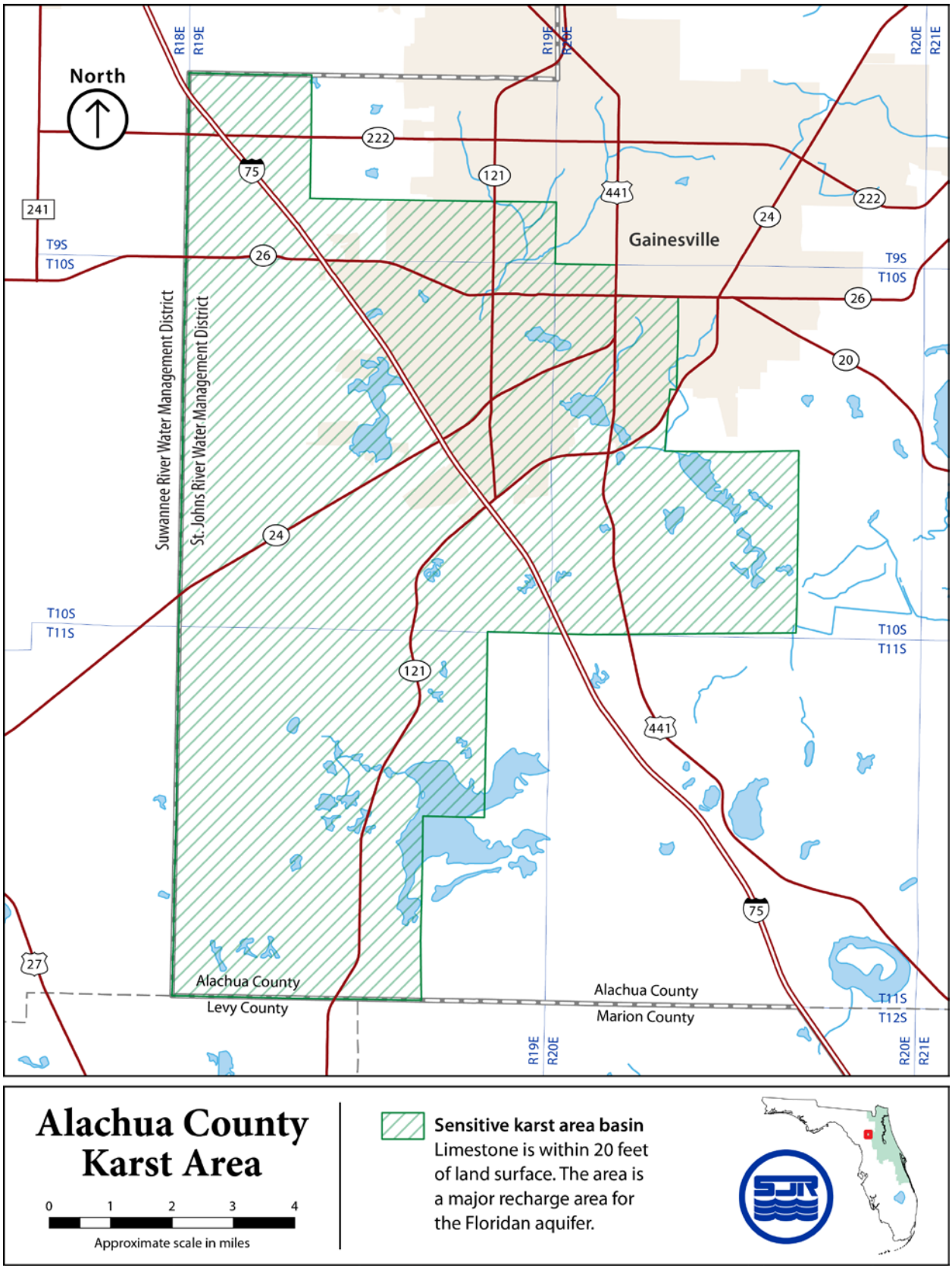


Figure 13.0-3 Alachua County Karst Area

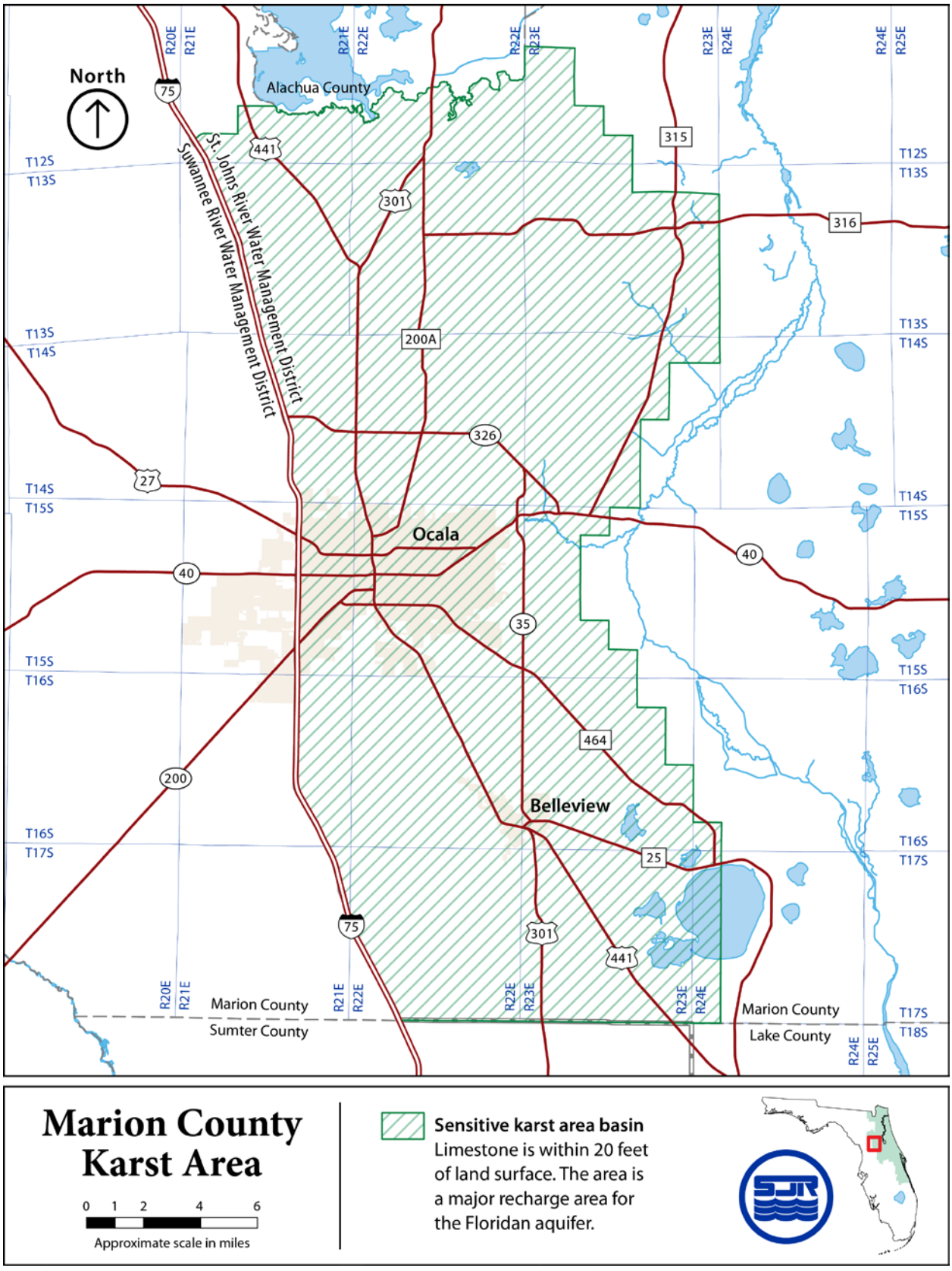


Figure 13.0-4 Marion County Karst Area

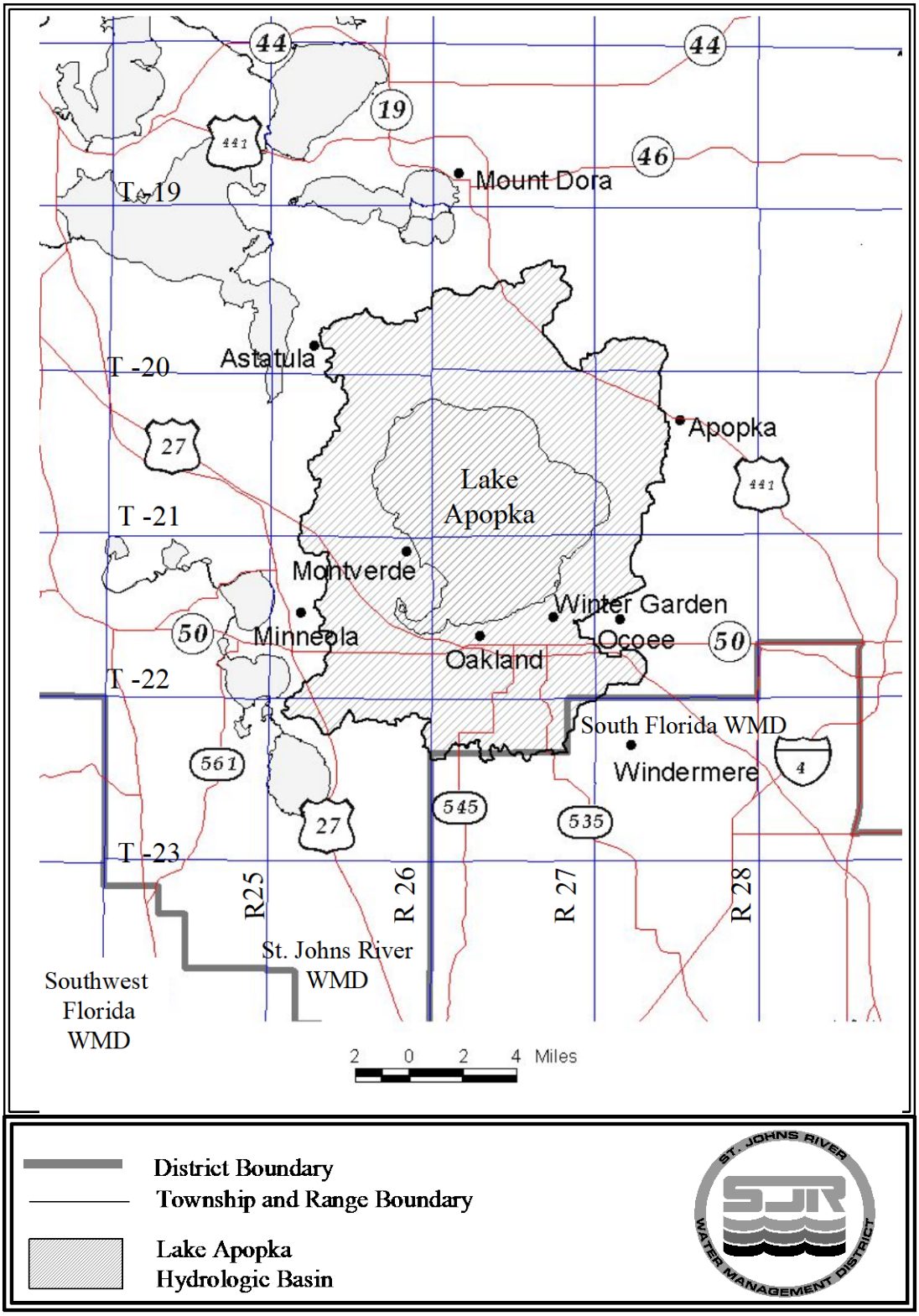


Figure 13.0-5 Lake Apopka Drainage Basin

13.1 Upper St. Johns River Hydrologic Basin

As part of the design criteria described in sections 62-330.301 and 62-330.302, F.A.C., above, systems in the Upper St. Johns River Basin must meet the following criteria:

13.1.1 Storm Frequency

The system shall meet applicable discharge criteria for 10-year and 25-year frequency storms. On-site storage and outlet capacity should be designed for the 25-year storm. Outlet capacity design should be checked and further refined, if necessary, for the 10-year storm.

13.1.2 Runoff Volume

For systems utilizing pumped discharges, the post-development discharge volume during the four day period beginning the third day of the four-day duration storm may not exceed the pre-development discharge during the same period.

13.1.3 Interbasin Diversion

(a) A system may not result in an increase in the amount of water being diverted from the Upper St. Johns River Hydrologic Basin into coastal receiving waters.

(b) It is an objective of the District to, where practical, curtail diversions of water from the Upper St. Johns River Hydrologic Basin into coastal receiving waters.

13.2 Ocklawaha River Hydrologic Basin

As part of the design criteria described in sections 62-330.301 and 62-330.302, F.A.C., above, systems in the Ocklawaha River Hydrologic Basin must meet the following criteria:

13.2.1 Storm Frequency

The system shall meet applicable discharge criteria for 10-year and 25-year frequency storms. On-site storage and outlet capacity should be designed for the 25-year storm. Outlet capacity design should be checked and further refined, if necessary, for the 10-year storm.

13.2.2 Runoff Volume

For systems utilizing pumped discharges, the post-development discharge volume during the four-day period beginning the third day of the four-day duration storm may not exceed the pre-development discharge during the same period.

13.3 Wekiva River Hydrologic Basin and Wekiva Recharge Protection Basin

As part of the standards and design criteria described in sections 62-330.301 and 62-330.302, F.A.C., above, systems in the Wekiva River Hydrologic Basin or the Wekiva Recharge Protection Basin (which are both shown in Figure 13.3-2) must meet the following standards and criteria as described below:

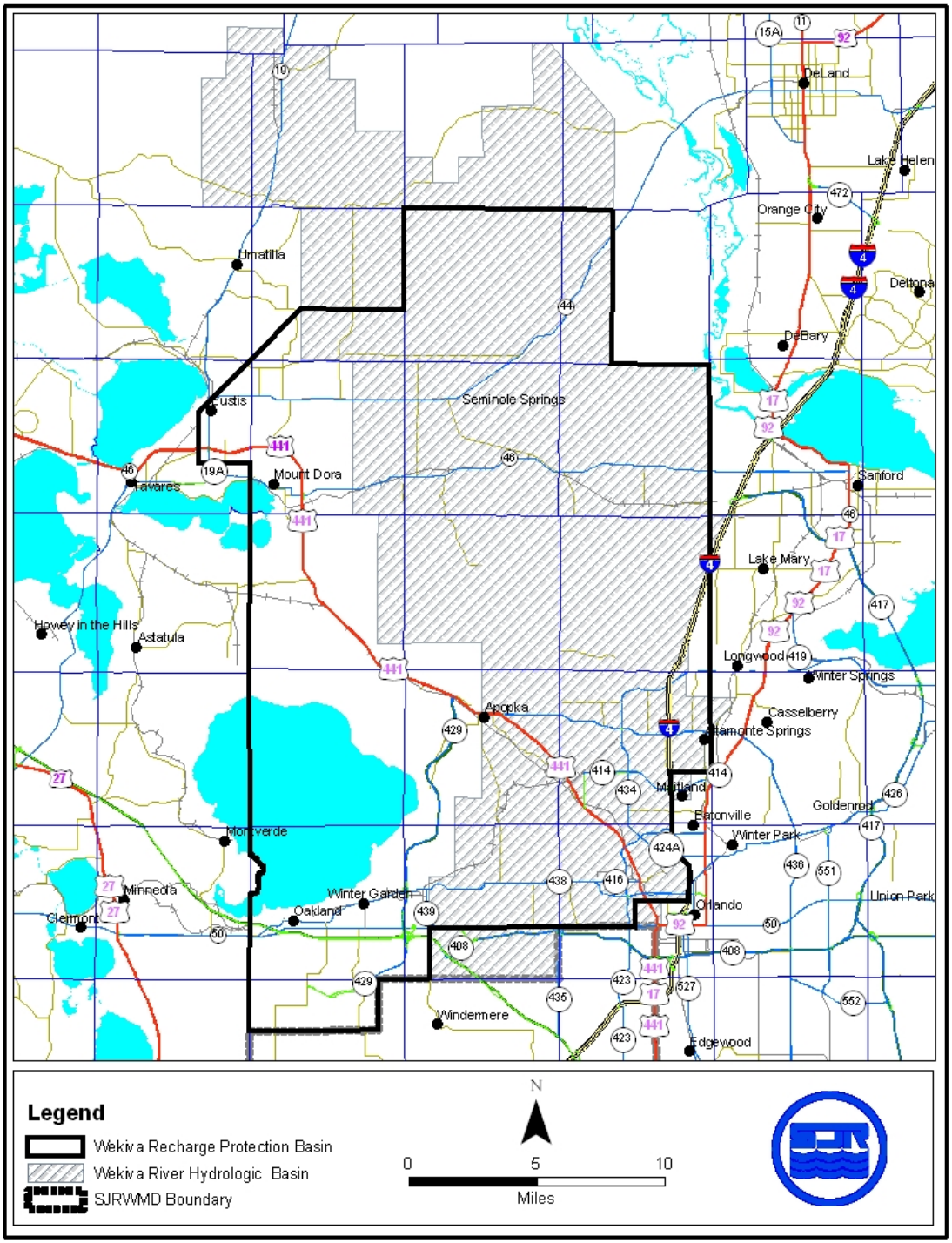
13.3.1 Recharge Standard

Applicants required to obtain a permit pursuant to Chapters 62-330 or 40C-44, F.A.C., for a surface water management system located within the Wekiva Recharge Protection Basin shall demonstrate that the system provides for retention storage of three inches of runoff from all impervious areas proposed to be constructed on soils defined as a Type "A" Soils as defined by the Natural Resources Conservation Service (NRCS) Soil Survey in the following NRCS publications: Soil Survey of Lake County Area, Florida (1975); Soil Survey of Orange County Area, Florida (1989); and Soil Survey of Seminole County Area, Florida (1990), which are incorporated by reference in rule 40C-4.091(1)(d), F.A.C. For purposes of this rule, areas with Type "A" Soils shall be considered "Most Effective Recharge Areas." The system shall be capable of infiltrating this storage volume through natural percolation into the surrounding soils within 72 hours. Off-site areas or regional systems may be utilized to satisfy this requirement. As an alternative, applicants may demonstrate that the post-development recharge capacity is equal to or greater than the pre-development recharge capacity. Pre-development recharge shall be based upon the land uses in place as of 12-3-06. Applicants may utilize existing permitted municipal master stormwater systems, in lieu of onsite retention, to demonstrate that post-development recharge is equal to or greater than pre-development recharge. Also, applicants may submit additional geotechnical information to establish whether or not a site contains Type "A" soils.

13.3.2 Storage Standard

Within the Wekiva River Hydrologic Basin, a system may not cause a net reduction in flood storage within the 100-year floodplain of a stream or other watercourse which has a drainage area upstream of more than one square mile and which has a direct hydrologic connection to the Wekiva or Little Wekiva Rivers or Black Water Creek.

Figure 13.3-2 Wekiva River Hydrologic Basin and Wekiva Recharge Protection Basin



13.3.3 Standards for Erosion and Sediment Control and Water Quality *Revised 6/1/18*

Construction and alteration of systems can result in erosion and downstream turbidity and sedimentation of waters. Erosion is the process by which the land surface is worn away by action of wind, water, and gravity. During construction and alteration, the potential for erosion increases dramatically. The result of erosion is discharges of turbid water and subsequent sedimentation (settling out) of soil particles in downstream receiving waters. Turbidity, suspended solids, and sedimentation result in adverse biological effects in aquatic and wetland environments, water quality degradation, and loss of flood storage and conveyance. The potential for erosion can be severe in the Wekiva River Hydrologic Basin as a result of steep slopes and erosive soils.

(a) Although erosion and sediment control measures are required throughout the St. Johns River Water Management District (see section 11.0 of Volume I), the District has determined that the problems associated with erosion in the Wekiva River Hydrologic Basin are sufficiently serious to warrant requiring those applicants proposing certain systems to provide detailed plans when permit applications are submitted.

A Water Quality Protection Zone shall extend one half mile from the Wekiva River, Little Wekiva River north of State Road 436, Black Water Creek, Rock Springs Run, Seminole Creek, and Sulphur Run, and shall also extend one quarter mile from any wetland abutting an Outstanding Florida Water.

An erosion and sediment control plan must be submitted as part of the surface water management permit application for a surface water management system which:

1. Serves a project which is located wholly or partially within this zone; or

2. Serves a project with a total land area equal to or exceeding 120 acres.

The applicant proposing such a system must give reasonable assurance in the erosion and sediment control plan that during construction or alteration of the system (including revegetation and stabilization), erosion will be minimized and sediment will be retained on-site. The plan must be in conformance with the erosion and sediment control principles set forth in section 13.8.2, and must contain the information set forth in section 13.8.3.

(b) For a project which will be located wholly or partially within 100 feet of an Outstanding Florida Water or within 100 feet of any wetland abutting such a water, an applicant must provide reasonable assurance that the construction or alteration of the system will not cause sedimentation within these wetlands or waters and that filtration of runoff will occur prior to discharge into these wetlands and waters.

It is presumed that this standard will be met if, in addition to implementation of the plan required in paragraph (a), any one of the following criteria is met:

1. A minimum 100-foot width of undisturbed vegetation must be retained landward of the Outstanding Florida Water or the abutting wetland, whichever is more landward. During construction or alteration, runoff (including turbid discharges from dewatering activities) must be allowed to sheetflow across this undisturbed vegetation as the natural topography allows. Concentrated or channelized runoff from construction or alteration areas must be dispersed before flowing across this undisturbed vegetation. Construction or alteration of limited scope necessary for outfall structures may occur within this area of undisturbed vegetation.

2. Construction of the following perimeter controls at all outfall points to the Outstanding Florida Water or its abutting wetlands must be completed prior to the start of any construction or alteration of the remainder of the system:

   a. Stormwater discharge facility meeting the requirements of Part V of this Volume;

   b. Sedimentation trap or basin located immediately upstream of the stormwater discharge facility referred to above; and

   c. Spreader swale to reduce the velocity of discharge from the stormwater facility to non-erosive rates before discharge to wetlands abutting the Outstanding Florida Water.

   These perimeter controls must be maintained routinely and operated throughout construction or alteration of the entire system. A minimum 25-foot width of undisturbed vegetation must be retained landward of the Outstanding Florida Water or the abutting wetland, whichever is more landward. Construction or alteration of limited scope necessary for outfall structures may occur within this area of undisturbed vegetation.

3. During construction or alteration, no direct discharge to the Outstanding Florida Water or its abutting wetland may occur during the 10-year 24-hour storm event or due to discharge from dewatering activities. Any on-site storage required to satisfy this criteria must be available (recovered) within 14 days following the rainfall event. A minimum 25-foot width of undisturbed vegetation must be retained landward of the Outstanding Florida Water or the abutting wetland, whichever is more landward. Construction or alteration of limited scope necessary for outfall structures may occur within this area of undisturbed vegetation.

   In determining whether construction or alteration is of "limited scope necessary", pursuant to any of the three presumptive criteria above, the District shall require that the area of disturbance be minimized and that the length of time between initial disturbance and stabilization of the area also be minimized.

13.3.4 Standard for Limiting Drawdown

Lowering the ground water table adjacent to wetlands can change the wetland hydroperiod such that the functions provided by the wetland are adversely affected.

Within the Wekiva River Hydrologic Basin, a Water Quantity Protection Zone shall extend 300 feet landward of the landward extent of Black Water Swamp and the wetlands abutting the Wekiva River, Little Wekiva River, Rock Springs Run, Black Water Creek, Sulphur Run, Seminole Creek, Lake Norris, and Lake Dorr. As part of providing reasonable assurance that the standard set forth in paragraph 62-330.301(1)(d) is met, where any part of a system located within this zone will cause a drawdown, the applicant must provide reasonable assurance that construction, alteration, operation, or maintenance of the system will not cause ground water table drawdowns which would adversely affect the functions provided by the referenced wetlands.

The applicant shall provide an analysis which includes a determination of the magnitude and areal extent of any drawdowns, based on site-specific hydrogeologic data collected by the applicant, as well as a description of the referenced wetlands, the functions provided by these wetlands, and the predicted impacts to these functions.

It is presumed that the part of this standard regarding drawdown effects will be met if the following criteria is met:

A ground water table drawdown must not occur within the Water Quantity Protection Zone.

13.3.5 Standard for Riparian Wildlife Habitat

Within the Wekiva River Hydrologic Basin, the wetlands abutting the Wekiva River, Little Wekiva River downstream of Maitland Boulevard, Rock Springs Run, Black Water Creek, Sulphur Run and Seminole Creek support an abundance and diversity of aquatic and wetland dependent wildlife. Uplands abutting these wetlands protect the wetlands from climatic extremes and also provide important habitat for some aquatic and wetland dependent species. Construction and alteration of surface water management systems within these wetlands and uplands can result in adverse changes in the habitat, abundance, and food sources of aquatic and wetland dependent species.

(a) The applicant must provide reasonable assurance that the construction or alteration of a system will not adversely affect the abundance, food sources, or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species provided by the following designated Riparian Habitat Protection Zone:

1. The wetlands abutting the Wekiva River, Little Wekiva River downstream of Maitland Boulevard, Rock Springs Run, Black Water Creek, Sulphur Run, or Seminole Creek;

2. The uplands which are within 50 feet landward of the landward extent of the wetlands above.

3. The uplands which are within 550 feet landward of the stream's edge as defined, for the purpose of this subsection, as the waterward extent of the forested wetlands abutting the Wekiva River, Little Wekiva River downstream of the northernmost crossing of the Little Wekiva River with S.R. 434, Rock Springs Run, Black Water Creek, Sulphur Run or Seminole Creek. In the absence of forested wetlands abutting these streams, the stream's edge shall be defined, for the purpose of this subsection, as the mean annual surface water elevation of the stream; however, if hydrologic records are unavailable, the landward extent of the herbaceous emergent wetland vegetation growing in these streams shall be considered to be the stream's edge.

(b) Any of the following activities within the Riparian Habitat Protection Zone is presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and any land clearing which results in the creation of any system. (Activities not listed above do not receive a presumption of no adverse effect.)

(c) The presumption in paragraph (b) shall not apply to any activity which promotes a more endemic state, where the land in the zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with the endemic land cover.

13.3.6 Local Government Notification for Wekiva River Protection Area *Revised 6/1/18*

The District shall not issue a conceptual approval or individual permit for a proposed surface water management system located wholly or partially within the Wekiva River Protection Area, as defined in Section 369.303(9), F.S., until the appropriate local government has provided written notification that the proposed activity is consistent with the local comprehensive plan and is in compliance with land development regulations in effect in the area where development will take place. The applicant proposing such a system must submit to the District form no. 40C-41.063(4), entitled "Local Government Notification", (incorporated by reference in 40C-41.063(4)), after it has been completed and executed by the local government. This form is available upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529. Permit applications for systems within the Wekiva River Protection Area shall be processed by the District staff pursuant to the time frames established in Section 120.60, F.S., and any District rule regarding permit processing, except that any agency action to approve or approve with conditions shall not occur until the Local Government Notification has been received by the District.

13.4 Econlockhatchee River Hydrologic Basin

As part of the standards and design criteria described in 62-330.301 and 62-330.302, F.A.C., above, systems in the Econlockhatchee River Hydrologic Basin must meet the following standards and criteria:

13.4.1 Design Storm Criteria

Systems must meet the peak discharge requirement for the following 24-hour duration design storm events:

(a) Mean annual storm (2.3-year return period) with a total 24-hour rainfall depth of 4.5 inches.

(b) 25-year return period.

System outlet control structures can be designed to meet the control peak discharge rates for both design storms by use of a two-stage weir, v-notch weir, multiple orifices, or other similar structures.

13.4.2 Floodplain Storage Criteria *Revised 6/1/18*

A system must not cause a net reduction in flood storage within the 100-year floodplain of the Econlockhatchee River or any of its tributaries, at a location with an upstream drainage area of 1 square mile or greater, except for structures elevated on pilings or traversing works that comply with the conveyance requirements in subsection 3.3.2.

13.4.3 Riparian Wildlife Habitat Standard

The wetlands abutting the Econlockhatchee River and its tributaries support an abundance and diversity of aquatic and wetland dependent wildlife. Uplands abutting these wetlands protect the wetlands and provide important habitat for aquatic and wetland dependent species. Construction, alteration, operation, maintenance, removal or abandonment of surface water management systems within these wetlands and uplands can result in adverse changes in the habitat, diversity, abundance and food sources of aquatic and wetland dependent species. Implementation of these regulations should be done in a manner which encourages development of functional resource protection plans.

(a) The applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a system within the following designated Riparian Habitat Protection Zone will not adversely affect the abundance, diversity, food sources or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species:

1. The wetlands contiguous with the Econlockhatchee River and the following tributaries: Little Econlockhatchee River north of University Boulevard, Mills Creek, Silcox Branch (branch of Mills Creek), Mills Branch (branch of Mills Creek), Long Branch, Hart Branch, Cowpen Branch, Green Branch, Turkey Creek, Little Creek, and Fourmile Creek;

2. The uplands which are within 50 feet landward of the landward extent of the wetlands above; and

3. The uplands which are within 550 feet landward of the stream's edge as defined, for the purpose of this subsection, as the waterward extent of the forested wetlands abutting the Econlockhatchee River and the above named tributaries. In the absence of forested wetlands abutting these streams, the stream's edge shall be defined, for the purpose of this subsection, as the mean annual surface water elevation of the stream; however, if hydrologic records are unavailable, the landward extent of the herbaceous emergent wetland

vegetation growing in these streams shall be considered to be the stream's edge.

4. The following portions of streams typically lack a defined water's edge, and subparagraph 3. shall not apply:

   a. Mills Creek upstream of the intersection of the creek with the Fort Christmas Road in Section 2, Township 22 South, Range 32 East;

   b. Long Branch upstream of the intersections of the creek with SR 520;

   c. Hart Branch upstream of the intersection of the creek and the Old Railroad Grade in Section 18, Township 23 South, Range 32 East;

   d. Cowpen Branch upstream of the southernmost bifurcation of the creek in Section 20, Township 23 South, Range 32 East;

   e. Green Branch upstream of the intersection of the creek with the north-south section line between Section 29 and 30, Township 23 South, Range 32 East;

   f. Turkey Creek including Turkey Creek Bay upstream of the intersection of the creek with the Weewahootee Road in Section 5, Township 24 South, Range 32 East;

   g. Little Creek upstream of the intersection of the creek with the north-south section line between Sections 22 and 23, Township 24 South, Range 32 East;

   h. Fourmile Creek including Bee Tree Swamp upstream of a point along the creek exactly halfway between section lines at the south end of Section 21 and the north end of Section 33 within Section 28, Township 24 South, Range 32 East; and

   i. All of the Econlockhatchee River Swamp (a portion of the Econlockhatchee River).

(b) Any of the following activities within the Riparian Habitat Protection Zone are presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and

any land clearing which results in the creation of any system. (Activities not listed above do not receive a presumption of no adverse effect.)

(c) The presumption in paragraph (b) shall not apply to any activity which promotes a more endemic state, where the land in the zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with endemic land cover.

(d) Applicants seeking to develop within the Riparian Habitat Protection Zone shall be given the opportunity to demonstrate that the particular development for which permitting is being sought will not have an adverse effect on the functions provided by the zone to aquatic or wetland dependent species. The functions provided by the zone are dependent on many factors. When assessing the value of the zone to aquatic and wetland dependent species, factors which the District will consider include: vegetative land cover, hydrologic regime, topography, soils, and land uses, existing within and adjacent to the zone; and range, habitat, and food source needs of aquatic and wetland dependent species, as well as sightings, tracks, or other such empirical evidence of use.

(e) The standard of paragraph 13.4.3(a) may be met by demonstrating that the overall merits of the proposed plan of development, including the preservation, creation or enhancement of viable wildlife habitat, provide a degree of resource protection to these types of fish and wildlife which offsets adverse effects that the system may have on the abundance, diversity, food sources, or habitat of aquatic or wetland dependent species provided by the zone. Mitigation plans will be considered on a case-by-case basis upon detailed site specific analyses. The goal of this analysis shall be the determination of the value of the proposed mitigation plan to aquatic and wetland dependent species with particular attention to threatened or endangered species. Mitigation plans should include: the information set forth in section 10.3.3 Applicant's Handbook Volume I for the uplands and wetlands within the zone and within other areas to be preserved, created or enhanced as mitigation for impacts within the zone; as well as other pertinent information, including land use, and the proximity of the site to publicly owned land dedicated to conservation. Implementation of this section contemplates that the proximity of development to the river and tributaries named herein and activities permitted in the zone may vary from place to place in support of a functional resource protection plan. Furthermore, some reasonable use of the land within the protection zone can be allowed under subsection 13.4.4.

(f) Roads or other traversing works which cross the zone have the potential to fragment the zone and adversely affect the habitat value of the zone to aquatic and wetland dependent species. To minimize adverse effects to the

zone, applicants for permits to construct traversing works in the zone must first demonstrate the need for the traversing works to provide for regional transportation, regional utility services, or reasonable property access, in addition to meeting the requirement of paragraph 13.4.3(a), above. Traversing works must also be designed to meet all requirements of the district rules related to water quality and quantity. Permittees responsible for traversing works shall be required to be responsible for maintaining the traversing works clean and free from trash and debris to the greatest extent practical.

13.4.4 Off-site Land Preservation as Mitigation in the Econlockhatchee River Hydrologic Basin. *Revised 6/1/18*

Mitigation in the Econlockhatchee River Hydrologic Basin must offset any adverse impacts of the system to the functions provided by the Econlockhatchee River Riparian Habitat Protection Zone and wetlands outside this zone, to aquatic and wetland dependent species. The lands proposed for preservation must be regionally significant or provide unique fish and wildlife habitat. For the purposes of this section the land to be preserved must be located entirely within the Econlockhatchee River Basin as designated in section 40C-41.023, F.A.C., and the applicant must propose to convey the land in fee simple to the St. Johns River Water Management District or a mutually acceptable designee. Alternatively, a perpetual conservation easement or other acceptable legal instrument may be conveyed to the District or a mutually acceptable designee in accordance with section 704.06, F.S. All of the following requirements will apply to off-site land preservation proposals within the Econlockhatchee River Basin:

(a) Prior to proposing off-site land preservation, the applicant must demonstrate that alternatives for avoiding adverse impacts to the functions provided by the Riparian Habitat Protection Zone and wetlands outside the zone have been evaluated, and that to the maximum extent practicable, adverse impacts to these functions have been avoided.

(b) As a part of an off-site land preservation proposal, the applicant must demonstrate that the proposal meets the standard described in paragraph 13.4.3(a) by providing a functional analysis, as described in paragraph 13.4.3(c), of the proposed impacts within the Riparian Habitat Protection Zone and the benefits of the proposed preservation area. If adverse impacts occur to wetlands, then as part of an off-site land preservation proposal, the applicant must demonstrate that the proposal meets the criteria described in section 10.3.3, Applicant's Handbook Volume I.

(c) The functional gain afforded by the preservation will depend upon the functional analysis of impacts and benefits. The suitability of this mitigation option will be determined on a case-by-case basis based on site-specific information.

13.5 Tomoka River and Spruce Creek Hydrologic Basins

As part of the standards and design criteria described in 62-330.301 and 62-330.302, F.A.C., systems within the Tomoka River Hydrologic Basin or the Spruce Creek Hydrologic Basin must meet the following standards and criteria:

13.5.1 Recharge Standard

Projects, or portions of projects, in the Most Effective Recharge Areas must retain three (3) inches of runoff from the directly connected impervious area within the Most Effective Recharge Area of the project area. As an alternative, applicants may demonstrate that the post-development recharge capacity will be equal to or greater than the pre-development recharge capacity.

Most Effective Recharge Areas, as used in this section, are areas which have 10-20 inches of recharge per year. Most Effective Recharge Areas can be more accurately defined by soils types. Those areas with Type "A" Hydrologic Soil Group shall be considered to be Most Effective Recharge Areas. Figures 13.5-1 and Figure 13.5-2 show the approximate location of the Most Effective Recharge Area in the Tomoka River and Spruce Creek Hydrologic Basins.

Section 13.8.1 contains a list of Type "A" soils for Flagler and Volusia counties. This list will be used to determine whether a proposed project, or portion of a project, is in the Most Effective Recharge Area. Also, applicants may submit additional geotechnical information to establish whether or not a site contains Type "A" soils and is within the Most Effective Recharge Area.

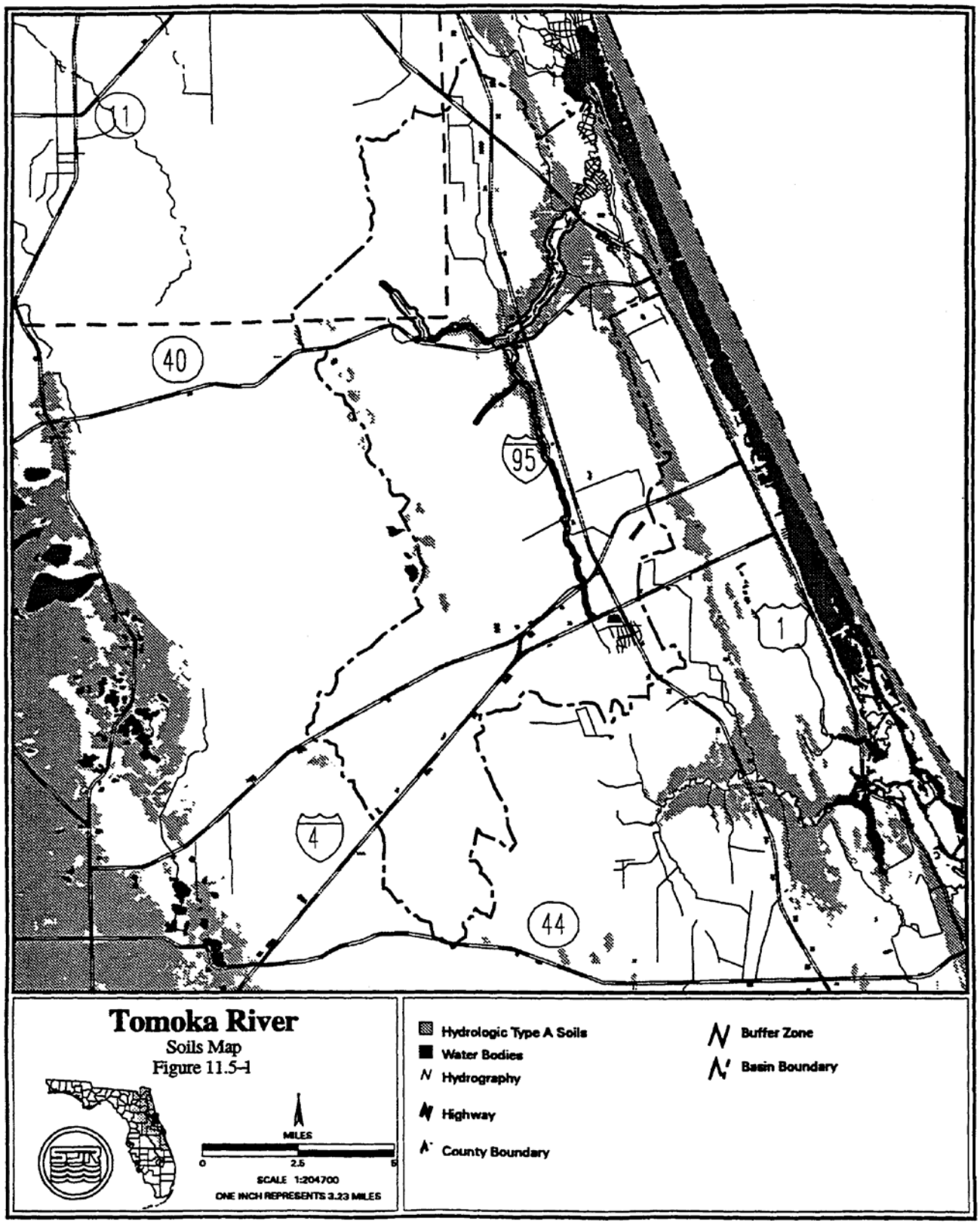


Figure 13.5-1 Tomoka River Soils Map

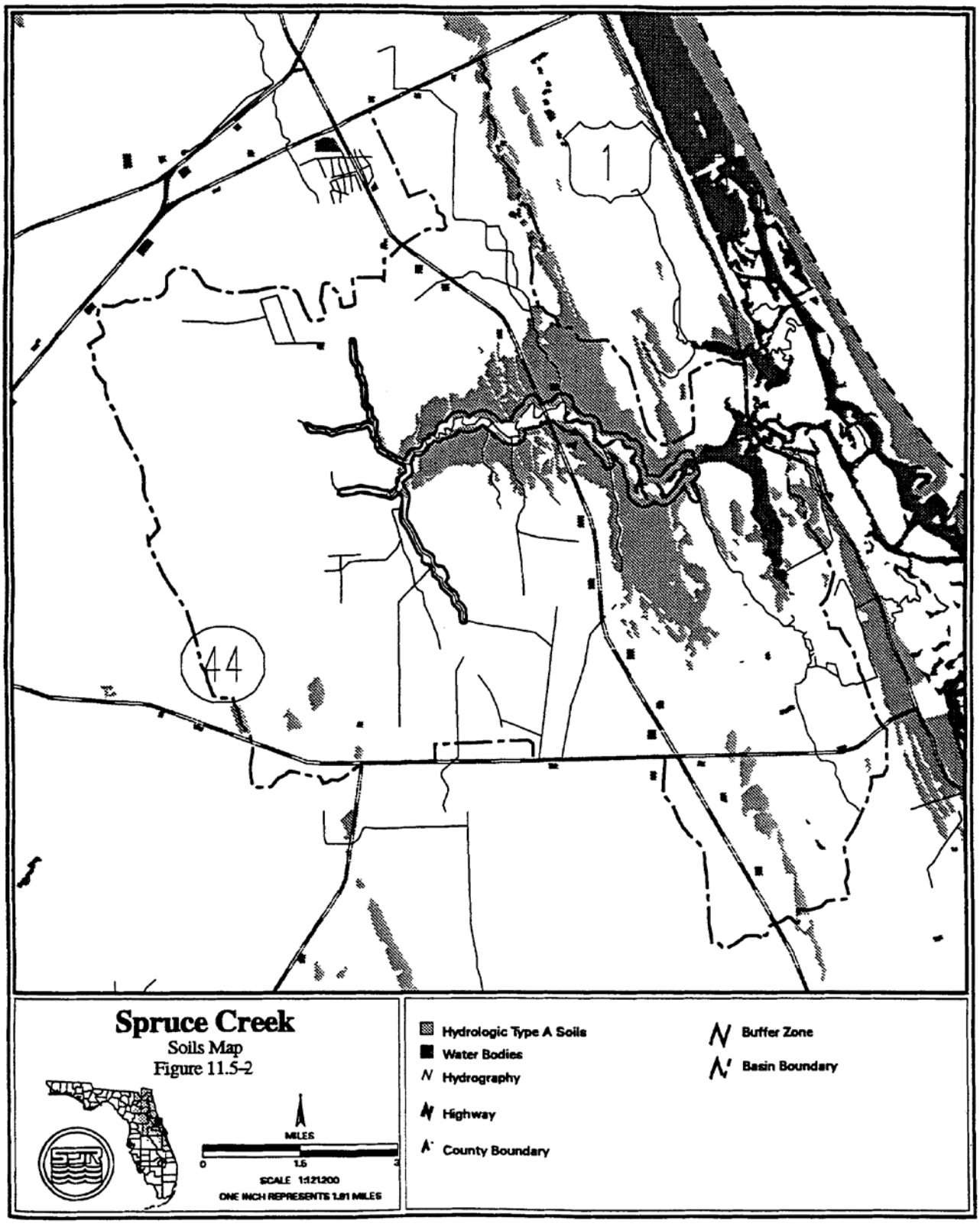


Figure 13.5-2 Spruce Creek Soils Map

Directly connected impervious areas are those impervious areas, which are connected to the surface water management system by a drainage improvement, such as a ditch, storm sewer, paved channel, or other man-made conveyance. Stormwater that is retained must be infiltrated into the soil or evaporated such that the storage volume is recovered within 14 days following the storm event.

13.5.2 Floodplain Storage Criteria

Systems constructed in the 100-year floodplain have the potential to increase flood stages on adjacent property. A system must not cause a net reduction in flood storage within the 100-year floodplain of the Tomoka River or Spruce Creek or any of their tributaries except for structures elevated on pilings or traversing works that comply with conveyance requirements in subsection 3.3.2.

13.5.3 Stormwater Management Standard

Construction of new stormwater management systems must be in accordance with the design and performance standards of Part V of this Volume. However, systems which serve drainage areas in excess of 10 acres cannot use detention with filtration treatment as the sole stormwater treatment methodology. Additionally, when retention systems are not feasible due to limited percolation capacity, wet detention treatment or other treatment demonstrated to be equivalent to retention or wet detention, in accordance with Part V of this Volume, must be used.

13.5.4 Riparian Wildlife Habitat Standard

The wetlands abutting the Tomoka River and Spruce Creek and their tributaries support an abundance and diversity of aquatic and wetland dependent wildlife. Uplands abutting these wetlands protect the wetlands and provide important habitat for aquatic and wetland dependent species. Construction, alteration, operation, maintenance, removal or abandonment of surface water management systems within these wetlands and uplands can result in adverse changes in the habitat, diversity, abundance and food sources of aquatic and wetland dependent species. Implementation of these regulations should be done in a manner which encourages development of functional resource protection plans.

(a) The applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a system within the following designated Riparian Habitat Protection Zone will not adversely affect the abundance, diversity, food sources or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species:

1. The wetlands and uplands which are within 50 feet landward of the landward extent of the wetlands which abut Spruce Creek north of

Pioneer Trail to the FEC railroad, and the Tomoka River north of I-4 to US 1 and the following tributaries:

a. Spruce Creek east of the western section line of Section 35, Township 16 South, Range 32 East, Volusia County, Florida.

b. Spruce Creek east of the power line easement in Section 27, Township 16 South, Range 32 East, Volusia County, Florida.

c. Spruce Creek west of SR 415 and south of the northern section line of Section 23, Township 16 South, Range 32 East, Volusia County, Florida.

d. The Little Tomoka River north of SR 40 in Volusia County and south of the western section line of Section 22, Range 31 East, Township 14 South, Flagler County.

e. Priest Branch east of the power line easement in Section 6, Township 15 South, Range 32 East, Volusia County, Florida.

2. The uplands which are within 550 feet landward of the stream's edge of the following portions of the streams. The stream's edge is defined, for the purpose of this subsection, as the waterward extent of the wetlands abutting the stream:

a. Spruce Creek north of the southern section line of Section 25, Range 32 East, Township 16 South, Volusia County, Florida;

b. Tomoka River north of the confluence of the Tomoka River and Priest Branch; and

3. The uplands which are within 320 feet landward of the stream's edge of the following stream. The stream's edge is defined, for the purpose of this subsection, as the waterward extent of the wetlands abutting the stream:

a. Spruce Creek east of I-95 and west of the FEC railroad; and

4. The uplands that are within 275 feet landward of the edge of the following streams:

a. Spruce Creek south of the southern section line of Section 25, Range 32 East, Township 16 South, Volusia County, Florida;

b. Spruce Creek east of the western section line of Section 35, Township 16 South, Range 32 East, Volusia County, Florida.

c. Spruce Creek east of the power line easement in Section 27, Township 16 South, Range 32 East, Volusia County, Florida.

d. Spruce Creek west of SR 415 and south of the northern section line of Section 23, Township 16 South, Range 32 East, Volusia County, Florida.

e. The Tomoka River south of the confluence of the Tomoka River and Priest Branch in section 36, Range 31 East, Township 14 South, Volusia County, Florida;

f. The Little Tomoka River north of SR 40, Volusia County, and south of the western section line of Section 22, Range 31 East, Township 14 South, Flagler County, Florida.

g. Priest Branch east of the power line easement in Section 6, Township 15 South, Range 32 East, Volusia County, Florida.

(b) Any of the following activities within the Riparian Habitat Protection Zone are presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the Zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and any land clearing which results in the creation of any system (activities not listed above do not receive a presumption of no adverse effect.)

(c) The presumption in paragraph (b) shall not apply to any activity which promotes a more endemic state, where the land in the Zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with endemic land cover.

(d) The standard of subsection 13.5.4(a) may be met by demonstrating that the overall merits of the proposed plan of development, including mitigation as described in section 10.3, Applicant's Handbook Volume I provide a degree of resource protection to these types of fish and wildlife which offsets adverse effects of the proposed system on the uplands and wetlands within the Zone. Some reasonable use of the land within the Zone can be allowed under subsection 13.5.4.

(e) Roads or other traversing works which cross the Zone have the potential to fragment the Zone and adversely affect the habitat value of the Zone to aquatic and wetland dependent species. To minimize adverse effects to the Zone, applicants for permits to construct traversing works in the Zone must

first demonstrate the need for the traversing works to provide for regional transportation, regional utility services, or reasonable property access, in addition to meeting the requirement of subsection 13.5.4(a), above. Traversing works must also be designed to meet all requirements of the district rules related to water quality and quantity.

13.6 Sensitive Karst Areas Basin Design Criteria

Chapter 40C-41, F.A.C., establishes additional surface water management criteria which are used in reviewing applications for permits in designated hydrologic basins. The Sensitive Karst Areas Basin covers those portions of western Alachua and western Marion counties within the District's boundaries (Figures 13.0-3 and 13.0-4). The design criteria for the Sensitive Karst Areas Basin are found in subsection 40C-41.063(6), F.A.C., and are discussed below.

13.6.1 Background of the Sensitive Karst Areas Design Criteria

The Floridan aquifer is the drinking water source for most of the population in the District. In parts of Alachua and Marion counties, the limestones that make up or comprise this aquifer are at or very near the land surface and potential sources of pollution. Potential contamination of the Floridan aquifer from surface pollutant sources in these areas is greater than within the rest of the District due to the hydrogeology and geology of these "sensitive karst areas." "Karst" is a geologic term used to describe areas where sinkhole formation is common and landscapes are formed by the solution of limestone.

13.6.2 Hydrogeology of the Sensitive Karst Areas Basin

Throughout the majority of the District the highly porous limestone which contains the Floridan aquifer is overlain by tens to hundreds of feet of sands, clays, and other material. This material acts as a buffer, isolating the Floridan aquifer from surface pollutants. Surface water seeps through this material slowly which allows for filtration, adsorption, and biological removal of contaminants.

However, in the Sensitive Karst Areas (SKA) the limestone which contains the Floridan aquifer exists at, or virtually at, land surface (Figure 13.6-1). The absence of cover material allows rapid movement of surface water into the aquifer with little treatment. The SKA are areas of high recharge for the Floridan aquifer. Floridan aquifer ground water levels vary from land surface to approximately 60 feet below land surface in the SKA.

A factor which makes the SKA particularly prone to stormwater contamination is the formation of solution pipe sinkholes. Solution pipe sinkholes are common in these areas and form due to the collapse of surficial material into vertical cavities that have been dissolved in the upper portion of the limestone (Figure 13.6-1). They are also formed by the movement of surface material into the porous limestone of

the SKA. In most cases, the solution pipes are capped by a natural plug of sands and clays (Figures 13.6-1 and 13.6-2). If the cap is washed out, the resulting solution pipe sinkhole (Figure 13.6-3) can act as a direct avenue for the movement of inadequately treated stormwater into the Floridan aquifer.

Solution pipe sinkholes often form in the bottom of stormwater retention basins. The capping plug may be reduced by excavation of the pond. Stormwater in the basin may increase the hydraulic head on the remaining plug. Both of these factors can wash the plug down the solution pipe. Solution pipes act as natural drainage wells and can drain stormwater basins.

The irregular weathering of the limestone surface in the SKA causes uncertainty and errors in determining the depth from land surface to limestone. For example, in Figure 13.6-1, boring A would show limestone much deeper than it would actually be encountered during excavation, shown at boring B. This potential for error must be considered for site investigations when evaluating site borings.

The SKA has been delineated within the District using two criteria:

(a) The area is a major recharge area, defined by the United States Geological Survey (USGS) as 10 to 20 inches annual recharge, for the Floridan aquifer.

(b) The porous limestone of the Floridan aquifer occurs within 20 feet of the land surface.

Delineations were made using the best available data, including boring and geologic data from the District, the Florida Geologic Survey, and the USGS. As additional data becomes available, the delineation of these areas can be further refined if needed. A generalized map of the SKA is shown in Figure 13.0-2; detailed maps are provided in Figures 13.0-3 and 13.0-4. If needed, maps of the SKA on USGS Quad Sheets are available for viewing in the Palatka and Maitland offices.

13.6.3 Design Criteria for Sensitive Karst Areas *Revised 6/1/18*

The stormwater system should be designed to assure adequate treatment of the water before it enters the Floridan aquifer. The system design should prevent the formation of solution pipe sinkholes in the basins. To protect the Floridan aquifer, the District requires the following minimum design features for all projects in the SKA:

(a) A minimum of three feet of unconsolidated soil material between the surface of the limestone bedrock and the bottom and sides of the stormwater basin. Excavation and backfill of suitable material may be made to meet this criteria. This provides reasonable assurance of adequate treatment of stormwater before it enters the Floridan aquifer.

(b) Stormwater storage areas should be as shallow as possible with a horizontal bottom (no deep spots). In general, the size of a stormwater storage basin can be minimized by providing retention throughout the project site by using shallow landscaped areas and swales.

(c) Maximum basin depth of 10 feet. (Items (b) and (c) reduce the potential for solution pipe sinkhole formation caused by a large hydraulic head.)

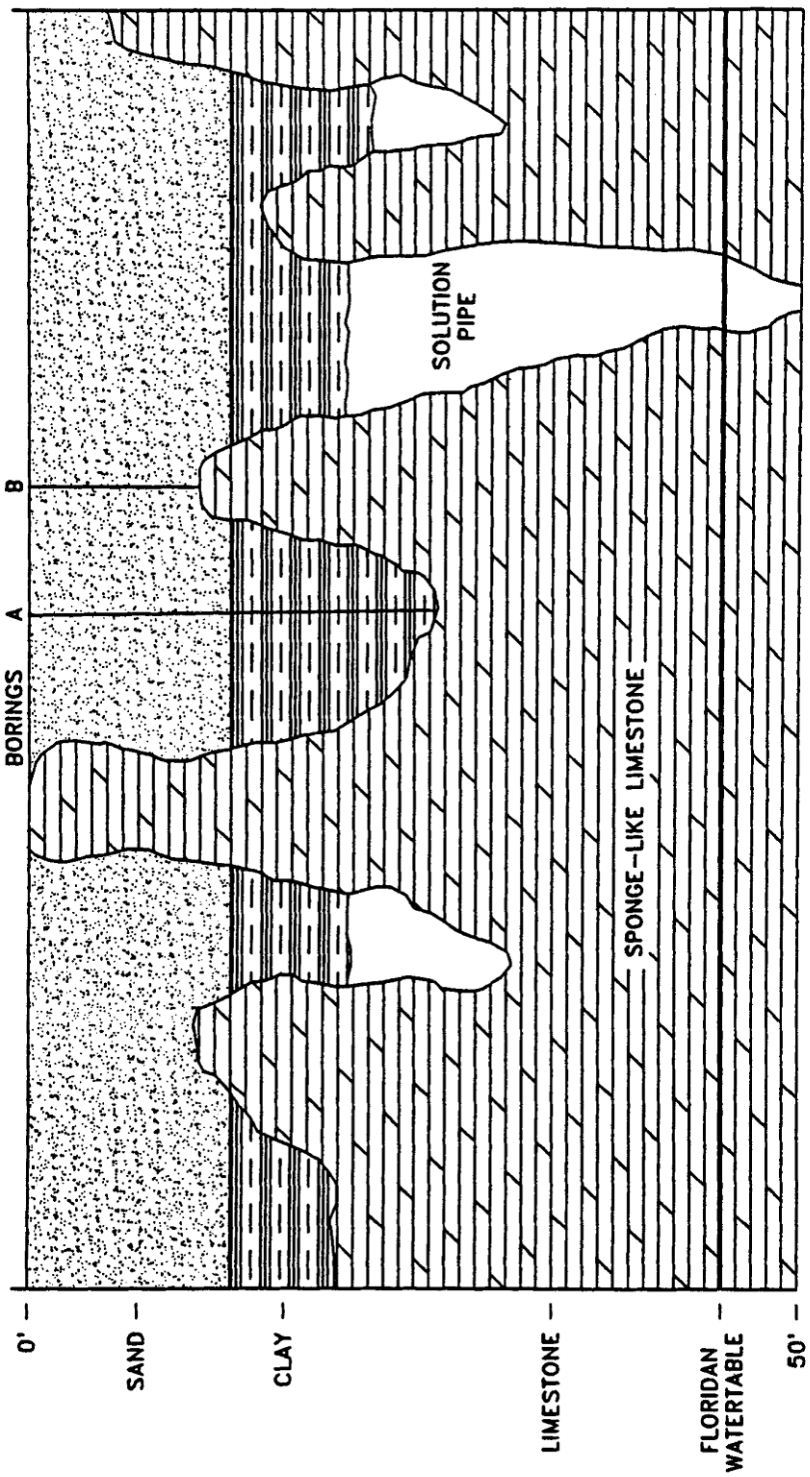


Figure 13.6-1 Generalized geologic section in karst sensitive area

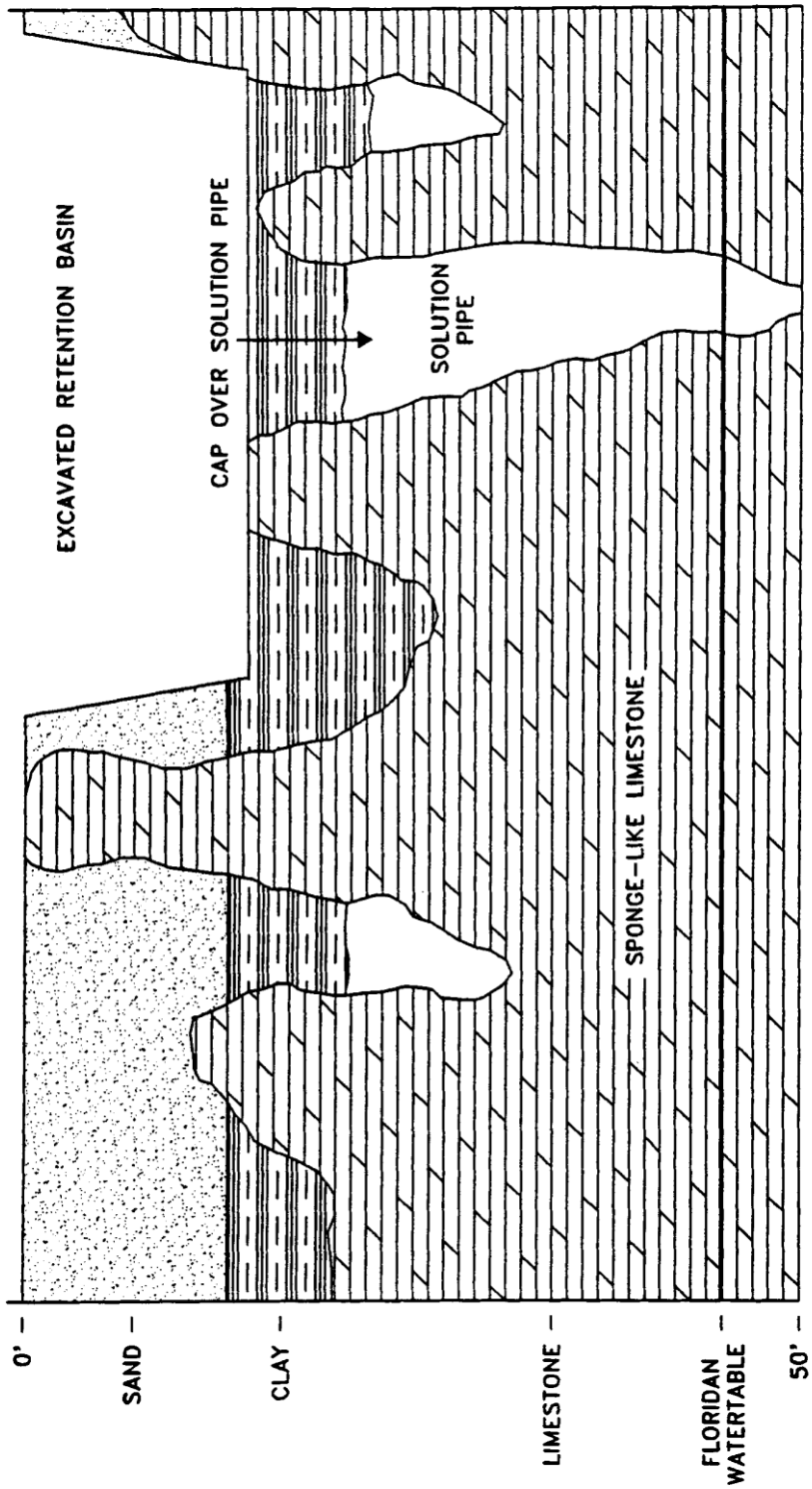
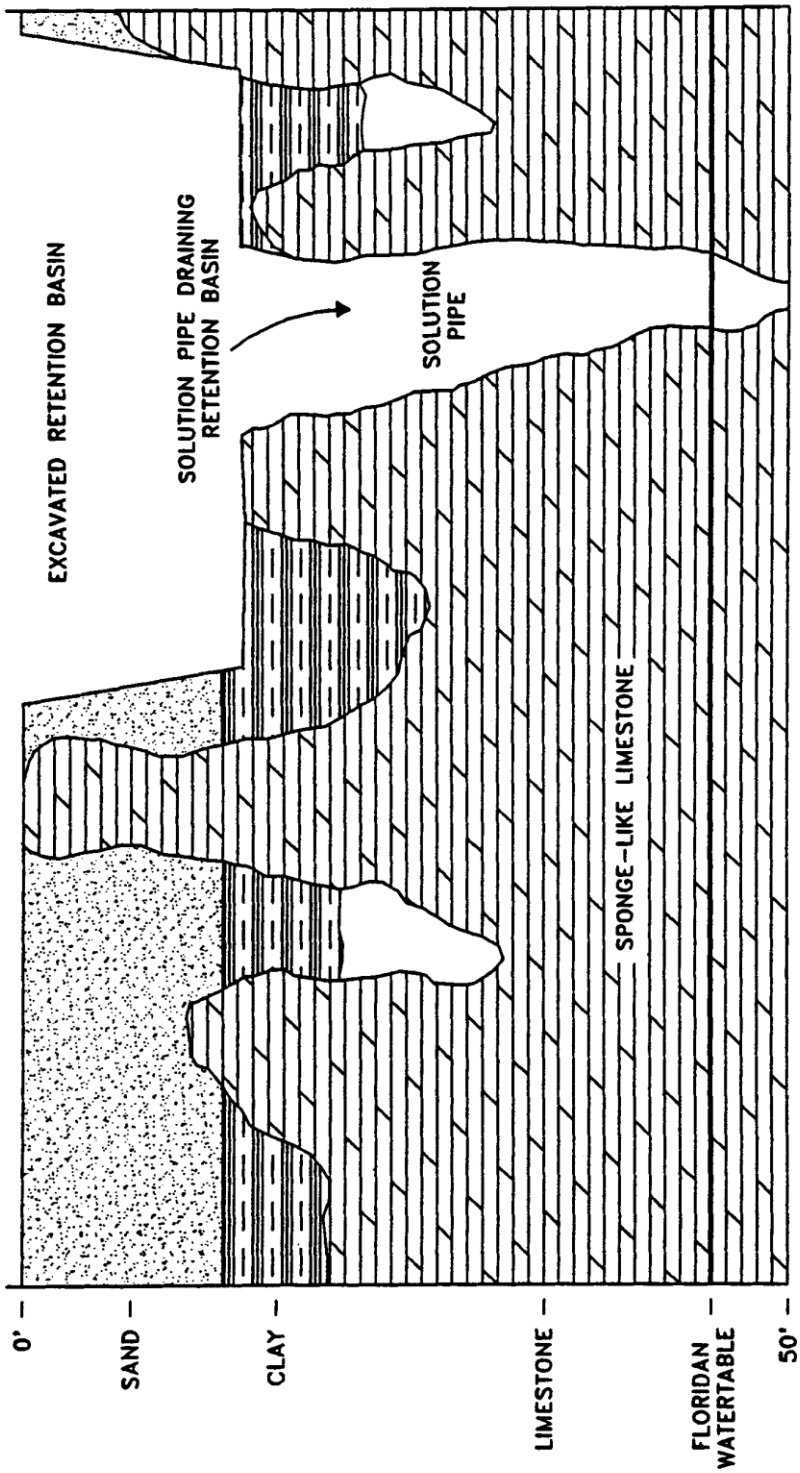


Figure 13.6-2 Generalized geologic section in karst sensitive area with excavated retention basin

Figure 13.6-3. Generalized geologic section in karst sensitive area with excavated retention basin



(d) Fully vegetated basin side slopes and bottom. Vegetation plays a critical role in the removal of contaminants from stormwater and stabilization of side slopes. In the SKA, droughty, highly alkaline soils are common and prevent successful establishment of commonly used grasses such as bahia. Typically poor survival of vegetation in stormwater basins in the SKA has demonstrated the need for mat-forming vegetation which can tolerate these conditions.

Two species of grasses are best suited for use in retention basins in the SKA. These grasses are discussed below:

St. Augustine: This grass can tolerate high alkalinity and brief inundation. However, irrigation is required to foster a healthy cover during dry periods.

Bermuda: This grass can grow in alkaline conditions, is drought resistant, and can stand brief inundation. It is also a low maintenance species which provides excellent cover and soil stabilization. Bermuda grass grows in a thick mat, eventually covering all exposed soil. It recovers quickly after even extended drought. Mowing is rarely required because bermuda creeps laterally rather than growing vertically. Seed is available commercially and is inexpensive.

The above conditions represent the minimum design requirements for systems in the SKA. Depending on the potential for contamination to the Floridan aquifer, more stringent criteria may apply. Industrial and some commercial sites will normally require more stringent design features. Some of the more stringent site-specific design requirements which may be necessary include:

(a) More than 3 feet of material between the limestone bedrock surface and the bottoms and sides of retention basins

(b) Basin liners (Clay or geotextile)

(c) Sediment trapping structures at stormwater inlets

(d) Off-line treatment

(e) Special stormwater system design

(f) Ground water monitoring

(g) Paint/solvent and water separators

If the design of the proposed stormwater management systems does not include the minimum design criteria discussed in this section, an analysis must be submitted to the District that provides reasonable assurance that the ground water quality standards as set forth in chapter 62-520, F.A.C., (incorporated by reference in 40C-4.091(1)(c), F.A.C.) are met.

13.7 Lake Apopka Hydrologic Basin *Revised 6/1/18*

(a) Pursuant to section 373.461(3)(a), F.S., the total phosphorus criterion for Lake Apopka is 55 parts per billion. To meet this total phosphorus criterion, the applicant must provide reasonable assurance of compliance with the following total phosphorus discharge limitations and comply with the relevant monitoring requirements in section 13.7(b) and relevant inspection requirements of section 13.7(c):

(1) Sites Within Lake Apopka Hydrologic Basin

Applicants required to obtain a permit pursuant to chapters 62-330 or 40C-44, F.A.C., for a surface water management system located within the Lake Apopka Hydrologic Basin shall demonstrate: (i) that the system provides stormwater treatment equivalent to or greater than any of the applicable stormwater treatment options contained in Table 13.7-1 for the removal of total phosphorus; (ii) that the post-development total phosphorus load discharged from the project area will not exceed the pre-development total phosphorus load discharged from the project area; or (iii) that the system, under the soil moisture conditions described in section 3.2.8(a), will not discharge water to Lake Apopka or its tributaries for the 100-year, 24-hour storm event. Systems described under section 13.7(a)(1)(iii) shall be considered to discharge to a land-locked lake that must meet the criteria in section 3.2. Any alteration of a system originally permitted pursuant to section 13.7(a)(1)(iii) which results in an increase in discharge of water to Lake Apopka or its tributaries shall be considered an interbasin diversion that must meet the criteria in sections 13.7(a)(2) and 13.7(b)(4).

(2) Interbasin Diversion of Water to Lake Apopka Hydrologic Basin

Applicants required to obtain a permit pursuant to chapters 62-330 or 40C-44, F.A.C., for a surface water management system that will cause the importation of water from another hydrologic basin into the Lake Apopka Hydrologic Basin shall not discharge any phosphorus from the project area to Lake Apopka or its tributaries, unless the applicant implements measures to reduce the existing total phosphorus load to Lake Apopka or its tributaries from another existing source by at least an equivalent amount of total

phosphorus. The imported water shall consist only of stormwater runoff. The imported water shall not be discharged to Lake Apopka or its tributaries when the water level of Lake Apopka is in Zone A of the Lake Apopka Regulation Schedule set forth in Figure 13.7-2. All measures to reduce existing phosphorous loads to Lake Apopka or its tributaries must be constructed and operating in compliance with the environmental resource permit prior to any importation of water into the Lake Apopka Hydrologic Basin. Measures that reduce existing phosphorous loads to Lake Apopka or its tributaries shall not include those measures taken on the District's land.

(3) Methodology for Determining Total Phosphorus Loads.

Determination of Pre-Development Total Phosphorus Loads.

Pre-development total phosphorus loads shall be based upon the land uses in place as of March 7, 2003. For systems which have been constructed in accordance with a permit issued pursuant to chapters 62-330 or 40C-44, F.A.C., at the permit applicant's option, the pre-development total phosphorus loads shall be based upon the land uses in place at the time the prior permit was issued. Pre-development total phosphorus loads shall be determined by: monitoring the total phosphorus loads from the project area for a period of one year prior to construction, alteration, abandonment, or removal of the proposed or existing system; calculating total phosphorus loads using the appropriate mean annual total phosphorus loadings in Table 13.7-3, or calculating total phosphorus loads for pre-development land uses not listed in Table 13.7-3 using mean annual total phosphorus loadings from the scientific literature. When the pre-development total phosphorus loads are determined by monitoring, the calculation of pre-development total phosphorus loads shall be adjusted by interpolation or extrapolation to reflect mean annual rainfall conditions.

Determination of Post-Development Total Phosphorus Loads.

Post-development total phosphorus loads shall be based upon the land uses proposed in the permit application and shall be determined by: calculating total phosphorus loads using the appropriate mean annual total phosphorus loadings in Table 13.7-3 and then reducing the total phosphorus load according to the appropriate total phosphorus removal efficiency values for systems listed in Tables 13.7-4 through 13.7-33. For purposes of Tables 13.7-4 and 13.7-6 through 13.7-33, the term "retention" includes stormwater harvesting and underdrain and underground exfiltration trench systems as those terms are defined in section 2.1 of this Volume. The calculation of total phosphorus loads for post-development land uses not listed in Table 13.7-3 or total phosphorus removal efficiency values for

systems not listed in Tables 13.7-4 through 13.7-33 may be calculated using mean annual total phosphorus loadings and total phosphorus removal efficiency values from the scientific literature.

(b) Monitoring

(1) Monitoring for Retention Systems.

A surface water management system to be permitted under section 13.7(a)(1)(i) which utilizes only retention, shall be monitored as set forth in this paragraph. Water elevations in such a system shall be monitored from the date that construction of the system is completed or any part of the system is used for its intended purpose, whichever is sooner. The monitoring shall continue for three years following completion of construction of the entire system, including all associated residential, commercial, transportation, or agricultural improvements. If the results of the monitoring indicate that the system is not recovering the treatment volume in accordance with the permitted design, then the permittee shall either perform maintenance on the system, or obtain a modification to the permit and implement measures, to bring the system into compliance, and in either event the monitoring shall continue for three years after the date the system is brought into compliance.

(2) Monitoring for Systems Permitted Under Section 13.7(a)(1)(iii).

A surface water management system to be permitted under section 13.7(a)(1)(iii), shall be monitored as set forth in this paragraph. Water elevations in such a system shall be monitored from the date that construction of the system is completed or any part of the system is used for its intended purpose, whichever is sooner. The monitoring in such a system shall continue for ten years following completion of construction of the entire system, including all associated residential, commercial, transportation, or agricultural improvements. If the results of the monitoring indicate that either the system is not recovering storage in accordance with the permitted design or causes water to be discharged to Lake Apopka or its tributaries for events less than the 100-year, 24-hour storm event, then the permittee shall either perform maintenance that brings the system into compliance or obtain a modification to the permit and implement measures to bring the system into compliance, and in either event the monitoring shall continue for three years after the date the system is brought into compliance.

(3) Monitoring for Other Systems

A surface water management system to be permitted, other than a system described in sections 13.7(b)(1), 13.7(b)(2) or 13.7(b)(4), shall be

monitored as set forth in this paragraph. Except as provided below, the total phosphorus load from the project area shall be monitored from the date that construction of such a system is completed or any part of the system is used for its intended purpose, whichever is sooner. The monitoring shall continue for three years following completion of construction of the entire system, including all associated residential, commercial, transportation, or agricultural improvements. If the results of the monitoring indicate that post-development total phosphorus loads exceed pre-development total phosphorus loads, then the permittee shall either perform maintenance on the system, or obtain a modification to the permit and implement measures, to reduce the total phosphorus loads to no more than pre-development levels, and, in either event, the monitoring shall continue for three years after the date the system is maintained or modified as described herein.

No monitoring shall be required under section 13.7(b)(3) when an applicant demonstrates that the system provides stormwater treatment equivalent to or greater than any of the applicable stormwater treatment options contained in Table 13.7-1 for the removal of total phosphorus. Alternatively, no monitoring shall be required under section 13.7(b)(3) when an applicant demonstrates that the post-development total phosphorus load discharged from the project area will not exceed the pre-development total phosphorus load discharged from the project area when determined using the appropriate mean annual total phosphorus loadings and total phosphorus removal efficiency values from Tables 13.7-3 through 13.7-33.

(4) Monitoring for Interbasin Diversion of Water to Lake Apopka Hydrologic Basin

A surface water management system to be permitted under section 13.7(a)(2) shall be monitored as set forth in this paragraph. The total phosphorus load shall be monitored from: (i) any system designed to reduce the existing total phosphorus load to Lake Apopka or its tributaries, and (ii) the system that is importing water to the Lake Apopka Hydrologic Basin. Monitoring of the system that is importing water to the Lake Apopka Hydrologic Basin shall commence from the date that construction of such system is completed or any part of the system is used for its intended purpose, whichever is sooner. Monitoring of systems designed to reduce the existing total phosphorus load to Lake Apopka or its tributaries shall commence from the date that construction of such system is completed. Monitoring shall continue for as long as water is imported from the system to the Lake Apopka Hydrologic Basin. If monitoring results indicate that the reductions in total phosphorus load are less than that in the imported water, then the permittee shall either perform

maintenance or obtain a permit modification to bring the system(s) into compliance.

(c) Inspecting Systems

Systems subject to the inspection requirements in section 62-330.311, F.A.C., and which are also subject to the phosphorus discharge limitations in section 13.7(a), shall be inspected by the operation and maintenance entity within one year after completion of construction and every year thereafter.

TABLE 13.7-1

STORMWATER TREATMENT CRITERIA TO ACHIEVE NO NET INCREASE IN POST-DEVELOPMENT LOADINGS WITHIN THE LAKE APOPKA HYDROLOGIC BASIN

LAND USE CATEGORY	HYDROLOGIC SOIL GROUP	RETENTION[1] ONLY[2]	RETENTION[1]/ WET DETENTION OPTION[3]
Low-Density Residential (max. 15% impervious)	A	2.75"	1.00"/14 days
	B	1.75"	0.50"/14 days
	C	1.25"	0.50"/14 days
	D	1.00"	0.25"/14 days
Single-Family Residential (max. 25% impervious)	A	2.75"	1.00"/14 days
	B	2.00"	0.75"/14 days
	C	1.75"	0.75"/14 days
	D	1.50"	0.50"/14 days
Single-Family Residential (max. 40% impervious)	A	3.75”	1.25"/14 days
	B	3.00"	1.00"/14 days
	C	2.00"	0.75"/14 days
	D	1.50"	0.50"/14 days
Multi-Family Residential (max. 65% impervious)	A	4.00”	2.50"/14 days
	B	3.75"	2.00"/14 days
	C	3.25"	1.75"/14 days
	D	2.75"	1.50"/14 days
Commercial (max. 80%impervious)	A	4.00”	2.75"/14 days
	B	3.75"	2.25"/14 days
	C	2.75"	1.50"/14 days
	D	2.25"	1.25"/14 days
Highway (max. 50% impervious)	A	4.00"	2.00"/14 days
	B	3.00"	1.50"/14 days
	C	2.50"	1.25"/14 days
	D	2.25"	1.00"/14 days
Highway (max. 75% impervious)	A	4.00”	2.75"/14 days
	B	3.75"	2.25"/14 days
	C	2.75"	1.75"/14 days
	D	2.25"	1.25"/14 days

1. For purposes of this Table, the term “retention” includes stormwater harvesting ~~reuse~~ and underdrain and underground exfiltration trench systems as those terms are defined in section 2.1 of this Volume .

2. Required dry retention volume (inches of runoff over project area)

3. Required dry retention volume (inches of runoff over project area) followed by wet detention with listed minimum residence time.

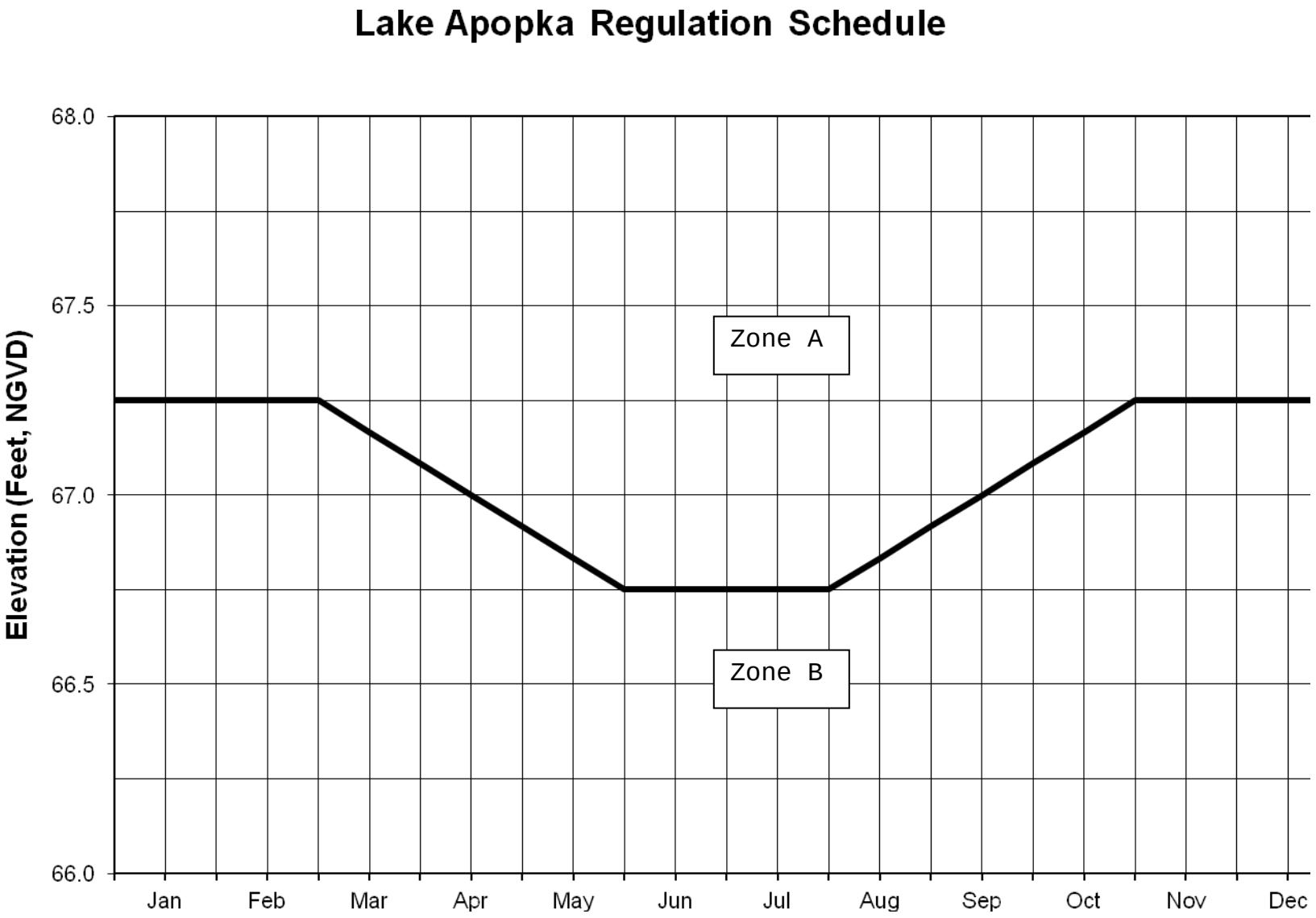

Lake Apopka Regulation Schedule
Elevation (Feet, NGVD)
68.0
67.5
67.0
66.5
66.0
Zone A
Zone B
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Figure 13.7-2

TABLE 13.7-3

MEAN ANNUAL LOADINGS OF TOTAL PHOSPHORUS FOR LAND USE TYPES IN THE LAKE APOPKA HYDROLOGIC BASIN

LAND USE CATEGORY	MEAN ANNUAL TOTAL PHOSPHORUS LOAD (kg/ac-yr)			
	HSG A	HSG B	HSG C	HSG D
Low-Density Residential (max. 15% impervious)	0.069	0.135	0.215	0.284
Single-Family Residential (max. 25% impervious)	0.227	0.286	0.383	0.465
Single-Family Residential (max. 40% impervious)	0.250	0.333	0.446	0.536
Multi-Family Residential (max. 65% impervious)	1.082	1.156	1.257	1.336
Commercial (max. 80% impervious)	0.899	0.916	0.943	0.964
Highway – max. 50% impervious	0.710	0.756	0.817	0.871
Highway – max. 75% impervious	1.053	1.076	1.106	1.133
Agriculture – Pasture	0.026	0.118	0.239	0.347
Agriculture – Crops, Ornamentals, Nurseries	0.040	0.180	0.366	0.531
Agriculture – Groves	0.007	0.036	0.079	0.123
Open Land/Recreational/Fallow Groves and Cropland	0.004	0.017	0.035	0.051
Forests/Abandoned Tree Crops	0.004	0.021	0.045	0.070

HSG = Hydrologic Soil Group

TABLE 13.7-4

REMOVAL EFFICIENCIES FOR TOTAL PHOSPHORUS IN DRY RETENTION SYSTEMS THAT MEET THE DESIGN AND PERFORMANCE CRITERIA IN PART V, "ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK VOLUME II: FOR USE WITHIN THE GEOGRAPHIC LIMITS OF THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT"

LAND USE	HSG A		HSG B		HSG C		HSG D	
	STANDARD	OFW	STANDARD	OFW	STANDARD	OFW	STANDARD	OFW
Low-Density Residential (max. 15% impervious)	78%	82%	67%	74%	63%	72%	60%	71%
Single-Family Residential (max. 25% impervious)	90%	92%	78%	83%	69%	77%	65%	74%
Single-Family Residential (max. 40% impervious)	84%	88%	72%	80%	65%	75%	63%	73%
Multi-Family Residential (max. 65% impervious)	74%	83%	69%	79%	64%	75%	62%	74%
Commercial (max. 80% impervious)	65%	76%	63%	74%	62%	72%	61%	71%
Highway (max. 50% impervious)	75%	85%	70%	80%	65%	76%	63%	74%
Highway (max. 75% impervious)	65%	76%	63%	74%	62%	72%	61%	71%

Standard - Meets design and performance criteria in Part V, Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District, for discharges to Class III waters

OFW - Meets design and performance criteria in Part V, Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District, for discharges to Class I, Class II, or Outstanding Florida Waters

TABLE 13.7-5

REMOVAL EFFICIENCIES FOR TOTAL PHOSPHORUS IN WET DETENTION SYSTEMS THAT MEET THE DESIGN AND PERFORMANCE CRITERIA IN PART V, ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK, VOLUME II: FOR USE WITHIN THE GEOGRAPHIC LIMITS OF THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Residence Time (days)	Phosphorus Removal Efficiency (%)
14	61.5
21	64.5

Table 13.7-6

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Low-Density Residential (max. 15% impervious) For Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	70	86	88	89
0.50	78	90	92	92
0.75	82	92	93	94
1.00	85	93	94	95
1.25	88	94	95	96
1.50	90	95	96	96
1.75	91	96	96	97
2.00	92	96	97	97
2.25	93	97	97	97
2.50	93	97	97	98
2.75	94	97	98	98
3.00	95	98	98	98
3.25	96	98	98	99
3.50	97	98	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-7

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Low-Density Residential (max. 15% impervious) For Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	53	78	82	83
0.50	67	85	87	88
0.75	74	88	90	91
1.00	79	91	92	93
1.25	83	92	93	94
1.50	85	93	94	95
1.75	88	94	95	96
2.00	89	95	96	96
2.25	90	96	96	97
2.50	92	96	97	97
2.75	93	97	97	97
3.00	93	97	97	98
3.25	94	97	98	98
3.50	94	97	98	98
3.75	95	98	98	98
4.00	95	98	98	98

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-8

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Low-Density Residential (max. 15% impervious) For Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	46	75	79	81
0.50	63	83	86	87
0.75	72	87	89	90
1.00	78	90	91	92
1.25	82	92	93	94
1.50	85	93	94	95
1.75	87	94	95	96
2.00	89	95	96	96
2.25	91	96	96	97
2.50	92	96	97	97
2.75	93	97	97	97
3.00	94	97	97	98
3.25	94	97	98	98
3.50	95	98	98	98
3.75	95	98	98	98
4.00	96	98	98	98

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-9

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Low-Density Residential (max. 15% impervious) For Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	42	74	78	79
0.50	60	82	85	86
0.75	71	87	89	90
1.00	78	90	91	92
1.25	82	92	93	94
1.50	85	93	94	95
1.75	88	94	95	96
2.00	90	95	96	96
2.25	91	96	97	97
2.50	92	96	97	97
2.75	93	97	97	98
3.00	94	97	98	98
3.25	95	98	98	98
3.50	95	98	98	98
3.75	96	98	98	98
4.00	96	98	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-10

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 25% impervious) For Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	82	92	93	94
0.50	90	95	96	96
0.75	92	96	97	97
1.00	94	97	98	98
1.25	95	98	98	98
1.50	96	98	98	98
1.75	96	98	99	99
2.00	97	98	99	99
2.25	97	99	99	99
2.50	98	99	99	99
2.75	98	99	99	99
3.00	98	99	99	99
3.25	99	99	99	99
3.50	99	99	100	100
3.75	99	100	100	100
4.00	99	100	100	100

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-11

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 25% impervious) For Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	65	84	87	88
0.50	78	90	91	92
0.75	83	92	94	94
1.00	87	94	95	95
1.25	89	95	96	96
1.50	91	96	96	97
1.75	92	96	97	97
2.00	93	97	97	98
2.25	94	97	98	98
2.50	95	98	98	98
2.75	95	98	98	98
3.00	96	98	98	98
3.25	96	98	99	99
3.50	96	98	99	99
3.75	97	99	99	99
4.00	97	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-12

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 25% impervious) For Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	54	79	82	84
0.50	69	86	88	89
0.75	77	90	91	92
1.00	82	92	93	94
1.25	85	93	94	95
1.50	88	95	95	96
1.75	90	95	96	96
2.00	91	96	97	97
2.25	92	97	97	97
2.50	93	97	97	98
2.75	94	97	98	98
3.00	95	98	98	98
3.25	96	98	98	98
3.50	96	98	98	99
3.75	96	98	99	99
4.00	97	98	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-13

Estimated Total P Removal Efficiencies for Various Treatment Options in Single-Family Residential (max. 25% impervious) For Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	48	76	80	81
0.50	65	84	86	87
0.75	74	88	90	91
1.00	81	91	93	93
1.25	84	93	94	94
1.50	87	94	95	95
1.75	89	95	96	96
2.00	91	96	96	97
2.25	92	96	97	97
2.50	93	97	97	98
2.75	94	97	98	98
3.00	95	98	98	98
3.25	95	98	98	98
3.50	96	98	98	98
3.75	96	98	99	99
4.00	97	98	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-14

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 40% impervious) for Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	71	90	93	94
0.50	86	95	96	97
0.75	90	97	98	98
1.00	93	97	98	99
1.25	94	98	99	99
1.50	95	98	99	99
1.75	96	99	99	99
2.00	97	99	99	99
2.25	97	99	99	99
2.50	97	99	99	99
2.75	98	99	99	100
3.00	98	99	99	100
3.25	98	99	100	100
3.50	98	99	100	100
3.75	99	100	100	100
4.00	99	100	100	100

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-15

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 40% impervious) for Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	61	86	90	92
0.50	77	92	94	95
0.75	83	94	95	97
1.00	87	95	97	97
1.25	89	96	97	98
1.50	91	97	98	98
1.75	93	97	98	99
2.00	94	98	98	99
2.25	94	98	99	99
2.50	95	98	99	99
2.75	95	99	99	99
3.00	96	99	99	99
3.25	97	99	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	97	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-16

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 40% impervious) for Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	51	82	87	90
0.50	68	88	91	93
0.75	77	92	94	95
1.00	83	94	95	96
1.25	86	95	96	97
1.50	89	96	97	97
1.75	91	96	97	98
2.00	92	97	98	98
2.25	93	97	98	98
2.50	94	97	98	98
2.75	95	98	98	98
3.00	95	98	98	99
3.25	96	98	98	99
3.50	96	98	99	99
3.75	97	98	99	99
4.00	97	98	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-17

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Single-Family Residential (max. 40% impervious) for Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	48	82	87	90
0.50	65	88	91	93
0.75	75	91	94	95
1.00	81	93	95	96
1.25	85	95	96	97
1.50	88	96	97	98
1.75	90	96	97	98
2.00	92	97	98	98
2.25	93	97	98	99
2.50	94	98	98	99
2.75	94	98	99	99
3.00	95	98	99	99
3.25	96	98	99	99
3.50	96	99	99	99
3.75	97	99	99	99
4.00	97	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-18

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Multi-Family Residential (max. 65% impervious) for Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	53	78	82	83
0.50	74	88	90	91
0.75	83	92	94	94
1.00	88	95	96	96
1.25	91	96	97	97
1.50	93	97	97	98
1.75	95	98	98	98
2.00	95	98	98	98
2.25	96	98	98	99
2.50	97	98	99	99
2.75	97	99	99	99
3.00	97	99	99	99
3.25	98	99	99	99
3.50	98	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-19

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Multi-Family Residential (max. 65% impervious) for Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	49	77	81	82
0.50	69	86	88	89
0.75	79	90	92	92
1.00	85	93	94	95
1.25	89	95	96	96
1.50	91	96	96	97
1.75	92	97	97	97
2.00	94	97	98	98
2.25	95	98	98	98
2.50	95	98	98	98
2.75	96	98	98	99
3.00	96	98	99	99
3.25	97	99	99	99
3.50	97	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-20

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Multi-Family Residential (max. 65% impervious) for Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	45	75	79	81
0.50	64	84	86	87
0.75	75	89	90	91
1.00	82	92	93	94
1.25	86	94	95	95
1.50	89	95	96	96
1.75	91	96	97	97
2.00	93	97	97	97
2.25	94	97	98	98
2.50	95	98	98	98
2.75	95	98	98	98
3.00	96	98	98	99
3.25	96	98	99	99
3.50	97	98	99	99
3.75	97	98	99	99
4.00	97	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-21

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Multi-Family Residential (max. 65% impervious) for Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	43	74	78	80
0.50	62	83	85	86
0.75	74	88	90	91
1.00	80	91	92	93
1.25	85	93	94	95
1.50	88	95	95	96
1.75	90	96	96	97
2.00	92	96	97	97
2.25	93	97	97	98
2.50	94	97	98	98
2.75	95	98	98	98
3.00	96	98	98	98
3.25	96	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	97	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-22

Removal Efficiencies for Total Phosphorus Using Various

Treatment Options in Commercial (max. 80% impervious)

for Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	41	73	77	79
0.50	65	84	86	87
0.75	76	89	91	91
1.00	83	92	93	94
1.25	88	95	95	96
1.50	91	96	96	97
1.75	93	97	97	97
2.00	94	97	98	98
2.25	95	98	98	98
2.50	96	98	98	99
2.75	97	98	99	99
3.00	97	99	99	99
3.25	97	99	99	99
3.50	98	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-23

Removal Efficiencies for Total Phosphorus Using Various

Treatment Options in Commercial (max. 80% impervious)

for Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	41	73	77	79
0.50	63	83	86	87
0.75	74	88	90	91
1.00	81	92	93	93
1.25	87	94	95	95
1.50	89	95	96	96
1.75	92	96	97	97
2.00	93	97	97	98
2.25	94	97	98	98
2.50	95	98	98	98
2.75	96	98	98	99
3.00	97	98	99	99
3.25	97	99	99	99
3.50	97	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-24

Removal Efficiencies for Total Phosphorus Using Various

Treatment Options in Commercial (max. 80% impervious)

for Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	39	72	77	78
0.50	62	83	85	86
0.75	72	87	89	90
1.00	80	91	92	93
1.25	85	93	94	95
1.50	88	95	96	96
1.75	91	96	97	97
2.00	92	97	97	97
2.25	94	97	98	98
2.50	95	98	98	98
2.75	96	98	98	98
3.00	96	98	99	99
3.25	97	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-25

Removal Efficiencies for Total Phosphorus Using Various

Treatment Options in Commercial (max. 80% impervious)

for Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	39	72	76	78
0.50	61	82	85	86
0.75	71	87	89	90
1.00	79	90	92	93
1.25	84	93	94	94
1.50	88	94	95	96
1.75	90	96	96	97
2.00	92	96	97	97
2.25	94	97	98	98
2.50	94	97	98	98
2.75	95	98	98	98
3.00	96	98	98	99
3.25	97	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-26

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 50% impervious) for Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	54	79	82	83
0.50	75	88	90	91
0.75	85	93	94	95
1.00	90	95	96	96
1.25	92	97	97	97
1.50	94	97	98	98
1.75	95	98	98	98
2.00	96	98	99	99
2.25	97	99	99	99
2.50	97	99	99	99
2.75	98	99	99	99
3.00	98	99	99	99
3.25	98	99	99	99
3.50	98	99	99	99
3.75	98	99	99	99
4.00	99	99	99	100

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-27
Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 50% impervious) for Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	50	77	81	82
0.50	70	86	89	89
0.75	80	91	92	93
1.00	86	93	94	95
1.25	89	95	96	96
1.50	91	96	97	97
1.75	93	97	97	97
2.00	94	97	98	98
2.25	95	98	98	98
2.50	96	98	98	98
2.75	96	98	99	99
3.00	97	98	99	99
3.25	97	99	99	99
3.50	97	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-28

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 50% impervious) for Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	47	76	79	81
0.50	65	84	87	88
0.75	76	89	91	91
1.00	83	92	93	94
1.25	87	94	95	95
1.50	89	95	96	96
1.75	91	96	97	97
2.00	93	97	97	97
2.25	94	97	98	98
2.50	95	98	98	98
2.75	96	98	98	98
3.00	96	98	98	99
3.25	97	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-29

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 50% impervious) for Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	44	74	78	80
0.50	63	83	86	87
0.75	74	88	90	91
1.00	81	91	93	93
1.25	85	93	94	95
1.50	89	95	96	96
1.75	91	96	96	97
2.00	92	96	97	97
2.25	93	97	97	98
2.50	94	97	98	98
2.75	95	98	98	98
3.00	96	98	98	99
3.25	96	98	99	99
3.50	97	98	99	99
3.75	97	99	99	99
4.00	97	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-30

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 75% impervious) for Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	41	73	77	79
0.50	65	84	86	87
0.75	76	89	91	91
1.00	83	92	93	94
1.25	88	95	95	96
1.50	91	96	96	97
1.75	93	97	97	97
2.00	94	97	98	98
2.25	95	98	98	98
2.50	96	98	98	99
2.75	97	98	99	99
3.00	97	99	99	99
3.25	97	99	99	99
3.50	98	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-31

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 75% impervious) for Hydrologic Soil Group B

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	41	73	77	79
0.50	63	83	86	87
0.75	74	88	90	91
1.00	81	91	93	93
1.25	87	94	95	95
1.50	89	95	96	96
1.75	92	96	97	97
2.00	93	97	97	98
2.25	94	97	98	98
2.50	95	98	98	98
2.75	96	98	98	99
3.00	97	98	99	99
3.25	97	99	99	99
3.50	97	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-32

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 75% impervious) for Hydrologic Soil Group C

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	39	72	77	78
0.50	62	82	85	86
0.75	72	87	89	90
1.00	80	91	92	93
1.25	85	93	94	95
1.50	88	95	95	96
1.75	91	96	97	97
2.00	92	97	97	97
2.25	94	97	98	98
2.50	95	98	98	98
2.75	96	98	98	98
3.00	96	98	99	99
3.25	97	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 13.7-33

Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Highway (max. 75% impervious) for Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	38	72	76	78
0.50	61	82	85	86
0.75	71	87	89	90
1.00	79	90	92	93
1.25	84	93	94	94
1.50	88	94	95	96
1.75	90	96	96	97
2.00	92	96	97	97
2.25	94	97	98	98
2.50	94	97	98	98
2.75	95	98	98	98
3.00	96	98	98	99
3.25	97	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

13.8 Additional Basin Criteria

13.8.1 Soil Types *Revised 6/1/18*

Type “A” Soils as defined by the Natural Resources Conservation Service (NRCS) Soil Survey in the following NRCS publications: Soil Survey of Flagler County Area, Florida (1997); Soil Survey of Lake County Area, Florida (1975); Soil Survey of Orange County Area, Florida (1989); Soil Survey of Seminole County Area, Florida (1990); and Soil Survey of Volusia County Area, Florida (1980), (incorporated by reference in 40C-4.091(1)(d), F.A.C).

Flagler County
Orsino
Astatula
Tavares
Palm Beach Sand
Welaka
Cocoa
Bulow
Paola

Lake County
Apopka
Apopka Urban Land
Astaula
Chandler
Chandler Urban Land
Kendrick
Lake
Lake Urban Land
Orlando
Orsino
Paola
Paola Urban Land
St. Lucie
St. Lucie Urban Land
Tavares
Tavares Urban Land

Orange County
Archbold
Apopka
Candler
Candler Urban Land
Florahome
Florahome Urban Land
Lake
Millhopper
Millhopper Urban Land
St. Lucie
St. Lucie Urban Land
Tavares
Tavares Urban Land

Seminole County
Apopka
Astatula

Millhopper
Paola
St. Lucie
Tavares

Volusia County
Apopka
Arents
Astatula
Astatula Urban Land
Bulow
Cocoa
Cocoa Urban
Deland
Orsino
Palm Beach
Palm Beach Urban Land
Paola
Paola Urban Land
St. Lucie
Tavares

13.8.2 Erosion and Sediment Control Principles

Factors which influence erosion potential include soil characteristics, vegetative cover, topography, and climatic conditions. The following principles must be considered in planning and undertaking construction and alteration of surface water management systems:

(a) Plan the development to fit topography, soils, and drainage patterns;

(b) Minimize the extent of area exposed at one time and the duration of exposure;

(c) Schedule areas with greatest erosion potential for dry, rather than wet, season exposure;

(d) Apply erosion control practices to minimize erosion from disturbed areas;

(e) Apply perimeter controls to protect disturbed area from off-site runoff and to trap eroded material on-site to prevent sedimentation in downstream areas;

(f) Keep runoff velocities low and retain runoff on-site;

(g) Stabilize disturbed areas immediately after final grade has been attained or during interim periods of inactivity resulting from construction delays; and

(h) Implement a thorough maintenance and follow-up program.

13.8.3 Erosion and Sediment Control Plan

A plan must be prepared prior to construction and alteration for certain systems and submitted with the permit application to minimize erosion and retain sediment on-site. The details and scope of the plan will depend on the potential for erosion. Projects with larger exposed areas, long duration of construction, steep slopes, erosive soils, or close proximity to streams and other watercourses will require more detailed and comprehensive plans. The plan must include consideration of the site specific erosion potential, including slopes, soil erodability, vegetative cover, and runoff characteristics. The following is a listing of the minimum information, which must be included in the plan, to be shown on construction or alteration plans, detail sheets, or other appropriate documents:

(a) The existing and proposed topography;

(b) A general description of the predominant soil types on the site, and the corresponding erodability potential as described by the appropriate soil survey information or on-site investigation;

(c) Schedule and general description of each construction phase of the project. At a minimum, the following applicable phases must be addressed: clearing, excavation earthwork, embankment earthwork, site utilities, roads, site grading and stabilization. The schedule must include estimated starting date and duration. Description must include limits of area impacted by each phase; and

(d) For each construction phase, a description of the following:

1. Storm drainage characteristics, including flow patterns and the peak velocity and discharge from the 1-in-2 year 24 hour storm, at all locations where control measures are proposed and at points of off-site discharge; and

2. Individual control measures (to be shown on construction plans or detail sheets):

a. Estimated date of installation and removal,

b. Location,

c. Purpose of measure and area served,

d. Detailed construction drawings and specifications,

e. Operation and maintenance schedule, and

f. All supporting calculations and documentation including referenced design standards and specifications.

PART VII – AGRICULTURAL SURFACE WATER MANAGEMENT SYSTEMS

(CHAPTER 40C-44)

A. POLICY AND PROCEDURES

14.0 Introduction

14.1 Policy

The District's policy is to assist those affected by the Agricultural Surface Water Management System rule (chapter 40C-44, F.A.C.) to understand the program and complete the application. Chapter 40C-44, F.A.C., is incorporated by reference in rule 62-330.010, F.A.C.

14.2 Purpose

The purpose of this part is to provide applicants, potential applicants, and others who are interested, with information and guidance regarding the Agricultural Surface Water Management System permitting program. The final determination of appropriate procedures to be followed will be made by reference to chapters 120 and 373, F.S., and chapters 62-330, 40C-1, and 40C-44, F.A.C. Specific rule citations are given, when appropriate, for further reference.

14.3 Organization of Part VII *Revised 6/1/18*

This part contains information regarding the programs, policy and procedures and criteria used in permit evaluation of agricultural systems.

If an applicant or potential applicant has any questions about these procedures or wishes to have District staff assistance in interpreting them or in completing an application, he is encouraged to contact the District's Agricultural Assistance Team:

Division of Regulatory Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4500

14.4 Applicable Statutes and Rules

The Agricultural Surface Water Management System permit application process is governed by chapters 373 and 120, F.S., and chapters 62-330, 40C-1, and 40C-44, F.A.C., and is affected by chapters 62-302, 62-4, and 62-40, F.A.C.

14.5 General Description of Rule *Revised 6/1/18*

The rule requires an individual environmental resource agricultural system permit for existing systems with pumped discharges, if the capacity, either individually or cumulatively, is 10,000 GPM or greater. These pumps typically drain large citrus groves, improved pasture, or muck farms, which produce sod or vegetables on organic soils. The pumps may be significant sources of pollution, due to their erosive velocities and ability to drain water faster and to a greater depth than gravity drained agricultural operations.

The rule also authorizes the District to require an individual permit for (1) existing pumped or gravity drained agricultural operations, on a case by case basis, if the discharge causes or contributes to a violation of state water quality standards and (2) certain new agricultural stormwater management systems that fall below some of the thresholds in subsection 62-330.020(2), F.A.C.

The rule establishes performance standards for agricultural discharges which are required to obtain a permit.

The rule contains water quality practices, which are presumed to provide reasonable assurance that the performance standards will be met when implemented as described in the rule. The water quality practices are more appropriate for agriculture than those which are currently used for urban projects and frequently applied to agriculture. The water quality practices include reduction of discharge volume by improved water table control and on-site recycling, implementation of a comprehensive Conservation Plan including nutrient and pesticide management plans, and installation of a treatment system using wet detention reservoirs or other equivalent alternatives.

Under this rule, permits for operation and maintenance are permanent. However, the rule allows modification or revocation of the permit if the permittee does not comply with the permit requirements or if monitoring indicates that the system does not comply with the performance standards.

Agricultural operations which are required to obtain a permit under subsection 62-330.020(2), F.A.C., must comply with the performance standards and water quality practices contained in this rule, in order to meet the District's water quality criteria.

14.6 Explanation of Thresholds, Exemptions, and Individual Permits

Permits are required for activities which exceed certain "thresholds" (see section 14.8). Activities below these thresholds are considered to have a minor impact on water resources and are not regulated.

Although certain activities may exceed a threshold, the District may elect to "exempt" them in the rule from a requirement to obtain a permit, usually because the activity is regulated by another agency or permit process (see section 14.10). Other exemptions are established by the Florida Legislature (see section 14.10.1).

14.7 Definitions

The following definitions are used by the District to clarify its intent in implementing chapter 40C-44, F.A.C., the Agricultural Surface Water Management System rule. Many of the definitions are derived directly from chapter 40C-44, F.A.C., and are reproduced here for the convenience of applicants.

(a) "Agriculture," for the purposes of this chapter, means the commercial production of crops, animals or animal products, or farm commodities including but not limited to vegetables, citrus and other fruits, grain, forage, sod, livestock, poultry, and foliage plants. For the purposes of this chapter, agriculture also includes horticulture and floriculture.

(b) "Agricultural Operation" means a contiguous farm, grove, ranch, nursery or similar entity owned or controlled by one or more persons, engaged in, or proposing to engage in, the practice of agriculture.

(c) "Associated Wastewater" means the flow of water which directly results from agricultural activities such as irrigation, soil flooding for pest control or soil preservation, freeze protection or pre-storm event drainage and is mixed or conveyed with stormwater in the surface water management system.

(d) "Closed System" means any reservoir or works located entirely within agricultural lands owned or controlled by the user and which requires water only for the filling, replenishing, and maintaining the water level thereof.

(e) "Conservation Plan" means a document, which describes a system of management practices to control and reduce soil erosion and sediment loss, and improve the quality of discharged water for a specific parcel of property, and which has been either:

(1) prepared by the U.S. Department of Agriculture Soil Conservation Service (SCS) in conjunction with a local Soil and Water Conservation District Board, organized pursuant to chapter 582, F.S., and which includes and applies the appropriate management practices consistent with the SCS Field Office Technical Guide - Section IV, and the Best Management Practices Selector,

incorporated by reference in section 40C-44.091, F.A.C., and which includes the following elements when appropriate for the proposed land use, as reference in the SCS Field Office Technical Guide - Section IV:

a. Reduction of the volume of water discharged off-site;

b. Water Table Control in Open Channels;

c. Irrigation Land Leveling;

d. Irrigation Water Management;

e. Nutrient Management Plan;

f. Pesticide Management Plan;

g. Reuse of the runoff from the agricultural site, using reservoir or canal storage already existing, proposed as part of the plan or otherwise required by permit, for uses such as freeze protection, soil flooding for pest control or soil preservation, or irrigation needs; and

h. Control of soil erosion.

(2) prepared by a private consultant, who has professional expertise in the fields of hydrology, water pollution control, irrigation design and soil conservation, according to SCS standards, specifications and guidelines. The plan must include and apply the appropriate management practices consistent with the SCS Field Office Technical Guide - Section IV and the Best Management Practices Selector, incorporated by reference in section 40C-44.091, F.A.C., and include the following elements when appropriate for the proposed land use, as referenced in the SCS Field Office Technical Guide - Section IV:

a. Reduction of the volume of water discharged off-site;

b. Water Table Control in Open Channels;

c. Irrigation Land Leveling;

d. Irrigation Water Management;

e. Nutrient Management Plan;

f. Pesticide Management Plan;

g. Appropriate reuse of the annual stormwater runoff from the agricultural site for uses such as freeze protection, soil flooding for pest control or soil preservation, or irrigation needs;

h. Control of soil erosion; and

i. Reduction of suspended solids loading at points of discharge off-site.

(f) "Engineer" means a Professional Engineer registered in Florida, or other person exempted pursuant to the provisions of chapter 471, F.S., who is competent in the fields of hydrology and water pollution control.

(g) "Existing agricultural surface water management system" means a system which was constructed or implemented on or before the effective date of this chapter.

(h) "Hayland" means a tract of land used for forage production, which has been planted with desirable forage plant species.

(i) "Improved Pasture" means a tract of land used for livestock grazing, which has been planted with desirable forage plant species.

(j) "Littoral zone" means, in reference to stormwater management systems, that portion of a wet detention pond which is designed to contain rooted aquatic plants.

(k) “NAVD” means North Atlantic Vertical Datum.

(l) "NGVD" means national geodetic vertical datum.

(m) "Permanent Pool" means that portion of a wet detention pond, which normally holds water, between the pond bottom and control elevation, excluding any water volume claimed as treatment volume.

(n) "Treatment" means any method, technique, process or management practice which changes the physical, chemical, or biological character of water and thereby reduces its potential for polluting waters of the state.

14.8 Activities Requiring a Permit

14.8.1 Date of Implementation

Chapter 40C-44, F.A.C., became effective on August 11, 1991. The rule was amended on October 20, 1992, October 3, 1995, and October 1, 2013.

Pumped agricultural operations, which have a valid Industrial Waste permit or consent order issued by DEP or the District, can continue to operate according to the terms of the permit or consent order until it expires. Ninety days prior to the expiration date of the permit or consent order, the agricultural operation must apply for a chapter 40C-44 permit or, if they also have a MSSW permit issued prior to June 1, 1988, must apply to modify the MSSW permit. [40C-44.031(1)(a)(b)(c), F.A.C.]

14.8.2 Permits Required

An individual environmental resource permit for an agricultural system is required prior to the undertaking of any activity described in section 14.9, if the activity exceeds the following thresholds:

(a) incorporates pumped discharges from an existing agricultural surface water management system, when:

(1) the pumps are stationary or portable facilities, and

(2) the pump(s) have a capacity, either individually or cumulatively, of 10,000 GPM or greater. [40C-44.041(1)(a), F.A.C.]

(b) causes or contributes to a violation of state water quality standards in waters of the state, when:

(1) the discharge is pumped or gravity drained, and

(2) the District has considered the following information on a case-by-case basis:

a. water quality monitoring data collected by the District or other agency,

b. the size of the agricultural operation and the amount of stormwater and associated wastewater reaching waters of the state, relative to the size and nature of the immediate drainage basin,

c. the means of conveyance of stormwater and associated wastewater to waters of the state,

d. characteristics of the site including the slope, vegetation, rainfall and other factors related to the likelihood or

frequency of discharge of stormwater and associated wastewater to waters of the state,

e. the status, results and recommendations of available basin-specific studies, including those conducted as part of a Surface Water Improvement and Management Plan or pursuant to chapter 62-40, F.A.C., and

f. the existence of mixing zones, variances or site specific alternative criteria granted by DEP pursuant to chapters 62-4 and 62-302, F.A.C. [40C-44.041(1)(b), F.A.C.]

(c) proposes construction, maintenance and operation of new agricultural surface water management systems, or alteration of existing systems, which:

(1) drain an agricultural area greater than 2 acres;

(2) are below thresholds described in paragraphs 62-330.020(2)(a) and (e), F.A.C.;

(3) serve a project with a total land area less than 40 acres; and

(4) do not provide for the placement of 12 or more acres of impervious surface which constitutes 40 or more percent of the total land area. [40C-44.041(2), F.A.C.]

When an activity that requires a permit pursuant to paragraph 62-330.020(2)(i), F.A.C., and section 1.2.3 of this Volume (i.e., chapter 40C-44, F.A.C.), also requires a permit pursuant to paragraph 62-330.020(2)(a), (b), (c), (d), (e), (f), (g), (h) or (j), F.A.C., or section 1.2.2 of this Volume, the review for determining compliance with all relevant permitting requirements will be included as part of one environmental resource permit.

14.8.3 The District will not issue separate permits for parts of a system, except for a system which is to be constructed in phases.

14.9 Activities Authorized by Permit

An individual environmental resource agricultural system permit must be obtained pursuant to paragraph 62-330.020(2)(i), F.A.C., for any surface water management system which exceeds the thresholds listed in subsection 14.8.2 of this Volume. Such permit is to be obtained as:

(a) Authorization to maintain and operate an existing system.

(b) Authorization to construct prior to the construction of a proposed system.

(c) Authorization to alter prior to the alteration of an existing system.

(d) Authorization to operate the entire system prior to the construction or operation of a proposed system or alteration of an existing system.

(e) Authorization to maintain prior to the maintenance or repair of a proposed system, or alteration of an existing system, except for routine custodial maintenance.

(f) Authorization to abandon prior to the abandonment of an existing system.

(g) Authorization to remove prior to the removal of an existing system.

14.10 Exemptions

14.10.1 Section 373.406 of the Florida Statutes specifically exempts certain activities from the requirements of chapter 62-330, F.A.C. Please refer to this statute and section 3.2 of Volume I for details regarding these exemptions.

14.10.2 In addition to the statutory exemptions, chapter 40C-44, F.A.C., provides for the exemptions listed below:

(a) Concentrated Animal Feeding Operations with a valid permit issued by the DEP pursuant to chapter 62-670, F.A.C., provided that:

(1) For dairy farms, the permitted design incorporates a high intensity use area, from which the stormwater runoff is centrally collected for storage and disposal by land application, or is treated prior to discharge.

(2) For egg production facilities, the permitted design prevents the discharge of process wastewater and stormwater runoff to surface waters, except in the event of a storm greater than a 25-year, 24-hour event.

(3) For any concentrated animal feeding operation which does not incorporate a high intensity use area, the permitted design includes provisions to treat stormwater and associated wastewater from adjacent animal loafing and feeding areas; manure pits; animal watering systems; washing, cleaning or flushing pens; or other pollutant sources, so that discharges through the surface water management system from the operation will not cause or

contribute to a violation of water quality standards in waters of the state. [40C-44.051(1), F.A.C.]

(b) Animal Feeding Operations, which do not discharge except in the event of a storm greater than a 25-year, 24-hour event and therefore are not Concentrated Animal Feeding Operations, pursuant to chapter 62-670, F.A.C. [40C-44.051(2), F.A.C.]

The exemptions for certain animal feeding operations, whose activities have been reviewed by DEP, and which provide treatment of their pollutant sources, are placed in the rule to minimize overlap between the District and the DEP. Only those areas of a Concentrated Animal Feeding Operation for which treatment has been provided, according to a DEP permit, are exempt. Likewise, only those areas of an Animal Feeding Operation which have facilities to retain the 25-year, 24-hour storm event are exempt. For areas which may be a pollutant source and for which treatment or retention is not provided, such as adjacent pastures or haylands, the District may require an individual permit on a case-by-case basis, as stated in section 14.8 of this Volume.

(c) Privately owned or operated agricultural surface water management systems lying within the boundaries of an active water control district that has obtained a chapter 40C-44 permit. [40C-44.051(3), F.A.C.]

The following is a list of active water control districts within the St. Johns River Water Management District:

1. Delta Farms Water Control District
2. Elkton Water Control District
3. Fellsmere Water Control District
4. Florahome Water Control District
5. Hastings Water Control District
6. Indian River Farms Water Control District
7. Ranger Water Control District
8. Sebastian River Improvement District
9. Sixteen Mile Creek Water Control District
10. Melbourne-Tillman Water Control District
11. St. Johns Improvement District
12. Zellwood Drainage and Water Control District

(d) Agricultural surface water management systems which are implementing one or more of the following practices under the District's Best Management Practices Cost-Sharing Program: SJ1 (Backflow Prevention), SJ5 (Pump Platform Fuel and Oil Containment) or SJ6 (Pesticide Mixing and Storage Area Containment). [40C-44.051(4), F.A.C.]

(e) Minor alterations, as described in section 14.11, of new or existing agricultural surface water management systems which have a permit under chapters 62-330, 40C-4, 40C-40, or 40C-44, F.A.C. [40C-44.051(5), F.A.C.]

This exemption applies to agricultural operations which propose minor alterations and which have obtained permits under the referenced rule chapters for their activities, and is intended to prevent repetitive permit modifications. For example, if the permit requires implementation of a Conservation Plan, but the Conservation Plan recommends installation of small water control structures which were not included in the original permit, no modification of the permit is necessary if the proposed activity is a minor alteration.

(f) Agricultural surface water management systems, which are required to obtain a permit as described in section 14.8.2, provided they have a Consumptive Use Permit which requires that they obtain, implement and maintain a Conservation Plan. [40C-44.051(6), F.A.C.]

This exemption is intended to minimize duplicative permitting for small agricultural operations such as ferneries or nurseries. It applies to agricultural operations with a project area less than <40 acres which propose no work in, on, or over wetlands or other surface waters that would require a permit pursuant to 62-330.020(2)(a), F.A.C., and which propose to construct or modify a surface water management system. If they have a valid Consumptive Use Permit, which requires that they obtain, implement and maintain a Conservation Plan, as defined in Section 14.7(e), then they do not have to obtain a permit under Chapter 40C-44, F.A.C. Under this exemption, the permit requirements described in Section 14.2.2.(a) have been transferred to a Consumptive Use permit condition.

14.11 Minor Alterations

14.11.1 Minor alterations are those alterations of existing agricultural surface water management systems which do not increase the peak discharge rate and total discharge volume (when applicable), alter off-site storage and conveyance capabilities of the water resource, adversely affect hydrologically related environmental functions, or increase the off-site pollutant loading. [40C-44.071(2), F.A.C.]

14.11.2 The following activities are presumed to be minor alterations:

(a) regrading or contouring of ditches and other conveyance systems necessary to implement a management practice recommended by a Conservation Plan.

(b) installation of new internal ditches or other conveyance systems necessary to implement a management practice recommended by a Conservation Plan.

(c) installation of internal water control structures necessary to implement a management practice recommended by a Conservation Plan.

(d) modification or expansion of existing detention ponds within previously diked areas, provided that public safety concerns related to levee failure are addressed, no floodplain encroachment occurs, and impacts to wetlands or other surface waters do not require a permit pursuant to paragraph 62-330.020(2)(a), F.A.C.

(e) construction of new detention ponds within previously diked areas, provided that public safety concerns related to levee failure are addressed, no floodplain encroachment occurs, and impacts to wetlands or other surface waters do not require a permit pursuant to paragraph 62-330.020(2)(a), F.A.C. [40C-44.071(3), F.A.C.]

14.11.3 The District's determination that the conceptual plans are consistent with chapter 373, F.S., and chapters 62-330, and 40C-41, F.A.C., will provide the applicant with an assurance that the concepts upon which his designs are based can provide for systems which will not be harmful to the water resources of the District and will not be inconsistent with the overall objectives of the District.

15.0 Application Preparation

15.1 Pre-application Conference

15.1.1 The District encourages applicants to participate in a pre-application conference with District staff. At the applicant's request, District staff will arrange for and participate in a pre-application conference. At a pre-application conference, the staff will be prepared to discuss with the applicant such information as:

(a) application completion, processing and evaluation procedures;

(b) information which will be required for evaluation of the application;

(c) the criteria which will be used in evaluation of the application;

(d) other hydrological, environmental or water quality data.

15.1.2 To schedule a pre-application conference, potential applicants should contact:

Division of Regulatory Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4500

15.2 Forms and Instructions

15.2.1 Applicants should complete Section A of form 62-330.060(1) (Joint Application for Individual and Conceptual Environmental Resource Permit/Authorization to Use State-Owned Submerged Lands/Federal Dredge and Fill Permit) (*6/1/18*) and incorporated by reference in rule 62-330.060(1), F.A.C., and form 40C-44.101(2) (Supplemental Information for Agricultural Systems), which has been incorporated by reference in 40C-44.101(2). These forms must be used in the application for an individual permit for construction, operation, maintenance, alteration, removal, or abandonment of new or existing systems. *Revised 6/1/18*

15.3 Permit Processing Fee

15.3.1 A non-refundable permit processing fee as specified by chapter 40C-1, F.A.C., is required for the processing of each application for individual permits or for a permit modification, and must be submitted concurrently with the filing of an application. An application submitted without the fee will not be considered complete. The required processing fees are listed in section 40C-1.603.

15.4 Procedure for Processing Applications *Revised 6/1/18*

Applications will be processed in accordance with the procedures described in subsections 5.5.3.3 and 5.5.3.5 through 5.5.3.7 of Volume I and subsection 373.4141(1), F.S. Thus:

(a) Within 30 days after receipt of an application for a permit under this part, the District shall review the application and shall request submittal of all additional information the department or the water management district is permitted by law to require. If the applicant believes any request for additional information is not authorized by law or rule, the applicant may request a hearing pursuant to s. 120.57. Within 30 days after receipt of such additional information, the department or water management district shall review it and may request only that information needed to clarify such additional information or to answer new questions raised by or directly related to such additional information. If the applicant believes the request of the department or water management district for such additional information is not authorized by law or rule, the department or water management district, at the applicant's request, shall proceed to process the permit application. [373.4141(1), F.S.]

(b) The District will inform the applicant within 30 days of receipt of the application, or within 30 days of receipt of additionally received information, whether the proposed activities are exempt from permitting or qualify for a general permit. Any processing fees received in excess of those required under Rule 62-330.071, F.A.C., will be refunded. [5.5.3.3, A.H., Volume I]

(c) The applicant shall have 90 days from the date the District makes a timely request for additional information to submit that information to the District. If an applicant requires more than 90 days to respond, it must notify the District in writing of the circumstances, at which time the application shall remain in active status for one additional period of up to 90 days. Additional extensions shall be granted for good cause shown by the applicant. A showing that the applicant is making a diligent effort to obtain the requested additional information, and that the additional time period is both reasonable and necessary to supply the information, shall constitute good cause. In such case, a specified amount of additional time shall be granted at the mutual consent of the District and the applicant. If the applicant chooses not to, or is unable to, respond to the request for additional information within the above time frames, the application shall be administratively denied without prejudice. Such denial is not a determination of the merits of an application and does not preclude the applicant from reapplying at a later time. However, the applicant will not

receive a refund of processing fees submitted, and the District will not apply those processing fees to a subsequently submitted permit application or notice. An applicant who cannot provide requested information within the above time frames is encouraged to withdraw their application before the District takes action to deny it. [5.5.3.5, A.H., Volume I]

(d) The applicant may submit a written request for an application to be deemed complete at any time. Upon receipt of such request, the District will begin processing the application and will take agency action to issue or deny the application within 60 days of that date, or within such additional time as may be provided if the applicant voluntarily waives that time clock. [5.5.3.6 A.H., Volume I]

(e) The applicant may voluntarily request the application be withdrawn prior to agency action if it does not or cannot provide the requested information or required processing fees within the above time frames. The applicant will not receive a refund of processing fees, but the District will apply processing fees submitted for such withdrawn application to the processing fee required for a new application or notice received from the same applicant, for an activity on all or a part of the same parcel within 365 days of the date the District received the request to withdraw the previous application. [5.5.3.7 A.H., Volume I]

16.0 Permits

16.1 Operation and Maintenance Unique to Agricultural Systems

16.1.1 Responsibility for Operation and Maintenance

The entity responsible for operation of the system (owner, lessee, public body, etc.) must be identified. If the responsible entity is not the owner, the following will be required:

(a) If the operation entity is to be a public body, such as a water control district, a preliminary letter of acceptance from the public body shall be submitted. A final letter of acceptance by the governing body is required before an operation or maintenance permit can become effective.

(b) If the entity is a lessee, the lessee must provide a copy of the lease agreement, and a separate document stating that the lessee will be responsible for maintenance and operation.

16.1.2 Operation and Maintenance Requirements

(a) The permittee is required to provide for periodic inspections of the surface water management system to insure that the system is functioning as designed and permitted.

(b) The following operational maintenance activities shall be performed on all permitted systems on a regular basis or as needed:

(1) Removal of trash and debris from the surface water management system,

(2) Inspection of culverts, culvert risers, pipes and screwgates for damage, blockage, excessive leakage or deterioration,

(3) Inspection of pipes for evidence of lateral seepage,

(4) Inspection of flapgates for excessive backflow or deterioration,

(5) Removal of sediments when the storage volume or conveyance capacity of the surface water management system is below design levels,

(6) Stabilization and restoration of eroded areas,

(7) Inspection of pump stations for structural integrity and leakage of fuel or oil to the ground or surface water, and

(8) Inspection of monitoring equipment, including pump hour meters and staff gauges, for damage and operational status.

(c) The permittee shall maintain and operate the Conservation Practices contained in the Conservation Plan, consistent with current SCS standards, specifications and guidelines.

(d) In addition to the practices listed in subsection (b) above, specific operational maintenance activities are required, depending on the type of permitted system, as follows:

(1) Overland flow systems shall include provisions for:

a. Mowing and removal of clippings, and

b. Maintenance of spreader swales and overland flow areas to prevent channelization.

(2) Spray irrigation systems for reuse/disposal shall include provisions for:

a. Inspection of the dispersal system, including the sprayheads or perforated pipe for damage or clogging, and

b. Maintenance of the sprayfield to prevent channelization.

(3) Treatment systems which incorporate isolated wetlands shall include provisions for:

a. Stabilization and restoration of channelized areas, and

b. Removal of sediments which interfere with the function of the wetland or treatment system.

(4) Systems in Class I waters shall include provisions for inspection and maintenance of valves for wells which discharge from an aquifer which contains greater than 250 mg/l of chloride.

(e) If the system is not functioning as designed and permitted, operational maintenance must be performed immediately to restore the system. If the operational maintenance measures are insufficient to enable the system to meet the performance standards of this chapter, the permittee must either

replace the system or construct an alternative design. A permittee must apply for and obtain a modification prior to constructing such alternative design. [40C-44.069, F.A.C.]

16.2 Transfers

16.2.1 The District must be notified in writing, within 30 days of any sale, conveyance, or other transfer of a permitted system or facility or within 30 days of any transfer of ownership or control of the real property at which the permitted system is located. Transfers of ownership or transfers of a permit obtained solely pursuant to 62-330.020(2)(i), F.A.C., and section 1.2.3 of this Volume are subject to the requirements of chapter 40C-1, F.A.C. All other transfers are subject to the requirements of chapter 62-330, F.A.C.

16.3 Related Permits

16.3.1 Application to construct, alter, or maintain a system must include application for any related permit required to operate a system.

16.3.2 Agricultural operations which are also required to obtain a permit pursuant to 62-330.020(2)(a), (b), (c), (d), (e), (f), (g), (h) or (j), F.A.C., or section 1.2.2 of this Volume, must comply with the performance standards and water quality practices contained in chapter 40C-44, F.A.C., in order to meet the District's water quality criteria. Additional special conditions, which will be applied in this case, are listed in section 40C-44.061, F.A.C. *Revised 6/1/18*

16.3.3 For permits which include construction, the permit for operation and maintenance will be granted with a condition that the operation and maintenance permit becomes valid upon satisfactory completion of the permitted construction or alteration (as demonstrated by the submission of certified as-built plans) and compliance with all conditions of the permit.

16.4 Duration

16.4.1 The permit which is granted will include a specified period for which the permit is valid. Unless revoked or modified, such period is:

(a) generally five years for permits to construct, alter, or remove a system; and

(b) permanent for permits to operate, maintain, or abandon a system.

16.4.2 The designed duration for permits to construct, alter, abandon, or remove, will be dependent upon the facts and circumstances of each situation. These include:

(a) size of a proposed system; and

(b) anticipated amount of time required to complete the proposed activity.

16.4.3 Permits expire at 11:59 pm on the date indicated on the permit conditions unless an application is made pursuant to chapter 40C-1, F.A.C., for an extension on or before the date of expiration. Application for an extension should be made by writing to:

Division of Regulatory Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529

16.4.4 If an application for re-issuance is made prior to expiration, the permit remains in effect until the District takes action on the application.

16.4.5 The District may revoke or modify a permit in accordance with the provisions of section 373.429, F.S., and chapter 40C-1, F.A.C. The following constitutes grounds for modification or revocation:

(a) Consistent noncompliance with permit conditions.

(b) Consistent noncompliance with state water quality standards.

(c) Noncompliance with approved wasteload allocations, developed pursuant to a Surface Water Improvement and Management Plan or other state or District program, when adopted by District rule, such that the operation has become inconsistent with the objectives of the District, as set forth in section 18.0 of Part VII of this Volume, or

(d) Noncompliance with a pollutant load reduction goal when adopted by District rule, such that the operation has become inconsistent with the objectives of the District, as set forth in section 18.0 of Part VII of this Volume.

For the purposes of this section of the rule only, the District will consider "consistent noncompliance with state water quality standards" to be violations of state water quality standards for 2 consecutive quarters of 3 or more parameters or violations of state water quality standards for 4 consecutive quarters of 1 or more parameters.

16.5 Enforcement and Inspection

16.5.1 Chapter 373, F.S. provides for the enforcement of District rules by administrative

and civil complaint. In addition to the authority of the District to enforce, the District has the authority to obtain the assistance of county and city officials in the enforcement of the rules (see sections 373.603 and 373.609, F.S.) A person who violates District rules or refuses to comply with a District order may be subject to criminal prosecution as set forth in section 373.403, F.S.

16.5.2 One condition of each permit will be that District authorized staff, upon proper identification, will have permission to enter, inspect and observe the system to insure compliance with the approved plans and specifications included in the permit.

16.6 Compliance

16.6.1 Permit conditions routinely require installation of monitoring equipment and reporting of monitoring data. Other conditions, as directed by the District, may be placed on permits. Noncompliance by performing activities which have not been authorized by permit and are not exempt, or by failure to adhere to permit conditions is subject to the appropriate legal action (see section 16.5.1).

16.6.2 Forms *Revised 6/1/18*

Compliance forms, used to report monitoring data, are incorporated by reference in 40C-44.061, F.A.C., and are available from the District.

16.6.3 Water Quality Monitoring *Revised 6/1/18*

Water quality monitoring is typically required by individual permits. Permittees are required to analyze samples for the parameters listed in Table 1 incorporated by reference in 40C-44.061, F.A.C., and may be required to perform additional analyses based on site specific conditions.

Samples must be analyzed by a laboratory certified by the Florida Department of Health (DOH).

16.6.4 Pump Hour Monitoring

Pump hour monitoring is typically required by individual permits. Pump hours are monitored by the installation of pump hour meters on each drainage pump, and submission of quarterly reports unless otherwise specified by permit condition.

16.6.5 Pond Stage Monitoring

Monitoring of pond stages is typically required by individual permits. A surveyed staff gauge (referenced to National Geodetic Vertical Datum (NGVD) or North American Vertical Datum (NAVD)) must be installed and maintained in each pond.

Staff gauges are made of metal or plastic with graduated lines. They can be purchased from survey equipment suppliers or field equipment supply catalogs, such as Forestry Suppliers or Ben Meadows. The USDA Natural Resources Conservation Service may be able to provide assistance in the installation and surveying of staff gauges.

Water levels must be recorded a minimum of 3 non-consecutive days per week, or as an alternative, once a week and daily during pump operation. More frequent monitoring may be required, depending on pump capacity, amount of freeboard, etc. Reports of water levels must be submitted to the District quarterly unless otherwise specified by permit condition.

B. CRITERIA FOR EVALUATION

17.0 Criteria for Evaluation

17.1 Purpose

The criteria which are explained in this part are those which have been approved by the Governing Board for use by District staff in evaluating permit applications for agricultural systems. The criteria are used in evaluating applications for individual permits. The staff recommendation on permit approval for any permit will be based upon a determination of whether the system meets the criteria for evaluation.

17.2 Source of Criteria *Revised 6/1/18*

The criteria for evaluation have been developed from guidelines established in chapter 373, F.S. (Water Resources Act of 1972); chapter 403, F.S., (Environmental Control); chapter 62-40, F.A.C. (State Water Policy); chapter 40C-4, F.A.C., (Environmental Resource Permits: Surface Water Management Systems), chapters 62-4 and 62-302, F.A.C. (Water Quality Standards), incorporated by reference in 40C-4.091(1)(c), F.A.C, this handbook, and through permitting decisions of the District. These criteria have been incorporated by reference in chapter 62-330, F.A.C.

17.3 Statutory Criteria

17.3.1 In order to obtain a permit, an applicant must give reasonable assurance that:

(a) The construction or alteration of any dam, impoundment, reservoir, appurtenant work or works will not be harmful to the water resources of the District.

(b) The operation or maintenance of any dam, impoundment, reservoir, appurtenant work or works will not be inconsistent with the overall objectives of the District and will not be harmful to the water resources of the District.

(c) The abandonment or removal of any dam, impoundment, reservoir, appurtenant work or works will not be inconsistent with the overall objectives of the District.

17.4 State Water Quality Standards *Revised 6/1/18*

State water quality standards are contained in chapters 62-4, 62-302, 62-520, and 62-550, F.A.C., (incorporated by reference in 40C-4.091(1)(c), F.A.C.). The standards are set by DEP, not by the District. Discharges from the agricultural surface water management systems can not cause or contribute to a violation of state water quality standards in waters of the state, as set forth in chapters 62-4, 62-302, 62-520, and 62-550 F.A.C., including any antidegradation provisions of sections 62-4.242(1)(a) and (b), 62-4.242(2) and (3), and 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in sections 62-4.242(2) and (3), F.A.C.

17.4.1 Surface Water Quality Standards

State water quality standards for surface waters are contained in chapters 62-4 and 62-302, F.A.C. The standards apply at the point of mixing with waters of the state. For the purposes of this rule, violations must be projected, based on monitoring results at the pump inlet or pond outfall and sound scientific rationale, or observed at the edge of the "boil" caused by the pump or weir discharge.

17.4.2 Groundwater Quality Standards

State water quality standards for groundwater are contained in chapter 62-520, F.A.C. Section 62-520.400, F.A.C., specifies minimum criteria for groundwater. In addition to the minimum criteria, Class G-I and G-II groundwater must meet primary and secondary drinking water quality standards for public water systems established pursuant to the Florida Safe Drinking Water Act, which are listed in sections 62-550.310 and .320, F.A.C.

Only the minimum criteria apply within a zone of discharge, as determined in section 62-520.400, F.A.C. A zone of discharge is defined as a volume underlying or surrounding the site and extending to the base of a specifically designated aquifer or aquifers, within which an opportunity for the treatment, mixture or dispersion of wastes into receiving ground water is afforded. Stormwater facilities generally have a zone of discharge 100 feet from the site boundary or to the installation's property boundary, whichever is less.

18.0 Overall Objectives of the District

18.1 Objectives

18.1.1 To obtain a permit for operation, maintenance, removal or abandonment of a system, each applicant must give reasonable assurance that such activity will not:

(a) Endanger life, health, or property;

(b) Be inconsistent with the maintenance of minimum flows and levels established pursuant to section 373.042, F.S.;

(c) Adversely affect the availability of water for reasonable beneficial purposes;

(d) Be incapable of being effectively operated;

(e) Adversely affect the operation of a Work of the District established pursuant to section 373.086, F.S.

(f) Adversely affect existing agricultural, commercial, industrial, or residential developments;

(g) Cause adverse impacts to the quality of receiving waters;

(h) Adversely affect natural resources, fish and wildlife;

(i) Increase the potential for damages to off-site property or the public caused by:

(1) Floodplain development, encroachment or other alteration;

(2) Retardance, acceleration, displacement or diversion of surface water;

(3) Reduction of natural water storage areas;

(4) Facility failure;

(j) Increase the potential for flood damages to residences, public buildings, or proposed and existing streets and roadways; and

(k) Otherwise be inconsistent with the overall objectives of the District. *Revised 6/1/18*

18.1.2 Because a system may result in both beneficial and harmful effects in terms of various individual objectives, in determining whether the applicant has provided evidence of reasonable assurance of compliance with subparagraph 40C-44.301(l)(a), the District shall consider a balancing of specific effects to show the system is not inconsistent with the overall objectives of the District.

19.0 Harm to the Water Resources of the District

19.1 Harm to the Water Resources Standards

19.1.1 The Governing Board has delineated the following performance standard which must be met to demonstrate that the proposed activity will not be harmful to the water resources of the District and will not cause adverse impacts to the quality of the receiving waters:

Discharges from the agricultural surface water management system shall not cause or contribute to a violation of water quality standards in waters of the state, as set forth in chapters 62-4, 62-302, 62-520, and 62-550, F.A.C. (incorporated by reference in 40C-4.091(1)(c)), including any antidegradation provisions of sections 62-4.242(1)(a) and (b), 62-4.242(2) and (3), and 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in sections 62-4.242(2) and (3), F.A.C.
Revised 6/1/18

19.1.2 To obtain an individual permit for construction, alteration, operation, or maintenance of a system, each applicant must give reasonable assurance that such activity is not harmful to the water resources by meeting the following standards:

(a) Adverse water quantity impacts will not be caused to receiving waters and adjacent lands;

(b) Surface and ground water levels and surface water flow will not be adversely affected;

(c) Existing surface water storage and conveyance capabilities will not be adversely affected;

(d) The system must be capable of being effectively operated;

(e) The activity must not result in adverse impacts to the operation of Works of the District established pursuant to section 373.086, F.S.; and

(f) Hydrologically-related environmental functions will not be adversely affected;

19.2 Harm to the Water Resources Criteria

19.2.1 It is presumed that a system meets the standards listed in subsection 19.1.2 if the system meets the criteria in sections 62-330.301 and 62-330.302, F.A.C.

19.2.2 Individual Permits *Revised 6/1/18*

(a) For the following types of systems qualifying for an individual permit pursuant to paragraph 40C-44.061(2), F.A.C., it is presumed that compliance with the criteria specified in section 19.1.2 will provide reasonable assurance that the system will comply with the performance standards described in section 19.1.1:

(1) Small agricultural operations (greater than 2 acres, but less than 40 acres) that do not propose any work in wetlands or other surface waters that would require a permit pursuant to paragraph 62-330.020(2)(a), F.A.C., if they have obtained a Conservation Plan, implemented the Conservation Plan within 180 days of permit issuance, and maintained the Conservation Plan. [40C-44.055(1), F.A.C.]

(2) Existing agricultural operations which are applying for a chapter 40C-44, F.A.C., permit prior to the expiration of a valid Industrial Waste permit or consent order (section 14.8.1), provided they:

a. Continue to maintain and operate the surface water management system, and associated treatment system, as previously permitted or authorized by consent order, and

b. Demonstrate compliance with the performance standards described in subsection 40C-44.065(1), F.A.C., based upon data collected in compliance with monitoring conditions. If the District staff determines that the compliance monitoring data does not demonstrate compliance with the performance standards, staff will notify the applicant, in writing, of the specific pollutant or pollutants for which treatment will be required in order to obtain an individual permit. [40C-44.055(2), F.A.C.]

(3) Minor alterations, described in section 14.1, provided the applicant provides reasonable assurance, through plans, test results or other information, that the activity is a minor alteration [40C-44.055(3), F.A.C.]

(4) Surface water management systems which drain an agricultural operation of less than 120 acres, which do not contain a concentrated animal feeding operation, which

implement a Conservation Plan within 180 days of permit issuance, and which maintain the Conservation Plan, provided the permittee satisfies the following monitoring conditions:

a. The permittee must maintain hour meters, in operating order, on each drainage pump. If the hour meters are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Reports of pump operating hours for each pump must be submitted to the District quarterly, using forms provided in the handbook.

b. The permittee must maintain a surveyed staff gauge, (referenced to NGVD or NAVD), in each detention pond. If the staff gauges are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Water levels must be recorded a minimum of 3 nonconsecutive days per week, or as an alternative, once a week and daily during pump operation. Reports of water levels for each pond must be submitted quarterly to the District using forms incorporated by reference and provided in 40C-44.061, F.A.C., and available from the District.

c. The permittee must monitor the water quality on a quarterly basis at each discharge point from pumps or pond outfalls to waters of the state. If no discharge has occurred during a particular quarter, no sampling is required. Water samples must be analyzed for the parameters listed in Table 1 (see 40C-44.061, F.A.C.). Samples must be analyzed by a laboratory certified by the Florida Department of Health.

d. If, after five years of water quality monitoring, the permittee demonstrates that the data collected represents steady state conditions and is adequate to project future compliance with state water quality standards, the District shall amend the monitoring conditions by reducing the frequency of monitoring or the number of parameters monitored, or eliminating such requirements.

e. If, after five years of water quality monitoring, the District notifies the permittee in writing that

discharges from the surface water management system have not complied with the performance standards described in subsection 40C-44.065(1), F.A.C., then the permittee must apply for an individual permit in accordance with subsection 40C-44.061(3), F.A.C.

(5) Surface water management systems which drain an agricultural operation which do not contain a concentrated animal feeding operation, which have obtained a Conservation Plan, implemented the Conservation Plan within 180 days of permit issuance, maintain the Conservation Plan, and which have not been issued an Industrial Waste permit or consent Order, provided the permittee satisfies the monitoring conditions described below:

a. The permittee must maintain hour meters, in operating Order, on each drainage pump. If the hour meters are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Reports of pump operating hours for each pump must be submitted to the District quarterly, using forms incorporated by reference and provided in 40C-44.061, F.A.C., and available from the District.

b. The permittee must maintain a surveyed staff gauge, (referenced to NGVD or NAVD), in each detention pond. If the staff gauges are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Water levels must be recorded a minimum of 3 nonconsecutive days per week, or as an alternative, once a week and daily during pump operation. Reports of water levels for each pond must be submitted quarterly to the District using forms incorporated by reference and provided in 40C-44.061, F.A.C., and available from the District.

c. The permittee must monitor the water quality on a quarterly basis at each discharge point from pumps or pond outfalls to waters of the state following implementation of the Conservation Plan or within 180 days of permit issuance, whichever occurs sooner. If no discharge has occurred during a

particular quarter, no sampling is required. Water samples must be analyzed for the parameters listed in Table 1 (see 40C-44.061, F.A.C.). Samples must be analyzed by a laboratory certified by the Florida Department of Health.

d. If, after five years of water quality monitoring, the permittee demonstrates that the data collected represents steady state conditions and is adequate to project future compliance with state water quality standards, the District shall amend the monitoring conditions by reducing the frequency of monitoring or the number of parameters monitored, or eliminating such requirements.

e. If, after one year of water quality monitoring, the District notifies the permittee in writing that discharges from the surface water management system have not complied with the performance standards described in section 40C- 44.065(1), F.A.C., then the permittee must apply for an individual permit in accordance with subsection 40C-44.061(3), F.A.C.

(b) For all other systems which are required to obtain an individual permit under section 40C-44.061, F.A.C., it is presumed that implementation of the water quality practices listed in section 19.2.4 will provide reasonable assurance that the system will comply with the performance standards described in section 19.1.1. The water quality practices or other alternatives shall be implemented to the extent necessary to comply with the performance standards described in section 19.1.1. In some cases, the implementation of these practices may not result in compliance with the performance standards for issuance of an individual permit. In those cases, the applicant shall provide for implementation of such additional water quality practices and/or treatment methodologies as necessary to provide reasonable assurance that the discharge will comply with the performance standards described in section 19.1.1.

19.2.3 Discharge to Class I, Class II, or Outstanding Florida Waters

New and existing systems which discharge to Class I, Class II or Outstanding Florida Waters shall be required to provide an additional level of treatment to provide reasonable assurance of compliance with section 19.1.1. Direct discharges to

Outstanding Florida Waters shall provide an additional 50% of the applicable treatment volume.

19.2.4 Water Quality Practices *Revised 6/1/18*

(a) Reduce the volume of stormwater and associated wastewater discharged to waters of the state by:

(1) Implementing management practices designed to reduce the volume of water discharged off-site, including Water Table Control in Open Channels, Irrigation Land Leveling and Irrigation Water Management, and

(2) Maximizing on-site recycling to satisfy irrigation, freeze protection and pest control needs. The applicant may demonstrate maximum stormwater harvesting by using all the practically available water from reservoir storage prior to using groundwater.

(b) Implement and maintain a Conservation Plan, which includes a Nutrient Management Plan and Pesticide Management Plan.

(c) Provide treatment of the pollutants generated by the agricultural operation. The treatment method required depends on the intensity of land use and associated pollutants.

(1) Wet detention ponds, designed and operated in accordance with section 8.0 of this Volume, are presumed to satisfy the requirements of paragraphs (a)(2) and (c) for those portions of an agricultural operation described below:

a. Citrus, row crop, sod, hayland or improved pasture which discharge to Class I, Class II, or Outstanding Florida Waters, or

b. Citrus, row crop, sod, hayland or improved pasture on predominantly organic soils. For the purposes of this handbook, organic soils are listed as mucks, peats or mucky fine sands in the NRCS county Soil Surveys.

(2) Other water quality practices in lieu of wet detention, such as overland flow, vegetative filters and detention in isolated wetlands, are presumed to satisfy the requirements in paragraph (c) for low intensity agricultural operations such as rough or semi-improved pasture, when the practice(s) is designed, operated and maintained using accepted engineering principles.

(3) Agricultural surface water management systems may incorporate overland flow, vegetative filters and detention in isolated wetlands as water quality practices. Existing canals and conveyance systems may be incorporated into a wet detention treatment system, when appropriate. The applicant must provide reasonable assurance, through plans, test results or other information, that the practice will provide an adequate level of treatment to meet the performance standards in section 19.1.1.

(d) Applicants who propose to satisfy the performance standards in section 19.1.1 by employing a treatment methodology or device other than those described in sections 19.2.4(a)-(c), may seek approval for an equivalent alternative through the District's permit process.

19.2.5 Agricultural surface water management systems requiring a permit which will be located in the Lake Apopka Hydrologic Basin or which will discharge water to Lake Apopka or its tributaries, must comply with the requirements of subsection 40C-41.063(8), F.A.C., and Section 13.7 of this Volume.

19.2.6 Agricultural surface water management systems requiring a permit that will be located within the Wekiva Recharge Protection Basin must comply with the requirements of paragraph 40C-41.063(3)(a), F.A.C., and Section 13.3 of this Volume.

APPENDICES

APPENDIX A

SJRWMD Drainage Basins for Cumulative Impacts Evaluation and Regional Watersheds for Mitigation Banking

SJRWMD Drainage Basins and Regional Watersheds

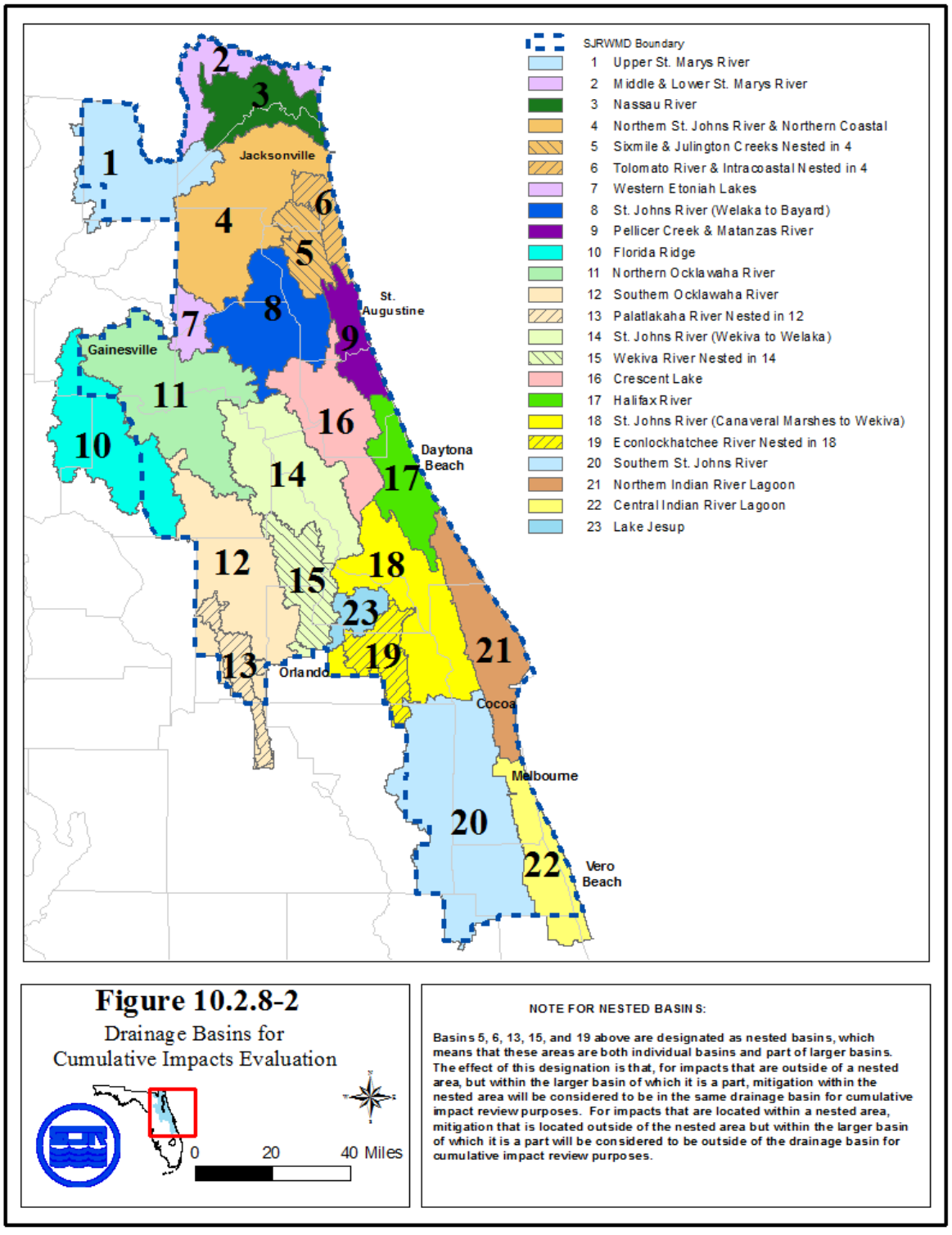
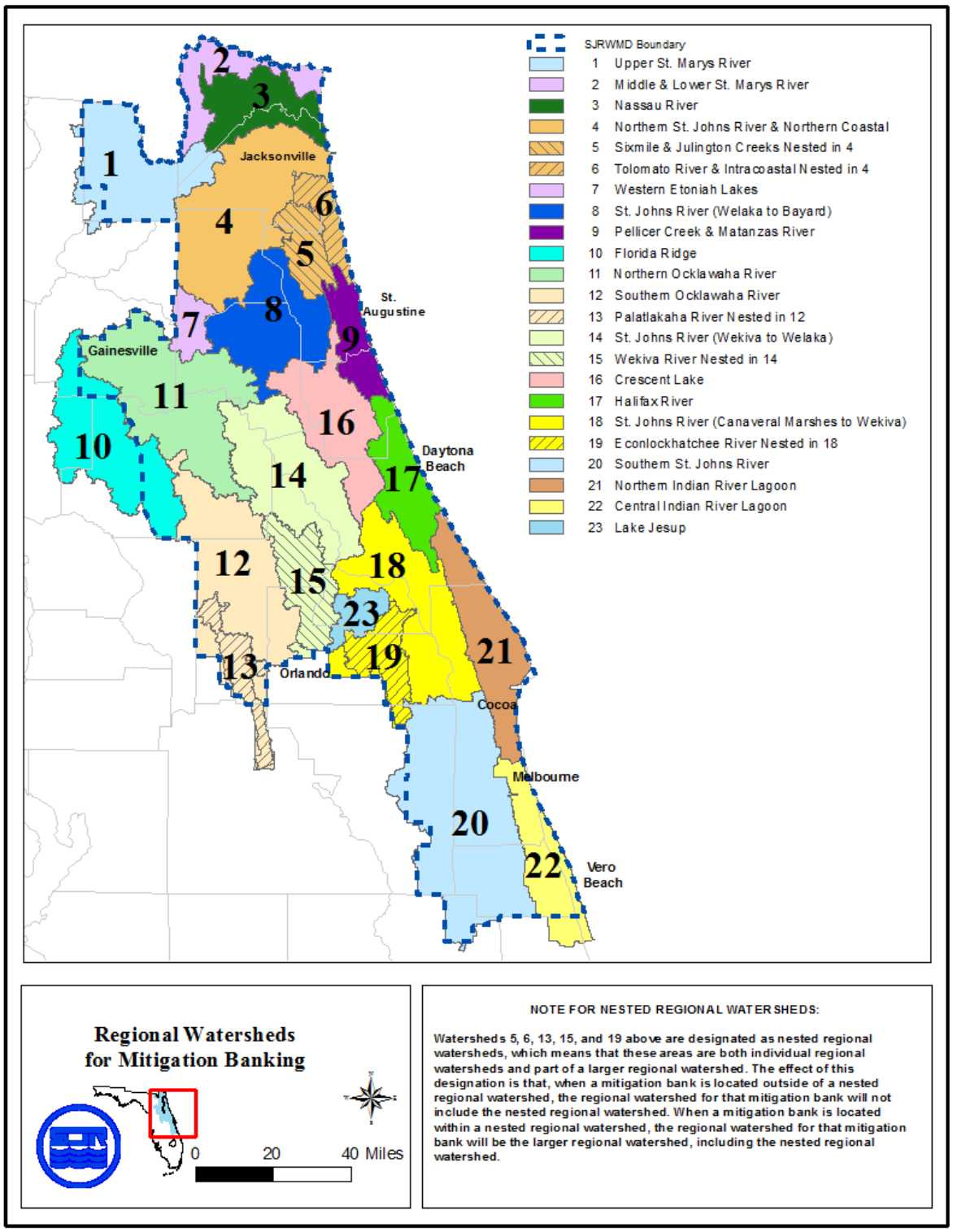


Figure 10.2.8-2
Drainage Basins for
Cumulative Impacts Evaluation

This figure constitutes Figure 10.2.8-2 in Applicant's Handbook, Volume I (General and Environmental) effective *10-1-13*



Revised 10/1/13

APPENDIX B

Basin Boundaries

LEGAL DESCRIPTION

UPPER ST. JOHNS RIVER HYDROLOGIC BASIN

Begin at the southeast corner of Section 33, Township 33 South, Range 38 East; thence west along the township section line between Township 33 and 34 South to the northwest corner of Section 6, Township 34 South, Range 37 East; thence south along the range line between Ranges 36 and 37 East to the southeast corner of Section 1, Township 34 South, Range 36 East; thence west along the section line to the northwest corner of Section 10, Township 34 South, Range 36 East; thence south along the section line to the southeast corner of Section 9, Township 34 South, Range 36 East; thence west along the section lines to the northwest corner of Section 18, Township 34 South, Range 36 East; thence south along the range line between Ranges 35 and 36 East to the southeast corner of Section 12, Township 34 South, Range 35 East; thence west along the section line to the northwest corner of Section 13, Township 34 South, Range 35 East; thence south along the section lines to the southwest corner of Section 35, Township 34 South, Range 35 East; thence west along the township line between Townships 34 and 35 South to the southwest corner of Section 35, Township 34 South, Range 34 East; thence north along the section lines to the Okeechobee and Osceola County line; thence west along the Okeechobee and Osceola County line to the southwest corner of Section 31, Township 32 South, Range 34 East; thence north along the section lines to the northeast corner of Section 1, Township 32 South, Range 33 East; thence west along the section lines to the southwest corner of Section 34, Township 31 South, Range 33 East; thence north along the section lines to the northwest corner of Section 3, Township 31 South, Range 33 East; thence east along the township line between Township 30 and Township 31 South to the southeast corner of Section 36, Township 30 South, Range 33 East; thence north along the range line between Ranges 33 and 34 East to the northeast corner of Section 1, Township 30 South, Range 33 East; thence west along the township line between Townships 29 and 30 South to the southwest corner of Section 31, Township 29 South, Range 33 East; thence north along the range line between Ranges 32 and 33 East to the northwest corner of Section 6, Township 28 South, Range 33 East; thence east along the township line between Townships 27 and 28 South to the southeast corner of Section 36, Township 27 South, Range 32

East; thence north along the range line between Ranges 32 and 33 East to the northeast corner of Section 1, Township 26 South, Range 32 East; thence west along the township line between Townships 25 and 26 South to the southwest corner of Section 35, Township 25 South, Range 32 East; thence north along the section lines to the northwest corner of Section 11, Township 25 South, Range 32 East; thence east along the section line to the southeast corner of Section 2, Township 25 South, Range 32 East; thence north along the section lines to the northwest corner of Section 24, Township 24 South, Range 32 East; thence east along the section line to the southeast corner of Section 13, Township 24 South, Range 32 East; thence north along the range line between Ranges 32 and 33 East to the northeast corner of Section 25, Township 22 South, Range 32 East; thence west along the section lines to the southwest corner of Section 23, Township 22 South, Range 32 East; thence north along the section lines to the northwest corner of Section 2, Township 22 South, Range 32 East; thence east along the township line between Townships 21 and 22 South to the southeast corner of Section 35, Township 21 South, Range 32 East; thence north along the section lines to the northwest corner of Section 13, Township 21 South, Range 32 East; thence east along the section lines to the southeast corner of Section 7, Township 21 South, Range 33 East; thence north along the section line to the northwest corner of Section 8, Township 21 South, Range 33 East, thence east along the section line to the southeast corner of Section 5, Township 21 South, Range 33 East; thence north along the section line to the northwest corner, Section 4, Township 21 South, Range 33 East; thence east along the township line between Township 20 and 21 South to the southeast corner of Section 33, Township 20 South, Range 33 East; thence north along the section lines to the northwest corner of Section 22, Township 20 South, Range 33 East; thence east along the section line to the southeast corner of Section 15, Township 20 South, Range 33 East; thence east along the section lines to the south east corner of Section 1, Township 20 South, Range 33 East; thence north along the range line between Ranges 33 and 34 East to the northwest corner of Section 30, Township 19 South, Range 34 East; thence east along the section lines to the northeast corner of Section 28, Township 19 South, Range 34 East; thence northerly along the boundary line between Section 21, Township 19 South, Range 34 East, and John H. McIntosh Grant to the northeast corner of Section 21, Township 19 South, Range 34; thence easterly along the boundary line between John Low Grant and John H. McIntosh Grant to the westerly right-

of-way line of Interstate Highway 95; thence southerly along the westerly right-of-way line of Interstate Highway 95 to the Brevard-Volusia County line; thence east along the Brevard-Volusia County line to the westerly right-of-way line of U.S. Route No. 1; thence southerly along the westerly right-of-way line of U.S. Route No. 1 to the northerly right-of-way line of State Route No. 50; thence west along the northerly right-of-way line of State Route No. 50 to the northwest corner of Section 27, Township 22 South, Range 35 East; thence south along the section lines to the southwest corner of Section 34, Township 22 South, Range 35 East; thence east along the township line between Townships 22 and 23 South to the northeast corner of Section 3, Township 23 South, Range 35 East; thence south along the section lines to the southwest corner of Section 14, Township 23 South, Range 35 East; thence east along the section lines to the northeast corner of Section 24, Township 23 South, Range 35 East; thence south along the range line between Ranges 35 and 36 East to the southwest corner of Section 7, Township 24 South, Range 36 East; thence east along the section line to the northeast corner of Section 18, Township 24 South, Range 36 East; thence south along the section lines to the southwest corner of Section 17, Township 25 South, Range 36 East; thence east along the section lines to the westerly right-of-way line of U.S. Route No. 1, thence southerly along the westerly right-of-way line of U.S. Route No. 1 to the range line between Ranges 36 and 37 East; thence south along the range line between Ranges 36 and 37 East to the northeast corner of Section 13, Township 27 South, Range 36 and 37 East to the northeast corner of Section 13, Township 27 South, Range 36 East; thence west along the section line to the northwest corner of Section 13, Township 27 South, Range 36 East; thence south along the section line to the southeast corner of Section 14, Township 27 South, Range 36 East; thence west to the easterly right-of-way line of Interstate Highway 95; thence south along the easterly right-of-way line of Interstate Highway 95 to the township line between Townships 27 and 28 South; thence east along the township line between Townships 27 and 28 South to the north quarter corner of Section 6, Township 28 South, Range 37 East; thence south to the center of Section 7, Township 28 South, Range 37 East; thence east to the east quarter corner of said section; thence south along the section line to the southwest corner of Section 8, Township 28 South, Range 37 East; thence east along the section line to the north quarter corner of Section 17, Township 28 South, Range 37 East; thence south to the south quarter corner of said section; thence east

along the section line to the northeast corner of Section 20, Township 28 South, Range 37 East; thence south along the section lines to the southwest corner of Section 28, Township 28 South, Range 37 East; thence east along the section lines to north quarter corner of Section 34, Township 28 South, Range 37 East; thence south to the south quarter corner of Section 3, Township 29 South, Range 37 East; thence west along the section line to the easterly right-of-way line of Interstate Highway 95; thence southerly along the easterly right-of-way line of Interstate Highway 95 to the section line between Sections 22 and 23, Township 29 South, Range 37 East; thence south along the section lines to the township line between Townships 29 and 30 South; thence west along the township line between Townships 29 and 30 South to the northwest corner of Section 3, Township 30 South, Range 37 East; thence south along the section lines to the southwest corner of Section 34, Township 30 South, Range 37 East; thence east along the township line between Townships 30 and 31 South to the southwest boundary of the Fleming Grant; thence southeast along the southwest boundary of the Fleming Grant to the range line between Ranges 37 and 38 East; thence south along the range line between Ranges 37 and 38 East to the southwest corner of Section 19, Township 32 South, Range 38 East; thence east along the section line to the northeast corner of Section 30, Township 32 South, Range 38 East; thence south along the section lines to the southwest corner of Section 5, Township 33 South, Range 38 East; thence east along the section line to the northeast corner of Section 8, Township 33 South, Range 38 East; thence south along the section line to the southwest corner of Section 9, Township 33 South, Range 38 East; thence east along the section line to the northeast corner of Section 16, Township 33 South, Range 38 East; thence south along the section line to the southeast corner of Section 33, Township 33 South, Range 38 East.

NOTE: This description based on Florida Department of Transportation County Maps.

LEGAL DESCRIPTION

OKLAWAHA RIVER HYDROLOGIC BASIN *Revised 6/1/18*

Begin at the northeast corner of Section 13, Township 25 South, Range 26 East; thence south along the range line between Ranges 26 and 27 East to the southwest corner of Section 18, Township 26 South, Range 27 East; thence east along the section line to the northeast corner of Section 19, Township 26 South, Range 27 East; thence south along the section lines to the southwest corner of Section 32, Township 26 South, Range 27 East; thence east along the township line between Townships 26 and 27 South to the northeast corner of Section 5, Township 27 South, Range 27 East; thence south along the section lines to the southerly right-of-way line of State Road 600; thence westerly along the southerly right-of-way line of said State Road 600 to the west boundary of Section 27, Township 27 South, Range 26 East; thence north along the section lines to the northeast corner of Section 16, Township 25 South, Range 26 East; thence west along the section line to the southwest corner of Section 9, Township 25 South, Range 26 East; thence north along the section lines to the Lake and Polk County line; thence west along the county line to the southwest corner of Section 32, Township 24 South, Range 26 East; thence into Lake County, north along the section lines to the northeast corner of Section 30, Township 24 South, Range 26 East; thence west along the section lines to the northeast corner of Section 28, Township 24 South, Range 25 East; thence north along the section lines to the northeast corner of Section 16, Township 24 South, Range 25 East; thence west along the section line to the northwest corner of Section 16, Township 24 South, Range 25 East; thence north along the section line to the northeast corner of Section 8, Township 24 South, Range East; thence west along the section lines to the range line between Ranges 24 and 25; thence north along the range line to the northeast corner of Section 12, Township 22 South, Range 24 East; thence west along the section lines to the southwest corner of Section 2, Township 22 South, Range 24 East; thence north along the section lines to the northeast corner of Section 27, Township 21 South, Range 24 East; thence west along the section lines to the southwest corner of Section 20, Township 21 South, Range 24 East; thence north along the section lines to the northeast corner of Section 18, Township 21 South, Range 24 East; thence west along the section line to the northwest corner of Section 18, Township 21 South, Range 24 East; also being the Sumter and Lake County line; thence north along the Sumter and

Lake County line, also being the range line between Ranges 23 and 24 East to the northwest corner of Section 30, Township 19 South, Range 24 East; thence east along the section line to the northeast corner of Section 30, Township 19 South, Range 24 East; thence north along the section line to the northwest corner of Section 20, Township 19 South, Range 24 East; thence east along the section line to the northeast corner of Section 20, Township 19 South, Range 24 East; thence north along the section lines to the northwest corner of Section 33, Township 18 South, Range 24 East; thence east along the section line to the northeast corner of Section 33, Township 18 South, Range 24 East; thence north along the section line to the northwest corner of Section 27, Township 18 South, Range 24 East; thence east along the section line to the southeast corner of Section 22, Township 18 South, Range 24 East; thence north along the section lines to the northeast corner of Section 15, Township 18 South, Range 24 East; thence west along the section lines to the northwest corner of Section 18, Township 18 South, Range 24 East also being the Sumter and Lake County line; thence north along the Sumter and Lake County line to the northeast corner of Section 1, Township 18 South, Range 23 East and the Marion County line; thence west along the Sumter and Marion County line, also being the township line between Township 17 and 18 South, to the southwest corner of Section 32, Township 17 South, Range 23 East; thence north along the section lines to the northwest corner of Section 8, Township 17 South, Range 23 East; thence east along the section line to the southeast corner of Section 5, Township 17 South, Range 23 East; thence north along the section lines to the northeast corner of Section 8, Township 16 South, Range 23 East; thence west along the section lines to the southwest corner of Section 6, Township 16 South, Range 23 East; thence north along the range lines between Range 22 and 23 East to the northeast corner of Section 24, Township 15 South, Range 22 East; thence west along the section lines to the northwest corner of Section 19, Township 15 South, Range 22 East; thence south along the range lines between Ranges 21 and 22 East to the Southeast corner of Section 24, Township 16 South, Range 21 East; thence west along the section lines to the westerly right-of-way line of Interstate Highway 75; thence northerly along the westerly right-of-way line of Interstate Highway 75 to the north boundary of Section 9, Township 14 South, Range 21 East; thence east along the section lines to the northeast corner of Section 12, Township 14 South, Range 21 East; thence south along the range line between Ranges 21 and 22 to the southwest corner of

Section 7, Township 14 South, Range 22 East; thence east along the section line to the northeast corner of Section 18, Township 14 South, Range 22 East; thence south along the section line to the southwest corner of Section 17, Township 14 South, Range 22 East; thence east along the section line the northeast corner of Section 20, Township 14 South, Range 22 East; thence south along the section line to the southwest corner of Section 21, Township 14 South, Range 22 East; thence east along the section lines to the southeast corner of Section 24, Township 14 South, Range 22 East; thence north along the range line between Ranges 22 and 23 East to the northwest corner of Section 18, Township 14 South, Range 23 East to the northwest corner of Section 18, Township 14 South, Range 23 East; thence east along the section lines to the southeast corner of Section 9, Township 14 South, Range 23 East' thence north along the section lines to the northeast corner of Section 4, Township 14 South, Range 23 East; thence west along the township line between Townships 13 and 14 South of the southwest corner of Section 33, Township 13 South, Range 23 East; thence north along the section lines to the southerly right-of-way line or Florida Highway 316; thence easterly along the southerly right-of-way line of Florida Highway 316 to the east line of Section 14, Township 13 South, Range 24 East; thence south along the section lines to the southwest corner of Section 36, Township 13 South, Range 24 East; thence east along the township line between Township 13 and 14 South to the northeast corner of Section 1, Township 14 South, Range 24 East; thence south along the range line between Ranges 24 and 25 East to the southwest corner of Section 31, Township 14 South, Range 25 East; thence along the township line between Townships 14 and 15 South to the northeast corner of Section 2, Township 15 South, Range 25 East; thence south along the section lines to the southwest corner of Section 24, Township 15 South, Range 25 East; thence east along the section line to the northeast corner of section 25, Township 15 South, Range 25 East; thence south along the range line between Ranges 25 and 25 1/2 South to the township line between Townships 15 and 16 South; thence south along the range line between Ranges 25 and 26 East to the southwest corner of Section 7, Township 17 South, Range 26 East; thence east along the section lines to the northeast corner of Section 15, Township 17 South, Range 26 East; thence south along the section lines to the southwest corner of Section 35, Township 17 South, Range 26 East; thence east along the section lines to the northeast corner of Section 5, Township 18 South, Range 27 East; thence south along the section lines

to the southwest corner of Section 33, Township 18 South, Range 27 East; thence east along the township line between Townships 18 and 19 South to the northeast corner of Section 3, Township 19 South, Range 27 East; thence south along the section lines to the southwest corner of section 35, Township 19 South, Range 27 East; thence east along the township line between Townships 19 and 20 South to the northeast corner of Section 2, Township 20 South, Range 26 East; thence south along the section lines to the southwest corner of Section 25, Township 20 South, Range 27 East; thence east along the section lines to the northeast corner of Section 33, Township 20 South, Range 28 East; thence south along the section lines to the southeast corner of Section 28, Township 21 South, Range 28 East; thence west along the section line to the northwest corner of Section 33, Township 21 South, Range 28 East; thence south along the section lines to the southeast corner of Section 8, Township 22 South, Range 28 East; thence west along the section line to the northeast corner of Section 18, Township 22 South, Range 28 East; thence south along the section lines to the southeast corner of Section 31, Township 22 South, Range 28 East; thence west along the township line between Townships 22 and 23 South to the northwest corner of Section 1, Township 23 South, Range 27 East; thence south along the section lines to the southeast corner of Section 11, Township 23 South, Range 27 East; thence west along the section lines to the northwest corner of Section 18, Township 23 South, Range 27 East; thence south along the range line between Ranges 26 and 27 East to the northeast corner of Section 24, Township 23 South, Range 26 East; thence west along the section line to the northwest corner of Section 24, Township 23 South, Range 26 East; thence south along the section line to the southeast corner of Section 23, Township 23 South, Range 26 East; thence west along the section lines to the northwest corner of Section 28, Township 23 South, Range 26 East; thence south along the section lines to the southwest corner of Section 16, Township 24 South, Range 26 East; thence east along the section lines to the northeast corner of Section 22, Township 24 South, Range 26 East; thence south along the section lines to the southwest corner of Section 16, Township 24 South, Range 26 East; thence east along the section lines to the northeast corner of Section 22, Township 24 South, Range 26 East; thence south along the section lines to southeast corner of Section 26, Township 24 South, Range 26 East; thence east along the section line to the northeast corner of Section 35, Township 24 South, Range 26 East; thence south along the section lines to the southwest corner of Section 12, Township

25 South, Range 26 East; thence east along the section line to the northeast corner of Section 13, Township 25 South, Range 26 East.

LESS AND EXCEPT any portion lying within Polk County (transferred to the Southwest Florida Water Management District, effective at 12:01 a.m. on July 1, 2003, per subsection 373.0691(2), Florida Statutes (2014)).

NOTE: This description based on Florida Department of County Maps.

LEGAL DESCRIPTION

WEKIVA RIVER HYDROLOGIC BASIN

Begin at the southeast corner of Section 31, Township 22 South, Range 28 East; thence east along the Township line between Townships 22 and 23 South to the center line of the State Highway 435, Township 22 South, Range 28 East; thence northerly along the center line of State Highway 435 to the center line of State Highway 50; thence east along the center line of State Highway 50 to the southeast corner of Section 22, Township 22 South, Range 29 East; thence north along the section line to the northeast corner of Section 22, Township 22 South, Range 29 East; thence east along the section line to center line of Interstate 4; thence northerly along the center line of Interstate 4 to the Seminole and Orange County line; thence east along the Seminole and Orange County line to the center line of State Highway 427, thence north along the center line of State Highway 427 to the center line of State Highway 436, thence east along the center line of State Highway 436 to the center line of State Highway 427; thence northeasterly along the center line of State Highway 427 to the southeast corner of Section 6, Township 21 South, Range 30 East; thence west along the section lines to the southeast corner of Section 2, Township 21 South, Range 29 East; thence north along the section lines to the center line of Interstate 4; thence north along the center line of Interstate 4 to the center line of State Highway 46A; thence west along the center line of State Highway 46A to the southwest corner of Section 31, Township 19 South, Range 30 East; thence north along the section lines also being the range line between Ranges 29 and 30 East to the Township line between Townships 18 and 19 South; thence west along the Township line between Townships 18 and 19 South to the Lake and Seminole County line, thence west along the Township line between Townships 18 and 19 South to the southwest corner of Section 33, Township 18 South, Range 29 East; thence north along the section lines to the north corner of Section 16, Townships 17 South, Range 29 East; thence northwesterly along section line to the northwest corner of Section 39 Township 17 South, Range 28 East (also being the Domingo Fernandez Grant line): thence west along Township line between Townships 16 and 17 South to the northeast corner of Section 2, Township 17 South, Range 28 East; thence south along the section lines to the southeast corner of Section 11, Township 17

South, Range 28 East; thence west along the section lines to the southwest corner of Section 10, Township 17 South, Range 28 East; thence south along the section lines to the southeast corner of Section 21, Township 17 South, Range 28 East; thence west along the section line to the southwest corner of Section 21, Township 17 South, Range 28 East; thence south along the section line to the southeast corner of Section 29, Township 17 South, Range 28 East; thence west along the section line to the southwest corner of Section 29, Township 17 South, Range 28 East; thence north along the section line to the northeast corner of Section 30, Township 17 South, Range 28 East; thence west along the section line to the northwest corner of Section 30, Township 17 South, Range 28 East; thence north along the section line to the northeast corner of Section 24, Township 17 South, Range 27 East; thence west along the section lines to the northwest corner of Section 23, Township 17 South, Range 27 East; thence north along the section lines to the northeast corner of Section 10, Township 17 South, Range 27 East; thence west along the section line to the northwest corner of Section 10, Township 17 South, Range 27 East; thence north along the section line to the northwest corner of Section 4, Township 17 South, Range 27 East; also being the Township line between Townships 16 and 17 South; thence west along the section line to the southwest corner of Section 31, Township 16 South, Range 27 East; thence north along the section line to the northwest corner of Section 31, Township 16 South, Range 27 East; also being the Lake and Marion County line; thence west along the section line to the northwest corner of Section 36, Township 16 South, Range 26 East; thence south along the section lines to the southwest corner of Section 1, Township 17 South, Range 26 East; thence west along the section line to the northwest corner of Section 11, Township 17 South, Range 26 East; thence south along the section lines to the southwest corner of Section 35, Township 17 South, Range 26 East; also being the Marion and Lake County line; thence east along the section lines to the northwest corner of Section 5, Township 18 South, Range 27 East; thence south along the section lines to the southwest corner of Section 33, Township 18 South, Range 27 East; thence east along the Township line between Townships 18 and 19 South to the northeast corner of Section 3, Township 19 South, Range 27 East; thence south along the section lines to the southwest corner of Section 35, Township 19 South, Range 27 East; thence east along the Township line between Townships 19 and 20 South to the northeast corner of Section 2, Township 20 South, Range 27 East; thence south along the section lines to the

southwest corner of Section 25, Township 20 South, Range 27 East; thence east along the section lines to the northeast corner of Section 33, Township 20 South, Range 28 East; thence south along the section lines to the southeast corner of Section 28, Township 21 South, Range 28 East; thence west along the section line to the northwest corner of Section 33, Township 21 South, Range 28 East; thence south along the section lines to the southeast corner of Section 8, Township 22 South, Range 28 East; thence west along the section line to the northeast corner of Section 18, Township 22 South, Range 28 East; thence south along the section lines to the southeast corner of Section 31, Township 22 South, Range 28 East, which is also the point of beginning.

LEGAL DESCRIPTION

WEKIVA RECHARGE PROTECTION BASIN[1]

Begin at the northwest corner of Section 6, Township 18 South, Range 28 East, Lake County, Florida, said corner lying on the north line of Township 18 South; thence Easterly along said north line of Township 18 South to the northeast corner of Section 5, Township 18 South, Range 29 East; thence Southerly along the east line of said Section 5 to the northeast corner of Section 8, Township 18 South, Range 29 East; thence Southerly along the east line of said Section 8 to the northeast corner of Section 17, Township 18 South, Range 29 East; thence Southerly along the east line of said Section 17 to the northeast corner of Section 20, Township 18 South, Range 29 East; thence Southerly along the east line of said Section 20 to the northeast corner of Section 29, Township 18 South, Range 29 East; thence Southerly along the east line of said Section 29 to the northeast corner of Section 32, Township 18 South, Range 29 East; thence Southerly along the east line of said Section 32 to the southeast corner thereof, said corner lying on the south line of Township 18 South; thence Easterly along the south line of said Township 18 South to an intersection with the east line of Range 29 East; thence Southerly along the east line of said Range 29 East to the southeast corner of Section 24, Township 21 South, Range 29 East; thence Westerly along the south line of said Section 24 to the southeast corner of Section 23, Township 21 South, Range 29 East; thence Westerly along the south line of said Section 23, to an intersection with the centerline of Interstate Highway No. 4; thence generally Southerly along the centerline of Interstate Highway No. 4 to an intersection with the south line of Section 13, Township 22 South, Range 29 East; thence Westerly along the south line of said Section 13 to the southeast corner of Section 14, Township 22 South, Range 29 East; thence Westerly along the south line of said Section 14 to the southeast corner of Section 15, Township 22 South, Range 29 East; thence Westerly along the south line of said Section 15 to the northeast corner of Section 21, Township 22 South, Range 29 East; thence Southerly along the east line of said Section 21 to an intersection with the centerline of State Road No. 50; thence Westerly along

[1]This legal description is for the same area defined as the “Wekiva Study Area” in Section 369.316, Florida Statutes.

the centerline of said State Road No. 50 to the northeast corner of Section 30, Township 22 South, Range 28 East; thence Southerly along the east line of said Section 30 to the northeast corner of Section 31, Township 22 South, Range 28 East; thence Southerly along the east line of said Section 31 to the southeast corner thereof, said corner lying on the south line of Township 22 South; thence Westerly along said south line of Township 22 South to the northeast corner of Section 2, Township 23 South, Range 27 East; thence Southerly along the east line of said Section 2 to the northeast corner of Section 11, Township 23 South, Range 27 East; thence Southerly along the east line of said Section 11 to the southeast corner thereof; thence Westerly along the south line of said Section 11 to the southeast corner of Section 10, Township 23 South, Range 27 East; thence Westerly along the south line of said Section 10 to the southeast corner of Section 9, Township 23 South, Range 27 East; thence Westerly along the south line of said Section 9 to the Southeast corner of Section 8, Township 23 South, Range 27 East; thence Westerly along the south line of said Section 8 to the southeast corner of Section 7, Township 23 South, Range 27 East; thence Westerly along the south line of said Section 7 to the southwest corner thereof, said corner lying on the line of demarcation between Orange County and Lake County; thence generally Northerly and along said county line to the northeast corner of Section 12, Township 20 South, Range 26 East, said corner lying on the east line of Range 26 East; thence generally Northerly and along said east line of Range 26 East to the southeast corner of Section 24, Township 19 South, Range 26 East; thence Westerly along the south line of said Section 24 to the southeast corner of Section 23, Township 19 South, Range 26 East; thence Westerly along the south line of said Section 23 to the southwest corner thereof; thence Northerly along the west line of said Section 23 to the southwest corner of Section 14, Township 19 South, Range 26 East; thence Northerly along the west line of said Section 14 to the southwest corner of Section 11, Township 19 South, Range 26 East; thence generally Northeasterly to the southwest corner of Section 1, Township 19 South, Range 26 East; thence generally Northeasterly to the southwest corner of Section 31, Township 18 South, Range 27 East; thence generally Northeasterly to the southwest corner of Section 29, Township 18 South, Range 27 East; thence generally Northeasterly to the northwest corner of Section 28, Township 18 South, Range 27 East; thence Easterly along the north line

of said Section 28 to the northwest corner of Section 27, Township 18 South, Range 27 East; thence Easterly along the north line of said Section 27 to the northwest corner of Section 26, Township 18 South, Range 27 East; thence Easterly along the north line of said Section 26 to the northwest corner of Section 25, Township 18 South, Range 27 East; thence Easterly along the north line of said Section 25 to an intersection with the west line of Range 28 East; thence Northerly along the west line of said Range 28 East, to the northwest corner of Section 6, Township 18 South, Range 28 East, and the Point of Beginning.

LEGAL DESCRIPTION

ECONLOCKHATCHEE RIVER HYDROLOGIC BASIN

Begin at the Northeast corner of Section 1, Township 26 South, Range 32 East; thence West along the Township line between Township 25 South and Township 26 South to the Southwest corner of Section 33, Township 25 South, Range 32 East; thence North along the Section lines to the Osceola and Orange County line; thence West along the Osceola and Orange County line to the South quarter corner of Section 31, Township 4 South, Range 32 East; thence North along the quarter section lines to the center of Section 18, Township 24 South, Range 32 East; thence West along the quarter section line to the Northwest corner of the Northeast quarter of the Southwest quarter of Section 18, Township 24 South, Range 32 East; thence North along the quarter quarter section lines to the Northeast corner of the Southwest quarter of the Southwest quarter of Section 7, Township 24 South, Range 32 East; thence West along the North line of the Southwest quarter of the Southwest quarter of Section 7, Township 24 South, Range 32 East to the range line between Range 31 East and Range 32 East; thence North along the range line between Range 31 East and Range 32 East to the Northerly Right-of-Way line of State Road 528, also known as the Bee Line Expressway; thence Westerly along the Northerly Right-of-Way line of State Road 528 to the Southwest Right-of-Way line of State Road 15; thence Northwesterly, Westerly and Northerly along the Southwest Right-of-Way line of State Road 15 to the South line of Section 8, Township 23 South, Range 30 East; thence East along the Section lines to the South quarter corner of Section 9, Township 23 South, Range 30 East; thence North along the quarter section lines to the center of Section 33, Township 22 South, Range 30 East; thence West along the quarter section lines to the center of Section 31, Township 22 South, Range 30 East; thence North along the quarter Section lines to the center of Section 19, Township 22 South, Range 30 East; thence East to the East quarter corner of Section 19, Township 22 South, Range 30 East; thence North along the Section lines to the Southwest corner of Section 8, Township 22 South, Range 30 East; thence East along the Section line to the Southeast corner of Section 8, Township 22 South, Range 30 East; thence North along the Section lines to the Northeast corner of Section 5, Township 22 South, Range 30 East; thence West along the Section line to the South quarter corner of Section 32, Township 21 South, Range 30 East; thence North to the North quarter

corner of Section 32, Township 21 South, Range 30 East; thence East along the Section lines to the North quarter corner of Section 35, Township 21 South, Range 30 East; thence South along the quarter section lines to the South quarter corner of Section 2, Township 22 South, Range 30 East; thence East along the Section line to the Southwest corner of Section 1, Township 22 South, Range 30 East; thence North along the Section line to the Northwest corner of the South 1/2 of the South 1/2 of Section 1, Township 22 South, Range 30 East; thence East to the Northwest corner of the South 1/2 of the South 1/2 of Section 6, Township 22 South, Range 31 East; thence East to the Northeast corner of the South 1/2 of the South 1/2 of Section 6, Township 22 South, Range 31 East; thence North along the Section lines to the Northwest corner of Section 32, Township 21 South, Range 31 East; thence East along the Section lines to the West Right-of-Way line of State Road 520; thence North along the West Right-of-Way line of State Road 520 to the East West quarter section line of Section 27, Township 21 South Range 31 East; thence East to the center of Section 27, Township 21 South, Range 31 East; thence North along the quarter section lines to the North quarter corner of Section 22, Township 21 South, Range 31 East; thence East to the Southeast corner of Section 15, Township 21 South, Range 31 East; thence North along the Section lines to the North Right-of-Way line of State Road 426; thence East and Northeasterly along the North Right-of-Way line of State Road 426 to the West Section line of Section 5, Township 21 South, Range 32 East; thence North along the Section lines to the West quarter corner of Section 20, Township 20 South, Range 32 East; thence East to the East quarter corner of Section 20, Township 20 South, Range 32 East; thence East to the center of Section 21, Township 20 South, Range 32 East; thence North along the North-South quarter line of Section 21, Township 20 South, Range 32 East to the North Right-of-Way line of State Road 46; thence Southeasterly along the North Right-of-Way line of State Road 46 to the North-South quarter line of Section 26, Township 20 South, Range 32 East; thence South along the quarter section lines to the center of Section 2, Township 21 South, Range 32 East; thence East along the quarter Section lines to the center of Section 1, Township 21 South, Range 32 East; thence North along the quarter Section lines to the center of Section 36, Township 20 South, Range 32 East; thence East along the quarter section lines to the center of Section 33, Township 20 South, Range 33 East; thence South along the quarter section lines to the South quarter corner of Section 4, Township 21

South, Range 33 East; thence West along the Section lines to the Northeast corner of Section 7, Township 21 South, Range 33 East; thence South along the Section line to the Southeast corner of Section 7, Township 21 South, Range 33 East; thence West along the section line to the Southwest corner of Section 7, Township 21 South, Range 33 East; thence South along the Range line between Range 32 East and Range 33 East to the Southeast corner of Section 13, Township 21 South, Range 32 East; thence West along the Section line to the Northeast Corner of Section 23, Township 21 South, Range 32 East; thence South along the section lines to the Southeast corner of Section 2, Township 22 South, Range 32 East; thence West along the section line to the South quarter corner of Section 2, Townships 22 South, Range 32 East; thence South along the quarter section lines to the South quarter corner of Section 23, Township 22 South, Range 32 East; thence East along the Section lines to the Northeast corner of Section 30, Township 22 South, Range 33 East; thence South along the Section lines to the South Right-of-Way line of State Road 50; thence West along the South Right-of-Way line of State Road 50 to the North-South quarter Section line of Section 31, Township 22 South, Range 33 East; thence South along the quarter Section lines to the South quarter corner of Section 7, Township 23 South, Range 33 East; thence West to the Southwest corner of Section 7, Township 23 South, Range 33 East; thence South along the Range line between Range 32 East and Range 33 East to the Southwest corner of Section 19, Township 23 South, Range 33 East; thence East along the section line to the North quarter corner of Section 30, Township 23 South, Range 33 East; thence South along the quarter section lines to the South quarter corner of Section 6, Township 24 South, Range 33 East; thence East along the section line to the Southeast corner of Section 6, Township 24 South, Range 33 East; thence South along the section lines to the East quarter corner of Section 31, Township 24 South, Range 33 East; thence West along the quarter section lines to the West quarter corner of Section 36, Township 24 South, Range 32 East; thence South along the Section lines to the West quarter corner of Section 1, Township 25 South, Range 32 East; thence East along the quarter section lines to the East quarter corner of Section 6, Township 25 South, Range 33 East; thence South along the Section lines to the Southeast corner of Section 19, Township 25 South, Range 33 East; thence West along the section line to the Southwest corner of Section 19, Township 25

South, Range 33 East; thence South along the range line between Range 32 East and Range 33 East to the Northeast corner of Section 1, Township 26 South, Range 32 East which is also the Point of Beginning.

NOTE: This description is based on U.S. Geological Survey 7.5 minute series quadrant maps and Florida Department of Transportation County Maps.

LEGAL DESCRIPTION

MARION COUNTY KARST AREA

BEGIN at the intersection of the westerly right-of-way line of Interstate Highway 75 with the Sumter-Marion County line; thence northerly along the westerly right-of-way line of Interstate Highway 75 to the intersection of said westerly right-of-way line with the northerly right-of-way line of State Road 318; thence northeasterly and easterly along the northerly right-of-way line of State Road 318 to the intersection of said right-of-way line with the westerly line of Section 28, Township 12 South, Range 21 East;l thence north along the section line to the northwest corner of Section 28, Township 12 South, Range 21 East; thence east along he section lines to the Alachua-Marion County line; thence easterly along the Alachua-Marion County line (following the meanderings thereof) to the range line between Range 22 and Range 23 East, the same being the Alachua-Marion County line; thence north along the Alachua-Marion County line and the range line between Range 22 and Range 23 East to the northwest corner of Section 18, Township 12 South, Range 23 East; thence east along the section line to the northeast corner of Section 18, Township 12 South, Range 23 East; thence south along the section lines to the southwest corner of Section 20, Township 12 South, Range 23 East; thence east along the section line to the southeast corner of Section 20, Township 12 South, Range 23 East; thence south along the section line to the northwest corner of Section 33, Township 12 South, Range 23 East; thence east along the section line to the northeast corner of Section 33, Township 12 South, Range 23 East, thence south along the section lines to the southwest corner of Section 3, Township 13 South, Range 23 East; thence east along the section lines to the southeast corner of Section 1, Township 13 South, Range 23 East; thence south along the range line between Range 23 and Range 24 East to the southeast corner of Section 1, Township 14 South, Range 23 East; thence west along the section line to the southeast corner of Section 2, Township 14 South, Range 23 East; thence south along the section lines to the southeast corner of Section 14, Township 14 South, Range 23 East; thence west along the section line to the southwest corner of Section 14, Township 14 South, Range 23 East; thence south along the section lines to the southeast corner of Section 34, Township line between Townships 14 and 15 South to the northeast corner of Section 4, Township 15 South, Range 23 East; thence south along the section line to the southeast corner of Section 4, Township 15 South, Range 23

East; thence west along the section line to the southwest corner of Section 4, Township 15 South, Range 23 East; thence south along the section lines to the southwest corner of Section 21, Township 15 South, Range 23 East; thence east along the section line to the southeast corner of Section 21, Township 15 South, Range 23 East; thence south along the section line to the northwest corner of Section 34, Township 15 South, Range 23 East; thence east along the section line to the northeast corner of Section 34, Township 15 South, Range 23 East; thence south along the section lines to the northwest corner of Section 11, Township 16 South; Range 23 East; thence east along the section line to the northeast corner of Section 11, Township 16 South, Range 23 East; thence south along the section lines to the northwest corner of Section 24, Township 16 South, Range 23 East; thence east along the section line to the northeast corner of Section 24, Township 16 South, Range 23 East; thence south along the range line between Range 23 and Range 24 East to the northwest corner of Section 31, Township 16 South, Range 24 East; thence east along the section line to the northeast corner of Section 31, Township 16 South, Range 24 East; thence south along the section lines to the intersection of the division line between Sections 5 and 6, Township 17 South, Range 24 East with the waters of Lake Weir; thence south crossing the water of Lake Weir to the intersection of the division line between Sections 19 and 20, Township 17 South, Range 24 East with the waters of Lake Weir; thence south along the section lines to the southeast corner of Section 31, Township 17 South, Range 24 East, and the Marion-Lake County line, also being the township line between Townships 17 and 18 South; thence west along the Marion-Lake County line and west along the Sumter-Marion County line, also being the township line between Townships 17 and 18 South, to the POINT OF BEGINNING.

NOTE: This description is based on U.S. Geological Survey 7.5 minute series quadrangle maps and Florida Department of Transportation County Maps.

LEGAL DESCRIPTION

ALACHUA COUNTY KARST AREA

BEGIN at the southeast corner of Section 36, Township 11 South, Range 18 East on the Alachua-Levy County line; thence north along the range line between Range 18 and Range 19 East to the northwest corner of Section 19, Township 9 South, Range 19 East; thence east along the section lines to the northeast corner of Section 20, Township 9 South, Range 19 East; thence south along the section lines to the southeast corner of Section 29, Township 9 South, Range 19 East; thence east along the section lines to the northeast corner of Section 36, Township 9 South, Range 19 east; thence south along the range line between Range 19 and Range 20 East to the southeast corner of Section 36, Township 9 South, Range 19 East; thence east along the township line between Township 9 and Township 10 South to the intersection of said township line with the easterly right-of-way line of State Road No. 25 (U.S. Route No. 441); thence south along the easterly right-of-way line of State Road No. 25 (U.S. Route No. 441) to the intersection of said easterly right-of-way line with the northerly right-of-way line of State Road No. 26; thence east along said northerly right-of-way line to the intersection of said northerly right-of-way line with the division line between Section 4 and Section 5, Township 10 South, Range 20 East; thence south along the section lines to the southwest corner of Section 9, Township 10 South, Range 20 East; thence south to the northwest corner of Section 21 Township 10 South, Range 20 East; thence east along the section lines to the northeast corner of Section 22, Township 10 South, Range 20 East; thence south along the section lines and along a southerly prolongation of the east line of Section 27, Township 10 South, Range 20 East, to the intersection of said southerly prolongation with an easterly prolongation of the north line of Section 6, Township 11 South, Range 20 East; thence west along said easterly prolongation to the northeast corner of Section 6, Township 11 South, Range 20 East; thence west along the township line between Township 10 and Township 11 South, to the northwest corner of Section 1, Township 11 South, Range 19 East; thence south along the section lines to the southeast corner of Section 14, Township 11 South, Range 19 East; thence west along the section line to the southwest corner of Section 14, Township 11 South, Range 19 East; thence south along the section lines to the southeast corner of Section 34, Township 11 South, Range 19 East, and the Alachua Marion County line, also being the township

line between Township 11 and Township 12 South; thence west along the Alachua-Marion County line and west along the Alachua-Levy County line to the POINT OF BEGINNING.

NOTE: This description is based on U.S. Geological Survey 7.5 minute series Quadrangle maps and Florida Department of Transportation County Maps.

LEGAL DESCRIPTION

LAKE APOPKA HYDROLOGIC BASIN

Begin at the Northeast corner of Section 29, Township 22 South, Range 28 East; thence South along the Section lines to the Southeast corner of the Northeast quarter of Section 32, Township 22 South, Range 28 East; thence west along the quarter section line to the Southeast corner of the Northwest quarter of Section 31, Township 22 South, Range 28 East; thence South along the quarter section line to the Southeast corner of the Southwest quarter of Section 31, Township 22 South, Range 28 East; thence West along the Section lines to the Southwest corner of the Southeast quarter of Section 36, Township 22 South, Range 27 East; thence South along the quarter section line to the Southeast corner of the Southwest quarter of Section 1, Township 23 South, Range 27 East; thence West along the Section line to the Southeast corner of Section 2, Township 23 South, Range 27 East; thence South along the Section line to the Southeast corner of Section 11, Township 23 South, Range 27 East; thence West along the Section lines to the Southeast corner of the Southwest quarter of Section 7, Township 23 South, Range 27 East; thence South along the quarter section line to the Southeast corner of the Northeast quarter of the Northwest quarter of Section 18, Township 23 South, Range 27 East; thence West along the south line of the Northeast quarter of the Northwest quarter and along the south line of the Northwest quarter of the Northwest quarter, to the Southwest corner of the Northwest quarter of the Northwest quarter of Section 18, Township 23 South, Range 27 East; thence North along the Section line to the Southwest corner of Section 7, Township 23 South, Range 27 East: thence West along the Section line to the Southwest corner of the Southeast quarter of Section 12, Township 23 South, Range 26 East; thence North along the quarter section line to the Southeast corner of the Southwest quarter of Section 1, Township 23 South, Range 26 East; thence West along the Section lines to the Southwest corner of the Southeast quarter of Section 6, Township 23 South, Range 26 East; thence North along the quarter section line to the Northwest corner of the Northeast quarter of Section 6, Township 23 South, Range 26 East; thence East along the Section line to the Southwest corner of Section 32, Township 22 South, Range 26 East; thence North along the Section line to the Northwest corner of Section 32, Township 22 South, Range 26 East; thence East along the Section line to the Southwest corner of Section 28, Township 22 South, Range 26 East; thence North along the Section line to the Southeast corner of the Northeast Quarter of Section 5, Township 22 South, Range 26 East; thence West along the quarter section line to the Southwest corner of the Northwest Quarter of Section 5, Township 22 South, Range 26 East; thence North along the Section lines to the Northwest corner of

Section 32, Township 21 South, Range 26 East; thence East along the Section line to the Northeast corner of the Northwest quarter of Section 32, Township 21 South, Range 26 East; thence North along the quarter section lines to the Northwest corner of the Northeast quarter of Section 20, Township 21 South, Range 26 East; thence East along the Section line to the Southwest corner of Section 16, Township 21 South, Range 26 East; thence North along the Section line to the Northwest corner of Section 16, Township 21 South, Range 26 East; thence East along the Section line to the Southwest corner of the Southeast quarter of Section 9, Township 21 South, Range 26 East; thence North along the quarter section line to the Northwest corner of the Southeast quarter of Section 4, Township 21 South, Range 26 East; thence West along the quarter section line to the Southwest corner of the Northwest quarter of Section 4, Township 21 South, Range 26 East; thence North along the Section line to the Northwest corner of Section 4, Township 21 South, Range 26 East and the South line of Section 33, Township 20 South, Range 26 East; thence West along said South line to the Southwest corner of said Section 33, Township 20 South, Range 26 East; thence North along the section lines to the Northwest corner of Section 28, Township 20 South, Range 26 East; thence East along the section lines to the Southwest corner of the Southeast quarter of Section 24, Township 20 South, Range 26 East; thence North along the quarter section line to the Northwest corner of the Southeast quarter of Section 24, Township 20 South, Range 26 East; thence East along the quarter section line to the Northeast corner of the Southeast quarter of Section 24, Township 20 South, Range 26 East; thence North along the Section line to the Northwest corner of Section 19, Township 20 South, Range 27 East; thence East along the Section lines to the Northwest corner of Section 21, Township 20 South, Range 27 East; thence North along the Section line to the Northwest corner of the Southwest quarter of Section 16, Township 20 South, Range 27 East; thence East along the quarter section line to the Northeast corner of the Southeast quarter of Section 16, Township 20 South, Range 27 East; thence North along the Section line to the Northwest corner of Section 15, Township 20 South, Range 27 East; thence East along the Section line to the Northeast corner of Section 14, Township 20 South, Range 27 East; thence South along the Section lines to the Southeast corner of Section 23, Township 20 South, Range 27 East; thence West along the Section line to the Southwest corner of the Southeast quarter of Section 23, Township 20 South, Range 27 East; thence South along the quarter section line to the Northwest corner of the Northeast quarter of Section 35, Township 20 South, Range 27 East; thence East along the Section line to the Northeast corner of Section 35, Township 20 South, Range 27 East; thence South along the Section line to the Southeast corner of Section 35, Township 20 South,

Range 27 East; thence East along the Section line to the Southwest corner of the Southeast quarter of Section 36, Township 20 South, Range 27 East; thence North along the quarter section line to the Northwest corner of the Southeast quarter of Section 36, Township 20 South, Range 27 East; thence East along the quarter section line to the Northeast corner of the Southeast quarter of Section 36, Township 20 South, Range 27 East; thence North along the Section line to the Northwest corner of Section 31, Township 20 South, Range 28 East; thence East along the Section lines to the Northeast corner of the Northwest quarter of Section 33, Township 20 South, Range 28 East; thence South along the quarter section lines to the Southeast corner of the Southwest quarter of Section 9, Township 21 South, Range 28 East; thence East along the Section line to the Northwest corner of the Northeast quarter of the Northeast quarter of Section 16, Township 21 South, Range 28 East; thence South along the quarter-quarter Section lines to the Southwest corner of the Southeast quarter of the Southeast quarter of Section 16, Township 21 South, Range 28 East; thence West along the Section line to the Southwest corner of the Southeast quarter of Section 16, Township 21 South, Range 28 East; thence South along the quarter section line to the Southeast corner of the Southwest quarter of Section 21, Township 21 South, Range 28 East; thence West along the Section line to the Southeast corner of Section 20, Township 21 South, Range 28 East; thence South along the Section line to the Southeast corner of Section 32, Township 21 South, Range 28 East; thence West along the Section line to the Southwest corner of the Southeast quarter of Section 32, Township 21 South, Range 28 East; thence South along the quarter section line to the Southwest corner of the Northeast quarter of Section 8, Township 22 South, Range 28 East; thence East along the quarter section line to the Southeast corner of the Northeast quarter of Section 8, Township 22 South, Range 28 East; thence South along the Section line to the Southeast corner of Section 8, Township 22 South, Range 28 East; thence West along the Section line to the Southeast corner of Section 7, Township 22 South, Range 28 East; thence South along the Section line to the Southeast corner of the Northeast quarter of Section 18, Township 22 South, Range 28 East; thence West along the quarter section line to the Northeast corner of the Southeast quarter of Section 13, Township 22 South, Range 27 East; thence South along the Section line to the Southeast corner of Section 13, Township 22 South, Range 27 East; thence West along the Section line to the Southwest corner of the Southeast quarter of Section 13, Township 22 South, Range 27 East; thence South along the quarter section line to the Northwest corner of the Northeast quarter of Section 25, Township 22 South, Range 27 East; thence East along the Section lines to the Northeast corner of Section 29, Township 22 South, Range 28 East, and the Point of Beginning.

NOTE: This description is based on U.S. Geological Survey 7.5 minute series quadrangle maps and St. Johns River Water Management District Hydrologic Basin maps.

LEGAL DESCRIPTION

TOMOKA RIVER HYDROLOGIC BASIN

Begin at the intersection of the West line of the Northeast 1/4 of Section 35, Township 15 South, Range 32 East, and the southerly right-of-way line of State Road 400. Thence Northerly along said West line of said Northeast 1/4, to the Northwest corner of said Northeast corner of said Section 35; Thence Northerly to the Southmost corner of Section 39, Township15 South, Range 32 East; Thence Northeasterly along the Southeast line of said Section 39, a distance of 5400 feet to a point; Thence Northwesterly to a point on the Northwest line of said Section 39, said point lying 4600 feet northeast of the Westmost corner of said Section as measured along the Northwesterly line thereof; Thence Northeasterly to the Northmost corner of Section 13, Township 15 South, Range 32 East; Thence Northeasterly and perpendicular to the Southwest line of Section 38, Township 15 South, Range 32 East, a distance of 2000 feet; Thence Northwesterly and parallel to the Southwest line of said Section 38, a distance of 2000 feet; Thence Northeasterly and perpendicular to the Southwest line of said Section 38, a distance of 2000 feet; Thence Northwesterly to the Southwest corner of Section 1, Township 15 South, Range 32 East; Thence Northerly along the West line of said Section 1, to an intersection with the Southwest line of Section 37, Township 15 South, Range 32 East; Thence Northwesterly along the Southwest line of said Section 37 and the Southwest line of Section 42, Township 14 South , Range 32 East, to the Northwest corner of said Section 42; Thence Northeasterly along the Northwest line of said Section 42, to an intersection with the east right-of-way of U.S. Highway No. 1; Thence Northwesterly along said east right-of-way line, to an intersection with the south right-of-way of State Road No. 40; Thence Northeasterly along said south right-of-way, a distance of 1200 feet, more or less, to a point 1300 feet southwest of the southwesterly edge of water of the Halifax River, as depicted on USGS Quadrangle Map “Ormond Beach, FLA”, photorevised 1980; Thence Northwesterly and parallel to said southwesterly edge of water, a distance of 26,000 feet; Thence Southwesterly a distance of 9200 feet to an intersection with a point on the Southwest line of Section 40, Township 13 South, Range 32 East, said point lying 4000 feet southeast of

the Northwest corner of said Section 40 as measured along said Southwest line; Thence Northwesterly along the Southwest line of said Section 40 and Section 39, Township 13 South, Range 32 East, a distance of 6100 feet; Thence Northwesterly a distance of 6800 feet more or less to the intersection of the west right-of-way line of Interstate Highway No. 95, and the west line of Section 24, Township 13 South, Range 31 East; Thence Northwesterly along said west right-of-way line of Interstate Highway No. 95, a distance of 2600 feet; Thence Southwesterly to the Southeast corner of the Southwest 1/4 of the Southwest 1/4 of Section 23, Township 13 South, Range 31 East; Thence Southerly to the intersection of the southwest right-of-way line of U.S. Highway No. 1 and the south line of the North 1/2 of Section 26, Township 13 South, Range 31 East; Thence Easterly along said south line of the North 1/2 of Section 26, to the Northwest corner of the Southwest 1/4 of said Section 26; Thence Easterly to the Northwest corner of the Northeast 1/4 of the Southwest 1/4 of Section 27, Township 13 South, Range 31 East; Thence Southwesterly to the Southwest corner of the Northeast 1/4 of Section 33, Township 13 South, Range 31 East; Thence Easterly to the Southwest corner of the Northeast 1/4 of the Northeast 1/4 of Section 32, Township 13 South, Range 31 East; Thence Southeasterly to the Southeast corner of said Section 32; Thence Southerly to the Southeast corner of Section 8, Township 14 South, Range 31 East; Thence Southwesterly to the Northwest corner of the Southwest 1/4 of the Southwest 1/4 of Section 19, Township 14 South, Range 31 East; Thence Southerly to the Southwest corner of said Section 19; Thence Southeasterly to the intersection of the North line of the South 1/4 of Section 30, Township 14 South, Range 31 East, and the south right-of-way line of State Road No. 40; Thence Easterly along said south right-of-way line of State Road No. 40 to a point 500 feet west of the East line of said Section 30, as measured along said south right-of-way line; Thence Southerly to a point on the south line of said Section 30, said point lying 700 feet west of the Southeast corner of said Section 30; Thence Southwesterly to the Southwest corner of the Northeast 1/4 of Section 31, Township 14 South, Range 31 East; Thence Southeasterly to a point on the East line of said Section 31, said point lying 600 feet north of the Southeast corner of said Section 31; Thence Southeasterly to the Northwest corner of Section 3, Township 15 South, Range 31 East; Thence Southeasterly to the Southwest corner of the Southeast 1/4

of said Section 3; Thence Southeasterly to the Southeast corner of Section 10, Township 15 South, Range 31 East; Thence Southeasterly to the Northwest corner of the Northeast 1/4 of the Southwest 1/4 of Section 14, Township 15 South, Range 31 East; Thence Easterly to the Northeast corner of the Southwest 1/4 of said Section 14; Thence Southerly to the Southeast corner of the Southwest 1/4 of said Section 14; Thence Southeasterly to a point on the South line of Section 23, Township 15 South, Range 31 East, said point lying 750 feet west of the Southeast corner of said Section 23; Thence Southeasterly to the Southeast corner of the Northeast 1/4 of Section 26, Township 15 South, Range 31 East; Thence Southwesterly to the Southwest corner of the Southeast 1/4 of the Southeast 1/4 of said Section 26; Thence Southeasterly to the Southeast corner of the Northeast 1/4 of Section 35, Township 15 South, Range 31 East; Thence Southwesterly to the Southwest corner of the Northeast 1/4 of the Northeast 1/4 of Section 9, Township 16 South, Range 31 East; Thence Southwesterly to the Southeast corner of the Northeast 1/4 of the Southwest 1/4 of said Section 9; Thence Westerly to the Southwest corner of the Northeast 1/4 of the Southwest 1/4 of said Section 9; Thence Southerly to the Southwest corner of the Southeast 1/4 of the Southwest 1/4 of said Section 9; Thence Southwesterly to the Northwest corner of the Southwest 1/4 of Section 16, Township 16 South, Range 31 East; Thence Southerly to the Southwest corner of the Northwest 1/4 of the Southwest 1/4 of said Section 16; Thence Southeasterly to the Northwest corner of the Northeast 1/4 of Section 21, Township 16 South, Range 31 East; Thence Southeasterly to the Southeast corner of said Section 21; Thence Southeasterly to a point on the South line of the North 1/2 of Section 34, Township 16 South, Range 31 East, said point lying 600 feet west of the East line of said Section 34, as measured along said South line of said North 1/2 of Section 34; Thence Southerly and parallel to the East line of Section 34, Township 16 South, Range 31 East, and Section 3, Township 17 South, Range 31 East, a distance of 7100 feet; Thence Southeasterly to the Southeast corner of the Northeast 1/4 of the Southeast 1/4 of Section 11, Township 17 South, Range 31 East; Thence Southeasterly to the Southeast corner of the Northwest 1/4 of Section 13, Township 17 South, Range 31 East; Thence Northeasterly to the Northeast corner of said Section 13; Thence Northerly to the Northwest corner of the Southwest 1/4 of the Southwest 1/4 of Section 7, Township 17

South, Range 32 East; Thence Easterly to the Southeast corner of the Northeast 1/4 of the Southwest 1/4 of said Section 7; Thence Northerly to the Northwest corner of the Northeast 1/4 of said Section 7; Thence Northwesterly to the Northwest corner of Section 6, Township 17 South, Range 32 East; Thence Northeasterly to the Northwest corner of the Northeast 1/4 of the Southwest 1/4 of Section 31, Township 16 South, Range 32 East; Thence Southeasterly to the Southeast corner of the Southwest 1/4 of the Southwest 1/4 of Section 32, Township 16 South, Range 32 East; Thence northerly to the Northeast corner of said Southwest 1/4 of said Southwest 1/4 of Section 32; Thence northwesterly to a point on the South line of Section 29, Township 16 South, Range 32 East, said point lying 600 feet easterly of the Southwest corner of said Section 29 as measured along the South line thereof; Thence northwesterly to the Northwest corner of the Southwest 1/4 of the Southwest 1/4 of said Section 29; Thence northwesterly to the Northwest corner of the Northeast 1/4 of the Northeast 1/4 of Section 30, Township 16 South, Range 32 East; Thence northwesterly to the Northeast corner of the Northwest 1/4 of the Northwest 1/4 of Section 19, Township 16 South, Range 32 East; Thence northeasterly to the Northeast corner of the Southeast 1/4 of the Southwest 1/4 of Section 18, Township 16 South, Range 32 East; Thence northerly to the Northeast corner of the Southwest 1/4 of said Section 18; Thence northeasterly to the Southeast corner of the Northeast 1/4 of the Northeast 1/4 of said Section 18; Thence easterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 17, Township 16 South, Range 32 East; Thence northerly to the Northeast corner of the Northwest 1/4 of Section 17; Thence northeasterly to the Northeast corner of the Southwest 1/4 of the Southeast 1/4 of Section 8, Township 16 South, Range 32 East; Thence southeasterly to the Southeast corner of said Section 8; Thence southeasterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 16, Township 16 South, Range 32 East; Thence easterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 15, Township 16 South, Range 32 East; Thence southeasterly to the Northwest corner of the Southeast 1/4 of the Southeast 1/4 of said Section 15; Thence northeasterly to a point on the East line of said Section 15, lying 600 feet south of the Northeast corner of said Section as measured along the East line thereof; Thence southeasterly to the Southeast corner of the Southwest 1/4 of the Northwest 1/4 of Section 14,

Township 16 South, Range 32 East; Thence northeasterly to a point on the North line of said Section 14, lying 1800 feet east of the Northwest corner of said Section as measured along the North line thereof; Thence easterly to the Southwest corner of the Southeast 1/4 of the Southeast 1/4 of Section 11, Township 16 South, Range 32 East; Thence northerly to the Northwest corner of said Southeast 1/4 of said Southeast 1/4 of said Section 11; Thence northeasterly to a point on the East line of said Section 11, lying 2000 feet north of the Southeast corner of said Section as measured along the East line thereof; Thence northeasterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 12, Township 16 South, Range 32 East; Thence easterly to the Southeast corner of the Northwest 1/4 of the Northeast 1/4 of said Section 12; Thence northwesterly to the Northeast corner of the Southeast 1/4 of the Southwest 1/4 of Section 1, Township 16 South, Range 32 East; Thence westerly to the Northwest corner of said Southeast 1/4 of said Southwest 1/4 of Section 1; Thence northwesterly to the point of intersection of the West line of the Northeast 1/4 of Section 35, Township 15 South, Range 32 East and the south right-of-way line of State Road 400, and the Point of Beginning.

NOTE: This description is based on U.S. Geological Survey 7.5 minute series quadrant maps and St. Johns River Water Management District Hydrologic Basin maps.

LEGAL DESCRIPTION

SPRUCE CREEK HYDROLOGIC BASIN

Begin at the intersection of the West line of the Northeast 1/4 of Section 35, Township 15 South, Range 32 East, and the southerly right-of-way line of State Road 400. Thence northeasterly along said southerly right of way line of State Road 400, to an intersection with the North line of the South 1/2 of Section 30, Township 15 South, Range 33 East; Thence southerly along the East line of the Southwest 1/4 of said Section 30, to the Northeast corner of the Northwest 1/4 of Section 31, Township 15 South, Range 33 East; Thence southerly along the East line of the West 1/2 of said Section 31, to the Northeast corner of the Northwest 1/4 of Section 6, Township 16 South, Range 33 East; Thence southeasterly to a point on the East line of said Section 6, lying 500 feet north of the Southeast corner of said Section as measured along the East line thereof; Thence southeasterly to a point on the North line of Section 8, Township 16 South, Range 33 East, said point lying 500 feet east of the Northwest corner of said Section as measured along the North line thereof; Thence southerly to a point on the South line of said Section 8, said point lying 500 feet east of the Southwest corner of said Section as measured along the South line thereof; Thence southeasterly to the Southwest corner of the Southeast 1/4 of the Southeast 1/4 of Section 17, Township 16 South, Range 33 East; Thence easterly to the Northeast corner of the Northwest 1/4 of the Northwest 1/4 of Section 21, Township 16 South, Range 33 East; Thence southeasterly to the Southwest corner of the Southeast 1/4 of the Southeast 1/4 of said Section 21; Thence southeasterly to the west-most corner of Section 38, Township 16 South, Range 33 East; Thence easterly to an intersection with a southerly projection of the East line of the West 1/2 of Section 22, Township 16 South, Range 33 East; Thence northerly to the Northeast corner of the Southwest 1/4 of said Section 22; Thence easterly along the South line of the North 1/2 of said Section 22 and the easterly prolongation thereof, to an intersection with the West right-of-way line of U.S. Highway No. 1; Thence southerly and southeasterly along said West right-of-way line, to an intersection with a northerly projection of the West line of Section 36, Township 16 South, Range 33 East; Thence southerly to the Southwest corner of the Northwest 1/4 of said Section 36; Thence easterly to the Southeast corner of the Northwest 1/4 of said Section 36; Thence

southeasterly to an intersection with a point on the Southeast line of Section 40, Township 17 South, Range 33 East, said point lying 9400 feet northeasterly of the southmost corner of said Section 40 as measured along the Southeast line thereof; Thence southerly to the Northeast corner of the Southwest 1/4 of Section 12, Township 17 South, Range 33 East; Thence southeasterly to an intersection with a point on the southeasterly right-of-way line of State Road 44, said point also lying on the East line of the West 1/2 of Section 19, Township 17 South, Range 34 East; Thence southerly to the westmost corner of Section 48, Township 17 South, Range 34 East; Thence southwesterly along the southwesterly prolongation of the Northwest line of said Section 48, a distance of 1000 feet to a point; Thence southwesterly to an intersection with a point on the South line of Section 44, Township 17 South, Range 33 East, said point lying 2300 feet easterly of the Southwest corner of said Section 44 as measured along the South line thereof; Thence southerly for 3800 feet to a point in the Ambrose Hull Grant Section 52, Township 17 South, Range 34 East, said point lying 1800 feet northwest of the Southeasterly line of said Section 52, and 1400 feet northeast of the Southwesterly line of said Section 52; Thence southwesterly to a point on the West line of the East 1/2 of Section 1, Township 18 South, Range 33 East, said point lying 2200 feet south of the North line of said Section 1 as measured along the West line of the East 1/2 thereof; Thence northerly to the Southwest corner of the Southeast 1/4 of Section 27, Township 17 South, Range 33 East; Thence northwesterly to the Northwest corner of said Section 27; Thence northerly along the line dividing Sections 21 and 22, Township 17 South, Range 33 East, to the north right-of-way line of State Road No. 44; Thence westerly along said north right-of-way line to the West line of Section 20, Township 17 South, Range 33 East; Thence northerly along the West line of said Section 20 to a point 1000 feet south of the Northwest corner thereof; Thence westerly and parallel to the North lines of Section 19, Township 17 South, Range 33 East, and Section 24, Township 17 South, Range 32 East, to an intersection with the West line of the East 1/2 of said Section 24; Thence southerly along said West line of said East 1/2, to an intersection with the north right-of-way line of State Road No. 44; Thence westerly along said north right-of-way line to an intersection with the west right-of-way line of State Road No. 415; Thence southwesterly to the Northwest corner of the Southwest 1/4 of the

Southwest 1/4 of Section 23, Township 17 South, Range 32 East; Thence westerly to the Northeast corner of the Northwest 1/4 of the Southwest 1/4 of Section 22, Township 17 South, Range 32 East; Thence southwesterly to the Northwest corner of the Southwest 1/4 of the Southwest 1/4 of said Section 22; Thence westerly to the Northwest corner of the Southeast 1/4 of the Southeast 1/4 of Section 21, Township 17 South, Range 32 East; Thence northerly to the Northwest corner of the Northeast 1/4 of the Northeast 1/4 of said Section 21; Thence northwesterly to the Northwest corner of the Southeast 1/4 of Section 16, Township 17 South, Range 32 East; Thence westerly to the Northwest corner of the Northeast 1/4 of the Southwest 1/4 of said Section 16; Thence northwesterly to the Northwest corner of said Section 16; Thence northwesterly to the Northwest corner of the Northeast 1/4 of the Northeast 1/4 of Section 8, Township 17 South, Range 32 East; Thence northwesterly to the Southeast corner of the Southwest 1/4 of the Southwest 1/4 of Section 32, Township 16 South, Range 32 East; Thence northerly to the Northeast corner of said Southwest 1/4 of said Southwest 1/4 of Section 32; Thence northwesterly to a point on the South line of Section 29, Township 16 South, Range 32 East, said point lying 600 feet easterly of the Southwest corner of said Section 29 as measured along the South line thereof; Thence northwesterly to the Northwest corner of the Southwest 1/4 of the Southwest 1/4 of said Section 29; Thence northwesterly to the Northwest corner of the Northeast 1/4 of the Northeast 1/4 of Section 30, Township 16 South, Range 32 East; Thence northwesterly to the Northeast corner of the Northwest 1/4 of the Northwest 1/4 of Section 19, Township 16 South, Range 32 East; Thence northeasterly to the Northeast corner of the Southeast 1/4 of the Southwest 1/4 of Section 18, Township 16 South, Range 32 East; Thence northerly to the Northeast corner of the Southwest 1/4 of said Section 18; Thence northeasterly to the Southeast corner of the Northeast 1/4 of the Northeast 1/4 of said Section 18; Thence easterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 17, Township 16 South, Range 32 East; Thence northerly to the Northeast corner of the Northwest 1/4 of Section 17; Thence northeasterly to the Northeast corner of the Southwest 1/4 of the Southeast 1/4 of Section 8, Township 16 South, Range 32 East; Thence southeasterly to the Southeast corner of said Section 8; Thence southeasterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 16,

Township 16 South, Range 32 East; Thence easterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 15, Township 16 South, Range 32 East; Thence southeasterly to the Northwest corner of the Southeast 1/4 of the Southeast 1/4 of said Section 15; Thence northeasterly to a point on the East line of said Section 15, lying 600 feet south of the Northeast corner of said Section as measured along the East line thereof; Thence southeasterly to the Southeast corner of the Southwest 1/4 of the Northwest 1/4 of Section 14, Township 16 South, Range 32 East; Thence northeasterly to a point on the North line of said Section 14, lying 1800 feet east of the Northwest corner of said Section as measured along the North line thereof; Thence easterly to the Southwest corner of the Southeast 1/4 of the Southeast 1/4 of Section 11, Township 16 South, Range 32 East; Thence northerly to the Northwest corner of said Southeast 1/4 of said Southeast 1/4 of said Section 11; Thence northeasterly to a point on the East line of said Section 11, lying 2000 feet north of the Southeast corner of said Section as measured along the East line thereof; Thence northeasterly to the Southeast corner of the Northeast 1/4 of the Northwest 1/4 of Section 12, Township 16 South, Range 32 East; Thence easterly to the Southeast corner of the Northwest 1/4 of the Northeast 1/4 of said Section 12; Thence northwesterly to the Northeast corner of the Southeast 1/4 of the Southwest 1/4 of Section 1, Township 16 South, Range 32 East; Thence westerly to the Northwest corner of said Southeast 1/4 of said Southwest 1/4 of Section 1; Thence northwesterly to the point of intersection of the West line of the Northeast 1/4 of Section 35, Township 15 South, Range 32 East and the south right-of-way line of State Road 400, and the Point of Beginning.

NOTE: This description is based on U.S. Geological Survey 7.5 minute series quadrant maps and St. Johns River Water Management District Hydrologic Basin maps.

APPENDIX C

Methodology and Design Example for the Modified Rational Hydrograph Method

Methodology and Design Example for the Modified Rational Hydrograph Method

C.1 Description

The rational method is a popular method for estimating peak runoff rates for small urban areas. The rational formula is expressed as:

$$Q_P = C\,I\,A \qquad \text{(C.1-1)}$$

where: Q_P = Peak runoff rate (*cfs*)
C = Runoff coefficient
I = Rainfall intensity (*in/hr*)
A = Drainage area (*acres*)

Values for the runoff coefficient (C) are contained in Table G1-1. The intensity (I) is determined from intensity-duration-frequency (IDF) curves such as those published by the FDOT (1987a). The rational method gives peak discharge rates rather than a runoff hydrograph.

Table C 1.1 Runoff Coefficients (C) for a Design Storm Return Period of Ten Years or Less[1]

		Sandy Soils		Clay Soils	
Slope	Land Use	Min.	Max.	Min.	Max.
Flat (0-2%)	Lawns	0.05	0.10	0.13	0.17
	Rooftops and pavement	0.95	0.95	0.95	0.95
	Pervious pavements[2]	0.75	0.95	0.90	0.95
	Woodlands	0.10	0.15	0.15	0.20
	Pasture, grass, and farmland[3]	0.15	0.20	0.20	0.25
	Residential				
	SFR: 1/2 acre lots and larger	0.30	0.35	0.35	0.45
	SFR: smaller lots and duplexes	0.35	0.45	0.40	0.50
	MFR: apartments, condominiums	0.45	0.60	0.50	0.70
	Commercial and Industrial	0.50	0.95	0.50	0.95
Rolling (2-7%)	Lawns	0.10	0.15	0.18	0.22
	Rooftops and pavements	0.95	0.95	0.95	0.95
	Pervious pavements[2]	0.80	0.95	0.90	0.95
	Woodlands	0.15	0.20	0.20	0.25

	Pasture, grass, and farmland[3]	0.20	0.25	0.25	0.30
	Residential				
	SFR: 1/2 acre lots and larger	0.35	0.50	0.40	0.55
	SFR: smaller lots and duplexes	0.40	0.55	0.45	0.60
	MFR: apartments, condominiums	0.50	0.70	0.60	0.80
	Commercial and Industrial	0.50	0.95	0.60	0.95
Steep (>7%)	Lawns	0.15	0.20	0.25	0.35
	Rooftops and pavements	0.95	0.95	0.95	0.95
	Pervious pavements[2]	0.85	0.95	0.90	0.95
	Woodlands	0.20	0.25	0.25	0.30
	Pasture, grass, and farmland[3]	0.25	0.35	0.30	0.40
	Residential				
	SFR: 1/2 acre lots and larger	0.40	0.55	0.50	0.65
	SFR: smaller lots and duplexes	0.45	0.60	0.55	0.70
	MFR: apartments, condominiums	0.60	0.75	0.65	0.85
	Commercial and Industrial	0.60	0.95	0.65	0.95

Sources: Florida Department of Transportation, 1987; Wanielista, 1990

[1]For 25- to 100-yr recurrence intervals, multiply coefficient by 1.1 and 1.25, respectively, and the product cannot exceed 1.0.
[2]Coefficients assume good ground cover and conservation treatment.
[3]Depends on depth and degree of permeability of underlying strata.
Note: SFR = Single Family Residential;
MFR = Multi-Family Residential

However, the Suwannee River Water Management District (1990) reports that the traditional rational formula can be modified to generate a runoff hydrograph by utilizing the rainfall intensity for various increments of the storm. The rate of discharge at any point in time during a storm can be calculated by combining the rainfall intensity for that time increment with the traditional rational formula. The modified rational hydrograph equation is as follows:

$$Q = C\,(I/P_{Total})\,(P_{Total})\,A \qquad \text{(C.1-2)}$$

where: Q = Discharge for a given time increment (cfs)
C = Runoff coefficient
I/P_{Total} = Intensity for a given time increment (in/hr-in)

P_{Total} = Total rainfall depth (in)
A = Drainage area (acres)

The Suwannee River Water Management District (SRWMD) modified rational method, which was also adopted by the Florida Department of Transportation (FDOT) for their Drainage Connection permits (FDOT 1987b), utilizes rainfall data from the SRWMD and FDOT to determine values of I/P_{Total} and P_{Total} respectively. The SRWMD requires applicants to analyze the system for several storm frequencies over various durations to determine the "critical" storm (i.e., the storm event which requires the most storage for peak discharge attenuation).

To transfer this methodology to the St. Johns River Water Management District (SJRWMD), staff derived values of I/P_{Total} at 15 minute increments (see Table G~~2~~4-2) from long term historic rainfall records within the SJRWMD for the mean annual, 24-hour storm as reported by Rao (1991). The applicant is only required to analyze the system for this rainfall distribution because it includes rainfall depths corresponding to the mean annual storm for durations up to and including 24 hours. Values of P_{Total} within the SJRWMD for the mean annual, 24-hour storm are found in Figure 2.7.1-1 of this Volume.

Similar to the rational method, use of the modified rational hydrograph method should be limited to small drainage basins with short times of concentration (SRWMD 1990). Therefore, the District's rules restrict use of the modified rational method for systems meeting the following criteria:

(a) The drainage area is less than 40 acres.

(b) The predevelopment time of concentration for the system is less than 60 minutes.

(c) The postdevelopment time of concentration for the system is less than 30 minutes.

Note: The District does not accept the modified rational hydrograph method for use in 25-year peak discharge design storms (see section 3.2.3 of this Volume). If a project requires a peak discharge analysis for multiple design storms to comply with chapter 62-330, F.A.C., and section 3.2.3, the District recommends that the system be analyzed for both design storm events using a methodology as described in section 3.2.3 of this Volume. As an alternative, the applicant may utilize the modified rational method only for the mean annual storm provided the above criteria are met.

Table C.1.2. SJRWMD Mean Annual, 24-Hour Storm Distribution for the Modified Rational Hydrograph Method

Time (hrs)	I/P_{Total} (in/hr-in)	Time (hrs)	$TimeI/P_{Total}$ (hrs)(in/hr-in)
0.00	0.000	12.25	0.256
0.25	0.008	12.50	0.204
0.50	0.008	12.75	0.116
0.75	0.004	13.00	0.092
1.00	0.008	13.25	0.080
1.25	0.008	13.50	0.068
1.50	0.008	13.75	0.044
1.75	0.008	14.00	0.040
2.00	0.008	14.25	0.036
2.25	0.008	14.50	0.036
2.50	0.008	14.75	0.032
2.75	0.012	15.00	0.028
3.00	0.008	15.25	0.020
3.25	0.008	15.50	0.020
3.50	0.008	15.75	0.020
3.75	0.012	16.00	0.016
4.00	0.008	16.25	0.016
4.25	0.012	16.50	0.016
4.50	0.008	16.75	0.016
4.75	0.012	17.00	0.016
5.00	0.012	17.25	0.012
5.25	0.008	17.50	0.016
5.50	0.012	17.75	0.012
5.75	0.012	18.00	0.012
6.00	0.012	18.25	0.012
6.25	0.016	18.50	0.012
6.50	0.012	18.75	0.012

6.75	0.012	19.00	0.012
7.00	0.016	19.25	0.012
7.25	0.016	19.50	0.008
7.50	0.016	19.75	0.012
7.75	0.016	20.00	0.008
8.00	0.016	20.25	0.012
8.25	0.020	20.50	0.008
8.50	0.020	20.75	0.008
8.75	0.020	21.00	0.008
9.00	0.020	21.25	0.012
9.25	0.032	21.50	0.008
9.50	0.032	21.75	0.008
9.75	0.032	22.00	0.008
10.00	0.040	22.25	0.008
10.25	0.044	22.50	0.008
10.50	0.048	22.75	0.008
10.75	0.072	23.00	0.008
11.00	0.084	23.25	0.008
11.25	0.104	23.50	0.008
11.50	0.132	23.75	0.008
11.75	0.436	24.00	0.004
12.00	1.080	24.00	0.004

C.1.2 Example Problem for the Modified Rational Hydrograph Method

Given: A = 3 acres Project Location = Titusville

C_{pre} = 0.35 C_{post} = 0.85

Determine: Utilizing the modified rational method determine the predevelopment and postdevelopment runoff hydrographs for the mean annual, 24-hour storm.

Step 1. Determine P_{Total} for the project location.

From Figure 2.7.1-1, the rainfall depth (P_{Total}) for the mean annual, 24-hour storm for Titusville is 5.0 inches.

Step 2. Set up the modified rational equations for both pre-development and post-development conditions utilizing equation 1-2.

$$Q_{pre} = (3\ ac)\ (0.35)\ (5.0\ in)\ (I/P_{Total}) = (5.25)(I/P_{Total})$$

$$Q_{post} = (3\ ac)\ (0.85)\ (5.0\ in)\ (I/P_{Total}) = (12.75)(I/P_{Total})$$

Step 3. Utilizing the values of I/P_{Total} in Table C.1-2, calculate the predevelopment and post-development runoff hydrographs at 15-minute increments for the mean annual, 24-hour storm. See Table C.1-3 for the Q_{pre} and Q_{post} hydrographs.

Step 4. From Table C.1-3, the post-development peak discharge rate is greater than the pre-development rate. Therefore, the postdevelopment runoff hydrograph should be routed through a detention basin and discharge structure with a suitable stage-storage-discharge relationship such that the peak discharge rate from the basin is less than or equal to the predevelopment peak rate of 5.67 cfs.

C.1.3 References

Florida Department of Transportation. 1987a. *Drainage Manual, Volume 2A - Procedures*. Tallahassee, Florida.

Florida Department of Transportation. 1987b. *Handbook for Drainage Connection Permit*. Tallahassee, Florida.

Rao, D.V. 1991. *24-Hour Rainfall Distributions for Surface Water Basins Within the St. Johns River Water Management District, Northeast Florida*. St. Johns River Water Management District Technical Publication No. 91-3, Palatka, Florida.

Suwannee River Water Managment District. 1990. *MSSW Handbook*. Live Oak, Florida.

Table C.1-3 Pre- and Post-Development Hydrographs for the Modified Rational Example Problem

Time (hrs)	I/P_{Total}	Q_{pre} (cfs)	Q_{post} (cfs)
0.00	0.000	0.000	0.000
0.50	0.008	0.044	0.104
0.75	0.004	0.020	0.052
1.00	0.008	0.044	0.104
1.25	0.008	0.044	0.104
1.50	0.008	0.044	0.104
1.75	0.008	0.044	0.104
2.00	0.008	0.044	0.104
2.25	0.008	0.044	0.104
2.50	0.008	0.044	0.104
2.75	0.012	0.064	0.152
3.00	0.008	0.044	0.104
3.25	0.008	0.044	0.104
3.50	0.008	0.044	0.104
3.75	0.012	0.064	0.152
4.00	0.008	0.044	0.104
4.25	0.012	0.064	0.152
4.50	0.008	0.044	0.104
4.75	0.012	0.064	0.152
5.00	0.012	0.064	0.152
5.25	0.008	0.044	0.104
5.50	0.012	0.064	0.152
5.75	0.012	0.064	0.152
6.00	0.012	0.064	0.152
6.25	0.016	0.084	0.204
6.50	0.012	0.064	0.152
6.75	0.012	0.064	0.152

7.00	0.016	0.084	0.204
7.25	0.016	0.084	0.204
7.50	0.016	0.084	0.204
7.75	0.016	0.084	0.204
8.00	0.016	0.084	0.204
8.25	0.020	0.104	0.256
8.50	0.020	0.104	0.256
8.75	0.020	0.104	0.256
9.00	0.020	0.104	0.256
9.25	0.032	0.168	0.408
9.50	0.032	0.168	0.408
9.75	0.032	0.168	0.408
10.00	0.040	0.212	0.508
10.25	0.044	0.232	0.560
10.50	0.048	0.252	0.612
10.75	0.072	0.380	0.920
11.00	0.084	0.440	1.072
11.25	0.104	0.548	1.328
11.50	0.132	0.692	1.684
11.75	0.436	2.288	5.560
12.00	1.080	5.672	13.772
12.25	0.256	1.344	3.264
12.50	0.204	1.072	2.600
12.75	0.116	0.608	1.480
13.00	0.092	0.484	1.172
13.25	0.080	0.420	1.020
13.50	0.068	0.356	0.868
13.75	0.044	0.232	0.560
14.00	0.040	0.212	0.508
14.25	0.036	0.188	0.460

14.50	0.036	0.188	0.460
14.75	0.032	0.168	0.408
15.00	0.028	0.148	0.356
15.25	0.020	0.104	0.256
15.50	0.020	0.104	0.256
15.75	0.020	0.104	0.256
16.00	0.016	0.084	0.204
16.25	0.016	0.084	0.204
16.50	0.016	0.084	0.204
16.75	0.016	0.084	0.204
17.00	0.016	0.084	0.204
17.25	0.012	0.064	0.152
17.50	0.016	0.084	0.204
17.75	0.012	0.064	0.152
18.00	0.012	0.064	0.152
18.25	0.012	0.064	0.152
18.50	0.012	0.064	0.152
18.75	0.012	0.064	0.152
19.00	0.012	0.064	0.152
19.25	0.012	0.064	0.152
19.50	0.008	0.044	0.104
19.75	0.012	0.064	0.152
20.00	0.008	0.044	0.104
20.25	0.012	0.064	0.152
20.50	0.008	0.044	0.104
20.75	0.008	0.044	0.104
21.00	0.008	0.044	0.104
21.25	0.012	0.064	0.152
21.50	0.008	0.044	0.104
21.75	0.008	0.044	0.104

22.00	0.008	0.044	0.104
22.25	0.008	0.044	0.104
22.50	0.008	0.044	0.104
22.75	0.008	0.044	0.104
23.00	0.008	0.044	0.104
23.25	0.008	0.044	0.104
23.50	0.008	0.044	0.104
23.75	0.008	0.044	0.104
24.00	0.004	0.020	0.052
24.25	0.000	0.000	0.000

APPENDIX D

Subparagraph 40C-4.041(2)(b)8 as it existed on September 25, 1991

ANNOTATIONS

Validity

Challenge of rule's validity failed, where petitioner argued that agency had neglected to describe in sufficient detail territory where permits were required; since precise boundaries of territory could be determined from information contained in rule and from maps available to public, no practical reason existed to require promulgation by rule of such metes and bounds. Sartori v. St. Johns River Water Management District (DOAH 81-2393R), 3 FALR 2456-A (1981).

Determination that challenged rule constituted incomplete exercise of legislative authority did not render such exercise invalid, where petitioner complained that neighboring property remained free from regulation due to agency procrastination; petitioner had suffered no injury as result of this delay. Sartori v. St. Johns River Water Management District (DOAH 81-2393R), 3 FALR 2456-A (1981).

40C-4.034 Revocation and Modification of Permits.

Specific Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.429 FS. History—New 2-20-77, Amended 12-26-77, Formerly 16I-4.34, Transferred to 40C-4.341, Amended 2-3-81, Formerly 40C-4.34.

40C-4.041 Permit Required.

(1) Unless expressly exempt by statute or rule, a surface water management permit must be obtained from the District prior to the construction, alteration, operation, maintenance, removal or abandonment of any dam, impoundment, reservoir, appurtenant work or works and for the maintenance and operation of existing agricultural surface water management systems or the construction of new agricultural surface water management systems.

(2) The District issues three types of surface water management permits: conceptual approval permits, individual permits and general permits.

(a) A conceptual approval permit may be issued for projects that are to be developed in phases. A letter of conceptual approval does not authorize any construction.

(b) An individual or general permit is required prior to the construction, alteration, operation, maintenance, abandonment or removal of a surface water management system which:

1. Is capable of impounding a volume of water of forty or more acre feet; or

2. Serves a project with a total land area equal to or exceeding forty acres; or

3. Serves a project with a total land area equal to or exceeding ten acres, when any part of the project is located within the Wekiva River Hydrologic Basin north of State Road 436, or within the Econlockhatchee River Hydrologic Basin; or

4. Provides for the placement of twelve or more acres of impervious surface which constitutes 40 or more percent of the total land area; or

5. Provides for the placement of one half acre or more of impervious surface, when any of the impervious surface is located within the Wekiva River Hydrologic Basin north of State Road 436; or

6. Provides for the placement of two acres or more of impervious surface, when any of the impervious surface is located within the Econlockhatchee River Hydrologic Basin; or

7. Contains a traversing work which traverses:

a. A stream or other watercourse with a drainage area of five or more square miles upstream from the traversing work; or

b. An impoundment with more than ten acres of surface area; or

8. Contains a surface water management system which serves an area of five or more contiguous acres of wetlands with a direct hydrologic connection to:

a. A stream or other watercourse with a drainage area of five or more square miles; or

b. An impoundment with no outfall, which is not wholly owned by the applicant and which is ten acres or greater in size; or

c. A wetland not wholly owned by the applicant.

9. Is wholly or partially located within the Wekiva River Hydrologic Basin's Riparian Habitat Protection Zone as described in Paragraph 40C-41.063(3)(e); or

10. Consists of or includes filling in, excavation in, or drainage of a wetland which is not isolated when any of the filling, excavation, or drainage is located within the Econlockhatchee River Hydrologic Basin; or

11. Is wholly or partially located within any isolated wetland.

(c) A general permit will be issued for specific classes of surface water management systems which satisfy the thresholds and conditions of Chapter 40C-40, F. A. C. A general permit may authorize the construction, alteration, operation, maintenance, abandonment, or removal of a system.

(d) An individual permit may be issued for projects which do not qualify for general permits under the provisions of Chapter 40C-40, F. A. C. An individual permit may authorize the construction, alteration, operation, maintenance, abandonment or removal of a system.

(e) An individual or general permit may be issued for the maintenance and operation of existing agricultural surface water management systems or the construction of new agricultural surface water management systems which satisfy the water quality practices and performance standards of chapter 40C-44, F.A.C.

(3)(a) The Governing Board may designate specific geographic areas within which individual or general permits shall be required for the construction, alteration, operation, maintenance, removal, or abandonment of any systems with threshold volumes and areas different from those specified in subsection (2)(b) above.

(b) Such designation shall be adopted by rule pursuant to Chapters 120 and 373, Florida Statutes, and Chapter 40C-1, F. A. C.

(c) Prior to the adoption of such rule, the Governing Board shall hold at least one public meeting in the vicinity of the area for which such designation is proposed. The purpose of the meeting shall be to hear testimony regarding the

justification and anticipated impacts of the designation.

Specific Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.409, 373.413, 373.416, 373.426, 373.429 FS. History—New 1-31-77, Formerly 16I-4.04, 40C-4.04, Amended 2-3-81, 12-7-83, Formerly 40C-4.041, 40C-4.0041, Amended 8-28-88, 8-1-89, 4-3-91, 8-11-91, 9-25-91.

40C-4.042 Formal Wetland Determination.

(1) Pursuant to section 373.421, F.S., a real property owner, an entity that has the power of eminent domain, or any other person who has a legal or equitable interest in real property may petition the District for a formal wetland determination for that property. A formal wetland determination means the District will verify the locations on the property of the landward boundaries of wetlands as defined by the District.

(2) To petition for a formal wetland determination, the petitioner must submit to the District the following:

(a) seven copies of completed form 40C-1.181(12), including copies of all items required by that form, and

(b) a wetland determination fee as prescribed in section 40C-1.603, F.A.C.

(3)(a) Within 30 days of receipt of a petition for a formal wetland determination, the District shall notify the petitioner of any additional information which may be necessary in order to complete review of the petition. The District shall complete the determination and shall issue a notice of intended agency action within 30 days after the petition is deemed complete. The District will publish the notice of intended agency action on the petition in a newspaper of general circulation in the county or counties where the property is located.

(b) The provisions of sections 120.57 and 120.59, F.S., apply to formal wetland determinations made pursuant to this section. Any person whose substantial interests will be affected by the District's proposed action on the petition may request an administrative hearing on the proposed action pursuant to section 40C-1.511, F.A.C. If no request for an administrative hearing is filed, the District will then take final action on the petition for the formal wetland determination.

(4) The petitioner or his agent shall clearly delineate the landward boundary of wetlands on the property. A District representative will verify the location of the boundary line. The petitioner must then have the boundary line surveyed, and must return four certified copies of that survey to the District. In order for the petition to be deemed complete, the District must receive four certified copies of the survey.

(5) The executive director is delegated the authority to take final action on petitions for formal wetland determinations under this section. The executive director shall issue a formal wetland determination only if the petitioner has satisfied all the requirements of this section.

(6) A formal wetland determination shall be binding for the time period issued provided physical conditions on the property do not change so as to alter the wetland boundaries during that period. A formal wetland determination shall be issued for five years.

(7) Any person eligible to petition for a wetland determination may petition to renew a formal wetland determination prior to the expiration date. A petition to renew an expired wetland determination shall be processed in the same manner as a petition for an original formal wetland determination. Persons petitioning the District to renew an expired formal wetland determination must submit the information and renewal fee required by subsections 40C-4.042(2) through (4), F.A.C.

(8) The Governing Board may revoke the formal wetland determination upon a finding that the petitioner has submitted inaccurate information to the District.

(9) A formal wetland determination issued pursuant to this section is final agency action and is in lieu of a declaratory statement of jurisdiction obtainable pursuant to section 120.565, F.S.

(10) The District may issue informal nonbinding preapplication wetland determinations or otherwise institute nonbinding wetland determinations on its own initiative as provided by law.

Specific Authority 373.044, 373.113, 373.421 FS. Law Implemented 373.421 FS. History—New 11-12-91.

40C-4.051 Exemptions.

(1) Exemptions are as found in:

(a) Section 373.406, Florida Statutes.

(b) Section 403.813(2), Florida Statutes.

(2) Specifically exempted from permitting under this chapter for the purpose of construction, operation, and maintenance are:

(a) Each system or phase of a phased system which is located in the areas described in Rule 40C-4.031 (1)(a) and (b), F.A.C., except agricultural operations, which:

1. Was constructed and operating under the provisions of a valid District permit on December 7, 1983; or

2. Was not required to obtain a permit prior to December 7, 1983, and was:

a. Constructed and operating prior to December 7, 1983; or

b. Being constructed on December 7, 1983, and was completed and operating by June 7, 1984; or

c. Under construction on December 7, 1983, and which had complied with the regulations of the Florida Department of Environmental Regulation and the appropriate local governmental agency.

3. Was constructed and operating as of March 2, 1974 for the Upper St. Johns Basin as described in Rule 40C-4.031(1)(a), F.A.C.; or

4. Was constructed and operating as of January 1, 1975 for the portion of the Oklawaha River Basin as described in Rule 40C-4.031(1)(b), F.A.C.

(b) Each system or phase of a phased system which is located in the area as described in Rule 40C-4.031(1)(c), F.A.C., except agricultural operations, and which was:

B. SURFACE WATER MANAGEMENT DESIGN AIDS

June 1, 2018

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

4049 Reid Street

Palatka, FL 32177-1429

(386) 329-4500

PART IX
ALTERNATIVE TREATMENT SYSTEMS

20.0 Compensating Stormwater Treatment

Occasionally, applicants find that it is impractical to construct a stormwater management system to capture the runoff from a portion of the project site due to extreme physical site conditions or right-of-way problems. Two methods have been developed to compensate for the lack of treatment for a portion of a project. The first method is to treat the runoff that is captured to a greater extent than required by District rules (i.e., "overtreatment"). The second method is to provide treatment for an off-site area which currently is not being treated (i.e., "off-site compensation"). Each method is designed to furnish the same level of treatment as if the runoff from the entire project site was captured and treated according to the District's rules.

Either of these methods should only be utilized as a last resort and the applicant is strongly encouraged to schedule a pre-application conference with District staff to discuss the project if these alternatives are being considered. Other rule criteria, such as peak discharge attenuation, will have to be met if the applicant utilizes these methods. Each alternative is described in more detail in the following sections.

20.1 Overtreatment

Overtreatment means to treat the runoff from the project area that does flow to a treatment system to a higher level than District rules require to make up for the lack of treatment for a portion of the project. The average treatment efficiency of the areas treated and the areas not treated must meet the pollutant removal goals of chapter 62-40, F.A.C., (i.e., 80% removal for discharges to Class III waters and 95% removal for systems which discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting). To meet these goals, the area not being treated generally must be small (less than 10%) in relation to the area which is captured and treated. Staff can aid in determining the proper level of overtreatment for a particular situation.

20.2 Off-site Compensation

Off-site compensation means to provide treatment to an existing developed area which currently is not being treated to compensate for the lack of treatment for portions of the proposed project due to space constraints. The following conditions must be met when utilizing off-site compensation:

(a) The off-site treatment system must serve an existing developed area for which no treatment is presently provided, required, or permitted.

(b) The off-site land area being treated must serve a similar or more intensive land use than the on-site area being compensated for.

(c) The proposed off-site treatment system must meet the applicable criteria of Environmental Resource Permit Applicant's Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District (see Part A. of this Manual), including legal authorization to utilize the off-site area for stormwater treatment and provisions for operation and maintenance of the system.

(d) The off-site area must be in the same watershed as the proposed project.

21.0 Stormwater Harvesting Systems Design Criteria

21.1 Description

Stormwater harvesting uses treated stormwater for beneficial purposes before it is discharged to surface waters, thereby reducing the stormwater volume and mass of pollutants discharged. On the average, within the St. Johns River Water Management District, landscape irrigation can account for more than 50% of the total water use at residential locations. Stormwater harvesting systems are designed to prevent the discharge of a given volume of stormwater into surface waters of the state by deliberate application of stormwater runoff for irrigation or other supplemental water uses. Examples of areas that can be irrigated include golf courses, cemeteries, highway medians, parks, playgrounds, school yards, retail nurseries, agricultural lands, and residential and commercial properties. Supplemental uses include hydration of wetlands, low flow augmentation, cooling water, processing water, and wash water.

A stormwater harvesting pond is similar to a wet detention system described in section 8 except for the drawdown of the treatment volume storage. For typical wet detention ponds, the treatment volume is released at a controlled rate by a drawdown orifice or bleeder. However, in a stormwater harvesting system the drawdown structure is replaced by a mechanical reuse system which recovers the treatment volume storage by withdrawing water from the pond. In a stormwater harvesting pond the treatment volume is termed "harvested volume" and the "control elevation" is the lowest elevation at which water can be withdrawn from the pond by the stormwater harvesting system. Like wet detention, stormwater harvesting systems are a recommended BMP for sites with moderate to high ground water table conditions. A schematic of a typical stormwater harvesting pond is shown in Figure 21-1.

The District encourages the use of stormwater harvesting systems because of the following benefits they provide:

(a) Reduction of runoff volume discharged to the receiving waters

(b) Reduction of pollutants discharged to the receiving waters

(c) Substitution of stormwater for irrigation of turf grass instead of using potable water

(d) Potential economic savings from paying reduced or no utility fees due to the reduced use of potable water for irrigation of turf grass.

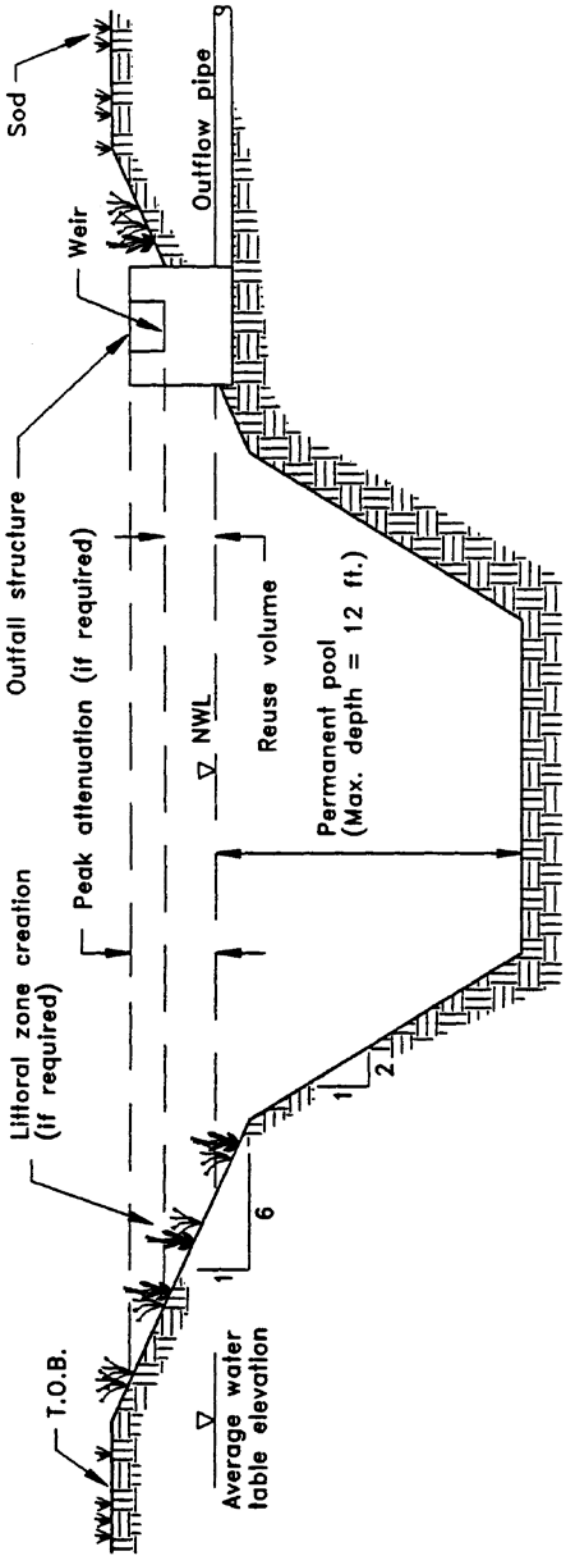


Figure 21-1. Stormwater harvesting system (N.T.S.)

Stormwater harvesting systems significantly remove dissolved and suspended pollutants by taking advantage of physical, chemical, and biological processes associated with wet detention systems and the recycling of constituents back to the landscape by systems that irrigate with stormwater (Wanielista et al. 1991). Stormwater harvesting systems can be utilized to meet the District's runoff volume criteria (see section 3.2 of this Manual).

In addition, stormwater harvesting ponds provide flood detention. As stormwater treatment systems, these ponds should not be designed to promote in-water recreation (i.e., swimming, skiing, fishing, and boating).

There are several components in a stormwater harvesting system which must be properly designed to achieve the required level of stormwater treatment. A description of each design feature and its importance to the treatment process is presented below. These criteria are intended to promote the harvesting of stormwater from properly designed stormwater management systems, such as wet detention. Several of these criteria are the same as those for wet detention systems as described in section 8 of this Manual.

21.2 "Harvested Volume"

A portion of the runoff from the site must be stored in the pond and subsequently withdrawn through the stormwater harvesting system. Systems which discharge to Class III receiving water bodies shall harvest at least 50 percent of the average annual runoff.

Stormwater harvesting systems which directly discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, must harvest at least 90 percent of the average annual runoff discharging to the pond. A methodology for designing stormwater harvesting systems to meet the above criteria is presented in section 29 of this Manual.

21.3 Permanent Pool

The permanent pool is that portion of a pond designed to constantly contain water (i.e., below the control elevation). The permanent pool should be sized to provide at least a 14-day residence time during the wet season (June - October). A description of the pollutant removal processes which occur in the permanent pool is given in section 8.5 of this Manual and a methodology for calculating the residence time is given in section 26 of this Manual.

21.4 Littoral Zone

The littoral zone is that portion of a stormwater harvesting pond designed to contain rooted aquatic plants. The littoral zone is usually created by extending and gently sloping the sides of the pond down to a depth of 2-3 feet below the normal water level or control elevation. Also, the littoral zone can be provided in other areas of the pond that have suitable depths (i.e., a shallow shelf in the middle of the lake).

The littoral zone is established with native aquatic vegetation by planting and/or placing wetland soils containing seeds of native aquatic plants. A specific planting plan must be prepared for the littoral zone. The plan must consider the pond hydroperiod and the type of plants to be established. Livingston et al. (1988) has published a list of recommended native plant species suitable for littoral zone planting. In addition, a layer of muck can be incorporated into the littoral zone to promote the establishment of the native aquatic vegetation. When placing muck, special precautions must be taken to prevent erosion and turbidity problems in the pond and at its discharge point while vegetation is becoming established in the littoral zone.

The following is a list of the design criteria for stormwater harvesting ponds designed with a littoral zone:

(a) The littoral zone shall be gently sloped (6H:1V or flatter). At least 30 percent of the stormwater harvesting pond surface area shall consist of a littoral zone. The percentage of littoral zone is based on the ratio of vegetated littoral zone to surface area of the pond at the control elevation.

(b) The treatment volume should not cause the pond level to rise more than 18 inches above the control elevation unless the applicant affirmatively demonstrates that the littoral zone vegetation can survive at greater depths.

(c) Within 24 months of completion of the system, 80 percent coverage of the littoral zone by suitable native aquatic vegetation is required.

(d) Planting of the littoral zone is recommended to meet the 80 percent coverage requirement. As an alternative to planting, portions of the littoral zone may be established by placement of muck soils (at least a four-inch depth) containing a seed source of desirable aquatic native vegetation. When utilizing this alternative, the littoral zone must be stabilized by mulching or other means and at least the portion of the littoral zone within 25 feet of the inlet and outlet structures must be planted.

21.5 Littoral Zone Alternatives

In lieu of establishing and maintaining vegetative littoral zones as described in section 21.4, the applicant can provide either:

(a) An additional 50 percent of the permanent pool volume as required in section 21.3, or

(b) Pre-treatment of the stormwater prior to the stormwater entering the stormwater harvesting pond. The level of pre-treatment must be at least that required for retention, underdrain, exfiltration, or swale systems. See section 8.11 of this Manual for additional information on pre-treatment.

Providing a larger permanent pool or pre-treatment volume will compensate for the pollutant removal benefits associated with an established littoral zone. However, even under the above alternatives, a portion of the stormwater harvesting pond may be colonized with nuisance species that will need to be controlled. This should be considered routine operational maintenance.

21.6 Pond Depth

The District requires a maximum pond depth of 12 feet and a mean depth (pond volume divided by the pond area at the control elevation) between 2 and 8 feet, unless demonstrated through a water quality analysis to support a deeper pond depth and mean depth. This criterion is needed because many of the nutrients and metals removed from the water column accumulate in the top few inches of the pond bottom sediments (Yousef et al. 1990). If a pond is deep enough, it has a tendency to stratify, creating the potential for anaerobic conditions developing at the bottom of the pond (CDM 1985). An aerobic environment should be maintained throughout the water column in wet ponds to minimize the release of nutrients and metals from the bottom sediments (Yousef et al. 1990). The maximum depth criterion minimizes the potential for significant thermal stratification which will help maintain aerobic conditions in the water column that should maximize sediment uptake and minimize sediment release of pollutants. On the other hand, the minimum mean depth criterion is required because aquatic plant growth may become excessive if the pond is too shallow.

21.7 Pond Configuration

The average length to width ratio of the pond should be at least 2:1. If short flow paths are unavoidable, the effective flow path can be increased by adding diversion barriers such as islands, peninsulas, or baffles to the pond. Inlet structures should be designed to dissipate the energy of water entering the pond.

21.8 Ground Water Table

To minimize ground water contributions which may lower treatment efficiencies, the control elevation should be set at or above the normal on-site groundwater table elevation (Yousef et al. 1990). This elevation may be determined by calculating the average of the seasonal high and seasonal low groundwater table elevations. In areas where the seasonal low water table is not determinable, the applicant may propose using the seasonal high water table elevation minus one foot. Regardless of which method is used, the system cannot cause adverse hydrologic impacts to adjacent wetlands or other surface waters.

If the control elevation is proposed to be set lower than the average elevation, ground water inflow must be considered in the calculation of the wet season residence time, estimated normal water level in the pond, and pollution removal efficiency of the system.

21.9 References

Camp Dresser & McKee Inc (CDM). 1985. *An Assessment of Stormwater Management Programs.* Prepared for Florida Department of Environmental Regulation, Tallahassee, Florida.

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

Yousef, Y.A., M.P. Wanielista, L.Y. Lin, and M. Brabham. 1990. *Efficiency Optimization of Wet Detention Ponds for Urban Stormwater Management (Phase I and II).* University of Central Florida, Orlando, Florida.

Wanielista, M.P., Y.A. Yousef, G.M. Harper, T.R. Lineback, L. Dansereau. 1991. *Precipitation, Inter-Event Dry Periods, and Reuse Design Curves for Selected Areas of Florida*. University of Central Florida, Orlando, Florida.

22.0 Filtration Design and Performance Criteria

22.1 Description

Stormwater filtration systems consist of a perforated pipe which collects and conveys stormwater following infiltration and percolation through suitable soil, sand, or aggregate filter. Filters are generally used where space, soil permeability, and/or high water table conditions dictate that recovery of the stormwater treatment volume cannot be achieved by natural percolation (i.e, retention systems) or sedimentation (i.e., wet detention systems). The filter trench is normally backfilled to the surface with aggregate material that is more permeable than the surrounding soil. Pollutant removal occurs as the prescribed volume of stormwater passes through the filter media surrounding the conduit.

Filters are normally installed in the bottom or along the banks of detention basins and may be utilized in either dry or wet basins. The most common wet systems utilize either side-bank or "shelf" filters (Figures 22-1 and 22-2, respectively). Shelf filters (Figure 22-2) are the preferred alternative from a hydraulic performance and maintenance standpoint. In normally dry basins, the filters can be located in the bottom of the basin or along the side of the bank (Figures 22-3 and 22-4, respectively). Again, locating the filter beneath the basin (Figure 22-4) is preferable to side bank filters.

A filtration system may also function to lower the water table in its immediate vicinity to some limited extent. However, unlike underdrain systems, filter systems are not necessarily designed with this objective. The District generally requires the placement of filter systems above the ground water table (see section 22.8).

Filters are a maintenance-intensive BMP because of the likelihood that they will become clogged over time. Filters must routinely be cleaned by pressure back washing or replaced. In most cases, partial or total replacement of the sand filter is required after it becomes clogged. Periodic replacement of the filter should be considered when selecting this BMP.

The pollutant removal capabilities of filtration systems have been documented to be limited (Harper and Herr 1993). Only pollutants which are primarily in particulate form are trapped by the filter media. Therefore, the pollutant removal efficiency of filters systems is not as great as systems such as retention and wet detention which remove both dissolved and particulate pollutants. Because of the limited pollutant removal efficiency of dry detention, this BMP must only be utilized where no other general permit BMP is feasible. Filters in wet basins (Figures 22-1 and 22-2) are preferable to filters in dry basins (Figures 22-3 and 22-4) because of the added pollutant removal capabilities of the permanent pool of the wet basin (Harper and Herr 1993).

Filters appear to be best suited for small drainage areas such as small, highly impervious commercial/industrial sites that are well stabilized with little potential for eroded soils. For larger projects (greater than 5 acres) other BMPs like wet detention should be utilized instead of filters.

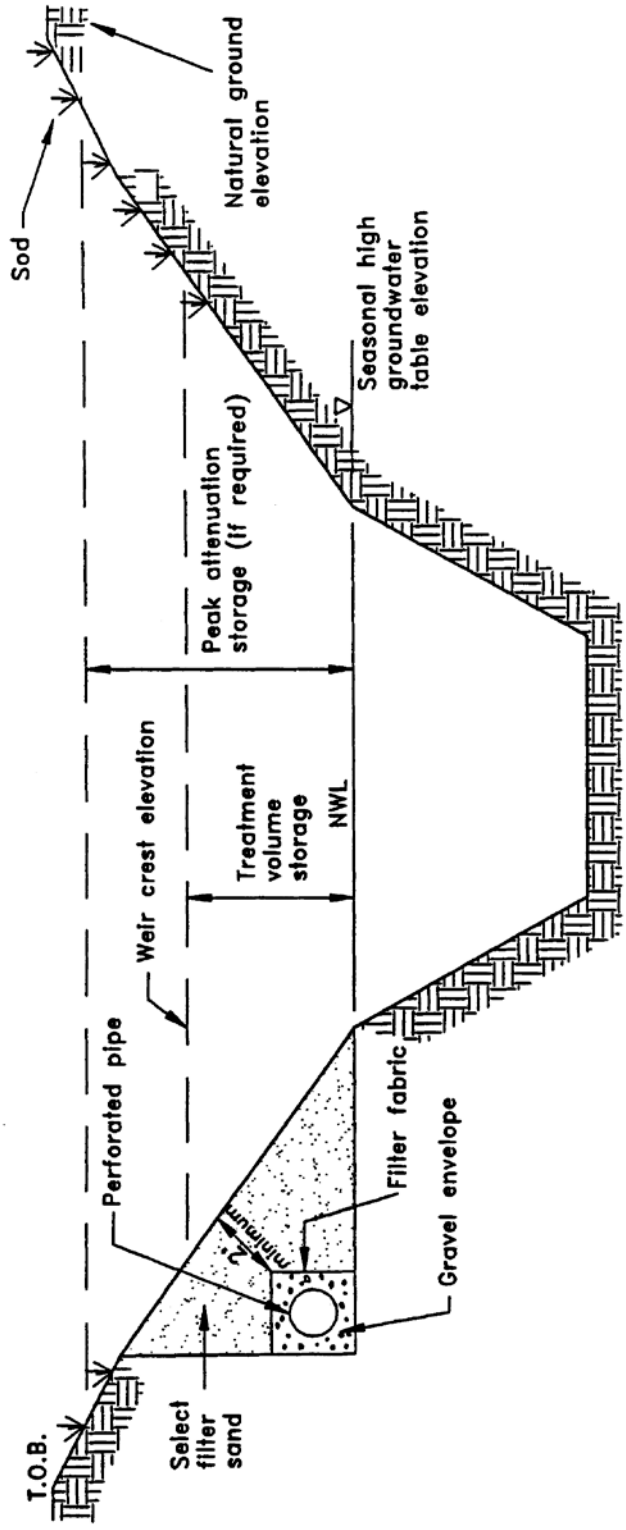


Figure 22-1. Side-bank filters in a wet basin (N.T.S.)

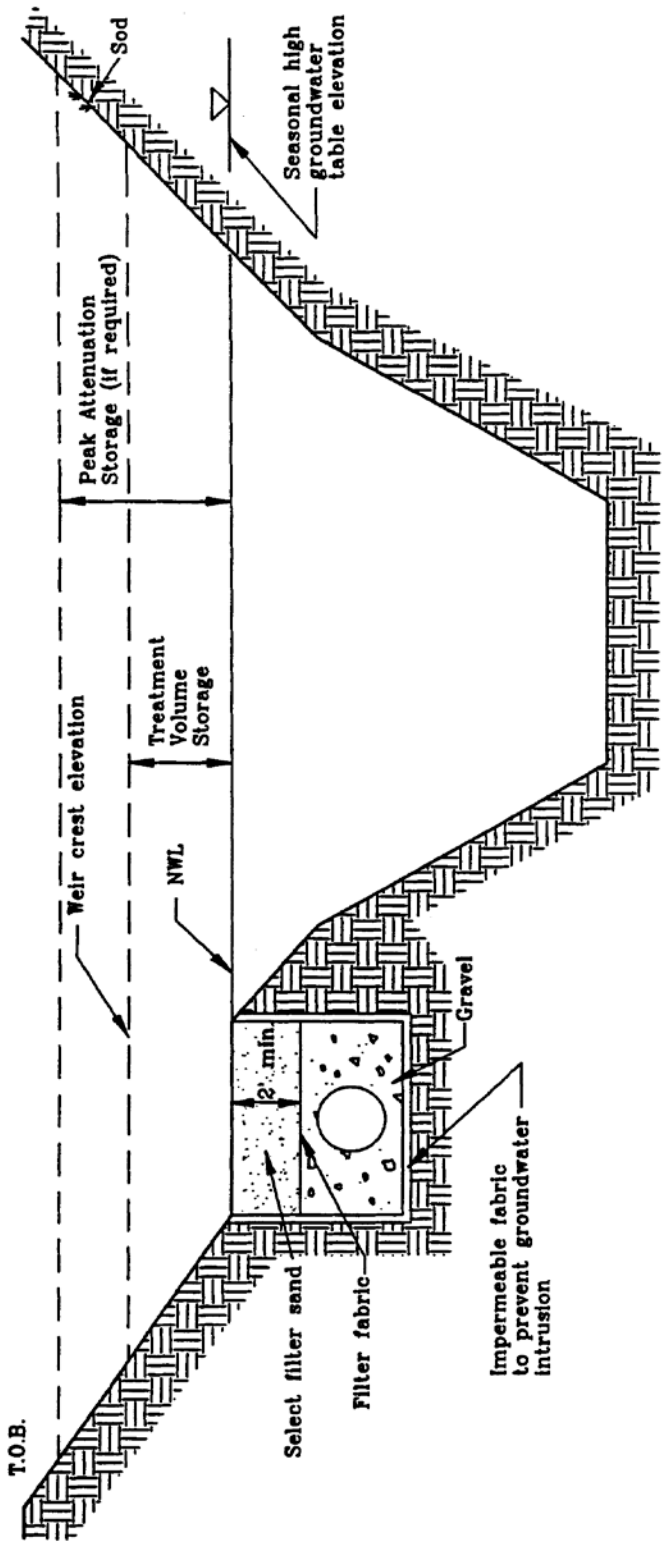


Figure 22-2. Filter shelf in a wet basin (N.T.S.)

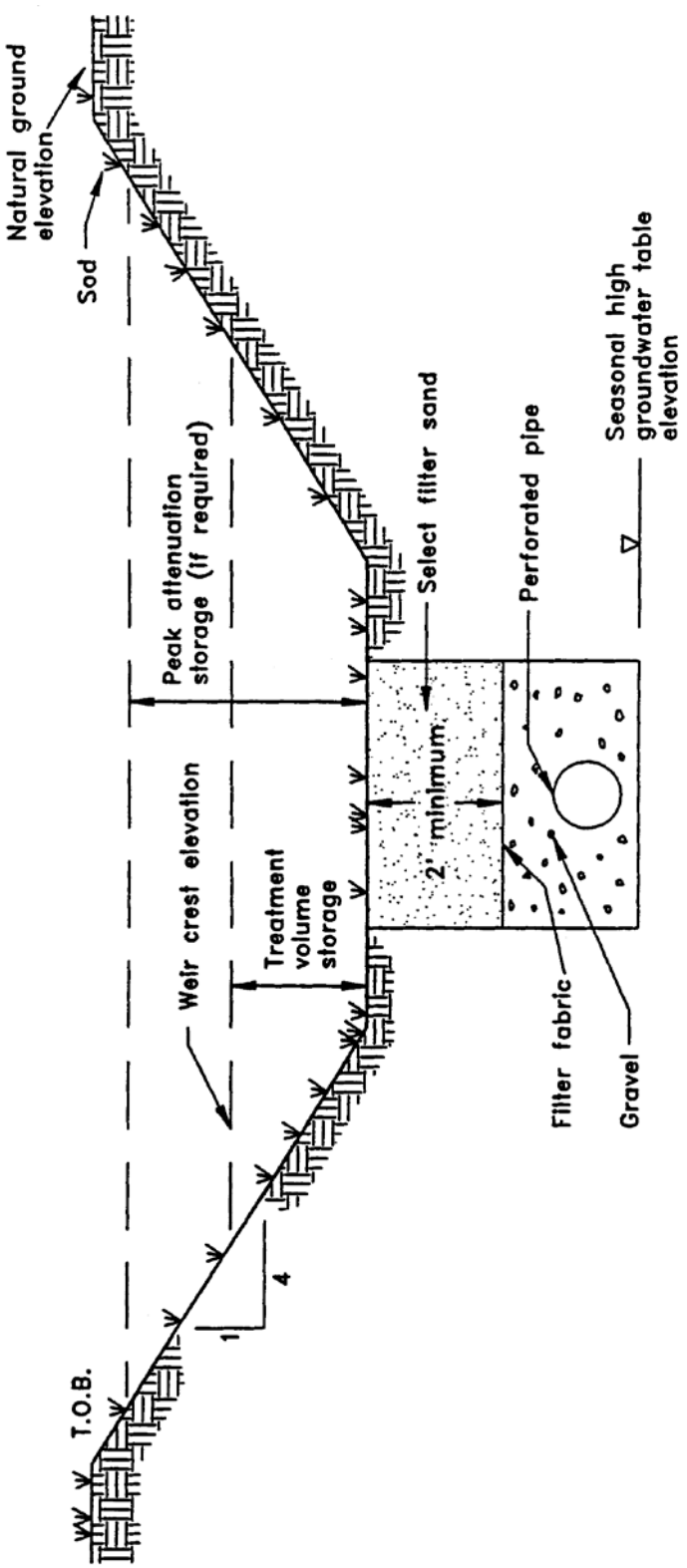


Figure 22-3. Dry detention with filtration (N.T.S)

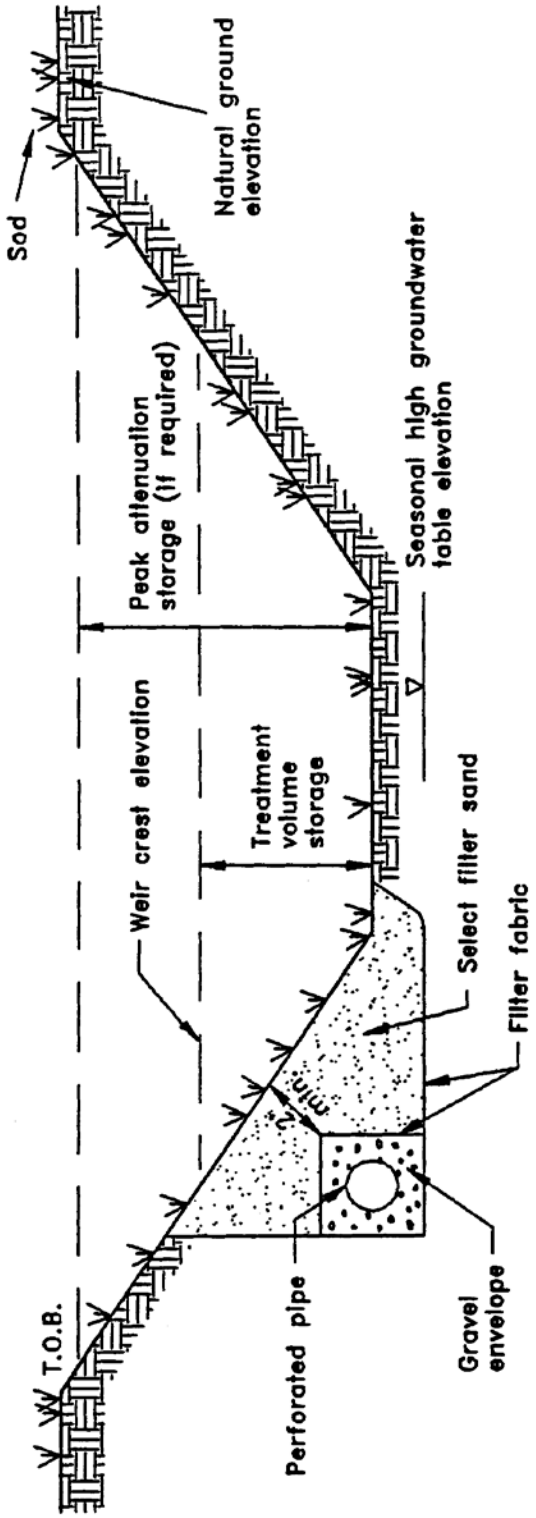


Figure 22-4. Dry detention with side-bank filters (N.T.S.)

Filters are not recommended for use in subdivisions where natural soil can erode and wash into the filter and where homeowners associations are commonly responsible for maintenance of the system.

The design and performance criteria specific to filtration systems are presented below.

22.2 Treatment Volume

The first flush of runoff should be detained in a wet or dry detention basin and filtered through the porous filter media. For discharges to Class III receiving water bodies, the system shall provide either of the following:

(a) *Off-line* detention with filtration of the first one-inch of runoff or 2.5 inches of runoff from the impervious area, whichever is greater

(b) *On-line* detention with filtration of an additional one half inch of runoff from the drainage basin area over the volume specified for off-line treatment.

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, the applicant should provide detention with filtration for either of following:

(a) At least an additional fifty percent of the applicable treatment volume specified for off-line filtration in (a), above. *Off-line* detention with filtration must be provided for at least the first one inch of runoff or 2.5 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.

(b) *On-line* detention with filtration of the runoff from the three-year, one-hour storm or an additional fifty percent of the treatment volume specified in (b), above, whichever is greater.

22.3 Recovery Time

The system should be designed to provide for the appropriate treatment volume of stormwater specified in section 22.2 within 72 hours following a storm event. A suitable configuration (e.g., trench area, depth, pipe diameter, hydraulic conductivity of filter media, and openings in the perforated pipe) of the filter system must be designed to achieve the recovery time requirement.

Additional capacity must be provided in the filter system if inflows from the surrounding ground water table, upstream underdrain systems (i.e., road underdrain systems), or treatment volumes from upstream stormwater systems are routed to the filter system. Underdesign of the system will result in reduced hydraulic capacity.

This, in turn, will result in a reduction in storage between subsequent rainfall events and an associated decrease in the annual average volume of stormwater treated resulting in a reduction of pollutant removal (Livingston et al. 1988). Such circumstances may also reduce the aesthetic value of the system and may promote mosquito production.

A detailed methodology with design examples for calculating retention basin recovery is presented in section 30.

22.4 Safety Factor

The filter system must be designed with a safety factor of at least two unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that a lower safety factor is appropriate for the specific site conditions. Examples of how to apply this factor include but are not limited to the following:

(a) Reducing the design percolation rate by half

(b) Doubling the length of the filtration system

(c) Designing for the required drawdown within 36 hours instead of 72 hours.

22.5 Filter Media

The filter media should have pore spaces large enough to provide sufficient flow capacity so that the permeability of the filter is equal to or greater than the surrounding soil. The design shall ensure that the particles within the filter do not move. When sand or other fine textured aggregate other than natural soil is used for filtration, the filter material should be of quality sufficient to satisfy the following requirements:

(a) Washed (less than 1 percent silt, clay and organic matter) unless filter cloth is used which is suitable to retain the silt, clay and organic matter within the filter. Calcium carbonate aggregate is not an acceptable filter media.

(b) Uniformity coefficient of 1.5 or greater but not more than 4.0.

(c) Effective grain size of 0.20 to 0.55 millimeters in diameter.

These criteria are not intended to preclude the use of multilayered filters nor the use of materials to increase ion exchange, precipitation or the pollutant absorption capacity of the filter.

22.6 Filter Fabric

Filtration systems should utilize filter fabric or other means to prevent the filter material from moving into and clogging the perforated pipe.

22.7 Ground Water Table

The filter system should be designed so that the invert elevation of the perforated pipe is above the seasonal high ground water table (SHGWT) elevation. If the pipe is proposed to be set below this elevation, contributions from the surrounding ground water may reduce the ability of the system to recover the treatment volume in the required time. Filter systems placed below the SHGWT elevation should be separated by structural means from the hydraulic contribution of the surrounding water table or ground water inflow must be considered in sizing the system to meet the required recovery time.

22.8 Inspection and Cleanout Ports

To facilitate maintenance of the filter system, capped and sealed inspection and cleanout ports which extend to the surface of the ground should be provided, at a minimum, at the following locations for each drainage pipe:

(a) The terminus

(b) Every 400 feet or every bend of 45 or more degrees, whichever is less.

22.9 Operation and Maintenance Entity

Filtration systems are not recommended when the operation and maintenance entity is a homeowners association.

22.10 References

Harper, H.H. and J.L. Herr. 1993. Treatment Efficiency of Detention with Filtration Systems. St. Johns River Water Management District Special Publication SJ93-SP12, Palatka, Florida.

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

PART X
METHODOLOGIES AND DESIGN EXAMPLES

23.0 Methodology and Design Examples for Retention Systems

The most common type of retention system consists of man-made or natural depression areas where the floor is graded as flat as possible and turf is established to promote infiltration and stabilize basin side slopes. Soil permeability and water table conditions must be such that the retention system can percolate the desired runoff volume within a specified time following a storm event.

23.1 Infiltration Processes

When runoff enters the retention basin, standing water in the basin begins to infiltrate. Water in the retention basin exits the basin in two distinct stages, either vertically (Stage One) thorough the basin bottom (unsaturated flow) or laterally (Stage Two) through the side slopes (saturated flow). One flow direction or the other will predominate depending on the height of the water table in relation to the bottom of the basin. The following paragraph briefly describes the two stages of infiltration and subsequent subsections present accepted methodologies for calculating infiltration rates and recovery times for unsaturated vertical (Stage One) and saturated lateral (Stage Two) flow.

Initially, the subsurface conditions are assumed to be the seasonal high ground water table (SHGWT) below the basin bottom, and the soil above the SHGWT is unsaturated. When the water begins to infiltrate, it is driven downward in unsaturated flow by the combined forces of gravity and capillary action. The water penetrates deeper and deeper into the ground and fills the voids in the soil. Once the unsaturated soil below the basin becomes saturated, the water table "mounds" beneath the basin (Figure 23-1). At this time, saturation below the basin prevents further vertical movement and water exiting the basin begins to flow laterally (Mongeau 1991). For successful design of retention basins, both the unsaturated and saturated infiltration must be accounted for and incorporated into the analysis (Andreyev and Wiseman 1989).

23.2 Water Management District-Sponsored Research on Retention Systems

The District has noticed difficulties pertaining to the design, construction, and operation of retention basins located where soil infiltration is limited. To improve the effectiveness of retention systems, the District conducted full-scale hydrologic monitoring of retention basins. This field data was used to evaluate and to recommend hydrogeologic characterization techniques and design methodologies for computing the time of percolation of impounded stormwater runoff. Although all of the retention basins selected for instrumentation were located within the Indian River Lagoon Basin of the SJRWMD where soil infiltration potential is, for the most part, limited, the results of the study and the design recommendations have district-

wide applicability for similar areas where water table and soil conditions limit percolation. Funding for the study was provided through the Indian River Lagoon Basin Surface Water Improvement and Management (SWIM) program. Copies of the report may be obtained from the District librarian in Palatka headquarters (see Appendix A, "Environmental Resource Permit Applicant's Handbook, Volume I (General and Environmental)" for address and phone number). The reader should request District Special Publication SJ93-SP10. The document is also available on the District's website under Special Publications.

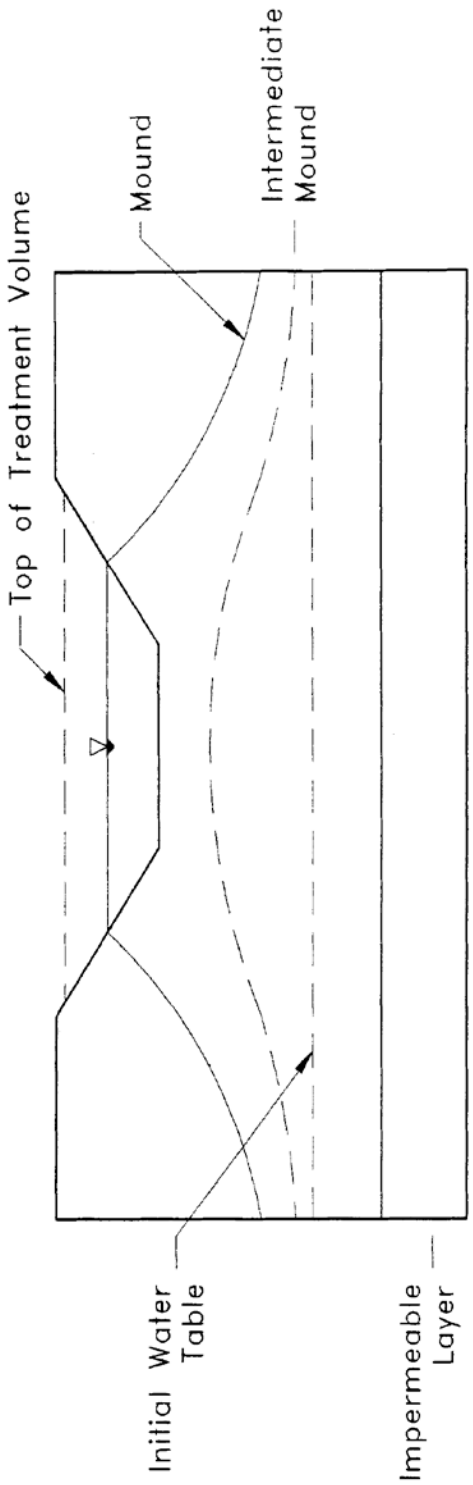


Figure 23-1. Groundwater Mounding Beneath a Retention System. (Source: Andreyev and Wiseman, 1989).

The study included design recommendations on field and laboratory methods of aquifer characterization and methodologies for computing recovery time. Acceptable methodologies for calculating retention basin recovery are presented in section 23.3 and recommended field and laboratory aquifer characterization testing methods are presented in section 23.4, below. These recommendations are based, in part, on the results in District Special Publication SJ93-SP10.

23.3 Accepted Methodologies and Design Procedures for Retention Basin Recovery

23.3.1 Accepted Methodologies

Acceptable methodologies for calculating retention basin recovery are presented below in Table 23-1. Vertical unsaturated flow methodologies are described in more detail in section 23.3.3 and lateral saturated flow methodologies are presented in section 23.3.4.

Table 23-1. Accepted Methodologies for Retention Basin Recovery

Vertical Unsaturated Flow	Lateral Saturated Flow
Green and Ampt Equation	Simplified Analytical Method
Hantush Equation	PONDFLOW
Horton Equation	Modified MODRET
Darcy Equation	
Holton Equation	

Several of these methodologies are available commercially in computer programs which the District has screened.

If applicants wish to calculate retention basin recovery by hand, acceptable methodologies for vertical unsaturated and lateral saturated flow are described in sections 23.3.3 and 23.3.5, respectively. A design example for each flow condition is presented below in section 23.5.

23.3.2 Design Procedures

It is recommended that, unless the normal seasonal high water table is over 6 inches below the basin bottom, unsaturated flow prior to saturated lateral mounding be conservatively ignored in recovery analysis. In other words, there should be no credit for soil storage immediately beneath the basin if the seasonal high water table is within 6 inches of the basin bottom. This is not an unrealistic assumption since the height of capillary fringe in fine sand is on the order of 6 inches and a partially

mounded water table condition may be remnant from a previous storm event, especially during the wet season.

It is also recommended that the filling of the pond with the treatment volume be simulated as a "slug" loading (i.e., treatment volume fills the pond within an hour).

23.3.3 Accepted Methodology for Estimating Vertical Unsaturated Flow

Vertical unsaturated flow consists of primarily downward movement of water stored in the basin into an unsaturated portion of the soil profile existing beneath the basin (Mongeau 1991). Vertical unsaturated flow only applies when the groundwater table or mound is below the retention basin bottom. Acceptable methodologies for calculating unsaturated vertical infiltration are included in Table 23-1. Each of the equations, however, are based on design assumptions that may not always be appropriate. In general the Green and Ampt equation is the most appropriate for conditions that typically occur in retention basin design. Andreyev and Wiseman (1989) utilized the following methodology in the MODRET computer program to estimate recovery in retention basins during unsaturated vertical flow. This methodology, which can easily be solved by hand, utilizes the modified Green and Ampt infiltration equation:

$$I_d = \frac{K_{vu}}{FS} \qquad (23\text{-}1)$$

where: I_d = Design infiltration rate
K_{vu} = Unsaturated vertical hydraulic conductivity
FS = Factor of safety (recommend FS = 2.0)

The time to saturate (t_{sat}) the soil mass below the basin is:

$$t_{sat} = \frac{f\ h_b}{I_d} \qquad (23\text{-}2)$$

where: t_{sat} = Time to saturate soil below the basin
h_b = Height of basin bottom above the groundwater table
f = Fillable porosity (generally 0.2 to 0.3)

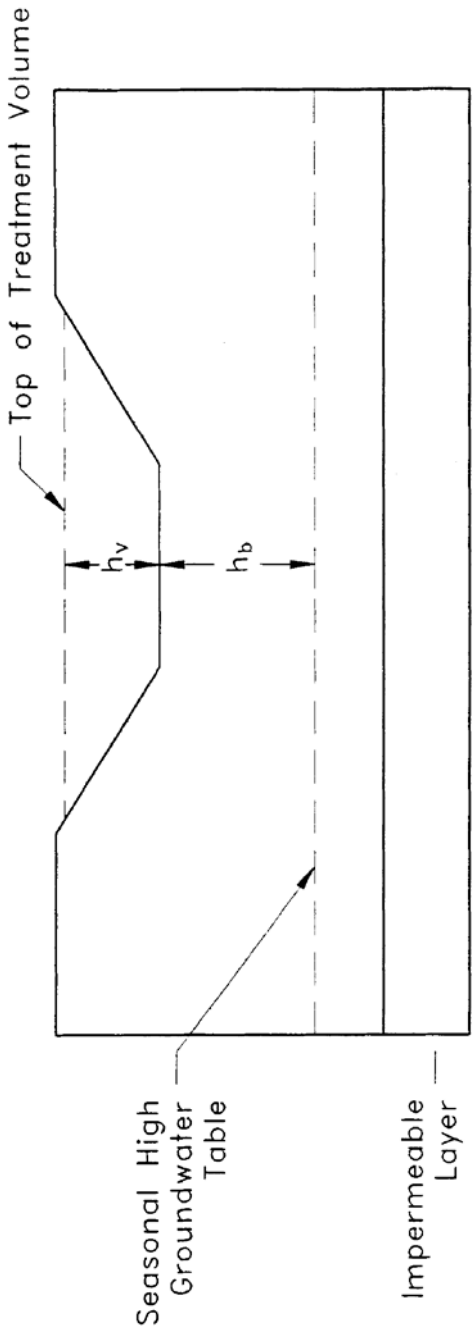


Figure 23-2. Design Parameters for Analysis of Stage One (Vertical) Flow (Source: Andreyev and Wiseman, 1989).

See Figure 23-2 for a schematic of the retention basin with the appropriate design parameters illustrated for vertical unsaturated flow conditions.

The total volume of water required to saturate the soil below the basin bottom (V_u) can be calculated as follows:

$$V_u = A_b \; h_b \; f \tag{23-3}$$

where: A_b = Area of basin bottom

Likewise, the height of water required to saturate the soil below the basin bottom (h_u) can be calculated using:

$$h_u = f \; h_b \tag{23-4}$$

Recovery of the treatment storage will occur entirely under vertical unsaturated flow conditions when:

(a) Treatment volume $\leq V_u$; or

(b) Height of the treatment volume (h_v) in the basin $\leq h_u$

If recovery of the treatment storage occurs entirely under vertical unsaturated conditions, analysis of the system for saturated lateral flow conditions will not be necessary.

This simplified approach is conservative because it does not consider the horizontal movement of water from the ground water mound that forms during this stage. In cases where the horizontal permeability is great, a more accurate estimate of the total vertical unsaturated flow can be obtained by using the Hantush equation. However, horizontal permeability of the unsaturated zone must be determined using an appropriate field or laboratory test.

The factor of safety (*FS*) is recommended to account for flow losses due to basin bottom siltation and clogging. For most sandy soils the fillable porosity (*f*) is approximately 0.2 to 0.3. The unsaturated vertical hydraulic conductivity (K_{vu}) can be measured using the field testing procedures or laboratory methods recommended in section 23.4.

A design example for utilizing the above methodology is presented below in section 23.5.

23.3.4 Accepted Methodologies for Lateral Saturated Flow

If the ground water mound is at or above the basin bottom, the rate of water level decline in the basin is directly proportional to the rate of mound recession in the saturated aquifer. The Simplified Analytical Method, PONDFLOW, and Modified MODRET methodologies are generally acceptable for retention basin recovery analysis under lateral saturated flow conditions. These models are all similar in that the receiving aquifer system is idealized as a laterally infinite, single-layered, homogenous, isotropic water table aquifer of uniform thickness, with a horizontal water table prior to hydraulic loading. If these assumptions are not reasonable, these models may not be applicable and a more appropriate model will be required.

All of the accepted models require input values for the pond dimensions, retained stormwater runoff volume, and the following set of aquifer parameters:

- Thickness or elevation of base of mobilized (or effective) aquifer
- Weighted horizontal hydraulic conductivity of mobilized aquifer
- Fillable porosity of mobilized aquifer
- Ambient water table elevation which, for design purposes is usually the normal seasonal high water table

In addition, to these one-layered, uniform aquifer idealization models accepted above, more complicated fully three dimensional models with multiple layers (such as MODFLOW) may be used. In order to use such three dimensional models, however, much more field data is necessary to characterize the three dimensional nature of the aquifer.

A brief description of each of the models recommended in Special Publication SJ93-SP10 is provided below. The reader is encouraged to consult the Special Publication for a more detailed description.

MODRET

MODRET is a methodology developed by Andreyev and Wiseman (1989) for the Southwest Florida Water Management. The saturated analysis module of MODRET is essentially a pre- and post-processor for the USGS three-dimensional ground water flow model MODFLOW. The MODRET model also has the capability to calculate unsaturated vertical flow from retention basins using the Green and Ampt equation. Unsaturated flow takes place prior to the ground water mound intersecting the basin bottom.

The input parameters in the MODRET pre-processor are use to create MODFLOW input files. After the MODFLOW program is executed, the MODRET post-processor extracts and prints the relevant information from the MODFLOW output files. MODRET allows the user to input time-varying recharge (such as a

hydrograph from a storm event) and calculate saturated flow out of the basin during recharge (i.e., a storm event).

During the study presented in Special Publication SJ93-SP10, it was discovered that the MODRET model was producing unstable MODFLOW solutions when modeling the recovery of some of the sites. This problem generally occurs when one or a combination of the following is true:

- The pond dimensions are relatively large (greater than 100 feet)
- The aquifer is relatively thin (less than 5 feet)
- The horizontal hydraulic conductivity is relatively low (less than 5 ft/day)

Upon further review, the MODRET model was modified in the study to correct this instability problem by changing the head change criterion for convergence to 0.001 ft from 0.01 ft. The original MODRET model with this modification is therefore referred to as "Modified MODRET."

PONDFLOW

PONDFLOW is a retention recovery computer model developed by Kuhns (1990). It is similar to MODRET in that is uses a finite difference numerical technique to approximate the time varying ground water profile adjacent to the basin. Also, like MODRET it can accommodate a time-varying recharge to the pond, account for seepage during the storm, and also calculates vertical unsaturated flow using Darcy's Equation.

Simplified Analytical Method (SAM)
The Simplified Analytical Method is a product of the study presented in District Special Publication SJ93-SP10. Figure 23-9 depicts the basic elements of the SAM. The integral for recovery time may be solved numerically or using commercially available software.

The SAM is somewhat conservative since it assumes that, for a prescribed runoff volume, the rise in the pond stage occurs instantaneously and there is no credit for seepage during the storm event.

23.3.5 Methodology for Analyzing Recovery by Lateral Saturated Flow by Hand

One methodology for analyzing lateral saturated flow from retention basins by hand is presented by Andreyev and Wiseman (1989) as part of their MODRET report. During the District's retention basin study presented in Special Publication SJ93-SP10, it was discovered that the MODRET model was producing unstable MODFLOW solutions when modeling the recovery of some of the retention basins monitored. This problem generally occurs when one or a combination of the following is true:

- The pond dimensions are relatively large (greater than 100 feet)
- The aquifer is relatively thin (less than 5 feet)
- The horizontal hydraulic conductivity is relatively low (less than 5 ft/day)

Therefore, the above parameters should be checked prior to utilizing the MODRET lateral saturated flow analysis presented below.

Andreyev and Wiseman (1989) used the MODFLOW groundwater flow computer model developed by the U.S. Geological Survey to generate a series of dimensionless curves to predict retention basin recovery under lateral saturated flow (Stage Two) conditions. The dimensionless parameters can be expressed as:

$$F_x = \sqrt{\frac{W^2}{4\ K_H\ D\ t}} \qquad (23\text{-}5)$$

$$F_y = \frac{h_c}{H_T} \qquad (23\text{-}6)$$

where: F_x = Dimensionless parameter representing physical and hydraulic characteristics of the retention basin and effective aquifer system (x-axis)

F_y = Dimensionless parameter representing percent of water level decline below a maximum level (y-axis)

W = Average width of the retention basin, midway between basin bottom and water level at time t (*ft*)

K_H = Average horizontal hydraulic conductivity (*ft/day*)

D = Average saturated thickness of the aquifer (*ft*)

t = Cumulative time since saturated lateral (Stage Two) flow started (*days*)

h_c = Height of water in the basin above the initial ground water table at time t (*ft*)

H_T = Height of water in the basin above the initial ground water table at the start of saturated lateral (Stage Two) flow (*ft*)

The average saturated thickness of the aquifer (D) can be expressed as:

$$D = H + \frac{h_c}{2} \qquad (23\text{-}7)$$

where: H = Initial saturated thickness of the aquifer (*ft*)

The height of water in the basin above the initial groundwater table at the start of saturated lateral (Stage Two) flow (H_T) is:

$$H_T = h_b + h_2 \quad (23\text{-}8)$$

where: h_2 = Height of water in the basin above the basin bottom at the start of saturated lateral (Stage Two) flow (*ft*)

Figure 23-3 contains an illustration of the design parameters for analysis of saturated lateral (Stage Two) flow conditions. The design parameters for a retention system utilizing both unsaturated vertical (Stage One) and saturated lateral (Stage Two) flow is represented in Figure 23-4.

The equation for F_x can be rearranged to solve for the time (t) to recover the remaining treatment volume under saturated lateral (Stage Two) flow:

$$t = \frac{W^2}{4\ K_H\ D\ F_x^2} \quad (23\text{-}9)$$

Andreyev and Wiseman (1989) developed four families of dimensionless curves for fillable porosity (f) = 0.1, 0.2, 0.3, and 0.4. Five individual curves, for length to width ratios of 1, 2, 4, 10, and 100 were developed for each family. The resulting dimensionless curves are presented on Figures 23-5 through 23-8. These curves can be used to calculate the recovery time given the hydraulic parameters of the aquifer, the recharge rate, and the physical configuration of the basin. An example design problem utilizing both unsaturated vertical (Stage One) and saturated lateral (Stage Two) flows to estimate the recovery time is given below in section 23.5.

23.4 Recommended Field and Laboratory Tests for Aquifer Characterization

The following field and laboratory investigation and testing guidelines are recommended for aquifer characterization and are described in more detail in Special Publication SJ93-SP10.

23.4.1 Definition of Aquifer Thickness

Standard Penetration Test (SPT) borings (ASTM D-1586) or auger borings (ASTM D 1452) should be used to define the thickness of the mobilized aquifer (i.e., depth to "hardpan" or restrictive layer) especially where the ground water table is high. This type of boring provides a continuous measure of the relative density/consistency of the soil (as manifested by the SPT "N" values) which is important for detecting the top of cemented or very dense "hardpan" type layers. Such layers restrict the vertical movement of ground water and are found over much of the District. If carefully utilized, manual "bucket" auger borings can also be used to define the thickness of the aquifer. Power flight auger borings may also be used with caution since this method may result in some mixing of soil from a given level with soils from strata above, thus masking the true thickness of the aquifer. To avoid this problem, technical guidelines for continuous flight auger borings are included in Appendix C of the District Special Publication SJ93-SP10.

Preferably, the SPT borings should be continuously sampled at least 2 feet into the top of the hydraulically restrictive layer. If a restrictive layer is not encountered, the boring should be extended to at least 10 feet below the bottom of the pond. As a minimum, the depth of the exploratory borings should extend to the base elevation of the aquifer assumed in analysis, unless nearby deeper borings or well logs are available.

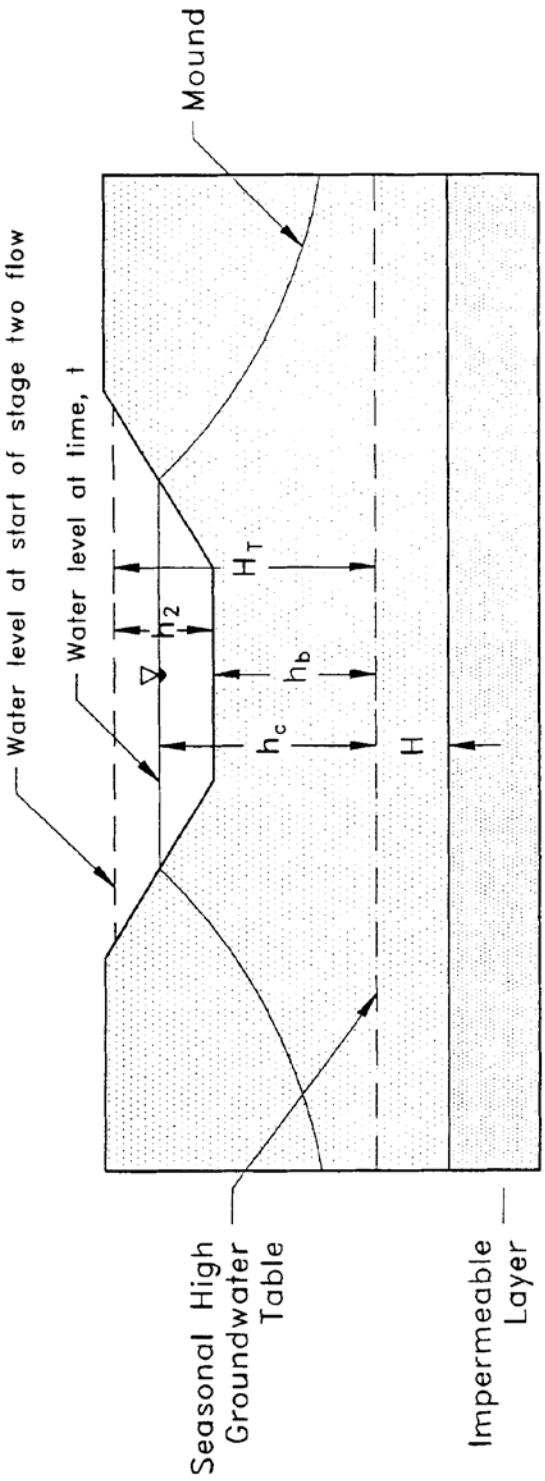


Figure 23-3. Design Parameters for Groundwater Mounding Analysis for Stage Two (Lateral) Flow (Source: Andreyev and Wiseman, 1989)

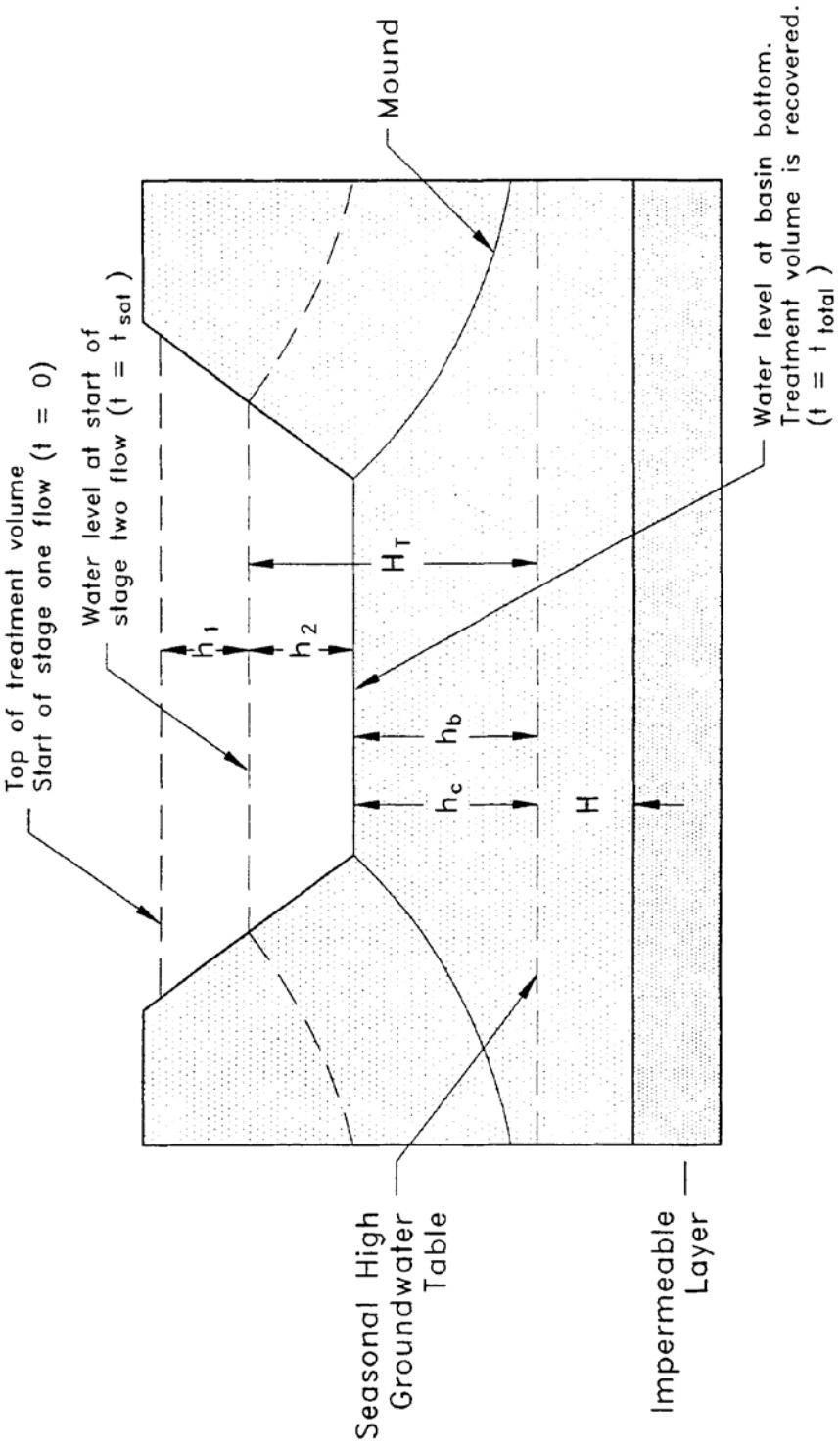


Figure 23-4. Design Parameters for Groundwater Mounding Analysis for Stage One and Stage Two Flow (Source: Andreyev and Wiseman, 1989).

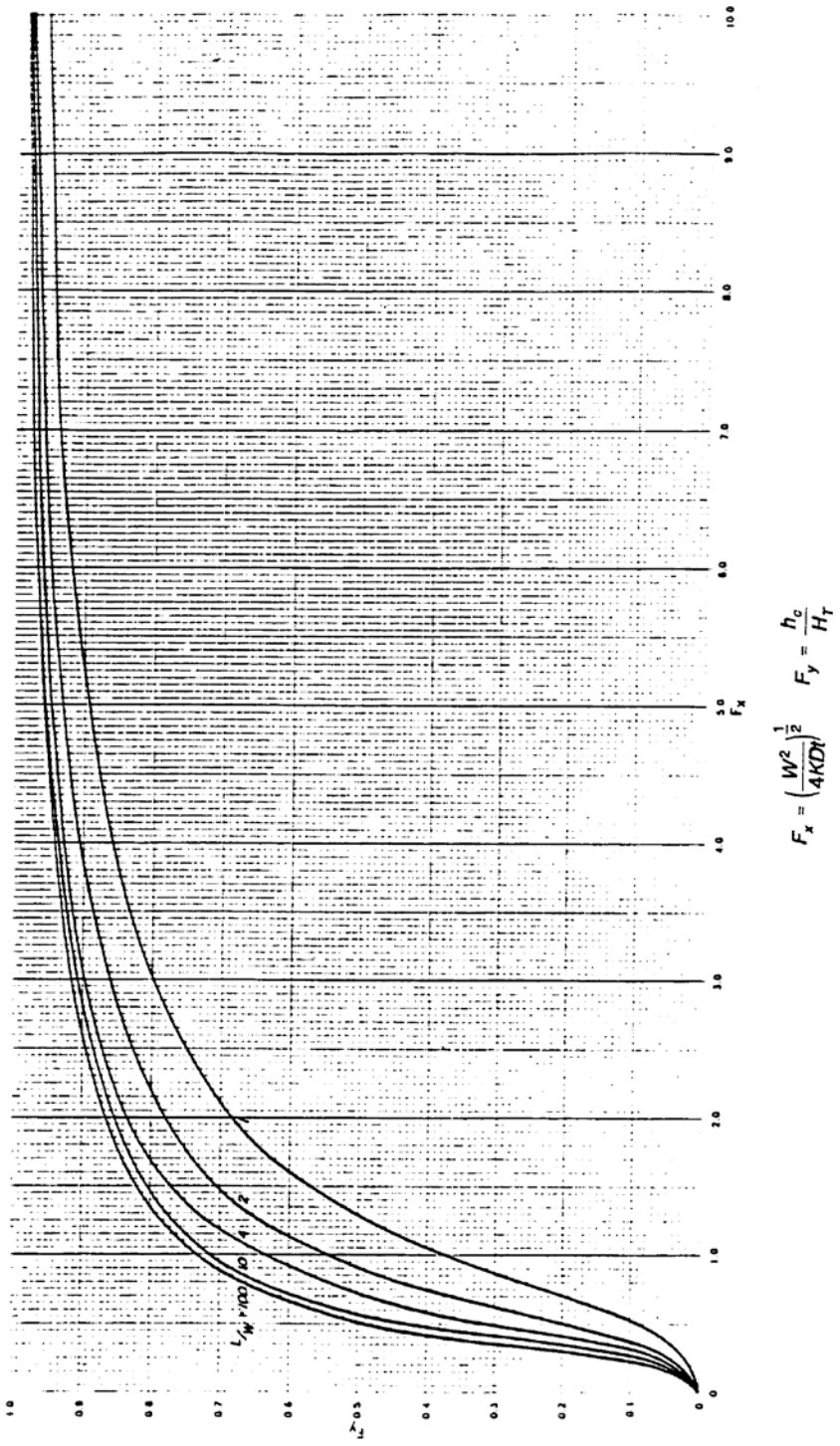


Figure 23-5. Dimensionless Curves Relating Basin Design Parameters to Basin Water Level in a Rectangular Retention Basin Over an Unconfined Aquifer (f = 0.1) (Source: Andreyev and Wiseman, 1989).

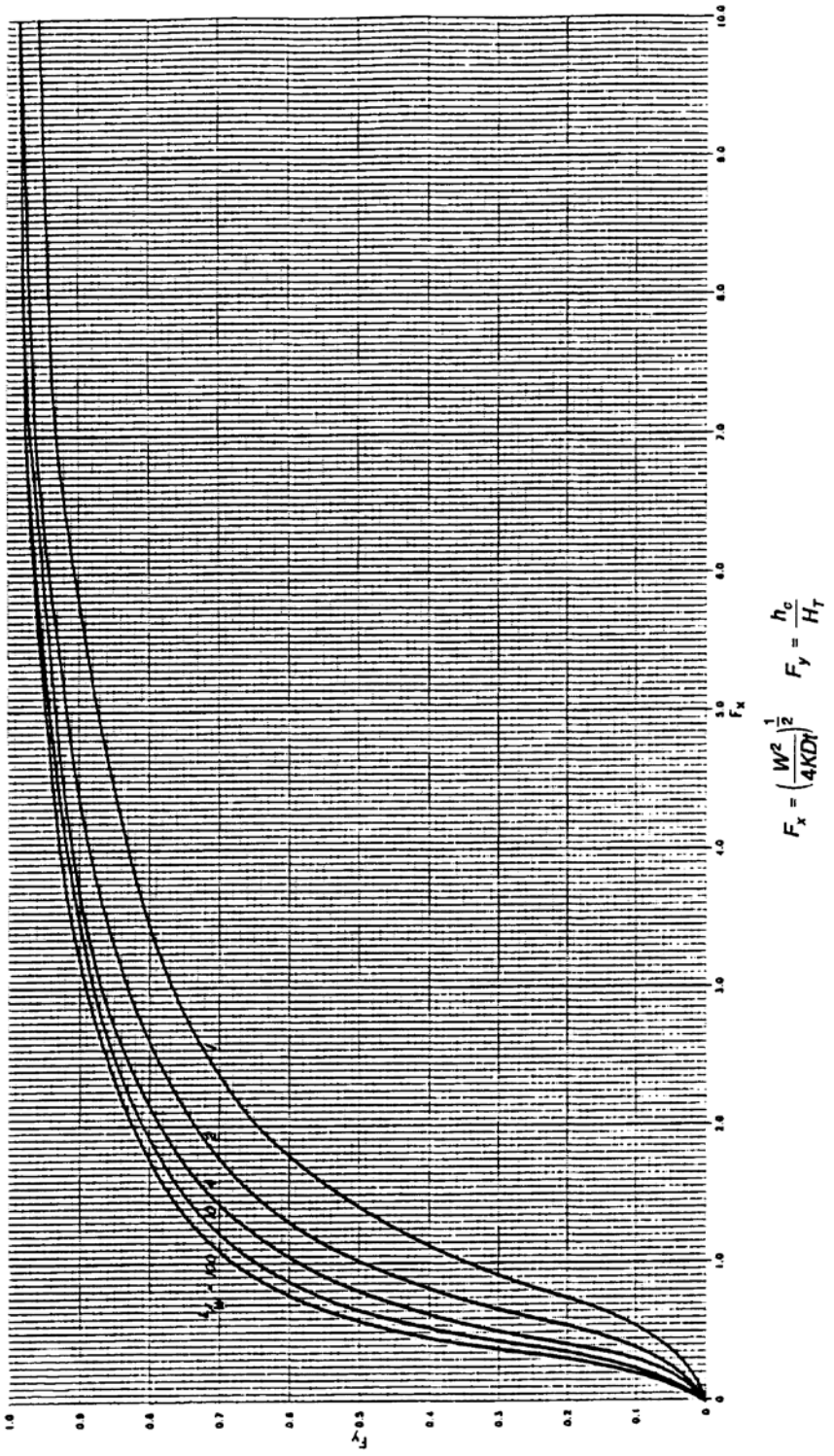


Figure 23-6. Dimensionless Curves Relating Basin Design Parameters to Basin Water Level in a Rectangular Retention Basin Over an Unconfined Aquifer (f = 0.2) (Source: Andreyev and Wiseman, 1989).

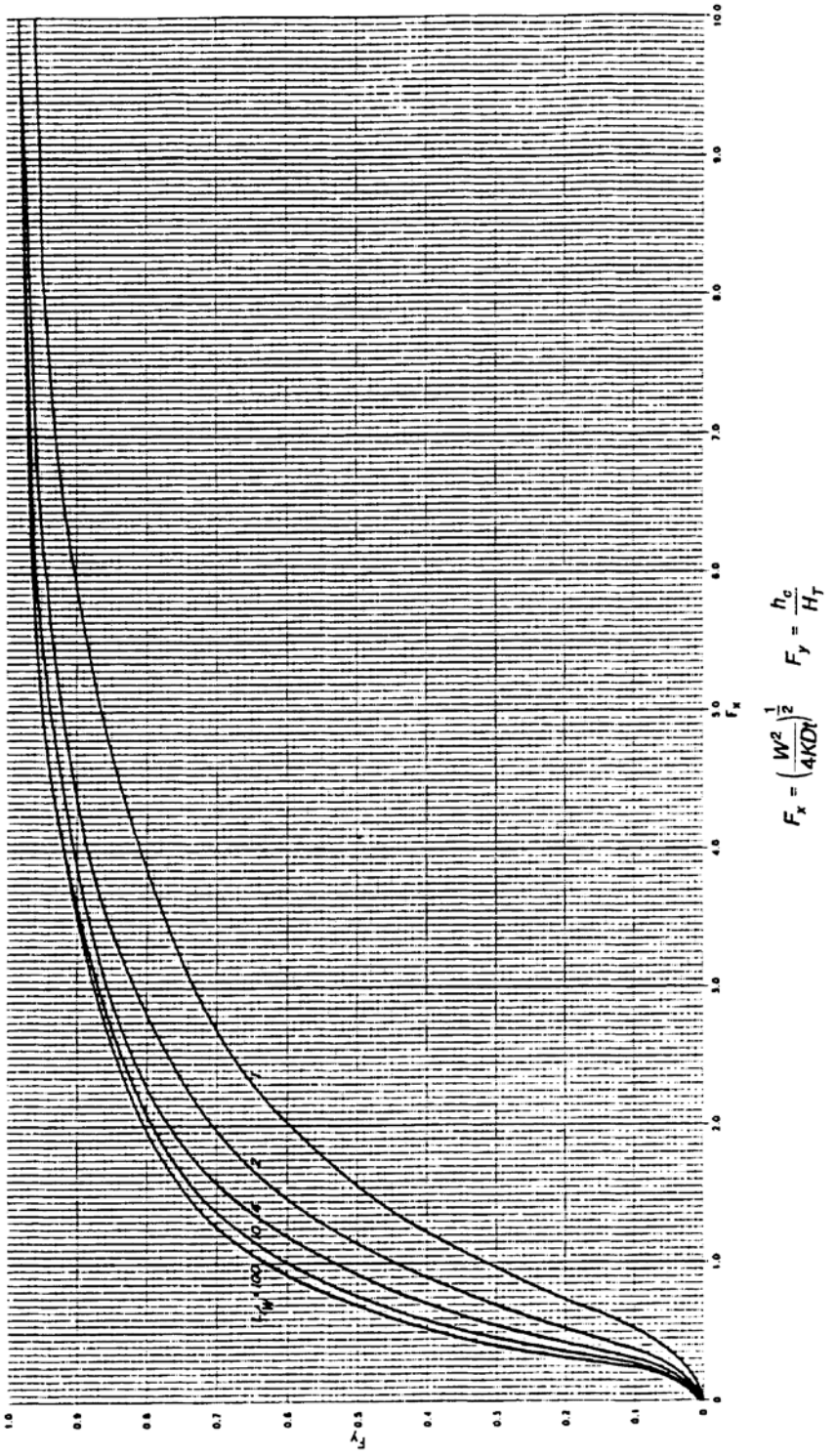


Figure 23-7. Dimensionless Curves Relating Basin Design Parameters to Basin Water Level in a Rectangular Retention Basin Over an Unconfined Aquifer (f = 0.3) (Source: Andreyev and Wiseman, 1989).

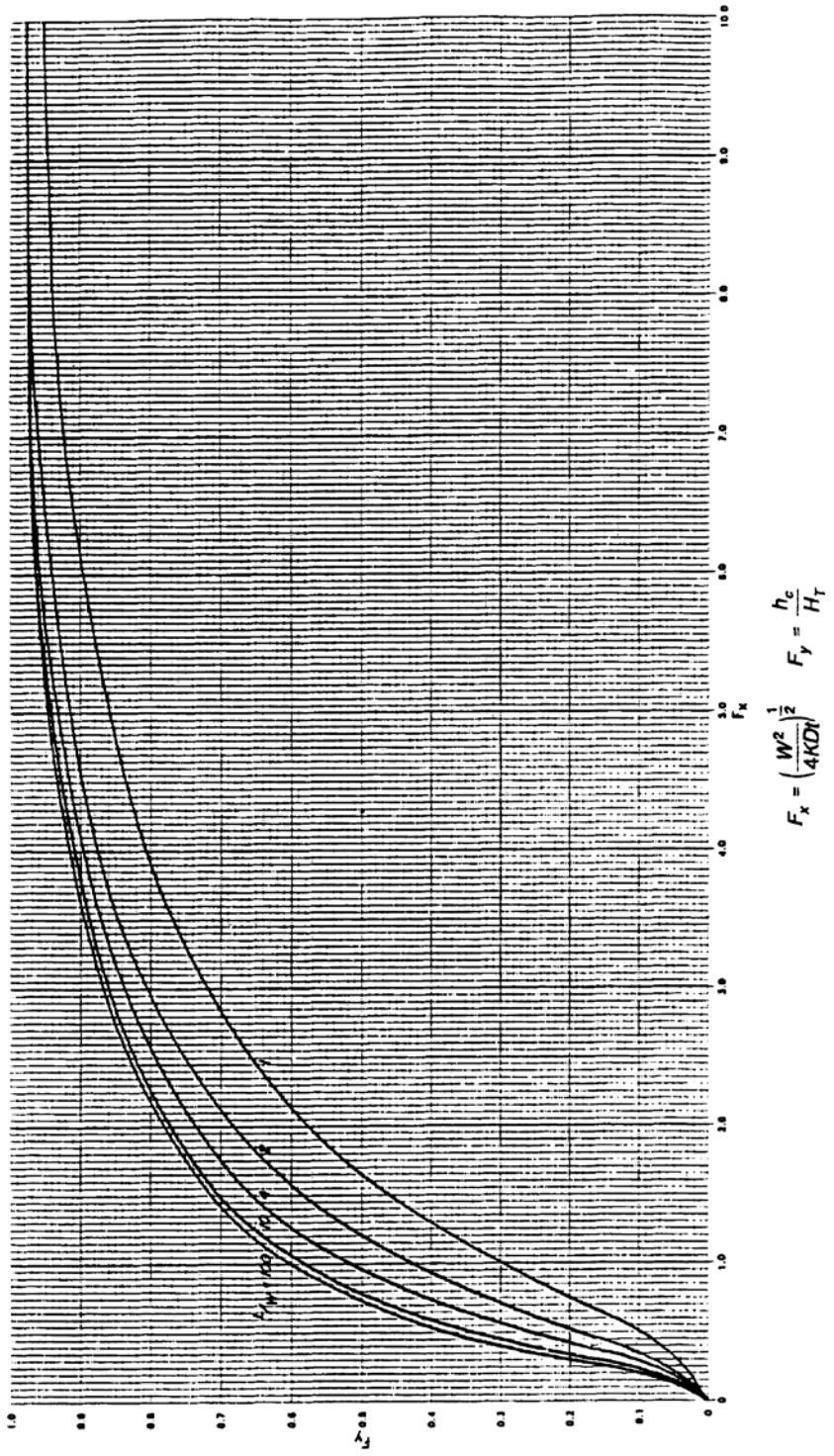
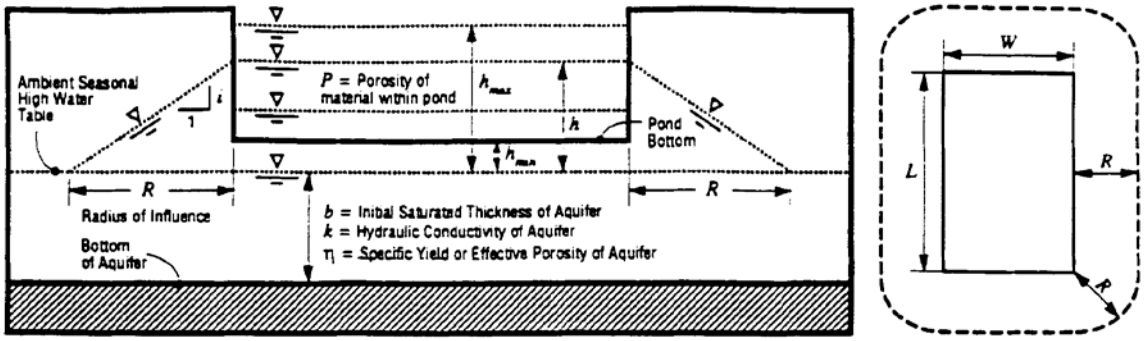


Figure 23-8. Dimensionless Curves Relating Basin Design Parameters to Basin Water Level in a Rectangular Retention Basin Over an Unconfined Aquifer (f = 0.4) (Source: Andreyev and Wiseman, 1989).



Required to find: Time for recovery from h_{max} to h_{min}

Solution: Assumes the volume that infiltrates the aquifer fills a triangular wedge above the water table, adjacent to the pond perimeter. For volume balance, therefore:

Volume Recovered from Pond = Volume in saturated triangular prism adjacent to pond and conical fans around edges

$$PLW\,(h_{max} - h) = \eta\, h \left\{ R\,(L + W) + \frac{\pi}{3} R^2 \right\} \tag{1}$$

Solving equation (1) for radius of influence:

$$R = \frac{\left\{ (L + W)^2 + \frac{4\pi}{3} \frac{PWL}{\eta} \frac{(h_{max} - h)}{h} \right\}^{1/2} - (L + W)}{\frac{2\pi}{3}} \tag{2}$$

$$\text{Therefore gradient } i = \frac{h}{R} = \frac{\frac{2\pi}{3} h}{\left\{ (L + W)^2 + \frac{4\pi}{3} \frac{PWL}{\eta} \frac{(h_{max} - h)}{h} \right\}^{1/2} - (L + W)} \tag{3}$$

$$\text{Seepage Face Area } A = (h + b)(2L + 2W) \tag{4}$$

$$\text{From Darcy's Law: Infiltration Rate } q = k\,i\,A = \frac{\frac{4\pi}{3} k\,(L + W)\,h\,(h + b)}{\left\{ (L + W)^2 + \frac{4\pi}{3} \frac{PWL}{\eta} \frac{(h_{max} - h)}{h} \right\}^{1/2} - (L + W)} \tag{5}$$

Incremental recovered volume
$PWL\,dh = q\,dt$;

$$dt = \frac{PWL}{q}\,dh$$

$$\text{Recovery Time } t = \int_{h_{min}}^{h_{max}} PWL \frac{\left[\left\{ (L + W)^2 + \frac{4\pi}{3} \frac{PLW}{\eta} \frac{(h_{max} - h)}{h} \right\}^{1/2} - (L + W) \right]}{\frac{4\pi}{3} k\,h\,(L + W)\,(h + b)}\,dh \tag{6}$$

Figure 23-9. Simplified Analytical Method (Source: SJRWMD Special Publication SJ93-SP10)

The number of borings required to characterize the receiving aquifer of a retention basin depends on the anticipated areal and vertical variability of the aquifer. The local experience of the geotechnical engineer also plays an important role in the selection of the number of borings. As a guide, Andreyev and Wiseman (1989) suggest the following empirical equation to estimate the number of exploratory borings required:

$$B = 1 + \sqrt{2A} + \frac{L}{2\pi W} \qquad (23\text{-}10)$$

where: B = Number of borings required
A = Average area of basin (*acres*)
L = Length of basin (*ft*)
W = Width of basin (*ft*)

Ground surface elevations at the boring locations should be surveyed if there is significant relief in the locality of the borings.

23.4.2 Estimated Normal Seasonal High Ground Water Table

In estimating the normal seasonal high ground water table (SHGWT), the contemporaneous measurements of the water table are adjusted upward or downward taking into consideration numerous factors, including: antecedent rainfall, redoximorphic features (i.e., soil mottling), stratigraphy (including presence of hydraulically restrictive layers), vegetative indicators, effects of development, and hydrogeologic setting. The application of these adjustments requires considerable experience.

In general, the measurement of the depth to the ground water table is less accurate in SPT borings when drilling fluids are used to maintain an open borehole. Therefore, when SPT borings are drilled, it may be necessary to drill an auger boring adjacent to the SPT to obtain a more precise stabilized water table reading. In poorly drained soils, the auger boring should be left open long enough (at least 24 hours) for the water table to stabilize in the open hole.

23.4.3 Estimation of Horizontal Hydraulic Conductivity of Aquifer

The following hydraulic conductivity tests are recommended for retention systems:

a) Laboratory hydraulic conductivity test on undisturbed sample (Figure 23-10)

b) Uncased or fully screened auger hole using the equation on Figure 23-11

c) Cased hole with uncased or screened extension with the base of the extension at least one foot above the confining layer (Figure 23-12)

d) Pump test or slug test, when accuracy is important and hydrostratigraphy is conductive to such a test method.

Of the above methods, the most cost effective is the laboratory permeameter test on an undisturbed horizontal sample. However, it becomes difficult and expensive to obtain undisturbed hydraulic conductivity tube samples under the water table or at depths greater than 5 feet below ground surface. In such cases -- where the sample depth is over 5 feet below ground surface or below the water table -- it is more appropriate to use the insitu uncased or fully screened auger hole method (Figure 23-11) or the cased hole with uncased or screened extension (Figure 23-12).

The main limitation of the laboratory permeameter test on a tube sample is that it represents the hydraulic conductivity at a point in the soil profile which may or may not be representative of the entire thickness of the mobilized aquifer. In most cases, the sample is retrieved at a depth of 2 to 3 feet below ground surface where the soil is most permeable, while the mobilized aquifer depth may be 5 to 6 feet. It is therefore important to use some judgement and experience in reviewing the soil profile to estimate the weighted hydraulic conductivity of the mobilized aquifer. It is not practical or economical to obtain and test permeability tubes at each point in the soil profile where there is a change in density, degree of cementation, or texture. Some judgement and experience must therefore be used to estimate representative hydraulic conductivities of the less permeable zones of the mobilized aquifer. In such an evaluation, geotechnical engineers usually consider, among other factors, particle size distribution (particularly the percent of roots, sample orientation (i.e., horizontal or vertical), remolding, and compaction. Valuable insight into the variation of saturated hydraulic conductivity with depth in typical Florida soils can be gleaned from the comprehensive series of soil characterization reports published by the Soil Science Department at the University of Florida. As an additional guide, Figure 23-13 presents an approximate correlation between hydraulic conductivity of poorly graded fine sands in Florida versus the percent by dry weight passing the U.S. No. 200 sieve.

The uncased or fully screened auger hole or cased hole with uncased or screened extension hydraulic conductivity test methods are suitable for use where the mobilized aquifer is stratified and there is a high water table. Ideally, these tests should be screened over the entire thickness of the mobilized aquifer to obtain a representative value of the weighted horizontal hydraulic conductivity. Tests performed below the water table avoid the need to saturate the soil prior to testing. If the mobilized aquifer is thick with substandard saturated and unsaturated zones, it is worthwhile to consider performing a laboratory permeameter test on an undisturbed sample from the upper unsaturated profile and also performing one the institute tests to characterize the portion of the aquifer below the water table.

Pump tests are appropriate for thick aquifers (greater than 10 feet) without intermediate hydraulically restrictive layers of hardpan, etc. Pump tests are the most expensive of the recommended hydraulic conductivity test methods. Therefore, it is recommended that pump tests be used in cases where the mobilized aquifer is relatively thick (greater than 10 feet)

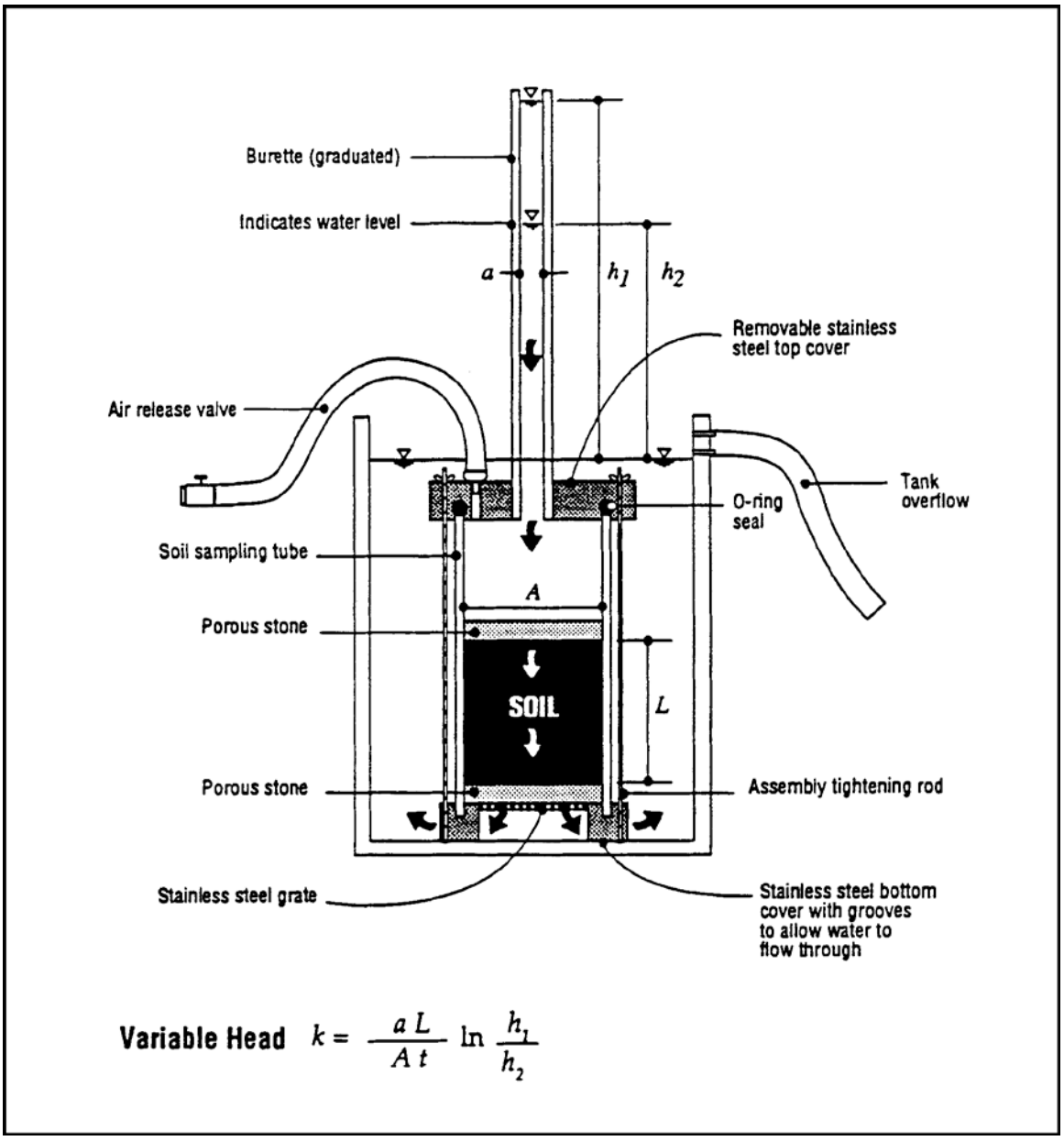
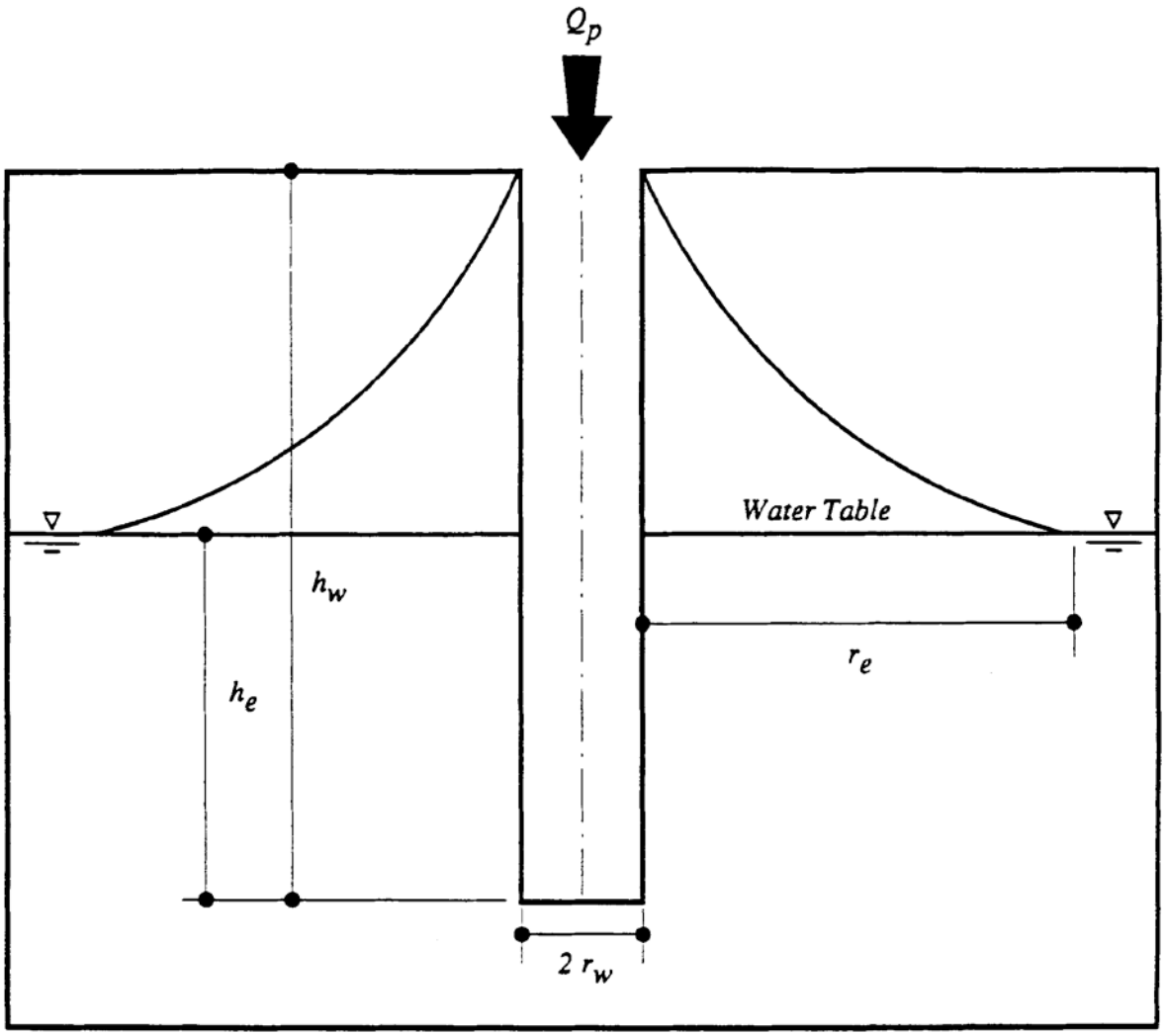


Figure 23-10. Laboratory Permeameter Test (PSI/Jammal & Associates Test Equipment) (Source: SJRWMD Special Publication SJ93-SP10)



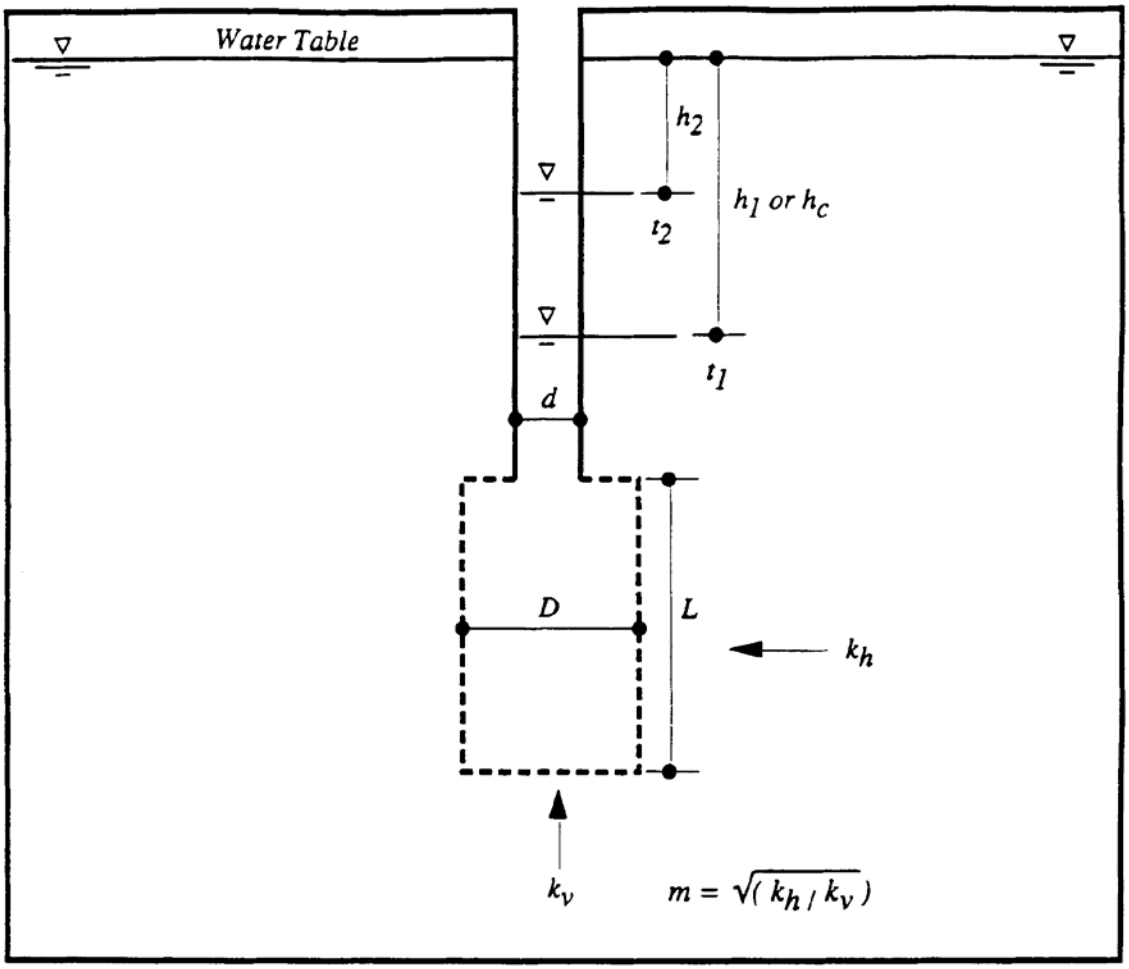
NOTE

Use r_e = 20 to 25 ft.

$$K = \frac{Q_p \, ln \left(\frac{r_e}{r_w}\right)}{\pi \, (h_w^{\,2} - h_e^{\,2})}$$

Q_p = Steady inflow rate to borehole (cfs)
K = Hydraulic conductivity (ft/sec)
r_e = Radius of influence of borehole (ft)
r_w = Radius of borehole (ft)
h_e = Depth of borehole below water table (ft)
h_w = Total depth of borehole (ft)

Figure 23-11. Field Hydraulic Conductivity Test: Uncased or Fully Screened Auger Hole, Constant Head (Source: SJRWMD Special Publication SJ93-SP10)



Constant Head $k_h = \dfrac{q \ln \left[\dfrac{mL}{D} + \sqrt{1 + \left(\dfrac{mL}{D}\right)^2}\right]}{2 \pi L h_c}$

Variable Head $k_h = \dfrac{d^2 \ln \left[\dfrac{mL}{D} + \sqrt{1 + \left(\dfrac{mL}{D}\right)^2}\right]}{8 L (t_2 - t_1)} \ln \dfrac{h_1}{h_2}$ $\qquad k_h = \dfrac{d^2 \ln \left(\dfrac{2mL}{D}\right)}{8 L (t_2 - t_1)} \ln \dfrac{h_1}{h_2}$ for $\dfrac{mL}{D} > 4$

ASSUMPTIONS

Soil at intake, infinite depth and directional isotropy (k_v and k_h constant); no disturbance, segregation, swelling or consolidation of soil; no sedimentation or leakage; no air or gas in soil, well point, or pipe; hydraulic losses in pipes, well point or filter negligible. (After Hvorslev, U. S. Corps of Engineers, W.E.S., 1951)

Figure 23-12. Field Hydraulic Conductivity Test: Cased Hole with Uncased or Screened Extension (Source: SJRWMD Special Publication SJ93-SP10)

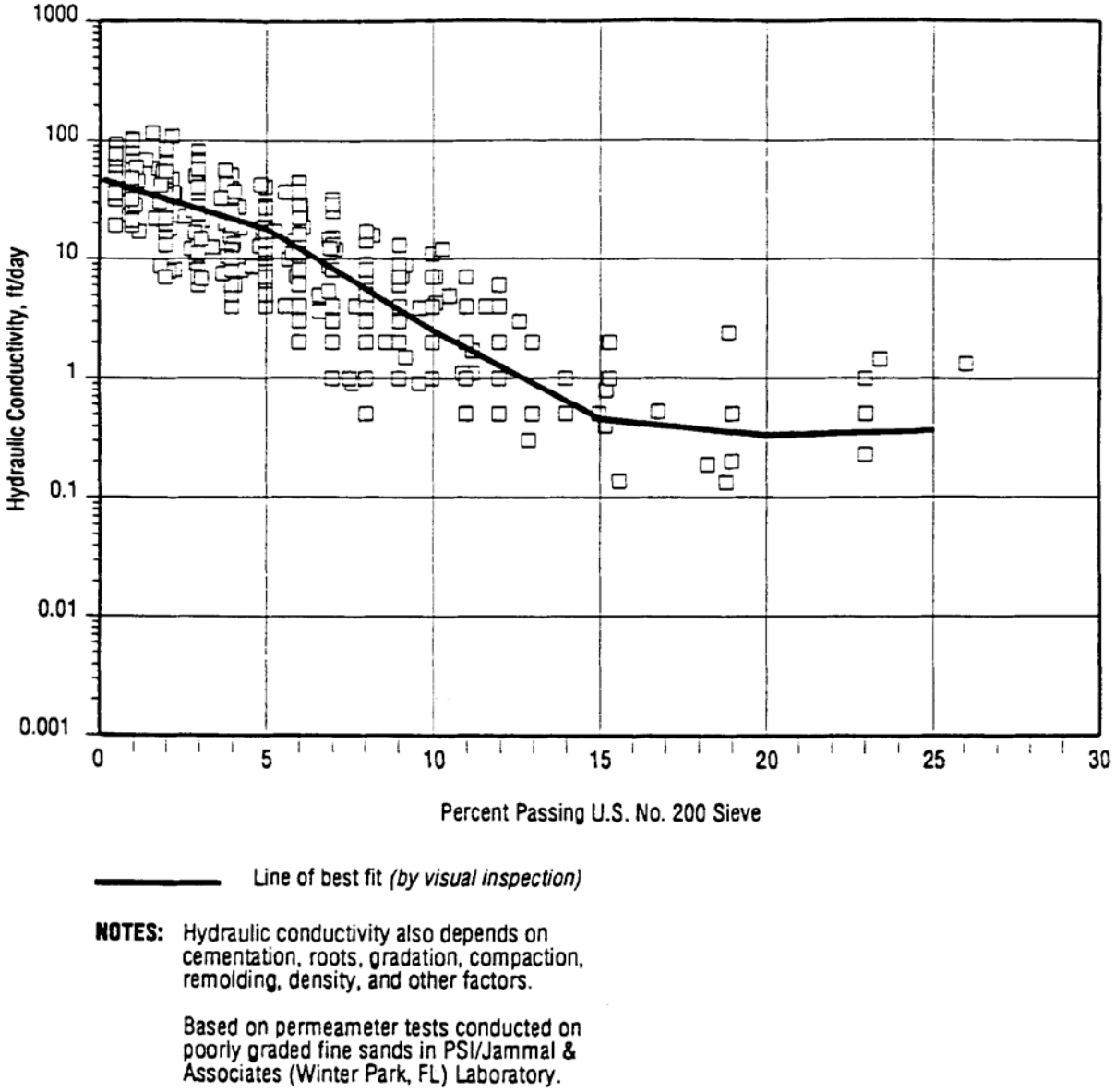


Figure 23-13. Correlation of Hydraulic Conductivity with Fraction by Weight Passing the U. S. No. 200 Sieve (Poorly Graded Fine Sands in Florida) (Source: SJRWMD Special Publication SJ93-SP10)

and where the environmental, performance, or size implications of the system justifies the extra costs of such a test.

For design purposes, a hydraulic conductivity value of over 40 ft/day should not be used for fine-grained sands and 60 ft/day for medium-grained sands.

The selection of the number of hydraulic conductivity tests for a specific project depends of the local experience and judgement of the geotechnical engineer. Andreyev and Wiseman (1989) recommends one hydraulic conductivity test plus one more test for every four soil borings.

23.4.4 Vertical Hydraulic Conductivity

The unsaturated vertical infiltration rate (K_{vu}) can be measured using a double ring infiltrometer test. The field test should be conducted at the same elevation as the proposed basin bottom or lower, if possible. The surface at the test site should be compacted to simulate pond bottom conditions after construction. Field measurements of K_{vu} at depths of more than 1 to 2 feet may not be possible, however, correlation of shallow strata test results with deeper strata may be possible. If field measurements of K_{vu} are not possible, measure the saturated vertical hydraulic conductivity (K_{vs}) by obtaining undisturbed tube sample in the vertical direction. Conduct laboratory permeameter test and then estimate K_{vu} using an empirical correlation of K_{vu} versus K_{vs} (Andreyev and Wiseman 1989):

$$K_{vu} = \frac{2}{3} K_{vs} \qquad (23\text{-}11)$$

23.4.5 Estimation of Fillable Porosity

In Florida, the receiving aquifer system for retention basins predominantly comprises poorly graded (i.e., relatively uniform particle size) fine sands. In these materials, the water content decreases rather abruptly with the distance above the water table and they therefore have a well-defined capillary fringe.

Unlike the hydraulic conductivity parameter, the fillable porosity value of the poorly graded fine sand aquifers in Florida are in a much narrower range (20 to 30 percent), and can therefore be estimated with much more reliability. For fine sand aquifers, it is therefore recommended that a fillable porosity in the range 20 to 30 percent be used in infiltration calculations. The higher values of fillable porosity will apply to the well- to excessively-drained, hydrologic group "A" fine sands, which are generally deep, contain less than 5 percent by weight passing the U.S. No. 200 (0.074 mm) sieve, and have a natural moisture content of less than 5 percent. No specific field or laboratory testing requirements is recommended to estimate this parameter.

23.5 Design Example for Retention Basin Recovery

The following design example is for estimating retention basin recovery by hand utilizing the methodologies in sections 23.3.3 and 23.3.5.

Given: Commercial project discharging to Class III waters
Drainage area = 1.5 acres
Percent impervious = 60%
Off-site drainage area = 0 acres
On-line treatment
f = 0.30; K_{vs} = 2 ft/day; K_H = 10 ft/day; FS = 2.0
Basin bottom elevation = 20.0 feet
Seasonal high groundwater table elevation = 17.0 feet
Impervious layer elevation = 14.0 feet
Rectangular retention basin with bottom dimensions of length = 100 ft and width = 50 ft

The proposed detention basin has the following stage-storage relationship:

Stage (ft)	Storage (ft^3)
20.00	0
20.25	1278
20.50	2615
20.75	4011
21.00	5468
21.25	6988

Objective: Calculate the time to recover the treatment volume.

Design Calculations:

Part I. Calculate the Treatment Volume and
the Height of the Treatment Volume in the Basin

Step 1. Calculate the required treatment volume. For on-line retention, the rule requires retention of 0.5 inches of runoff or 1.25 inches times the impervious area, whichever is greater, plus an additional 0.5 inch.

$$0.5\text{" volume} = \frac{(1.5\ ac)\ (0.5\ in)\ (43560\ ft^2/ac)}{12\ in/ft} = 2723\ ft^3$$

$$1.25\text{" x imp. area} = 1.5\ ac\ (0.6)\ (1.25\ in)\ (43560\ ft^2/ac) = 4084\ ft^3$$
$$12\ in/ft$$

$$Total\ treatment\ volume = 2723 + 4084 = 6807\ ft^3$$

Step 2. Calculate the height of the treatment volume in the basin. Using the stage/storage data, we see that 6807 ft^3 is between elevation 21.0 and 21.25 ft. Interpolating:

$$Treatment\ vol.\ elev. = (21.25 - 21.0\ ft)\ x\ \frac{(6807\ ft^3 - 5468\ ft^3)}{(6988\ ft^3 - 5468\ ft^3)} + 21.0\ ft = 21.22\ ft$$

Part II. Unsaturated Vertical Flow Analysis

Step 3. Determine if saturated lateral (Stage Two) flow will occur.

$$Treatment\ volume\ depth\ (h_v) = 21.22 - 20.00\ ft = 1.22\ ft$$

From Equation 23~~26~~-4, the height of water to saturate the soil (h_u) is:

$$h_u = f\ (h_b) = 0.3\ (3\ ft) = .90\ ft$$

Saturated lateral flow will occur since $h_v > h_u$

Step 4. Calculate the volume of water infiltrated in unsaturated vertical (Stage One) flow and the time to infiltrate this volume. The area of basin bottom (A_b) is:

$$A_b = 50\ ft\ x\ 100\ ft = 5000\ ft^2$$

Utilizing Equation 23-3, the volume infiltrated during Stage One (V_u) is:

$$V_u = 5000\ ft^2\ (3\ ft)\ 0.35) = 5250\ ft^3$$

The unsaturated vertical hydraulic conductivity (K_{vu}) is determined from Equation 23-11:

$$K_{vu} = \frac{2\ (2\ ft/day)}{3} = 1.33\ ft/day$$

The design infiltration rate (I_d) is found from Equation 23-1:

$$I_d = \frac{1.33\ ft/day}{2} = 0.67\ ft/day$$

From Equation 23-2, the time to saturate soil beneath the basin (t_{sat}) is:

$$t_{sat} = \frac{(3\ ft)(0.35)}{0.67\ ft/day} = 1.57\ days$$

Part III. Saturated Lateral Flow Analysis

Step 5. Calculate the remaining treatment volume to be recovered under saturated lateral (Stage Two) flow conditions.

Remaining volume to be infiltrated under saturated lateral flow = 6807 - 5250 = 1557 ft^3

Calculate the elevation of treatment volume at the start of saturated lateral flow by interpolating:

Treatment volume elev. at start of saturated lateral flow = (20.50 - 20.25 *ft*) x $\frac{(1557\ ft^3 - 1278\ ft^3)}{(2615\ ft^3 - 1278\ ft^3)}$ + 20.25 *ft* = 20.30 *ft*

Step 6. Calculate F_y and F_x

When the treatment volume is recovered (time $t = t_{Total}$) the water level is at the basin bottom. Hence, the height of the water level above the initial groundwater table (h_c) will be equal to h_b.

$$h_c = h_b = 3\ ft \quad (\text{at } t = t_{Total})$$

The height of water in the basin at the start of saturated lateral flow (h_2) is:

$$h_2 = 20.3 - 20.0 = 0.3\ ft$$

From Equation 23-8:

$$H_T = h_b + h_2 = 3.0 + 0.3 = 3.3\ ft$$

F_y is determined from Equation 23-6:

$$F_y = \frac{3\ ft}{3.3\ ft} = 0.91$$

When the water level is at the basin bottom (time $t = t_{Total}$) the basin length (L) = 100 ft and the basin width (W) = 50 ft.

$$\textit{Basin length to width ratio (L/W)} = \frac{100\ ft}{50\ ft} = 2$$

Determine F_x.

From Figure 23-7; $F_x = 4.65$ (for $f = 0.3$, $L/W = 2$, and $F_y = 0.91$)

Step 7. Calculate the time to recover the remaining treatment volume under saturated lateral flow.

$$H = 17.0 - 14.0 = 3.0\ ft$$

The average saturated thickness (D) can be found from Equation 23-7:

$$D = H + \frac{hc}{2} = 3.0 + \frac{3.0}{2} = 4.5\ ft$$

The time (t) to recover the remaining treatment volume under lateral saturated flow conditions is determined from Equation 15-9:

$$t = \frac{(50\ ft)^2}{(4)\ (10\ ft/day)\ (4.5\ ft)\ (4.75)^2} = 0.62\ days$$

Part IV. Calculate Total Recovery Time

Step 8. Total time to recover the treatment volume (t_{Total}) equals the time to recover during unsaturated vertical flow plus the time to recover under lateral saturated conditions.

Total recovery time (t_{Total}) = 1.57 *days* + 0.62 *days* = 2.19 *days* or 53 *hours*

Therefore, the design meets the 72-hour recovery time criteria.

23.6 References

Andreyev, N.E., and L.P. Wiseman. 1989. *Stormwater Retention Pond Infiltration Analysis in Unconfined Aquifers*. Prepared for Southwest Florida Water Management District, Brooksville, Florida.

Kuhns, G.L. 1990. *PONDFLOW II - Stormwater Recovery Analysis Program*. User Manual (unpublished).

Mongeau, M.L. 1991. Groundwater Considerations. In *Stormwater Management: A Designer's Course*. Florida Engineering Society, Orlando, Florida.

Professional Service Industries, Inc. (PSI), Jammal & Associates Division. 1993. *Full-Scale Hydrologic Monitoring of Stormwater Retention Ponds and Recommended Hydro-Geotechnical Design Methodologies*. Prepared for St. Johns River Water Management District, Palatka, Florida. Special Publication SJ93-SP10.

24.0 Methodology and Design Example for Underdrain Systems

24.1 Spacing Underdrain Laterals

Optimum drain spacing for drainage laterals is influenced by soil permeability, drain depth, water table elevation desired after installation of the system, and site characteristics. The following procedure used to design underdrain systems are largely based on techniques used to design agricultural subsurface drainage systems. The procedures in this section are adapted from Livingston et al. (1988).

Underdrain spacing can be determined by the "ellipse equation" which is expressed as (SCS 1973):

$$S = \sqrt{\frac{4\,K\,(m^2 + 2\,a\,m)}{q}} \qquad (24\text{-}1)$$

where: S = Drain spacing (*ft*)
K = Permeability rate of the soil (*ft*/*hr*)
M = Height of water table above drain (after drawdown) measured at the midpoint between laterals (*ft*)
A = Height of drain above impermeable layer (*ft*)
Q = Drainage coefficient (*ft/hr*)

Refer to Figure 24-1 for an illustration of the variables used in the ellipse equation.

The drainage coefficient (q) is the rate of water removal to obtain the required 72-hour recovery of the treatment volume and to lower the free water surface a specified depth below the basin bottom. In the ellipse equation, the drainage coefficient (q) is expressed in the same units as the permeability (K). The drainage coefficient (q) can be expressed as (Livingston et al. 1988):

$$q = \frac{c}{t} \qquad (24\text{-}2)$$

where: c = Depth from the ground surface to water table (after drawdown) (*ft*)
t = Recovery time (*hr*)

Based on Figure 24-1, the height of the water table above the drain (m) is given by:

$$m = d - c \qquad (24\text{-}3)$$

where: d Depth to drainage pipe from the natural ground surface elevation (*ft*)

The height of the drain above the impermeable barrier (a) is:

$$a = D - d \qquad (24\text{-}4)$$

where: D = Depth to impermeable layer from the natural ground surface elevation (*ft*)

When there is no impermeable barrier present, the depth to the impermeable layer (D) should be assumed at a depth equal to twice the drain depth (d).

The ellipse equation is based on steady state conditions and the assumption that ground water inflow from outside the area is slight. For this reason the use of the ellipse equation should be limited to conditions in which:

(a) The hydraulic gradient of the undisturbed water table is one percent (0.01 feet per foot) or less. Under these conditions there is likely to be very little ground water flow or movement from outside the system.

(b) The site is underlain by a impermeable barrier at relatively shallow depths (twice the depth of the drain (d) or less) which restricts vertical flow and forces the percolating water to flow horizontally toward the drain.

(c) A gravel envelope surrounds the perforated drainage pipes so that flow restrictions into the drain are minimized.

(d) The height of drain above impermeable layer (a) is less than or equal to the depth to the drainage pipe (d).

24.2 Length of Underdrain Required and Basin Dimensions

It is desirable to keep both the bottom and sides of the detention area dry. To maintain a dry basin bottom, the District recommends the distance between the basin bottom and water table after drawdown be at least 6 inches (see Figure 24-1). Maintaining $r \geq 6$ inches will ensure that the floor of the basin is above the ground water table capillary zone.

If the side slope and shape of the detention basin are known, it is possible to determine the dimensions of the basin and the exact length of drain pipe needed. The area (A_L) served by each lateral in a rectangular basin is given by (see Figure 24-2):

$$A_L = S\,(L + S) \qquad (24\text{-}5)$$

where: A_L = Area served by each lateral (ft^2)
L = Length of lateral (*ft*)

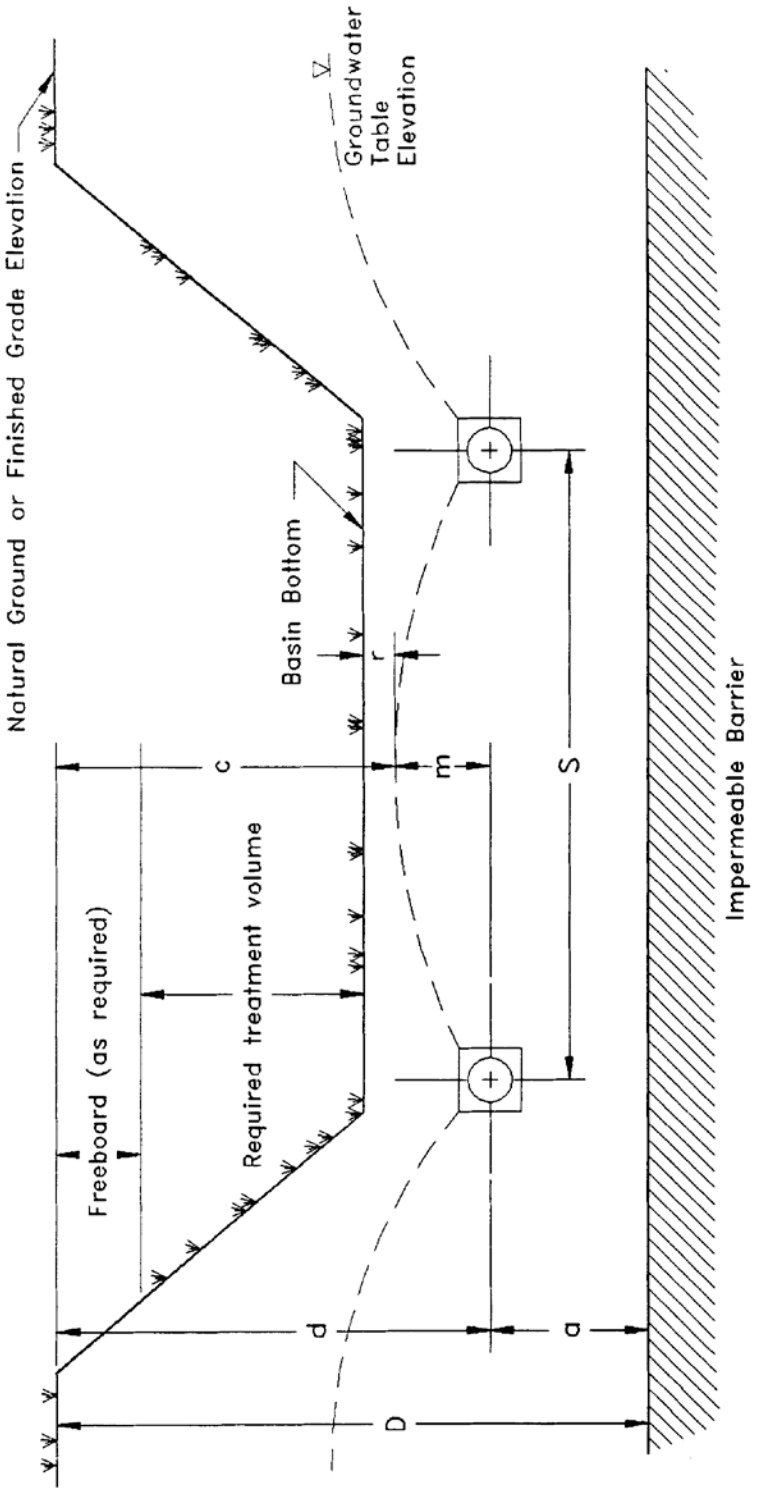


Figure 24-1. Cross-section of underdrain system illustrating variables used in the ellipse equation (N.T.S.)

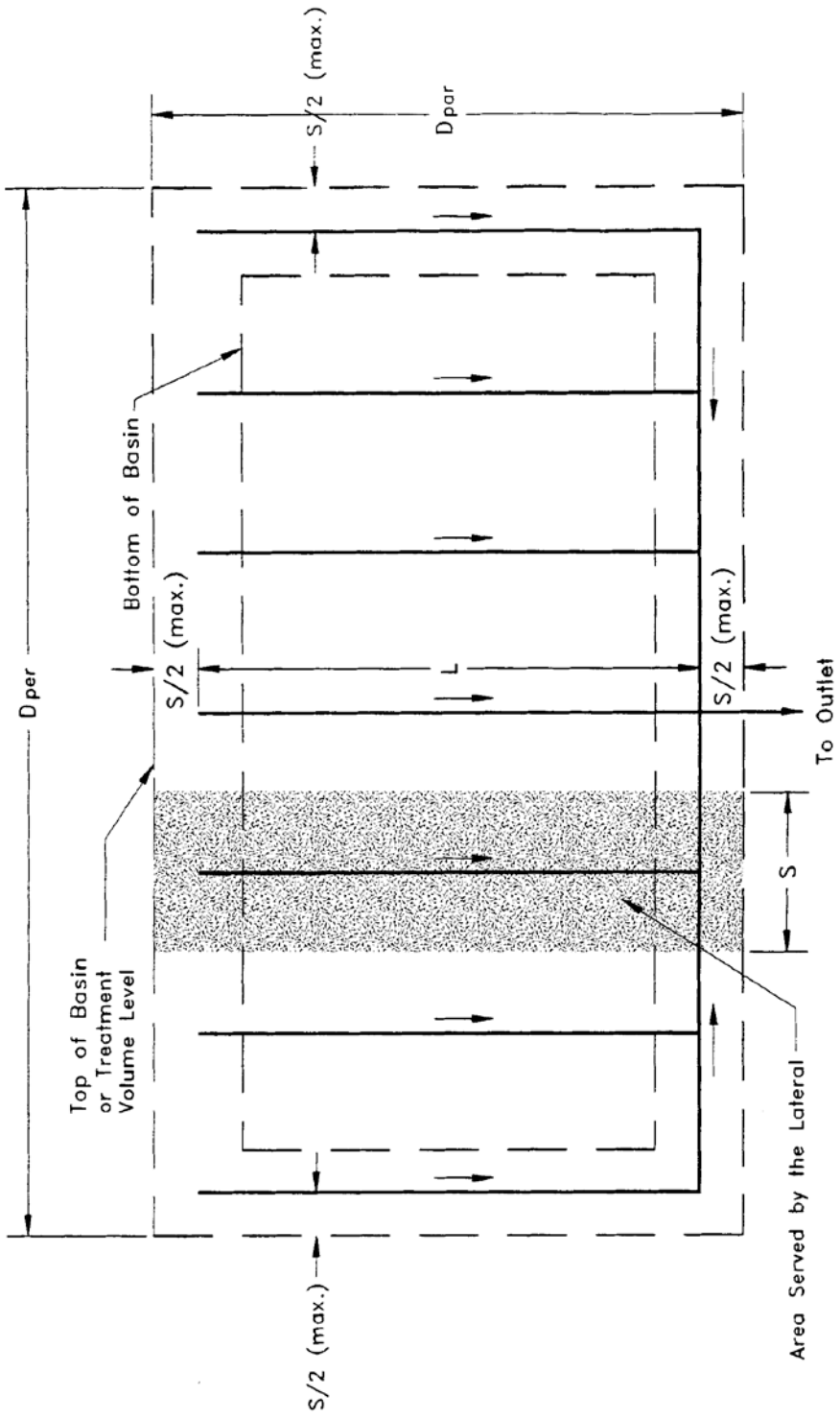


Figure 24-2. Top view of underdrain system illustrating variables used in the ellipse equation (N.T.S.)

The total area served by all the laterals (A_{TL}) is:

$$A_{TL} = A_L N \tag{24-6}$$

where: N = Number of laterals

The top area of the detention basin (A_{BT}) can be expressed as:

$$ABT = DPAR \ DPER \tag{24-7}$$

where: A_{BT} = Top area of the detention basin (ft^2)
D_{PAR} = Distance of top of basin in the direction parallel to the laterals (ft)
D_{PER} = Distance of top of basin in the direction perpendicular to the laterals (ft)

Setting the total area served by the laterals (A_{TL}) so that it is equal to the area of the detention basin as measured from the top of bank dimensions (A_{BT}), will ensure that both the bottom and sides of the basin remain dry between storm events. In this case the criteria for the lateral spacings and the top dimensions of the basin are determined as follows:

$$\textit{Lateral Length :} \quad L + S \geq D_{PAR} \tag{24-8}$$

$$\textit{Lateral Spacing :} \quad S\,(N) \geq D_{PER} \tag{24-9}$$

$$\textit{Lateral Side Offset Distance :} \quad Offset \leq \frac{S}{2} \tag{24-10}$$

$$\textit{Top Area:} \quad D_{PAR}\ (D_{PER}) \leq A_{TL} \tag{24-11}$$

Given the lateral spacing (S) and two of the three variables L, D_{PAR}, or D_{PER}, the designer can solve for the unknown variable using the equations in this section. An example problem for designing an underdrain system is given in section 24.5.

24.3 Drain Size

The discharge from a drain may be found by the following formula (SCS 1973):

$$Q_r = \frac{q\,S\left(L + \frac{S}{2}\right)}{CF} \tag{24-12}$$

where: Q_r = Relief drain discharge (cfs)
S = Drain spacing (ft)

L = Drain length (*ft*)
q = Drainage coefficient (*in/hr*)
CF = Conversion factor = 43200

Subsurface drains ordinarily are not designed to flow under pressure. The hydraulic gradient is considered to be parallel with the grade line of the underdrain. The flow in the drain is considered to be open-channel flow. The size conduit required for a given capacity is dependent on the hydraulic gradient and the roughness coefficient (n) of the drain. Commonly used materials have n values ranging from about 0.011 for good quality smooth plastic pipe to about 0.025 for corrugated metal. When determining the size of drain required for a particular situation the n value of the product to be used must be known. This information will normally be available from the manufacturer. The diameter pipe required for a given capacity, hydraulic gradient, and four different n values may be determined from Figures 24-3, 24-4, 24-5, and 24-6.

The area to the right of the broken line in the charts indicates conditions where the velocity of flow is expected to be less than 2.0 ft/sec. Lower velocities may present a problem with siltation in areas of fine soils.

24.4 Sizing of Drains Within the System

The previous discussion on drain size deals with the problem of selecting the proper size for a drain at a specific point in the stormwater system. In drainage systems with laterals and mains, the variation of flow within a single line may be great enough to warrant changing size in the line. This is often the case in long drains or system with numerous laterals. The example problem in section 24.5 illustrates a method for such a design.

24.5 Example Design Calculations for Underdrain Systems

Given: Desired depth of the treatment volume in the basin = 3 feet
Desired basin freeboard = 1 ft
4" minimum pipe diameter
3" gravel envelope on each side of the drainage pipes
Minimum distance between basin bottom and top of the gravel envelope = 2 feet = $m + r$
Depth from natural ground to impermeable barrier = 7.5 feet
Area of basin (measured from top of treatment volume) = 7260 ft^2
Maximum top dimension of basin perpendicular to drainage laterals = 30 feet
K = 1.0 ft/hr
Slope of laterals = 0.2%
n = 0.015
Safety factor = 2.0
"T" shaped drainage network (similar to Figure 24-2)

Objective: Design an underdrain system to lower the water level to a level 6" below the basin bottom within 72 hours.

Design Calculations:

Step 1. Calculate the required drain spacing.

First determine the depth to the drain line from natural ground surface (*d*) from the following relationship:

Depth to the drain line from = Depth of treatment volume in the basin + depth of natural ground surface (d) freeboard + depth of soil between basin floor and envelope + depth of gravel envelope + drain radius

$$d = 3\,ft + 1\text{ ft} + 2\,ft + \frac{3\,in}{12\,in/ft} + \frac{2\,in}{12\,in/ft} = 6.42\,ft$$

Determine the height of the drain above the impermeable layer (*a*) by utilizing Equation 24-4:

$$a = D - d = 7.5 - 6.42 = 1.08\,ft$$

Depth to water table after drawdown (*c*) = *treatment volume depth + freeboard depth + r*

$$c = 3\,ft + 1\,ft + \frac{6\,in}{12\,in/ft} = 4.5\,ft$$

From Equation 24-3:

$$m = d - c = 6.42\,ft - 4.5\,ft = 1.92\,ft$$

Determine the drainage coefficient (q) from Equation 24-2 with t = 36 hrs to incorporate a safety factor of 2 (i.e., 72/2 = 36):

$$q = \frac{c}{t} = \frac{4.5\text{ ft}}{36\text{ hr}} = 0.125\text{ ft/hr} = 1.5\text{ in/hr}$$

The spacing (S) is determined from Equation 24-1:

$$S = \sqrt{\frac{4(1.0\,ft/hr)\left[(1.92\,ft)^2 + 2(1.08\,ft)(1.92\,ft)\right]}{0.125\,ft/hr}} = 15.8\,ft$$

Determine the number of laterals (*N*) utilizing Equation 24-9:

$$N \geq \frac{30\,ft}{15.8\,ft} \geq 1.5$$

Since the laterals should be located no farther than *S*/2 from the top of the basin, use two laterals spaced 15 ft apart and located 5 ft inside the top of basin. The two laterals will be connected to a main line with an outlet pipe intersecting at the midpoint of the main line.

Step 2. Calculate the length of the laterals.

Use Equation 24-11 with $A_{BT} = A_{TL}$:

$$D_{PAR} = \frac{7260\ ft^2}{30\ ft} = 242\ ft$$

Find the length of each lateral (L) from Equation 24-8:

$$L = 242\ ft - 15\ ft = 227\ ft$$

Step 3. Size the drainage laterals. The flow per lateral (Q_r) is found from Equation 24-12:

$$Q_r = (1.5\ inch/hr)\ 15\ ft \left(227\ ft + \frac{15}{2}\ ft\right) \frac{1}{43200} = 0.122\ cfs$$

From Figure 24-5 with slope = 0.002 and n = 0.015, the capacity of a 4" pipe is 0.074 cfs. Since this is less than the flow rate that each lateral must convey, a 4" drain will not be sufficient for the entire length of the lateral and the size will have to be increased. Start the design process at the upper end of the drain using a minimum size of 4 inches. First, compute the distance that the drain would carry the flow on the assumed grade. The accretion per 100 would be:

$$\frac{0.122\,cfs}{227\ ft/100\ ft} = 0.054\,cfs$$

The distance (in 100-foot sections) down gradient that a 4" drain would be adequate is:

$$\frac{0.074\,cfs}{0.054\,cfs} = 1.38\ (100 - \text{foot sections of } 4\text{" pipe})$$

The 4" drain pipe is adequate for 135 feet of line. Continue these calculations for the next size pipe (5-inch) which has a maximum capacity of 0.13 cfs (from Figure 24-5).

$$\frac{0.13\,cfs}{0.055\,cfs} = 2.42\ (100 - \text{foot sections of } 5\text{" pipe})$$

The 5" drain would be adequate for 242 feet. Of this 242 feet, 138 would be 4" drain; and the remaining 104 feet would be 5" pipe. Since the total length required for each lateral is 227 feet, the amount of 5" drain needed is:

$$227\ ft\ -\ 138\ ft\ =\ 89 ft\ of\ 5"\ drain\ per\ lateral$$

In summary, each lateral should contain 138 ft of 4" drain and 89 ft of 5" drain, although practical applications might consider 5" drain for the entire 227 ft.

Step 4. Size the main and outlet lines.

Assume the outlet intersects the main line at the midpoint. With only two laterals in the system, the main will not intersect any other laterals before reaching the outlet. Therefore, a 5" drain 10 feet in length on either side of the outlet will be sufficient for the main line.

$$Flow\ in\ the\ outlet\ =\ 0.122\ cfs\ per\ lateral\ \times\ 2\ laterals\ =\ 0.244\ cfs$$

From Figure 24-5, with slope = 0.002 and n = 0.015; a flow of 0.244 cfs is greater than the capacity of a 6" but less than the capacity of a 8" drain. Therefore, use 8" drain for the outlet.

24.6 References

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

Natural Resources Conservation Service (SCS). 1973. *Drainage of Agricultural Lands*. Water Information Center, Port Washington, New York.

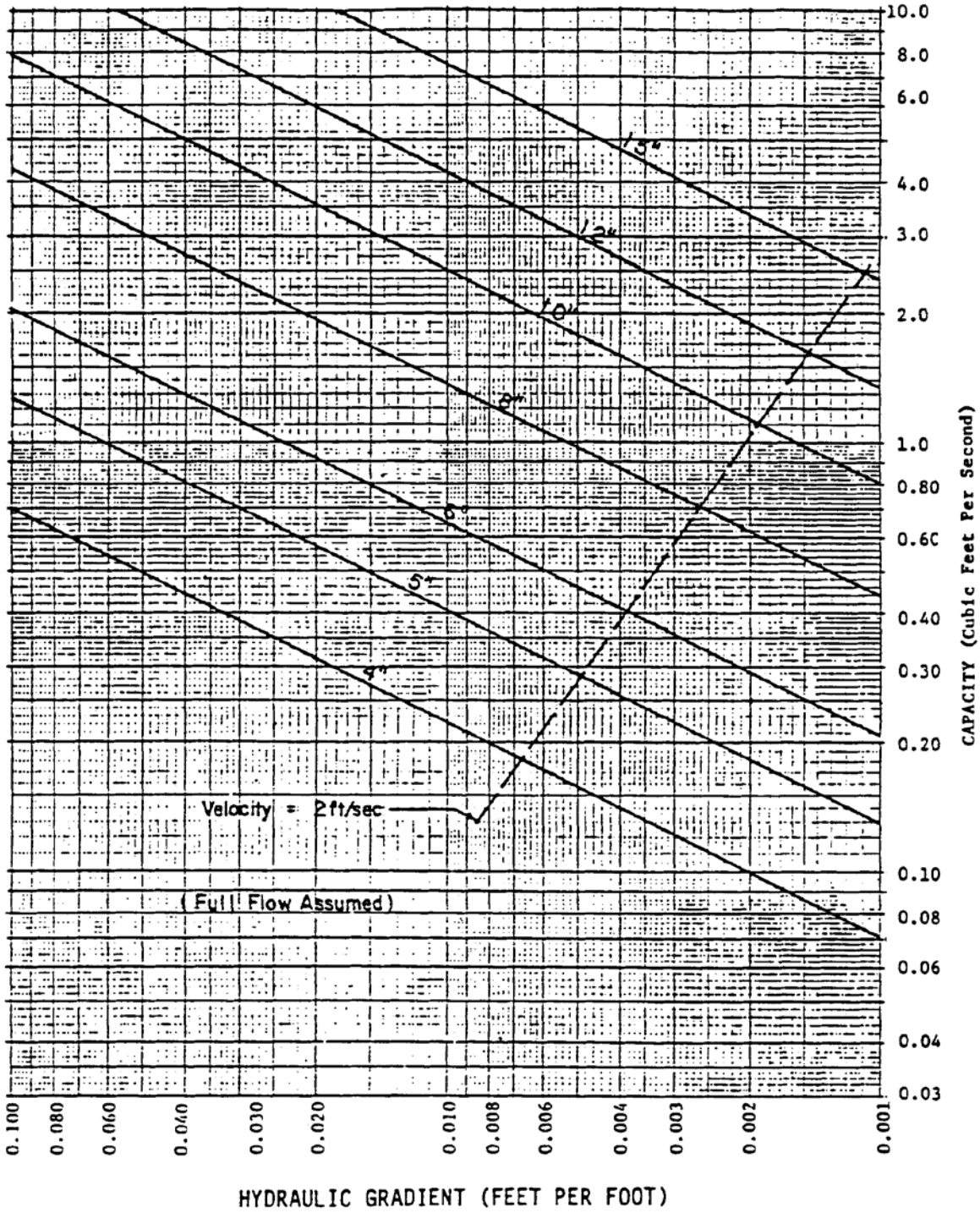


Figure 24-3. Subsurface Drain Capacity Chart - "n" = 0.011 (Source USDA-SCS)
Source: Livingston et al., 1988

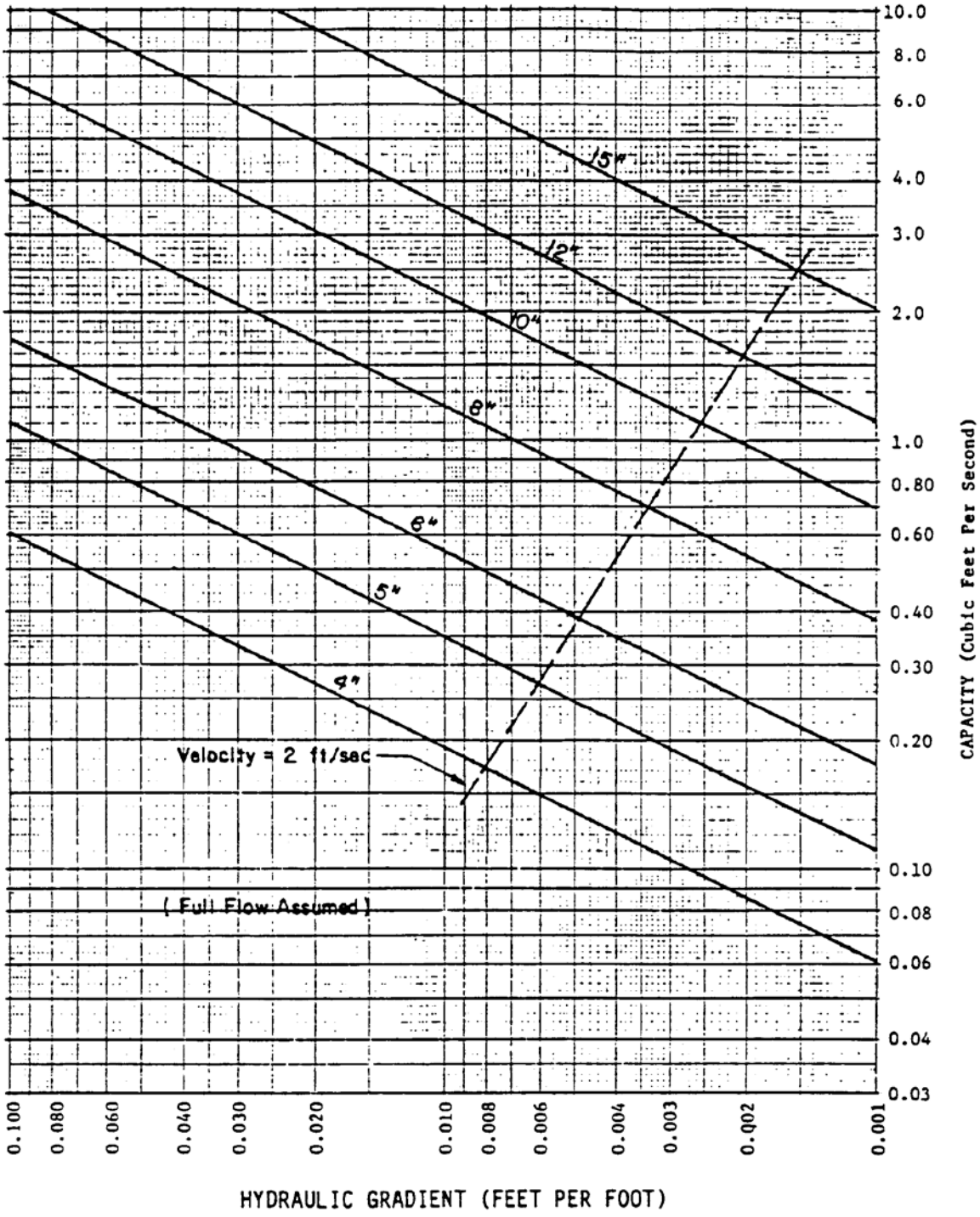


Figure 24-4. Subsurface Drain Capacity Chart - "n" = 0.013 (Source USDA-SCS)
Source: Livingston et al., 1988

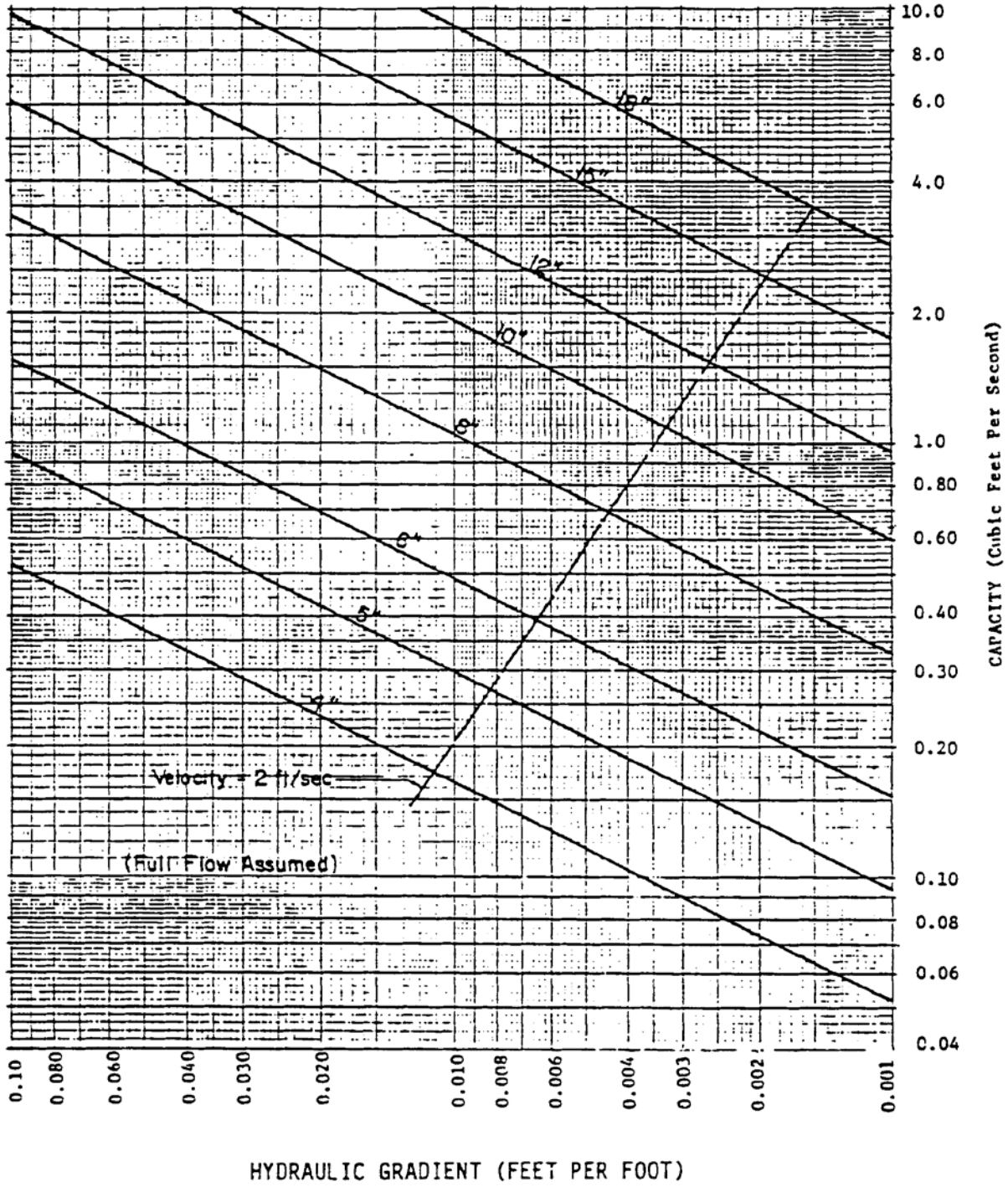


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Figure 24-5. Subsurface Drain Capacity Chart - "n" = 0.015 (Source USDA-SCS)
Source: Livingston et al., 1988

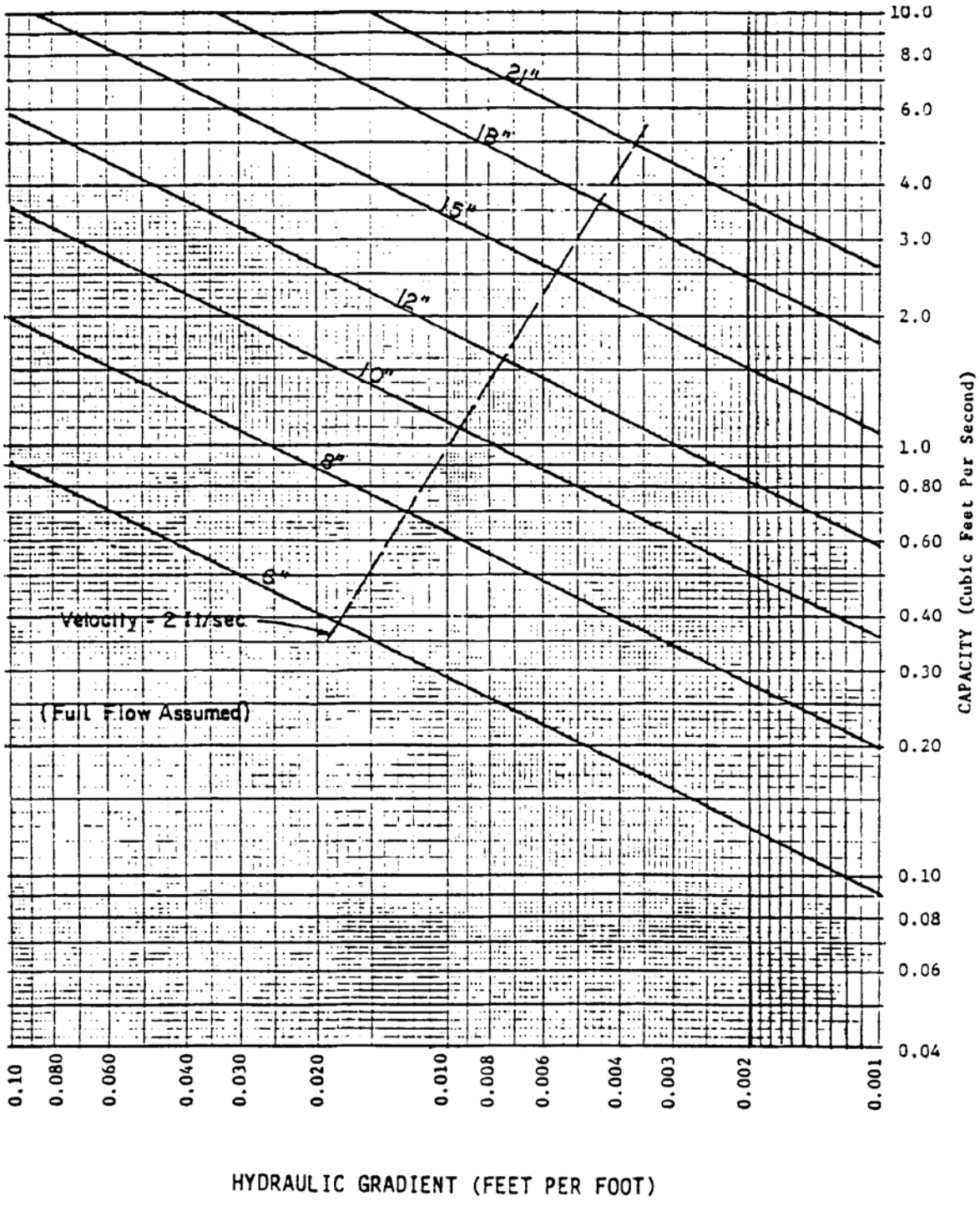


Figure 24-6. Subsurface Drain Capacity Chart - "n" = 0.025 (Source USDA-SCS)
Source: Livingston et al., 1988

25.0 Methodology and Design Example for Exfiltration Trench Systems

25.1 Calculating Storage Capacity of an Exfiltration Trench

The storage volume of a trench (V_{TR}) can be expressed as:

$$V_{TR} = V_P + V_S \tag{25-1}$$

where: V_{TR} = Total storage volume of the trench
V_P = Volume of the pipe
V_S = Volume of the void spaces in the trench aggregate

The volume in a pipe (V_P) is:

$$V_P = A_P\, L \tag{25-2}$$

where: A_P = Pipe area
L = Length of pipe = length of trench

The area of a pipe (A_P) is:

$$A_P = \frac{\pi\, d^2}{4} \tag{25-3}$$

where: d = Pipe diameter

Substituting Equation 25-3 into Equation 25-2 gives:

$$V_P = \frac{\pi\, d^2\, L}{4} \tag{25-4}$$

The volume of the void spaces in the trench aggregate (V_S) can be expressed as:

$$V_S = \left(A_T - A_P\right) f\, L \tag{25-5}$$

where: A_T = Trench area
f = Fillable porosity of the aggregate

The area of a trench (A_T) with rectangular cross-section is:

$$A_T = W\, H \tag{25-6}$$

where: W = Trench width
H = Trench height

The capacity of a trench (V_{TR}) with rectangular cross-section can now be expressed by substituting Equations 25-2 through 25-6 into Equation 25-1:

$$V_{TR} = \frac{\pi d^2 L}{4} + (WH - \frac{\pi d^2}{4}) f L \quad (25\text{-}7)$$

Equation 25-7 can be simplified to:

$$V_{TR} = L \left\lfloor \frac{\pi d^2}{4} (1 - f) + WHf \right\rfloor \quad (25\text{-}8)$$

25.2 Estimating Recovery Time

The infiltration design methodologies and geotechnical tests recommended in section 23 for retention systems are applicable to exfiltration trenches. It is recommended that, unless the normal seasonal high water table is over 6 inches below the trench bottom, unsaturated flow prior to saturated lateral mounding be conservatively ignored in recovery analysis. In other words, there should be no credit for soil storage immediately beneath the trench if the seasonal high water table is within 6 inches of the trench bottom. This is not an unrealistic assumption since the height of capillary fringe in fine sand is on the order of 6 inches and a partially mounded water table condition may be remnant from a previous storm event, especially during the wet season.

It is also recommended that the filling of the trench with the treatment volume be simulated as a "slug" loading (i.e., treatment volume fills the trench within an hour).

25.2.1 Limiting Exfiltration Rates

Wanielista et al. (1991) reports that because of sediment buildup on the fabric, the rate at which water can exfiltrate through the filter fabric will decline over time and approach a value substantially lower than initial rates and then generally remain constant at this level. This value is designated as the limiting exfiltration rate for the trench. The limiting exfiltration rate is the lowest sustained rate at which the water can be expected to flow through the fabric, after long term loading. Wanielista et al. (1991) found the limiting exfiltration rate to be 0.5 in/hr through the fabric.

Wanielista et al. (1991) reports that woven fabric (Mirafi 700XG) performed better in mixed sand and silty soil than non-woven fabric (Mirafi 140N). On the other hand, the non-woven fabric had higher exfiltration rates in sandy soils than the woven fabric. If the filter fabric is "matched" to the soil type, the limiting exfiltration rate can be increased to 1.0 in/hr.

The above limiting exfiltration rates through the fabric should be compared to the permeability of the parent soil and for conservative designs, the lesser of the two values should be used in the recovery time calculations.

25.3 Design Example for Sizing an Exfiltration Trench

Given: Treatment Volume = 500 ft^3
f(soil) = 0.3; f(aggregate) = 0.5; K_{vs} = 2 ft/day; K_H = 5 ft/day; FS = 2.0
Seasonal high groundwater table elevation = 17.0 feet
Impervious layer elevation = 14.0 feet
Trench bottom elevation = 21.0 ft
Pipe invert elevation = 22.0 ft

Objective: Size an exfiltration trench to store the treatment volume and recover within 72 hours.

Design Calculations:

Step 1. Select the trench dimensions.
Pipe diameter (d) = 24 in
Rectangular trench cross-section with:
Trench width (W) = 6 ft
Trench height (H) = 4 ft

Step 2. Calculate the length of trench (L) required to store the treatment volume.
From Equation 25-8:

$$1000\ ft^3 = L\left[\frac{\pi(2\ ft)^2\ (1\ -\ 0.5)}{4} + (4\ ft)\ (6\ ft)\ (0.5)\right]$$

$$L = 73.7\ ft$$

Since pipe lengths are usually sold in twenty foot lengths, round up to $L = 80\ ft$

Step 3. Check for lateral saturated infiltration (see section 23 for a complete description of infiltration processes). Determine the volume infiltrated during unsaturated vertical flow (V_u) from Equation 23-3:

$$V_u = A_b\ f\ h_b$$

$$\text{Area of trench bottom } (A_b) = 80\ ft \times 6\ ft = 480\ ft^2$$

$$\text{Height of trench bottom above the ground water table } (h_b) = 21.0\ ft - 17.0\ ft = 4.0\ ft$$

$$V_u = (480\ ft^2)\ (4\ ft)\ (0.3) = 576\ ft^3$$

Lateral saturated infiltration will not occur since the volume infiltrated during vertical unsaturated flow (V_u) is greater than the treatment volume of 500 ft^3.

Step 4. Calculate the time to saturate the soil beneath the trench *(t_{sat})*. From Equation 23-11, the unsaturated vertical hydraulic conductivity (K_{vu}) is:

$$K_{VU} = \frac{2(2\ ft/day)}{3} = 1.33\ ft/day$$

The design infiltration rate (I_d) is determined using Equation 23-1:

$$I_d = \frac{1.33\ ft/day}{2} = 0.67\ ft/day$$

$$I_d = 0.67\ ft/day\ (12\,in/\ ft)(1\,day/24\,hrs) = 0.34\,in/hr$$

Since I_d is less than the limiting exfiltration rate through the filter fabric (0.5 in/hr) use the value of I_d calculated above in the design analysis.

The time elapsed to saturate soil beneath the trench (t_{sat}) is found from Equation 23-2:

$$t_{sat} = \frac{(4\ ft)(0.3\ ft)}{0.67\ ft/day} = 1.79\,days$$

Therefore, the design meets the 72 hour recovery time criterion.

25.4 Alternative Design Procedures

Wanielista (1991) has developed an alternative procedure for designing off-line exfiltration trenches based on the long term mass balance of an exfiltration system utilizing local rainfall conditions. Fifteen years of hourly precipitation data from six regions in Florida were used as input for the mass balance. From these simulations, design curves for exfiltration systems were developed. These curves relate the rate at which stored runoff is removed from the trench to the volume of storage within the trench. These curves can be used to design an exfiltration trench based on diversion efficiencies of 50%, 60%, 70%, 80%, 85%, 90%, and 95%.

The District accepts this methodology for those areas of the District (i.e., Jacksonville and Orlando) for which the curves have been developed. Applicants designing systems which discharge to Class III receiving waters should use the 80% curve and those that direct discharge to Class I, Class II, and Outstanding Florida Waters should utilize the 95% curve.

25.5 References

Wanielista, M.P., M.J. Gauthier, and D.L. Evans. 1991. *Design and Performance of Exfiltration Systems*. Department of Civil and Environmental Engineering, University of Central Florida, Orlando, Florida.

26.0 Methodology and Design Example for Wet Detention

26.1 Calculating Permanent Pool Volumes

The residence time of a pond is defined as the average time required to renew the water volume (permanent pool volume) in the pond and can be expressed as:

$$RT = \frac{PPV}{FR} \tag{26-1}$$

where: RT = Residence time (*days*)
PPV = Permanent Pool Volume (*ac-ft*)
FR = Average Flow Rate (*ac-ft/day*)

Solving Equation 26-1 for the permanent pool volume (PPV) gives:

$$PPV = (RT)\ (FR) \tag{26-2}$$

The average flow rate (FR) during the wet season (June - October) can be expressed by:

$$FR = \frac{DA\ C\ R}{WS} \tag{26-3}$$

where: DA = Drainage area to pond (*ac*)
C = Runoff coefficient (see Table 24-1 for a list of recommended values for C)
R = Wet season rainfall depth (*in*)
WS = Length of wet season (*days*) (June - October = 153 *days*)

The depth of the wet season rainfall (R) for areas of the District is shown in Figure 26-1. The rainfall depth at a particular location may be established by interpolating between the nearest isopluvial lines.

Substituting Equation 26-3 into Equation 26-2 gives:

$$PPV = \frac{DA\ C\ R\ RT}{WS\ CF} \tag{26-4}$$

where: CF = Conversion factor = 12 *in/ft*

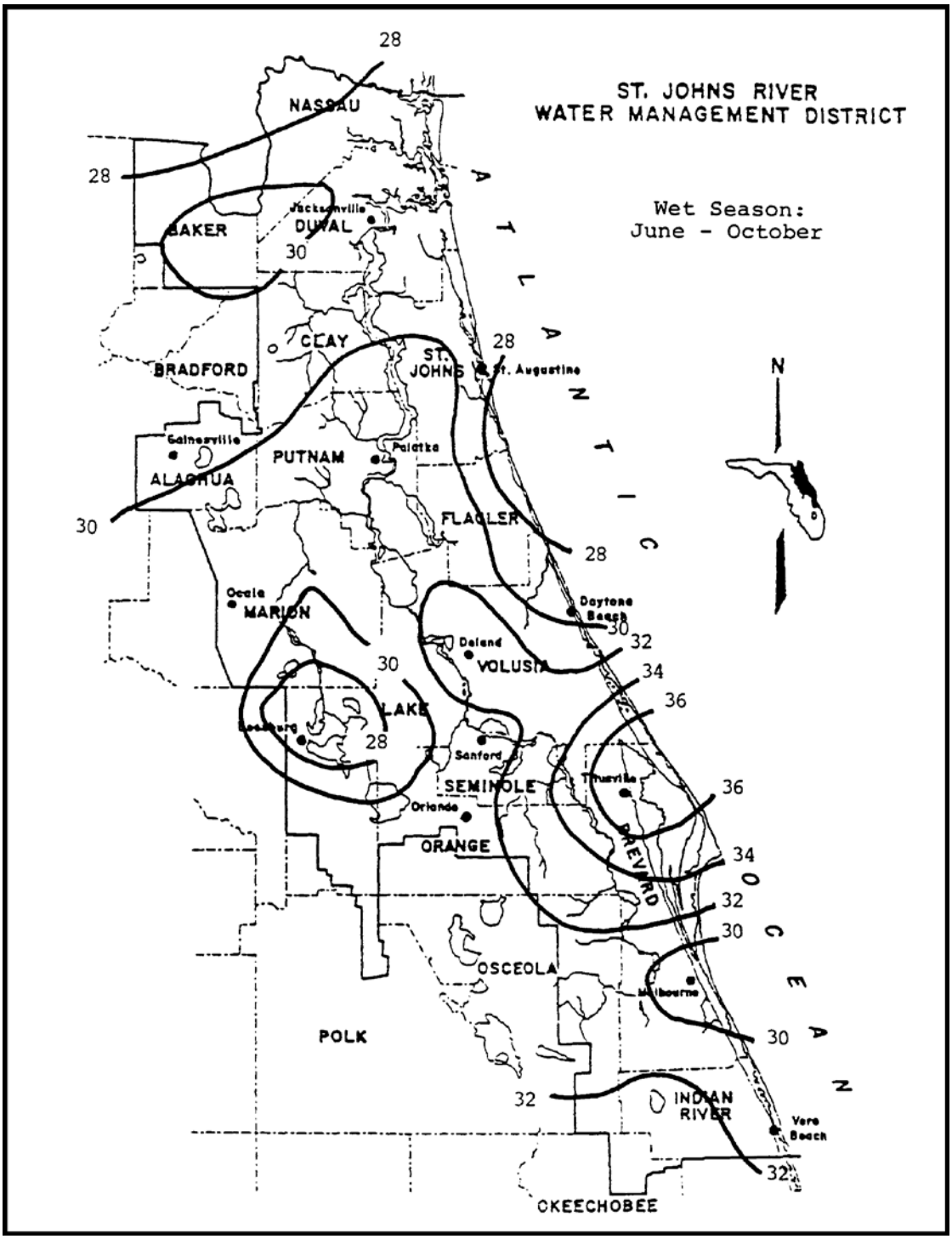


Figure 26-1. Wet Season Normal Rainfall, inches (Source: Rao, et al., 1990)

26.2 Sizing the Drawdown Structure

The rule requires that no more than half the treatment volume should be discharged in the first 24 to 30 hours after the storm event. A popular means of meeting this requirement is to use an orifice or a weir. The following subsections show procedures for sizing an orifice and V-notch weir to meet the drawdown requirements.

26.2.1 Sizing an Orifice

The orifice equation is given by:

$$Q = C A \sqrt{2 g h} \tag{26-5}$$

where: Q = Rate of discharge (*cfs*)
A = Orifice area (ft^2)
G = Gravitational constant = (32.2 ft/sec^2)
H = Depth of water above the flow line (center) of the orifice (*ft*)
C = Orifice coefficient (usually assumed = 0.6)

The average discharge rate (Q) required to drawdown half the treatment volume (TV) in a desired amount of time (t) is:

$$Q = \frac{TV}{2 t CF} \tag{26-6}$$

where: TV = Treatment Volume (ft^3)
t = Recovery time (*hrs*)
CF = Conversion Factor = 3600 *sec/hr*

The depth of water (h) should be set to the average depth above the flow line between the top of the treatment volume and the stage at which half the treatment volume has been released:

$$h = \frac{(h_1 + h_2)}{2} \tag{26-7}$$

where: h_1 = Depth of water between the top of the treatment volume and the flow line (*ft*)
h_2 = Depth of water between the stage when half the treatment volume has been released and the flow line of the orifice (*ft*)

Equation 26-5 can be rearranged to solve for the area (A):

$$A = \frac{Q}{C \sqrt{2 g h}} \tag{26-8}$$

The diameter (D) of an orifice is calculated by:

$$D = \sqrt{\frac{4A}{\pi}} \tag{26-9}$$

where: D = Diameter of the orifice (*ft*)

26.2.2 Sizing a V-notch Weir

Discharge (Q) through a V-notch opening in a weir can be estimated by:

$$Q = 2.5 \tan\left(\frac{\theta}{2}\right) h^{2.5} \tag{26-10}$$

where: Q = Discharge (*cfs*)

Θ = Angle of V-notch (*degrees*)

h = Head on vertex of notch (*ft*)

The average discharge rate (Q) required to draw down half the treatment volume (TV) in a desired amount of time (t) is:

$$Q = \frac{TV}{2\,t\,CF} \tag{26-11}$$

where: TV = Treatment Volume (ft^3)

t = Recovery time (*hrs*)

CF = Conversion Factor = 3600 *sec/hr*

The depth of water (h) should be set to the average depth above the vertex of the notch between the top of the treatment volume and the stage at which half the treatment volume has been released:

$$h = \frac{(h_1 + h_2)}{2} \tag{26-12}$$

where: h_1 = Depth of water between the top of the treatment volume and the vertex of the notch (*ft*)

h_2 = Depth of water between the stage when half the treatment volume has been released and the vertex of the notch (*ft*)

Equation 26-10 can be rearranged to solve for the V-notch angle (□):

$$\theta = 2 \tan^{-1}\left(\frac{Q}{2.5\, h^{2.5}}\right) \quad (26\text{-}13)$$

Substituting Equation 26-11 into Equation 18-13 and simplifying gives:

$$\theta = 2 \tan^{-1}\left(\frac{TV}{5\, t\, CF\, h^{2.5}}\right) \quad (26\text{-}14)$$

26.3 Mean Depth of the Pond

The mean depth (*MD*) of a pond can be calculated from:

$$MD = \frac{PPV}{A_P} \quad (26\text{-}15)$$

where: MD = Mean depth of the pond (*ft*)
A_P = Area of pond measured at the control elevation (ft^2)

26.4 Design Example

Given:

Residential development in Melbourne
Class III receiving waters
Project area = 100 acres; Project runoff coefficient = 0.4
Project percent impervious (not including pond area) = 30%
Off-site drainage area = 10 acres; Off-site percent impervious = 0%
Off-site runoff coefficient = 0.2
Seasonal high groundwater elevation at the proposed lake = 20.0 ft
Design tailwater elevation = 19.5 ft
Pond area at elevation 20.0 ft = 5.0 acres
Non-littoral zone option

The proposed wet detention lake has the following stage-storage relationship:

Stage (ft)	Storage (ac-ft)
9.0	0.0
20.0	17.0
25.0	35.5

Design Calculations:

Step 1. Calculate the required treatment volume. The District requires a treatment volume of either 1 inch of runoff or 2.5 inches times the impervious area, whichever is greater.

$$\textit{Treatment volume required} = (110\ ac.)(1\ inch) = 9.17\ ac\text{-}ft$$
$$\textit{(one inch of runoff)} \qquad 12\ in/ft$$

$$\textit{(2.5" times \% imp.)} = [(100 - 5.0\ ac)(0.3) + (10\ ac)(0)]\ (2.5\ in.) = 5.94\ ac\text{-}ft$$
$$\textit{(excludes pond area)} \qquad 12\ in/ft$$

$$\textit{Treatment volume} = 9.17\ ac\text{-}ft$$

Step 2. Set the elevation of the control structure.

Set the orifice invert at or above the normal water table and design tailwater elevation. Therefore, set the orifice invert elevation at 20.0 ft.

Set an overflow weir at the top of the treatment volume storage to discharge runoff volumes greater than the treatment volumes. Utilizing the stage-area-storage relationship, interpolate between 20.0 and 25.0 ft.

$$\textit{Weir elev.} = (25\ ft - 20\ ft) \times \frac{9.17\ ac - ft}{35.5\ ac - ft - 17.0\ ac - ft} + 20\ ft = 22.48\ feet$$

Step 3. Calculate the minimum permanent pool volume that will provide the required residence time. Since the non-littoral zone option is being utilized, the permanent pool must be sized to provide a residence time of at least 21 days (i.e., 14 days plus an additional 50%) during the wet season (June - October).

The length of the wet season (*WS*) = 153 *days*

From Figure 26-1, the wet season rainfall depth (*R*) for Melbourne = 30 *inches*

For a non-littoral zone option, the minimum residence time (*RT*) = 21 *days*

The runoff coefficient (*C*) for the drainage area to the wet detention pond is:

$$C = \frac{(100\ ac)(0.4) + (10\ ac)(0.2)}{110\ ac} = 0.38$$

Utilizing Equation 26-4:

$$\textit{Permanent pool volume} = \frac{(110\ ac)(0.38)(30\ in)(21\ days)}{(153\ days)12\ in/\ ft} = 14.3\ ac - ft$$

The pond volume below elevation 20.0 feet is 17.0 ac-ft. Therefore, adequate storage is provided to satisfy the permanent pool criteria.

Step 4. Size a circular orifice to recover one-half the treatment volume in 48 hours. Since the size of the orifice has yet to be determined, use the invert elevation of the orifice as an approximation of the flow line (center) of the orifice. After calculating the orifice size, adjust the flow line elevation and calculate the orifice size again.

$$\textit{Treatment volume depth } (h_1) = 22.48\ ft - 20.00\ ft = 2.48\ ft$$

$$\textit{Stage at half the treatment volume} = \frac{9.17\ ac-ft \times 0.5}{(35.5\ ac-ft - 17.0\ ac-ft)} \times (25.0\ ft - 20.0\ ft) + 20.0\ ft = 21.24\ ft$$

$$h_2 = 21.24\ ft - 20.00\ ft = 1.24\ ft$$

From Equation 26-7:

$$h = \frac{(2.48\ ft + 1.24\ ft)}{2} = 1.86\ feet$$

The average flow rate (Q) required to drawdown one-half the treatment volume is found from Equation 26-6:

$$Q = \frac{9.17\ ac-ft \times 43560\ ft^2/ac}{2} \times \frac{1}{48\ hrs} \times \frac{1}{3600\ \text{sec}} = 1.1558\ cfs$$

Find the area (A) of the orifice utilizing Equation 26-8:

Given: C = 0.6
G = 32.2 ft/sec^2

$$A = \frac{1.1558\ ft^3/\text{sec}}{0.6\sqrt{2\ (32.2\ ft/\text{sec}^2)\ 1.86\ ft}} = 0.176\ ft^2$$

From Equation 26-9, the orifice diameter (D) is:

$$D = \sqrt{\frac{4\ (0.176\ ft^2)}{3.1416}} = 0.473\ ft = 5.7\ inches$$

Adjust h_1, h_2, and the orifice diameter (D) to the flow line of the orifice.

$$\textit{Flow line elevation} = 20.00\ ft + \frac{0.437\ ft}{2} = 20.24\ ft$$

$$h_1 = 22.48\ ft - 20.24\ ft = 2.24\ ft$$

$$h_2 = 21.24\ ft - 20.24\ ft = 1.00\ ft$$

$$h = \frac{2.24\ ft + 1.00\ ft}{2} = 1.62\ ft$$

$$A = \frac{1.1558\ ft^3/\text{sec}}{0.6\sqrt{2\ (32.2\ ft/\text{sec}^2)\ 1.62\ ft}} = 0.189\ ft^2$$

$$D = \sqrt{\frac{4\ (0.189\ ft^2)}{3.1416}} = 0.491\ ft = 5.9\ inches$$

$$Flow\ line\ elev. = 20.00\ ft + \frac{0.491\ ft}{2} = 20.25\ ft$$

20.25 *ft* vs 20.24 *ft* = 0.01 *ft* difference which is acceptable

Step 5. Check the mean depth of the pond. The mean depth of the permanent pool must be between 2 and 8 feet. From Equation 26-15:

$$mean\ depth = \frac{17.0\ ac\text{-}ft}{5.0\ ac} = 3.4\ ft$$ which is consistent with the mean depth criteria.

Additional Steps.

In a typical design, the applicant would have to design the following:

(a) Pond shape to provide at least 2:1 length to width ratio
(b) Alignment of inlets and outlets to promote mixing and maximize flow path
(c) Overflow weir to safely pass the design storm event(s) at pre-development peak discharge rates.

26.5 References

Rao, D.V., S.A. Jenab, and D.A. Clapp. 1990. *Rainfall Analysis for Northeast Florida, Part V: Frequency Analysis of Wet Season and Dry Season Rainfall.* St. Johns River Water Management District, Technical Publication No. 90-3, Palatka, Florida.

27.0 Methodology and Design Example for Swales

Infiltration from swale systems follows the same processes discussed in section 23.1 for retention systems. However, unlike retention systems, swales are an "open" conveyance facility which must infiltrate a specified portion of runoff from the three-year, one-hour storm without the aid of berms, check dams, etc. Also, the swale must be sized to convey a design storm without being subjected to erosive velocities. The following methodology, which is adapted from Livingston et al. (1988), is recommended for designing swales to percolate the desired portion of runoff and to convey the design flow rate with acceptable velocities.

27.1 Runoff Hydrograph and Volume

The rational method can be utilized to estimate peak runoff rates for small urban areas. The traditional rational formula is expressed as:

$$Q = C\,I\,A \qquad (27\text{-}1)$$

where: Q = Peak runoff rate (*cfs*)
C = Runoff coefficient
I = Rainfall intensity (*in./hr*)
A = Drainage area (*acres*)

Values for the runoff coefficient (C) are contained in Table 31-1. The intensity (I) is determined from intensity-duration-frequency (IDF) curves such as those published by the Florida Department of Transportation (1987).

A simplified runoff hydrograph for a specific design storm with given duration (D) can be constructed given the time of concentration (Tc) of the drainage area. As seen in Figure 27-1, this modified simplified runoff hydrograph is a modification of the traditional rational formula. The implied assumption behind Figure 27-1 is that the drainage basin time of concentration (Tc) is less than the duration (D) of the design storm event.

The peak runoff rate from this simplified hydrograph method is not the "traditional" rational peak discharge rate at the basin time of concentration but a sustained and lower peak runoff rate (Q_P) resulting from the rainfall intensity as determined for the desired duration of the storm. The sustained peak runoff rate is expressed as:

$$Q_P = C\,I_D\,A \qquad (27\text{-}2)$$

where: Q_P = Peak runoff rate from the 3-year, 1-hour rainfall intensity (*cfs*)
I_D = Average rainfall intensity for a one hour duration (*in./hr*)

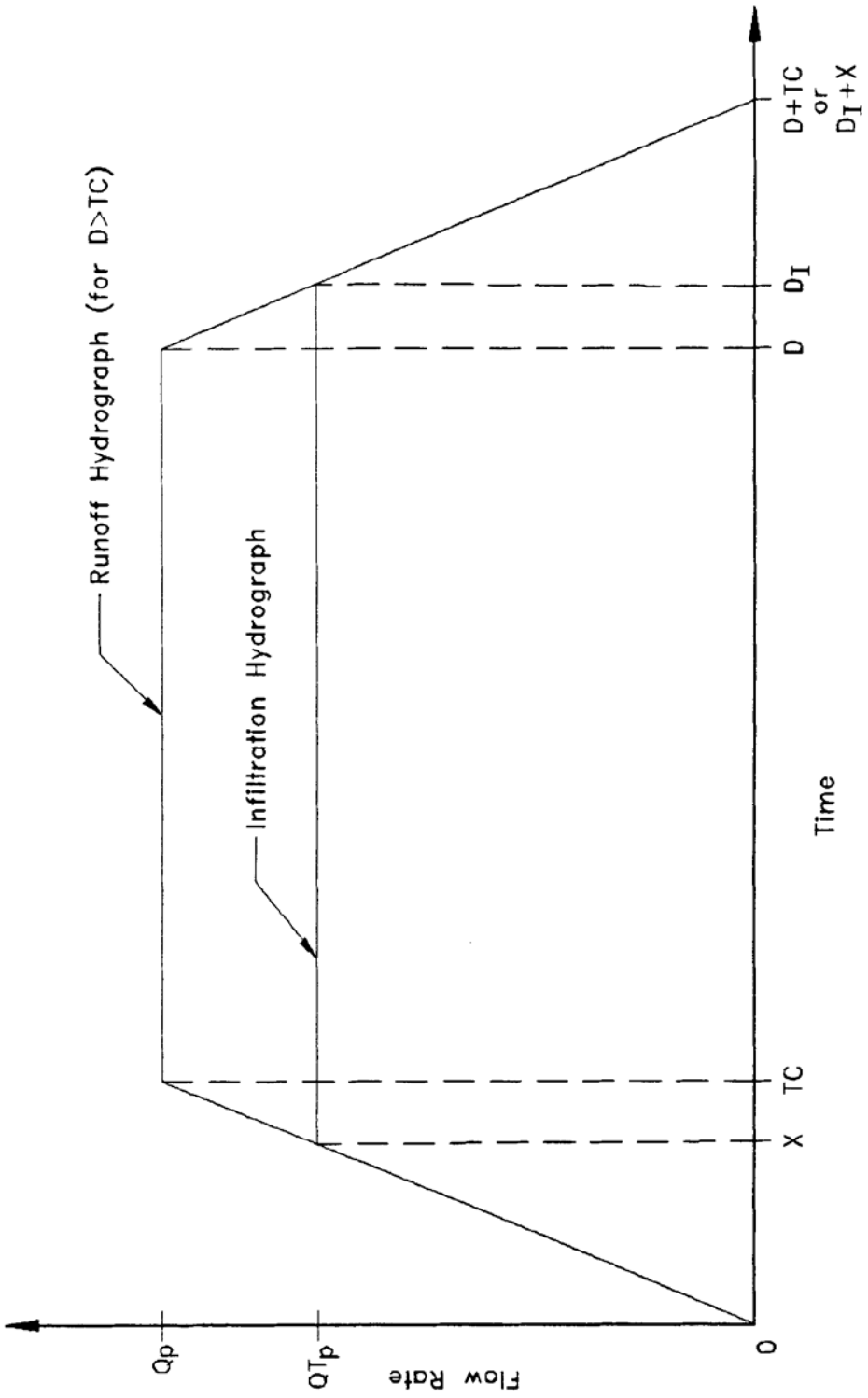


Figure 27-1. Simplified Runoff and Infiltration Hydrographs

The volume of runoff (V_R) is equal to the area under the runoff hydrograph curve in Figure 27-1 and can be expressed as:

$$V_R = \frac{1}{2} Q_P Tc + Q_P (D - Tc) + \frac{1}{2} Q_P (D + Tc - D) \quad (27\text{-}3)$$

$$V_R = Q_P D \quad (27\text{-}4)$$

where: V_R = Volume of runoff (ft^3)
Tc = Time of concentration (hr)
D = Rainfall duration (hr)

27.2 Infiltration Hydrograph and Volume

The peak infiltration rate and volume should be calculated using one of the acceptable methodologies listed in section 23.3.4 for vertical unsaturated infiltration. Utilizing the modified Green and Ampt Equation (described in section 23.3.4) the peak infiltration rate is the design infiltration rate (I_d) and is expressed as:

$$I_d = \frac{K_{vu}}{FS} \quad (27\text{-}5)$$

where: I_d = Design infiltration rate (ft/hr)
K_{vu} = Unsaturated vertical hydraulic conductivity (ft/hr)
FS = Factor of safety (recommend $FS = 2.0$)

The area of swale bottom and side slopes (A_b) in which infiltration will occur is:

$$A_b = L P \quad (27\text{-}6)$$

where: A_b = Area of swale bottom and side slopes in which infiltration will occur (ft^2)
L = Length of swale (ft)
P = Wetted perimeter (ft)

The peak infiltration flow rate (Qi_P) is:

$$Qi_P = I_d A_b = I_d L P \quad (27\text{-}7)$$

where: Qi_P = Peak infiltration flow rate (ft^3/hr)

The wetted perimeter (P) is dependent on the geometry of the swale. Equations for the wetted perimeter for three common swale shapes are given in Figure 27-2. A simple infiltration hydrograph can be constructed as in Figure 27-1. The volume infiltrated is the area under the infiltration hydrograph curve and can be expressed as:

$$V_I = \frac{1}{2} Qi_P X + Qi_P (D_I - X) + \frac{1}{2} Qi_P (D_I + X - D_I) \quad (27\text{-}8)$$

and simplified to:

$$V_I = Qi_P D_I \quad (27\text{-}9)$$

where: V_I = Volume of runoff infiltrated (ft^3)
D_I = Time from the beginning of the storm to the end of the peak infiltration flow rate (*hr*)
X = Time from D_I to the end of the runoff hydrograph (*hr*)

Based on Figure 27-1, D_I can be expressed as:

$$D_I = D + Tc - X \quad (27\text{-}10)$$

and X can be expressed as:

$$X = \frac{Tc\ Qi_P}{Q_P} \quad (27\text{-}11)$$

Substituting equations 27-10 and 27-11 into 27-9 gives:

$$V_I = Qi_P \left(D + Tc - \frac{Tc\ Qi_P}{Q_P} \right) \quad (27\text{-}12)$$

If the volume infiltrated (V_I) is greater than or equal to the required portion (i.e, 80%) of the runoff volume (V_R) then the design is adequate for treatment purposes. In addition, the design should be checked to ensure that the swale can convey the design storm runoff without reaching erosive velocities.

27.3 Velocity

The velocity of flow in an open channel can be found from Manning's Equation:

$$V = \frac{1.49}{n} R^{2/3} S^{1/2} \quad (27\text{-}13)$$

where: V = Average velocity in the channel (*ft/sec*)
n = Manning's roughness coefficient, based on the lining of the channel
R = Hydraulic radius (*ft*)
S = Slope of the channel (*ft/ft*)

The maximum permissible velocity for various channel slopes and types of vegetative cover is given in Table 27-1. The velocity of flow in the swale

(calculated using the Manning's equation) will be non-erosive if it is less than the maximum permissible velocity given in Table 27-1.

The hydraulic radius (R) is dependent on the geometry of the swale. Equations for the hydraulic radius for three common swale shapes are given in Figure 27-2.

Manning's roughness coefficient (n) can be determined from Table 27-2 and Figure 27-3. In utilizing Table 27-2, mowed conditions are recommended for analysis of the swale infiltration capacity. The retardance class under mowed conditions result in lower n values, shallower flow depths, and less wetted perimeter for infiltration. Unmowed conditions may be more appropriate for swale analysis under flood flow conditions. The retardance class under unmowed conditions result in higher n values. This will yield more conservative flow depths which may be more appropriate for establishing floodwater elevations in the swale.

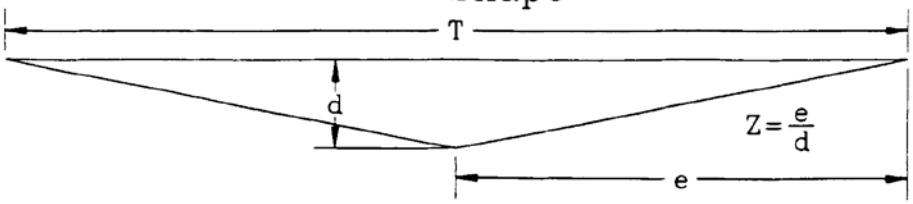
Table 27-1. Permissible Velocities for Grass-Lined Channels

Channel Slope	Lining	Permissible Velocity (ft/sec)
0 – 5%	Bermuda grass	6.0
	Bahia	5.0
	Bluestem (broomsedges)	5.0
	Grass-legume mixture	4.0
	Sericea lespedeza	2.5
	Annual lespedeza	2.5
	Small grains (temporary)	2.5
5 – 10%	Bermuda grass	5.0
	Bahia	4.0
	Bluestem (broomsedges)	4.0
	Grass-legume mixture	4.0

Source: Livingston et al. 1988

CHANNEL GEOMETRY

V – Shape



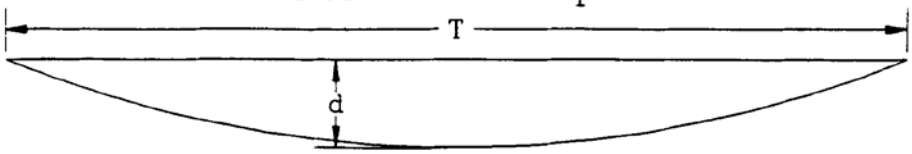
Cross-Sectional Area (A) = Zd^2

Top Width (T) = $2dZ$

Hydraulic Radius (R) = $\frac{Zd}{2\sqrt{Z^2+1}}$

Wetted Perimeter (P) = $2d\sqrt{Z^2+1}$

Parabolic Shape



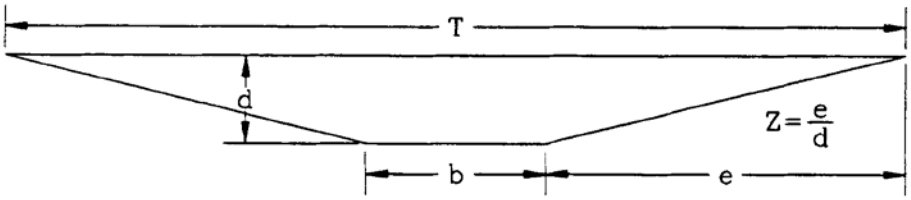
Cross-Sectional Area (A) = $\frac{2}{3}Td$

Top Width (T) = $\frac{1.5A}{d}$

Hydraulic Radius (R) = $\frac{T^2d}{1.5T^2+4d^2}$

Wetted Perimeter (P) = $T + \frac{8d^2}{3T}$

Trapezoidal Shape



Cross-Sectional Area (A) = Zd^2+bd

Top Width (T) = $b+2dZ$

Hydraulic Radius = $\frac{Zd^2+bd}{b+2d\sqrt{Z^2+1}}$

Wetted Perimeter (P) = $b+2d\sqrt{Z^2+1}$

Figure 27-2. Typical Waterway Shapes and Mathematical Expressions for Calculating Cross-sectional Area, Top Width, Hydraulic Radius and Wetted Perimeter
Source: Livingston et al. 1988

Table 27-2. Classification of Vegetation Cover as to Degree of Retardance

Retardance Class	Cover	Condition
A	Bluestem (broomsedges)	Excellent stand, tall (average 36")
B	Bermuda or Bahia	Good stand, tall (average 12")
	Native Grass mixture (bluestem, vasey grass, and other long and short wet prairie grasses)	Good stand, unmowed
	Lespedeza sericea	Good stand, not woody tall (average 19')
C	Bahia	Good stand, uncut (6-8")
	Bermuda grass	Good stand, mowed (average 6")
	Centipede grass or St. Augustine	Very dense (average 6")
D	Bermuda or Bahia	Good stand, cut to 2.5" height Cut to 2” height
	Lespedeza sericea	Very good stand before cutting
E	Centipede grass or St. Augustine	Good stand, cut to 1.5" height

Source: Livingston et al. 1988

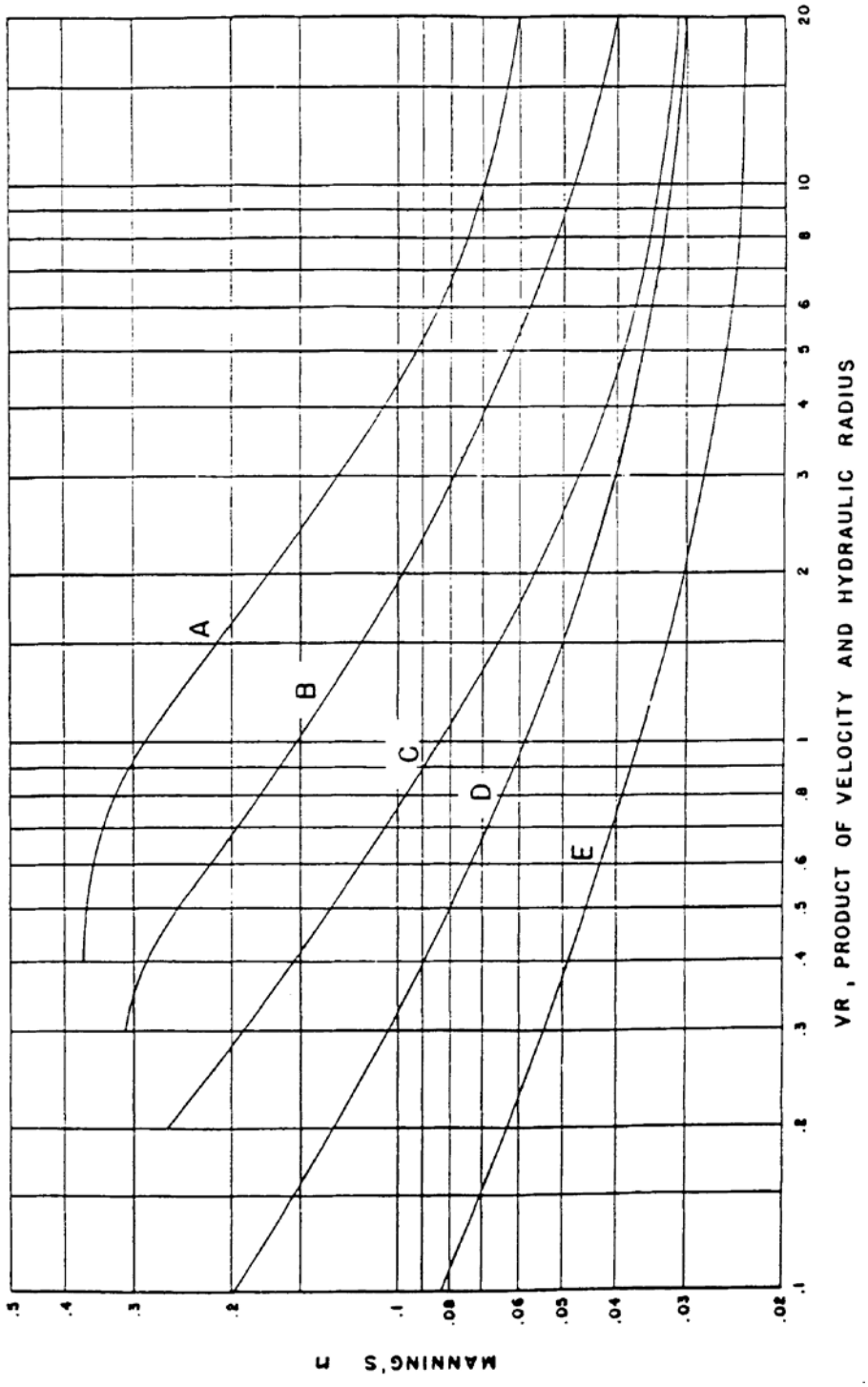


Figure 27-3. Manning's "n" Related to Velocity, Hydraulic Radius and Vegetal Retardance
Source: Livingston et al. 1988

27.4 Capacity

Manning's Equation (Equation 27-13) and the Continuity Equation ($Q = V A$) can be combined to determine flow capacity of an open channel:

$$Q = \frac{1.49}{n} R^{2/3} S^{1/2} A \qquad (27\text{-}14)$$

where: Q = Flow in the channel (ft^3/sec)
A = Cross-section area of the channel (ft^2)

The cross-sectional area (A) is dependent on the channel shape and equations for the cross-sectional area for three common swale shapes are given in Figure 27-2.

In addition to the treatment capacity of the swale, the design of the swale must be adequate to provide flood protection in accordance with the requirements of local agencies.

27.5 Vertical Unsaturated and Lateral Saturated Infiltration

The design of the swale system should be checked using one of the accepted methodologies in section 23 to insure that lateral saturated infiltration does not occur. Lateral saturated infiltration occurs when the ground water table "mounds" beneath the swale and intercepts the swale bottom. See section 23 for a complete description of infiltration processes.

Utilizing the methodology described in section 23.3.4, the volume infiltrated under vertical unsaturated flow (V_u) is determined from Equation 23-3:

$$V_u = A_b f h_b$$

where: V_u = Volume of water required to saturate the soil below the swale
h_b = Height of swale bottom above the ground water table
f = Fillable porosity (generally 0.2 to 0.3)

If $V_u > V_R$ infiltration will occur entirely under vertical unsaturated flow conditions.

27.6 Example Design Calculations for Swale Systems

Given: Residential project in Palatka discharging to Class III waters
Drainage area = 10 acres
Post-development runoff coefficient = 0.4
Tc = 20 minutes; S = 3%
f = 0.3; K_{vs} = 36 in/hr; FS = 2.0; h_b = 10 ft
Rectangular project site with dimensions of length = 660 ft and width = 660 ft

Three streets each 600 ft long with swales on both sides

Objective: Design a swale system to percolate the required treatment volume and check the capacity and velocity of the swales.

Design Calculations:

Step 1. Determine Q_P and V_R.

For swales discharging to Class III waters, the rule requires percolation of 80% of the runoff from the 3-year, 1-hour storm.

From the Florida Department of Transportation IDF Curve (FDOT 1987) for Zone 5 (Palatka) the average intensity (i) for the 3-year, 1-hour storm is 2.6 in./hr.

The sustained peak runoff rate (Q_p) is determined from Equation 27-2:

$$Q_P = (0.4)\ 2.6\ in./hr\ (10\ ac) = 10.4\ cfs$$

The volume of runoff (V_R) is found by utilizing Equation 27~~30~~-4:

$$V_R = (10.4\ cfs)\ (60\ min)\ (60\ sec/min) = 37440\ ft^3$$

Since each swale serves approximately an equal drainage area and project land use, the peak runoff rate (Q_P) per swale represents a more realistic flow for design of the treatment function for the swale. The peak runoff flow rate (Q_P) per swale is:

$$Q_P\ per\ swale = \frac{10.4\ cfs}{(3\ streets)\left(2\ \frac{swales}{street}\right)} = 1.73\ \frac{cfs}{swale}$$

Step 2. Select swale dimensions and determine flow depth and infiltration area. Assume a "V - shaped" swale. For maintenance and public safety reasons, limit the side slopes to no steeper than 4:1. Try swales with 6:1 side slopes. From Figure 27-2:

$$Z = \frac{e}{d} = 6 \qquad (27\text{-}15)$$
$$A = Z\ d^2 = 6\ d^2$$

$$R = \frac{Z\ d}{2\sqrt{Z^2 + 1}} = \frac{6d}{2\sqrt{6^2 + 1}} = 0.49\ d \qquad (27\text{-}16)$$

where: d = Normal depth of flow in the channel (ft)

Use Figures 27-3 and Table 27-2 to determine Manning's roughness coefficient (n). From Table 27-2 for Bahia grass, assume the grass as a good stand and mowed. Therefore, the retardance class = class D and $n = 0.04$ for design of the swale treatment capacity. A more overgrown condition (retardance class = B and $n = 0.077$) should be considered for conveyance and level of service flood protection design.

To solve for the normal depth (d), first rearrange Equation 27-14 to give:

$$R^{2/3} A = \frac{Q n}{1.49 S^{1/2}}$$

Substituting the above values of Q, n, and S:

$$R^{2/3} A = \frac{1.73 \text{ cfs } (0.04)}{1.49 (0.03 \text{ ft / ft})^{1/2}} = 0.27$$

Trial #1: Assume $d = 0.50$ ft. From Equation 27-15 the cross-sectional area (A) is:

$$A = 6 (0.50 \text{ ft})^2 = 1.5 \text{ ft}^2$$

Determine the hydraulic radius (R) from Equation 27-16:

$$R = 0.49 (0.5 \text{ ft}) = 0.245 \text{ ft}$$

Therefore

$$R^{2/3} A = (0.245)^{2/3} 1.5 = 0.59$$

Since $0.59 \neq 0.27$, try another value for d.
Trial #2: Assume $d = 0.37$ ft

From Equation 27-15:

$$A = 6 (0.37 \text{ ft})^2 = 0.82 \text{ ft}^2$$

From Equation 27-16:

$$R = 0.49 (0.37 \text{ ft}) = 0.18 \text{ ft}$$

and:

$$R^{2/3} A = (0.18)^{2/3} 1.5 = 0.26$$

Since $0.26 \approx 0.27$, the value of $d = 0.37$ ft is acceptable.

Also from Figure 27-2, the wetted perimeter (P) is:

$$P = 2\,d\sqrt{1 + Z^2} = 2\,(0.37ft)\sqrt{1 + 6^2} = 4.50\,ft$$

The total length of swales, L = (3 *streets*) (2 *swales / street*) (600 *ft / swale*) = 3600 *ft*

From Equation 27-6, the total infiltration area (A_b) can be determined:

$$A_b = L\,P = (3600\,ft)\ 4.5\,ft = 16200\,ft^2$$

The infiltration area (A_b) per swale is:

$$A_b \text{ per swale} = (600\,ft)\ 4.5\,ft = 2700\,ft^2 \text{ per swale}$$

Step 3. Check for lateral saturated infiltration (see section 23 for a complete description of infiltration processes).

Volume infiltrated under vertical unsaturated flow (V_u) is determined from Equation 23-3:

$$V_u = A_b\,f\,h_b = 16200\,ft^2\ (0.3)\ 10\,ft = 48600\,ft^3$$

Since $V_u > V_R$ infiltration will occur entirely under vertical unsaturated flow conditions. Therefore, analysis of lateral saturated infiltration will not be required for this example.

Step 4. Calculate the peak infiltration flow rate (Qi_P).

The unsaturated vertical hydraulic conductivity (K_{vu}) is found by Equation 23-11:

$$K_{vu} = \frac{2\left(36\,in./hr\right)}{3} = 24\,in./hr$$

From Equation 27-5, the design infiltration rate (I_d) is:

$$I_d = \frac{24\,in./hr}{2} = \cdots 12\,in./hr$$

The peak infiltration rate (Qi_P) per swale is determined by Equation 27-7 with the infiltration area (A_b) per swale = 2700 ft^2:

$$Qi_P \text{ per swale} = 12\ in./hr\ (2700\ ft^2 \text{ per swale})\ (1\ ft / 12\ in.)\ (1\ hr / 60\ min)$$

$$Qi_P \text{ per swale} = 45.0\ ft^3/min = 0.75\ ft^3/sec \text{ per swale}$$

Step 5. Calculate the volume of water infiltrated (V_I) per swale and compare to the required infiltration volume. From Equation 27-12 with T_c = 20 *min*; D = 60 *min*; Qi_P = 45.0 *ft^3/min*; and Q_P = 1.73 *ft^3/sec*:

$$V_I \text{ per swale} = 45.0 \text{ ft}^3/\text{min} \left(60 \text{ min} + 20 \text{ min} - \frac{20 \text{ min } (45.0 \text{ ft}^3/\text{min})}{1.73 \text{ ft}^3/\text{sec } (60 \text{ sec}/\text{min})} \right)$$

$$V_I \text{ per swale} = 3210 \text{ ft}^3 \text{ per swale}$$

$$\text{Total } V_I = 3210 \text{ ft}^3 \text{ per swale} \times 6 \text{ swales} = 19259 \text{ ft}^3$$

Required infiltration volume for discharges to Class III receiving waters is 80% of the runoff volume (V_R):

$$\text{The required infiltration volume} = 0.8\, V_R = 0.8\,(37440 \text{ ft}^3) = 29952 \text{ ft}^3$$

Since the volume of runoff infiltrated (V_I) < required infiltration volume (80% of V_R) the design is inadequate.

Step 6. Revise the swale section to provide more infiltration surface area. Try a trapezoidal section with an 8 ft bottom width (b) and 4:1 side slopes. From Figure 27-2:

$$Z = \frac{e}{d} = 4.0$$

$$A = bd + Zd^2 = 8d + 4d^2 \qquad (27\text{-}17)$$

$$R = \frac{bd + Zd^2}{b + 2d\sqrt{Z^2 + 1}} = \frac{8d + 4d^2}{8 + 8.25d} \qquad (27\text{-}18)$$

$$P = b + 2d\sqrt{Z^2 + 1} = 8 + 2d\sqrt{4^2 + 1} = 8 + 8.25d \qquad (27\text{-}19)$$

where: b = Bottom width of a trapezoidal channel (ft)

Assume a value for d and then compare $AR^{2/3}$ for the trapezoidal channel with the value of $AR^{2/3}$ determined in Step 2., above. From Step 2.: $A\,R^{2/3} = 0.27$

Assume $d = 0.13$ ft. From Equation 27-17, the cross-sectional area (A) is:

$$A = 8\,(0.13) + 4\,(0.13)^2 = 1.11 \text{ ft}^2$$

The hydraulic radius (R) is determined from Equation 27-18:

$$R = \frac{8\text{ft}(0.13\text{ft}) + 4(0.13\text{ft})^2}{8\text{ft} + 8.25(0.13\text{ft})} = 0.12\text{ft}$$

$$A\,R^{2/3} = (1.11 \text{ ft}^2)\,(0.12)^{2/3} = 0.27$$

Since 0.27 = 0.27, the value of d = 0.13 ft is acceptable.

The wetted perimeter (P) is found from Equation 27-19:

$$P = 8 + 8.25\,(0.13\ ft) = 9.07\ ft$$

The infiltration area (A_b) per swale is determined from Equation 27-6:

$$A_b \text{ per swale} = L\,P = (600\ ft)\ 9.07\ ft = 5442\ ft^2 \text{ per swale}$$

Utilizing Equation 27-7, the peak infiltration rate (Qi_P) per swale is:

$$Qi_P \text{ per swale} = 12\ in./hr\ (5442\ ft^2)\ (1\ ft / 12\ in.)\ (1\ hr / 60\ min)$$

$$Qi_P \text{ per swale} = 90.7\ ft^3/min = 1.51\ ft^3/sec$$

From Equation 27-12, the volume infiltrated (V_I) per swale is:

$$V_I \text{ per swale} = 90.7\ ft^3/\text{min}\ \left(60\ \text{min} + 20\ \text{min} - \frac{20\ \text{min}\ (90.7\ ft^3/\text{min})}{1.73\ ft^3/\text{sec}\ (60\ \text{sec}/\text{min})}\right)$$

$$V_I \text{ per swale} = 5668.8\ ft^3 \text{ per swale}$$

Total volume of runoff infiltrated (V_I) = 6 *swales* (5668.8 ft^3 *per swale*) = 34013 ft^3

Required infiltration volume = 0.8 V_R = 0.8 (37440 ft^3) = 29952 ft^3

Since the volume of runoff infiltrated (V_I) > required infiltration volume the design is adequate.

Step 7. Calculate the velocity in the swale and compare with permissible values. From Table 27-1, for Bahia grass the maximum permissible velocity (V_{max}) is 5.0 ft/sec.

Calculate the velocity of the swales from Equation 27-13:

$$V = \frac{1.49}{0.04}\ (0.12)^{2/3}\ (0.03)^{1/2} = 1.57\ ft/\text{sec}$$

The calculated velocity of flow in the swale (1.57 ft/sec) will be non-erosive since it is less than the maximum permissible velocity (5 ft/sec) given in Table 27-1.

27.7 References

Florida Department of Transportation. 1987. *Drainage Manual, Volume 2A - Procedures*. Tallahassee, Florida.

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

28.0 Methodology and Design Example for Dry Detention

28.1 Designing the Drawdown Structure

The District's rules generally require that no more than half the treatment volume should be discharged in the first 24 - 30 hours after the storm event. A popular means of meeting this requirement is to use an orifice or a weir. The following subsections show procedures for sizing an orifice and V-notch weir to meet the drawdown requirements.

28.1.1 Designing an Orifice

Discharge (Q) through an orifice is given by:

$$Q = CA\sqrt{2gh} \qquad (28\text{-}1)$$

where: Q = Rate of discharge (*cfs*)
A = Orifice area (ft^2)
G = Gravitational constant = (32.2 ft/sec^2)
H = Depth of water above the flow line (center) of the orifice (*ft*)
C = Orifice coefficient (usually assumed = 0.6)

The average discharge rate (Q) required to drawdown half the treatment volume (TV) in a desired amount of time (t) is:

$$Q \quad \frac{TV}{2tCF} \qquad (28\text{-}2)$$

where: TV = Treatment Volume (ft^3)
t = Recovery time (*hrs*)
CF = Conversion Factor = 3600 *sec/hr*

The depth of water (h) should be set to the average depth above the flow line between the top of the treatment volume and the stage at which half the treatment volume has been released:

$$h = \frac{(h_1 + h_2)}{2} \qquad (28\text{-}3)$$

where: h_1 = Depth of water between the top of the treatment volume and the flow line of the orifice (*ft*)
h_2 = Depth of water between the stage when half the treatment volume has been released and the flow line of the orifice (*ft*)

Equation 28 -1 can be rearranged to solve for the area (A):

$$A = \frac{Q}{C\sqrt{2gh}} \tag{28-4}$$

The diameter (D) of an orifice is calculated by:

$$D = \sqrt{\frac{4A}{\pi}} \tag{28-5}$$

where: D = Diameter of the orifice (*ft*)

28.1.2 Designing a V-notch Weir

Discharge (Q) through a V-notch opening in a weir can be estimated by:

$$Q = 2.5 \tan\left(\frac{\theta}{2}\right) h_v^{2.5} \tag{28-6}$$

where: Q = Discharge (*cfs*)
θ = Angle of V-notch (*degrees*)
h_v = Head on vertex (invert) of notch (*ft*)

The average discharge rate (Q) required to draw down half the treatment volume (TV) in a desired amount of time (t) is:

$$Q = \frac{TV}{2\,t\,CF} \tag{28-7}$$

where: TV = Treatment Volume (ft^3)
t = Recovery time (*hrs*)
CF = Conversion Factor = 3600 *sec/hr*

The depth of water (h_v) should be set to the average depth above the vertex of the notch between the top of the treatment volume and the stage at which half the treatment volume has been released:

$$h = \frac{(h_1 + h_2)}{2} \tag{28-8}$$

where: h_{v1} = Depth of water between the top of the treatment volume and the vertex of the notch (*ft*)
h_{v2} = Depth of water between the stage when half the treatment volume has been released and the vertex of the notch (*ft*)

Equation 28-6 can be rearranged to solve for the V-notch angle (θ):

$$\theta = 2 \tan^{-1}\left(\frac{Q}{2.5\ h_v^{2.5}}\right) \quad (28\text{-}9)$$

Substituting Equation 28-7 into Equation 28-9 and simplifying gives:

$$\theta = 2 \tan^{-1}\left(\frac{TV}{5\ t\ CF\ h_v^{2.5}}\right) \quad (28\text{-}10)$$

28.2 Example Design Calculations for Dry Detention Systems

Given:

Commercial development
Class III receiving waters
Project area = 0.66 acres
Project percent impervious (not including pond area) = 37%
Off-site drainage area = 0 acres
Seasonal high groundwater elevation at the proposed basin = 6.2 ft
Design tailwater elevation = 6.1 ft
Off-line treatment

The proposed detention basin has the following stage-storage relationship:

Stage (ft)	Storage (ac-ft)	Storage (ft^3)
6.3	0.000	0
6.4	0.010	36
6.5	0.022	958
6.6	0.034	1481
6.7	0.047	2047
6.8	0.064	2788

Design Calculations:

Step 1. Calculate the required treatment volume.

For off-line treatment by dry detention, the rule requires a treatment volume of 1 inch of runoff or 2.5 inches times the impervious area, whichever is greater.

$$\textit{Treatment volume required (one inch of runoff)} = \frac{(0.66\ ac)(1\ inch)}{12\ in/ft} = 0.055\ ac\text{-}ft$$

$$\textit{(2.5 inches times \% imp.)} = \frac{(0.66\ ac)(2.5\ in)(0.37)}{12\ in/ft} = 0.051\ ac\text{-}ft$$

Therefore, *treatment volume* = 0.055 *ac-ft*

Step 2. Set the elevation of the basin floor and the control structure.

Set the detention basin floor and control structure above the design tailwater elevation and at least one foot above the seasonal high water table elevation. Therefore, set the floor elevation at 6.3 ft.

Set an overflow weir at the top of the treatment volume storage to discharge runoff volumes greater than the treatment volumes. Utilizing the stage-storage relationship, 0.055 ac-ft of storage is between 6.7 and 6.8 feet. Interpolate between 6.7 and 6.8 ft to find the weir elevation:

$$\textit{Weir elevation} = (6.8 - 6.7\ ft) \times \frac{(0.055\ ac\text{-}ft - 0.047\ ac\text{-}ft)}{(0.064\ ac\text{-}ft - 0.047\ ac\text{-}ft)} + 6.7\ ft = 6.75\ ft$$

Step 3. Size the outfall structure to recover one-half the treatment volume in 24 hours. For this example, we will design both a circular orifice and V-notch weir to recover the treatment volume.

Option A) Orifice Design

Size a circular orifice to recover one-half the treatment volume in 24 hours. Since the size of the orifice has yet to be determined, use the invert elevation of the orifice as an approximation of the flow line (center) of the orifice. After calculating the orifice size, adjust the flow line elevation and calculate the orifice size again. If the difference in flow line elevations in negligible, the orifice design is adequate.

Trial #1

Treatment volume depth (h_1) = 6.75 *ft* - 6.30 *ft* = 0.45 *ft*

One-half the treatment volume = 0.055 *ac-ft* x 0.5 = 0.0275 *ac-ft*

Interpolate between 6.6 and 6.5 ft to find the elevation at one-half the treatment volume:

$$\textit{elevation at one-half treatment volume} = (6.6 - 6.5\ ft) \times \frac{(0.0275\ ac\text{-}ft - 0.022\ ac\text{-}ft)}{(0.034\ ac\text{-}ft - 0.022\ ac\text{-}ft)} + 6.5\ ft = 6.55\ ft$$

$$h_2 = 6.55\ ft - 6.3\ ft = 0.25\ ft$$

From Equation 28-3:

$$h = \frac{(0.45\ ft + 0.25\ ft)}{2} = 0.35\ feet$$

The average flow rate (Q) required to drawdown one-half the treatment volume in 24 hours is found from Equation 28-2:

$$Q = 0.055\ ac\text{-}ft \times \frac{1}{2} \times 43560\ ft^2/ac \times \frac{1}{24\ hrs} \times \frac{1\ hr}{3600\ sec} = 0.0139\ cfs$$

Find the area (A) of the orifice utilizing Equation 28-4:

Given: $C = 0.6$
$G = 32.2\ ft/sec^2$

$$A = \frac{0.0139\ ft^3/\text{sec}}{0.6\sqrt{2\ (32.2\ ft/\text{sec}^2)\ 0.35\ ft}} = 0.0049\ ft^2$$

From Equation 28-5, the orifice diameter (D) is:

$$D = \sqrt{\frac{4\ (0.0049\ ft^2)}{3.1416}} = 0.079\ ft = 0.95\ inches$$

Trial #2

Adjust h_1, h_2, and the orifice diameter (D) to the flow line of the orifice.

$$Flow\ line\ elevation = 6.30\ ft + \frac{0.079\ ft}{2} = 6.34\ ft$$

$$h_1 = 6.75\ ft - 6.34\ ft = 0.41\ ft$$

$$h_2 = 6.55\ ft - 6.34\ ft = 0.21\ ft$$

$$h = \frac{0.41\ ft + 0.21\ ft}{2} = 0.31\ ft$$

$$A = \frac{0.0139\ ft^3/\text{sec}}{0.6\sqrt{2\ (32.2\ ft/\text{sec}^2)\ 0.31\ ft}} = 0.0052\ ft^2$$

$$D = \sqrt{\frac{4\ (0.0052\ ft^2)}{3.1416}} = 0.0813\ ft = 0.98\ inches$$

$$Adjusted\ flow\ line\ elev. = 6.30\ ft + \frac{0.0813\ ft}{2} = 6.34\ ft$$

This trial is acceptable because there is no difference between the flow line elevations. Therefore, a 0.98 inch diameter circular orifice at invert elevation 6.3 will meet the recovery time criteria. The diameter may be rounded up to 1.0 inch for construction purposes.

Some mechanism, such as a gravel jacket or perforated pipe wrapped with filter fabric, must be provided to minimize clogging (see section 12.4 of this Manual). The designer should check that the discharge rate is not limited by the selected anti-clogging device.

Option B) V-notch weir

Size a V-notch weir to recover one-half the treatment volume in 24 hours. The vertex (invert) of the notch will be set at the detention basin floor elevation (6.30 ft). Next, calculate the depth of water between the top of the treatment volume and the vertex of the notch (h_{v1}):

$$\textit{Treatment volume depth } (h_{v1}) = 6.75\ ft - 6.30\ ft = 0.45\ ft$$

Find the depth of water between the stage when half the treatment volume has been released and vertex of the notch (h_{v2}):

$$\textit{One-half the treatment volume} = 0.055\ ac\text{-}ft \times 0.5 = 0.0275\ ac\text{-}ft$$

Interpolate between 6.6 and 6.5 ft to find the elevation at one-half the treatment volume:

$$\textit{elevation at one-half treatment volume} = (6.6 - 6.5\ ft) \times \frac{(0.0275\ ac\text{-}ft - 0.022\ ac\text{-}ft)}{(0.034\ ac\text{-}ft - 0.022\ ac\text{-}ft)} + 6.5\ ft = 6.55\ ft$$

$$h_{v2} = 6.55\ ft - 6.3\ ft = 0.25\ ft$$

The average depth of water above the notch (h_v) is determined from Equation 28-8:

$$h_v = \frac{(0.45\ ft + 0.25\ ft)}{2} = 0.35\ feet$$

From Equation 28-10, calculate the angle of the V-notch (θ):

$$\theta = 2 \tan^{-1}\left(\frac{0.055ac\text{-}ft \times 43560\ ft^2/ac}{5\ (24hrs)3600\,\text{sec}/hr\ (0.35ft)^{2.5}}\right) = 8.8degrees$$

Therefore, a 8.8 degree V-notch weir with top elevation at 6.75 *ft* and vertex elevation at 6.30 *ft* will meet the recovery time criteria.

Some mechanism, such as a gravel jacket or perforated pipe wrapped with filter fabric, must be provided to minimize clogging (see section 12.4 of this Manual). The designer should check that the discharge rate is not limited by the selected anti-clogging device.

29.0 Methodology and Design Examples for Stormwater Harvesting Systems

29.1 Overview

Water budgets are utilized to design stormwater harvesting systems. A water budget is an accounting of water movement onto, within, and off an area. The purpose of developing a water budget for stormwater harvesting systems is to quantify the reduction in offsite discharge that can be harvested for a given time period. Individual components of water supply, storage, use, and movement must be accounted for in the water budget. Calculation of these components require knowledge of the watershed characteristics, harvesting area (if irrigation is to be used), desired percentage of runoff to be harvested, harvested volume, harvesting rate, rainfall data, and evaporation data.

Using the above parameters, Wanielista et al. (1991) simulated the long-term behavior of stormwater harvesting ponds over time for various locations in Florida. The results of the simulations are presented in Rate-Efficiency-Volume (REV) curves. The REV curves can be used to design stormwater harvesting systems to meet the performance criteria described in section 21 of this Manual.

Important assumptions that must be kept in mind when using the REV curves include:

(a) Net ground water movement into or out of the pond is assumed to be zero.

(b) The harvesting rate is constant over time.

(c) The mean annual evaporation from the pond equals the mean annual rainfall on the pond.

(d) The results are long term averages based on historical rainfall records. The results will not give an indication of conditions during a wet or dry year.

To design a stormwater harvesting system which does not meet one of the above assumptions, the applicant can develop a site-specific water budget analysis to meet the performance criteria described in section 21 of this Manual.

The following sections and design examples summarize the REV curve methodology presented by Wanielista et al. (1991) for the design of stormwater harvesting systems.

29.2 Equivalent Impervious Area

When designing stormwater harvesting systems, the runoff characteristics of the watershed must be determined. The overall runoff coefficient (C) for an area composed of different surfaces can be determined by weighting runoff coefficients with respect to the total areas they encompass:

$$C = \frac{C_1 A_1 + C_2 A_2 + \ldots + C_N A_N}{A_1 + A_2 + \ldots + A_N} \quad (29\text{-}1)$$

where: C_N = Runoff coefficient for surface N (see Table 31~~24~~-1 for values of C)
A_N = Area of surface N

This weighted runoff coefficient (C) is termed the effective runoff coefficient and is representative of the entire watershed.

The equivalent impervious area (*EIA*) is equal to the product of the total area of the watershed (A) and the effective, or weighted, runoff coefficient (C) for the watershed:

$$EIA = C A \quad (29\text{-}2)$$

where: *EIA* = Equivalent impervious area (acres)
C = Effective runoff coefficient for the watershed
A = Area of watershed (acres)

The *EIA* is defined as the area of a completely impervious watershed that would produce the same volume of runoff as the actual watershed. For example, a 20-acre watershed with an effective runoff coefficient (C) of 0.5 would have an *EIA* of 10 acres (20 ac x 0.5). If one inch of rain fell on this 10-acre impervious area, the runoff volume would be 10 ac-in (10 ac x 1 in). If the same amount of rain fell on the actual watershed, the runoff volume would not change:

$$20\ ac\ (1\ in)\ (0.5) = 10\ ac\text{-}in$$

The *EIA* will be expressed in acres throughout this methodology. The use of the *EIA* serves to generalize the model so that it can be applied to a watershed of any size and runoff characteristics.

The *EIA* for a watershed should include the area of the pond when using this methodology.

29.3 Harvested Volume

The harvested volume (V) is the amount of runoff stored in the stormwater pond between the top of the permanent pool and the invert of the overflow structure (see Figure 21-1). This volume is akin to the treatment volume in wet detention systems. The major difference between a stormwater harvesting pond and a wet detention pond is the operation of this storage volume. For wet detention systems, the treatment volume is designed to be discharged downstream to receiving waters via an overflow structure. On the other hand, in a stormwater harvesting pond the harvested volume (V) is reused instead of being discharged downstream.

Harvested volumes are expressed in units of inches over the *EIA*. The values can be converted using simple formulas or equations (see the example problems at the end of this section).

29.4 Harvesting Rate

Harvesting rate (*R*) is the rate at which stormwater runoff is harvested. On the REV curves, the units used for harvesting rate are inches per day over the *EIA*. The values can be converted using simple formulas or equations (see the design example in section 29-7 of this Manual).

Many stormwater harvesting applications involve an area to be irrigated. For instance, an apartment complex may irrigate grass and other landscaped common areas. Recommended irrigation rates for turf grasses in Florida is usually less than one inch per week on the average over a year.

Use of a constant harvesting rate for irrigation applications tends to over estimate the efficiency of the system due to the lack of reuse demands during periods of heavy rainfall. Therefore, the District recommends that the harvesting efficiency (*E*), defined as the percentage of runoff that is harvested, be increased by 5% to compensate for use of a constant reuse rate. For example, if the required harvesting efficiency (*E*) is 50% and a constant harvesting rate (*R*) is utilized, then the system should be designed for $E = 55\%$.

The designer should consult a landscape irrigation specialist for the design of the irrigation system and the recommended irrigation rates.

29.5 Rate-Efficiency-Volume (REV) Curves

Wanielista et al. (1991) used long term rainfall records for 25 Florida rainfall stations in a model that simulated the behavior of a stormwater harvesting pond over time. Both the rate of harvesting from the pond and the harvested volume were varied. The harvesting efficiency (*E*), defined as the percentage of runoff that is harvested, was calculated as the harvested volume and harvesting rate were varied. The results of the simulations are presented in Rate-Efficiency-Volume (REV) curves. The REV curves relate the harvesting rate (*R*), the efficiency (*E*), and the harvested volume (*V*) of the pond.

The REV curves are generalized for application to watersheds of any size or runoff coefficient via the *EIA*. Both the harvesting rate and harvested volume are based on the *EIA*.

Wanielista et al. (1991) developed a REV chart for each of the 25 rainfall station locations used in the simulations. Individual REV charts are specific to geographical regions with similar meteorological characteristics. The designer should use the one closest to the site for design. The REV charts for stations within the SJRWMD are presented in Figures 29-1 through 29-8 and are listed in Table 29-1 below.

Table 29-1. REV Charts for Stations within the SJRWMD

STATION NAME	FIGURE NUMBER
Jacksonville	29-1
Marineland	29-2
Gainesville	29-3
Daytona Beach	29-4
Orange City	29-5
Orlando	29-6
Lisbon	29-7
Melbourne	29-8

On every REV chart, there is a curve for each of the following efficiency levels (in percentage): 50, 60, 70, 80, 90, and 95. The range of the curves are restricted by practical applicability.

The following design examples illustrate the use of the REV charts, reuse rate, reuse volume, and *EIA* in the design of stormwater reuse systems.

29.6 Design Examples for Stormwater Harvesting Systems

The following design example cover the design of the harvesting rate, harvested volume, and the harvesting efficiency. In a typical design, the applicant would have to consider the following:

(a) Irrigation system or areas that will be irrigated
(b) Permanent pool size and depth
(c) Pond shape to provide at least 2:1 length to width ratio
(d) Alignment of inlets and outlets to promote mixing, settling, and maximize the flow path
(e) Overflow weir to safely pass the design storm event(s) at pre-development conditions
(f) Littoral zone (if required)

Example Problem #1 (Determine *R*; Given *E* and *V*)

Given: 10-acre watershed in Orlando that is 70% impervious
Runoff coefficient for the pervious area = 0.2
Harvested volume available in a pond = 109,000 ft^3
Area available for irrigation = 2.5 acres
Harvesting efficiency = 50%

Objective: Determine the harvesting rate (*R*)

Design Calculations:

Step 1. Determine the *EIA*. From Equation 29-1, the runoff coefficient (*C*) is:

$$C = \frac{7\ ac\ (1.0) + 3\ ac\ (0.2)}{10\ ac} = 0.76$$

The effective impervious area (*EIA*) is found from Equation 29-2:

$$EIA = 0.76\ (10\ ac) = 7.6\ ac$$

Step 2. Convert the harvested volume (*V*) units to inches over the *EIA*.

$$V = 109{,}000\ ft^3 \times \frac{1}{7.6\ ac} \times \frac{1\ ac}{43560\ ft^2} \times \frac{12\ inches}{1\ ft} = 3.95\ inches$$

Step 3. Find the harvesting rate (*R*). From the Orlando REV chart (Figure 29-6),

$$R = f(50\%, 3.95\ \text{inches}) = 0.068\ \text{inches per day over the } EIA$$

Step 4. Convert the harvesting rate units to inches per week over the irrigated area.

$$R = 0.068\ \frac{inch}{day} \times 7.6\ ac \times \frac{43560\ ft^2}{1\ ac} \times \frac{1\ ft}{12\ inches} = 1876\ \frac{ft^3}{day}$$

$$R = 1876\ \frac{ft^3}{day} \times \frac{7\ days}{1\ week} \times \frac{1}{2.5\ ac} \times \frac{1\ ac}{43560\ ft^2} \times \frac{12\ inches}{1\ ft} = 1.45\ \frac{inches}{week}$$

Therefore, irrigation of 1.45 inches per week over the 2.5-acre irrigation area will achieve 50% efficiency with the given harvested volume.

Example Problem #2 (Determine *V*; given *E* and *R*)

Given: 20-acre watershed in Melbourne that is 50% impervious
Pervious $C = 0.3$
6 acres are available for irrigation at a rate of 2 inches per week
Required efficiency is 90%

Objective: Determine the harvested volume (*V*)

Design Calculations:

Step 1. Determine the *EIA*. From Equation 29-1, the runoff coefficient (*C*) is:

$$C = \frac{10\ ac\ (1.0) + 10\ ac\ (0.3)}{20\ ac} = 0.65$$

The effective impervious area (*EIA*) is found from Equation 29-2:

$$EIA = 0.65\ (20\ ac) = 13\ ac$$

Step 2. Convert the harvesting rate units to inches per week over the *EIA*.

$$R = 6\ ac\ x\ \frac{2\ inches}{1\ week}\ x\ \frac{1}{13\ ac}\ x\ \frac{1\ week}{7\ days} = 0.13\ \frac{inches}{day}\ on\ the\ EIA$$

Step 3. Find the harvested volume (*V*). From the Melbourne REV chart (Figure 29-7),

$V = f$(90%; 0.13 inches/day over the *EIA*) = 6.5 inches over the *EIA*

Step 4. Convert the harvested volume (*V*) units to ft^3

$$V = 6.5\ inches\ x\ 13\ ac\ \frac{1\ ft}{12\ inches}\ x\ \frac{43560\ ft^2}{1\ ac} = 306735\ ft^3$$

Therefore, 306735 ft^3 of harvested volume is needed in the pond.

Example Problem #3 (Determine *E*; Given *R* and *V*)

Given: 3.5-acre watershed in Orlando that is 100% impervious
Harvested volume (*V*) = 0.875 ac-ft
2.87 acres are available for irrigation at a rate of 1.75 inches per week

Objective: Determine the harvesting efficiency (*E*)

Design Calculations:

Step 1. Determine the *EIA*. Since the site is 100% impervious, the *EIA* = 3.5-acres

Step 2. Convert the harvested volume (*V*) units to inches over the *EIA*.

$$V = 0.875\ ac\text{-}ft\ x\ \frac{1}{3.5\ ac}\ x\ \frac{12\ inches}{1\ ft} = 3\ inches\ on\ the\ EIA$$

Step 3. Convert the harvesting rate units to inches per week over the *EIA*.

$$R = 2.87\ ac\ x\ \frac{1.75\ inches}{1\ week}\ x\ \frac{1}{3.5\ ac}\ x\ \frac{1\ week}{7\ days} = 0.205\ \frac{inches}{day}\ on\ the\ EIA$$

Step 4. Determine the efficiency from the Orlando REV chart (Figure 29-6).

$$E = f(0.205 \text{ inches/day}; 3.0 \text{ inches}) = 90\%$$

29.7 References

Wanielista, M.P., Y.A. Yousef, G.M. Harper, T.R. Lineback, L. Dansereau. 1991. *Precipitation, Inter-Event Dry Periods, and Reuse Design Curves for Selected Areas of Florida*. University of Central Florida, Orlando, Florida.

Wanielista, M.P. 1992. Private Communication. University of Central Florida, Orlando, Florida.

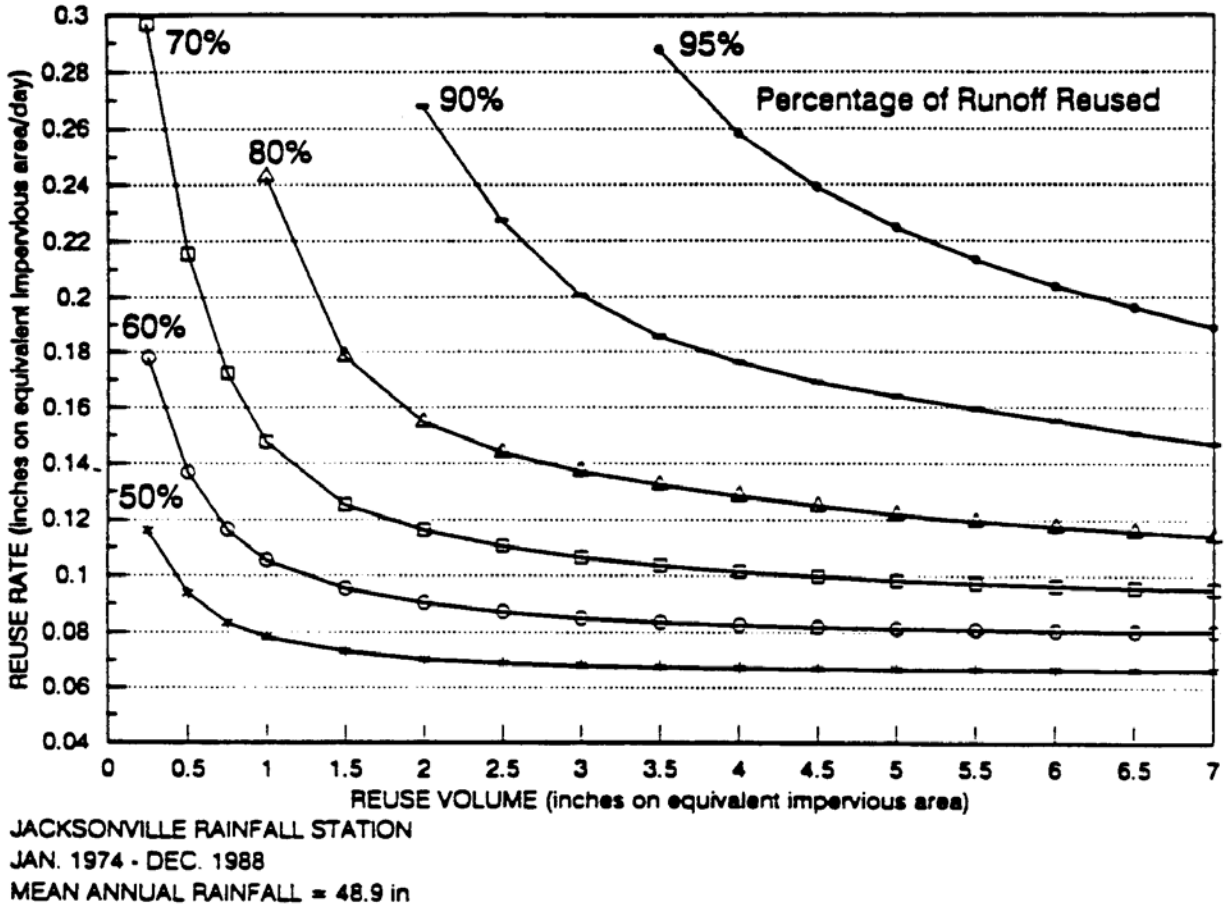


Figure 29-1. REV Chart for Jacksonville

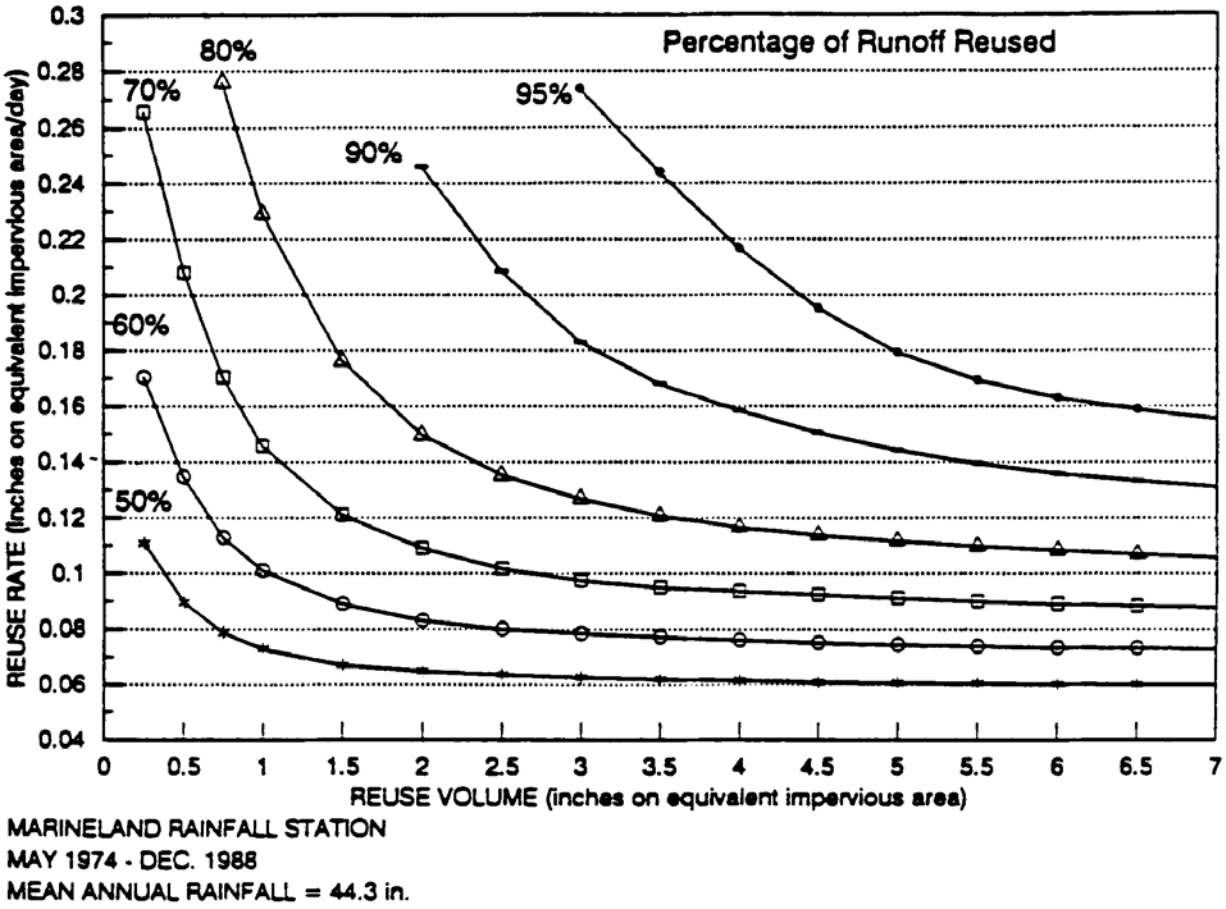


Figure 29-2. REV Chart for Marineland

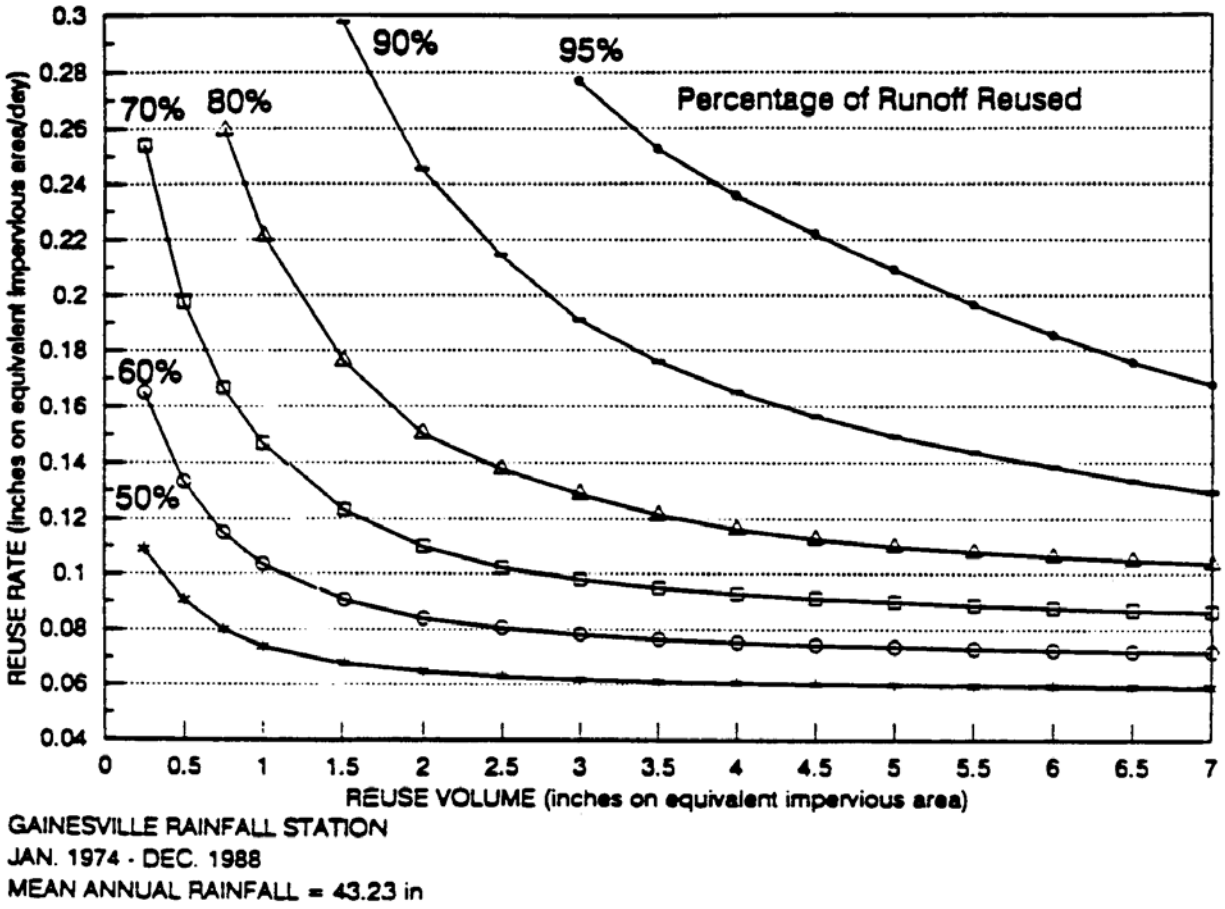


Figure 29-3. REV Chart for Gainesville

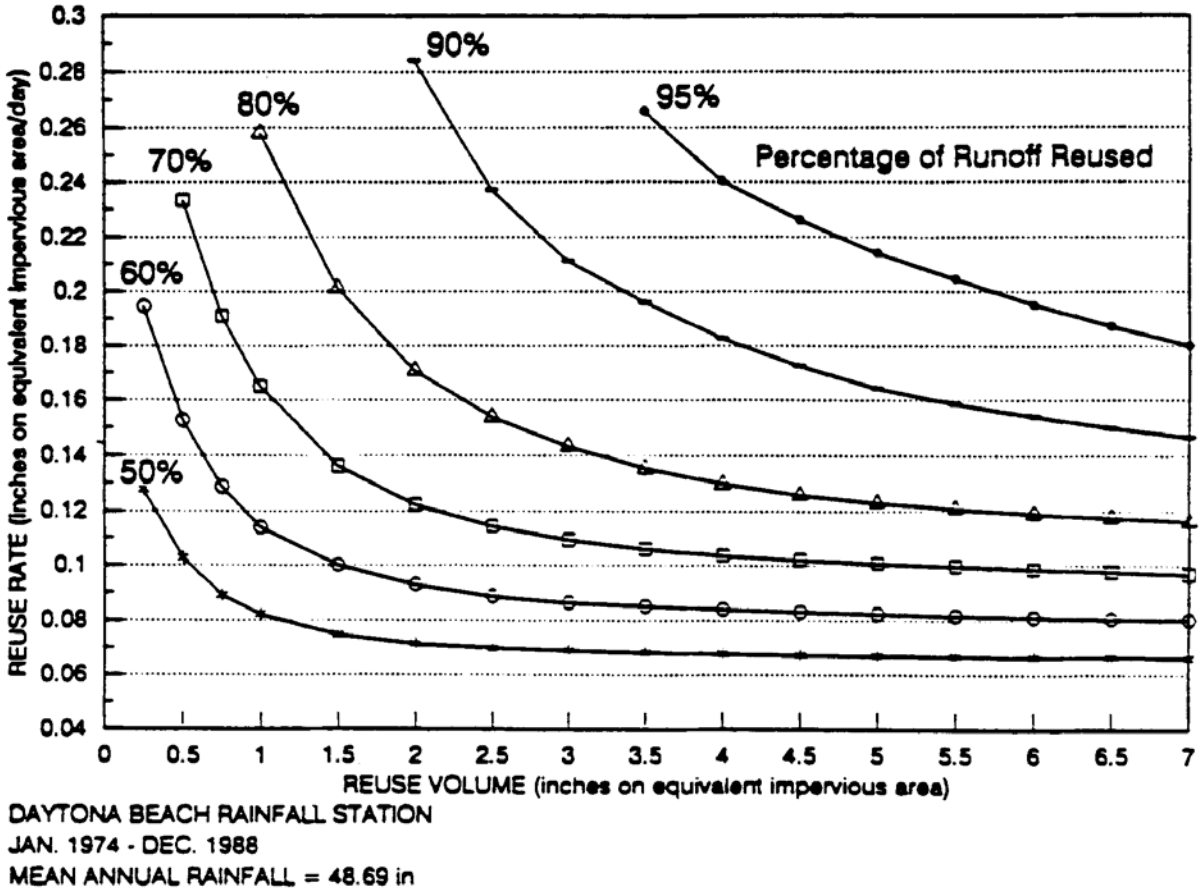


Figure 29-4. REV Chart for Daytona Beach

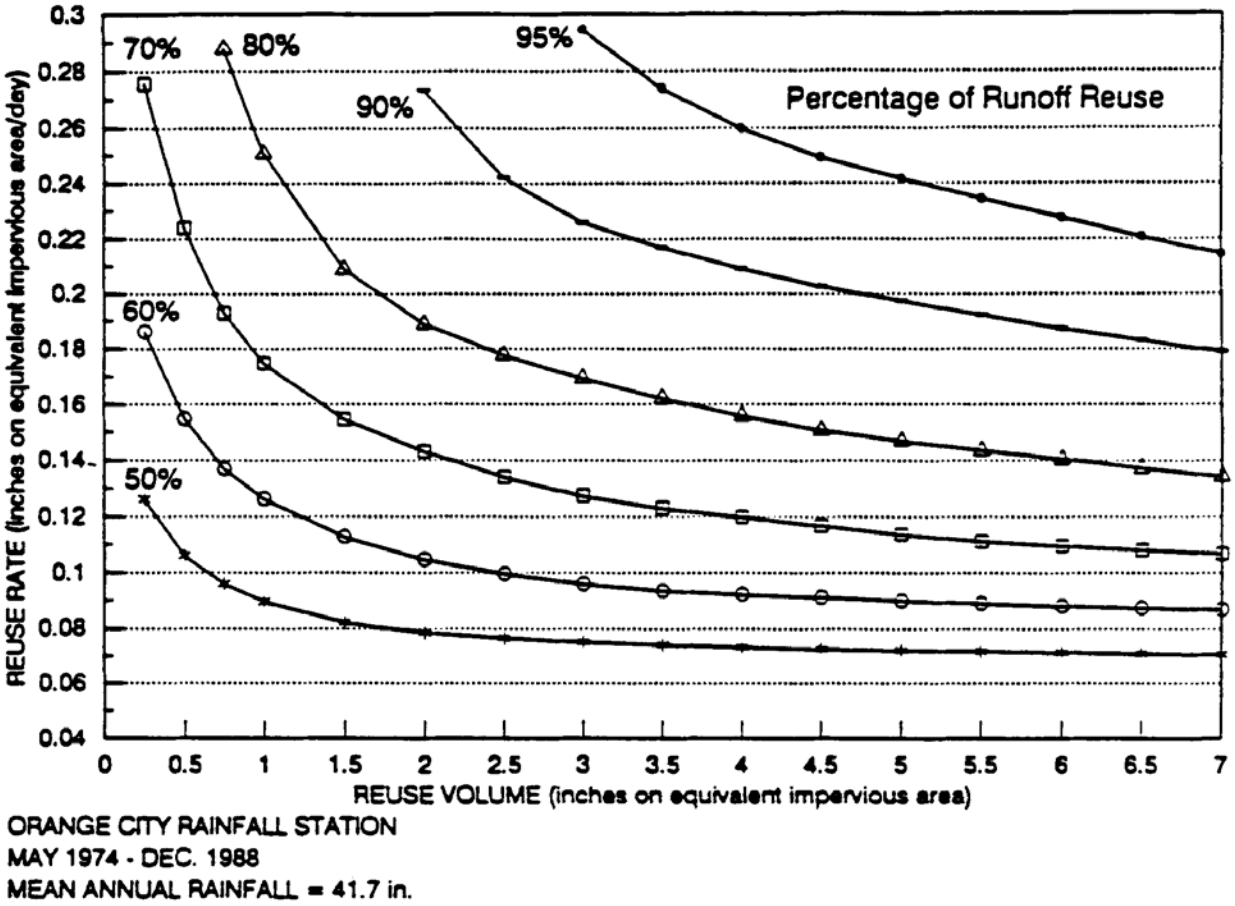


Figure 29-5. REV Chart for Orange City

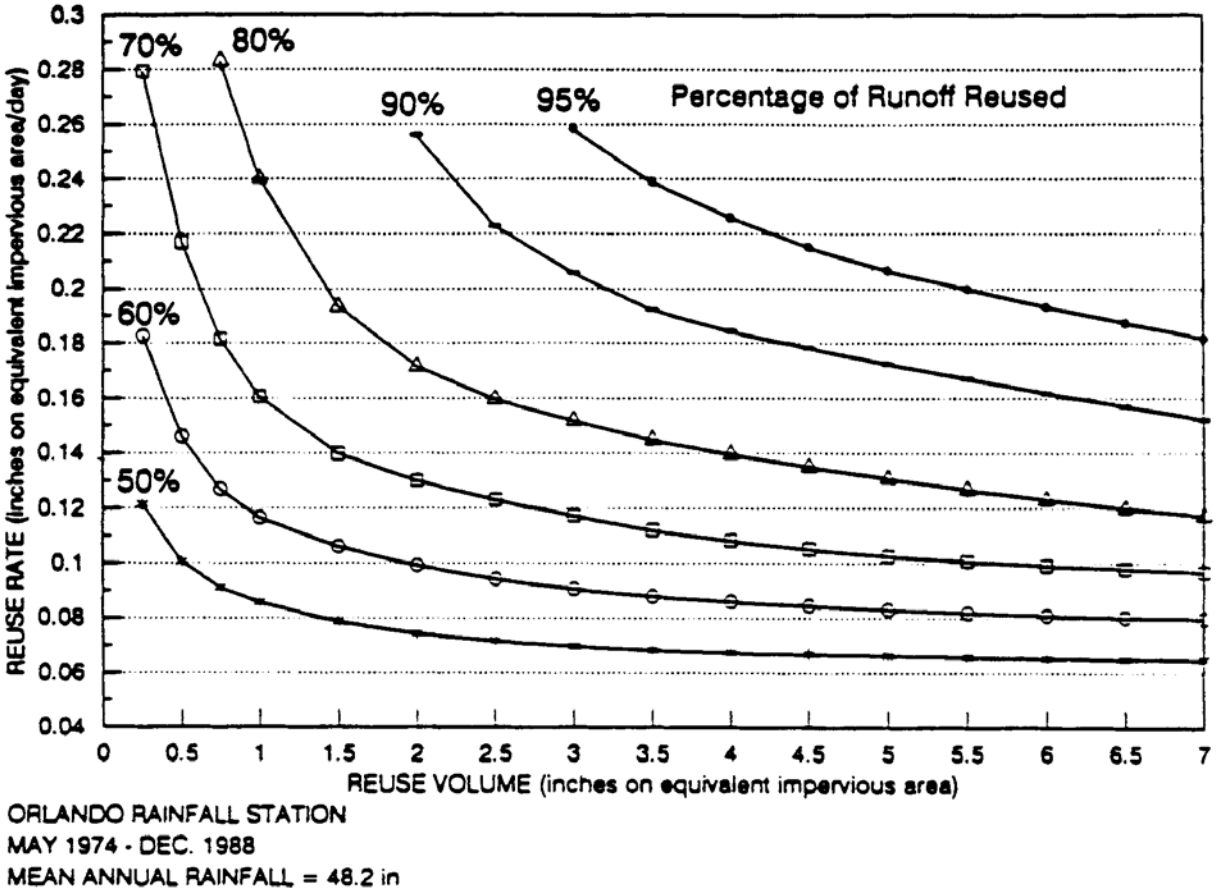


Figure 29-6. REV Chart for Orlando

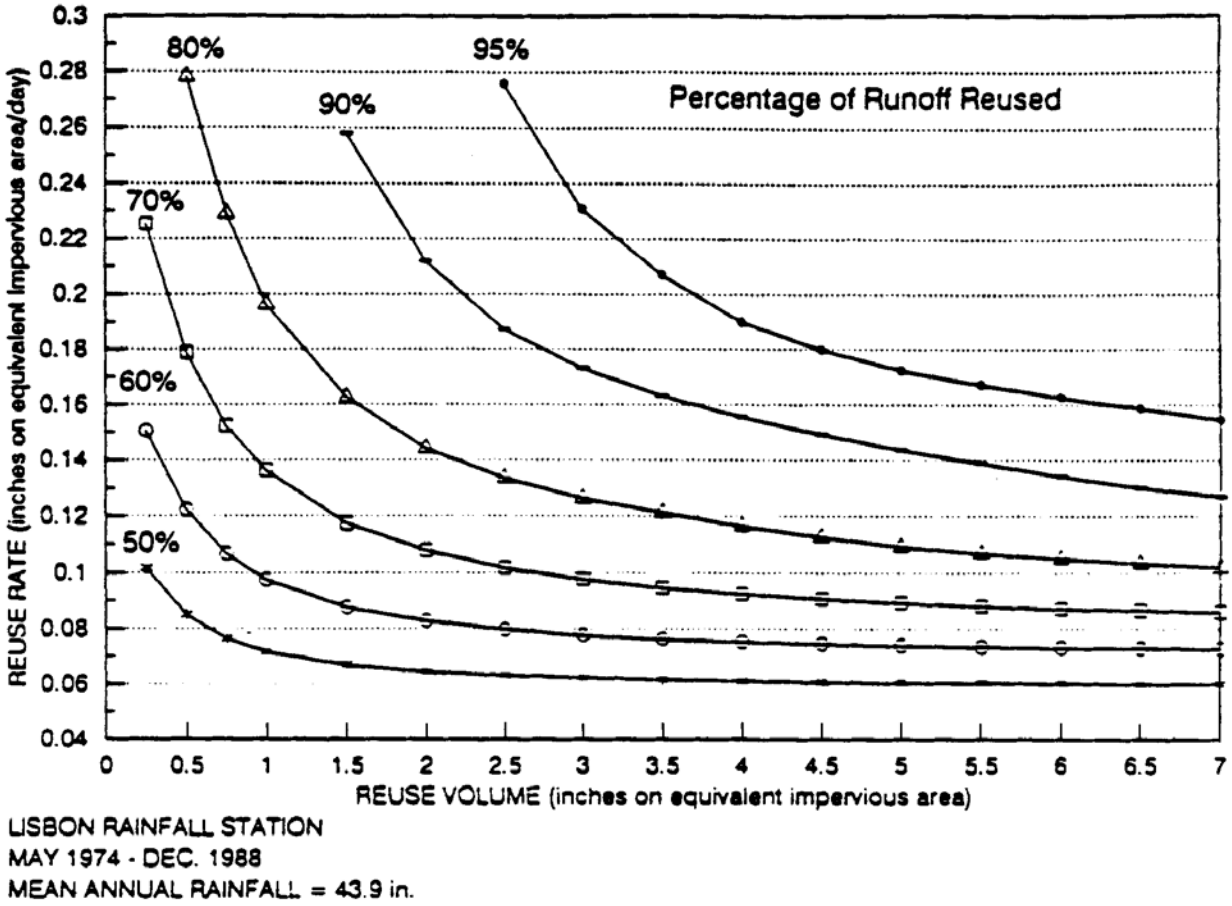


Figure 29-7. REV Chart for Lisbon

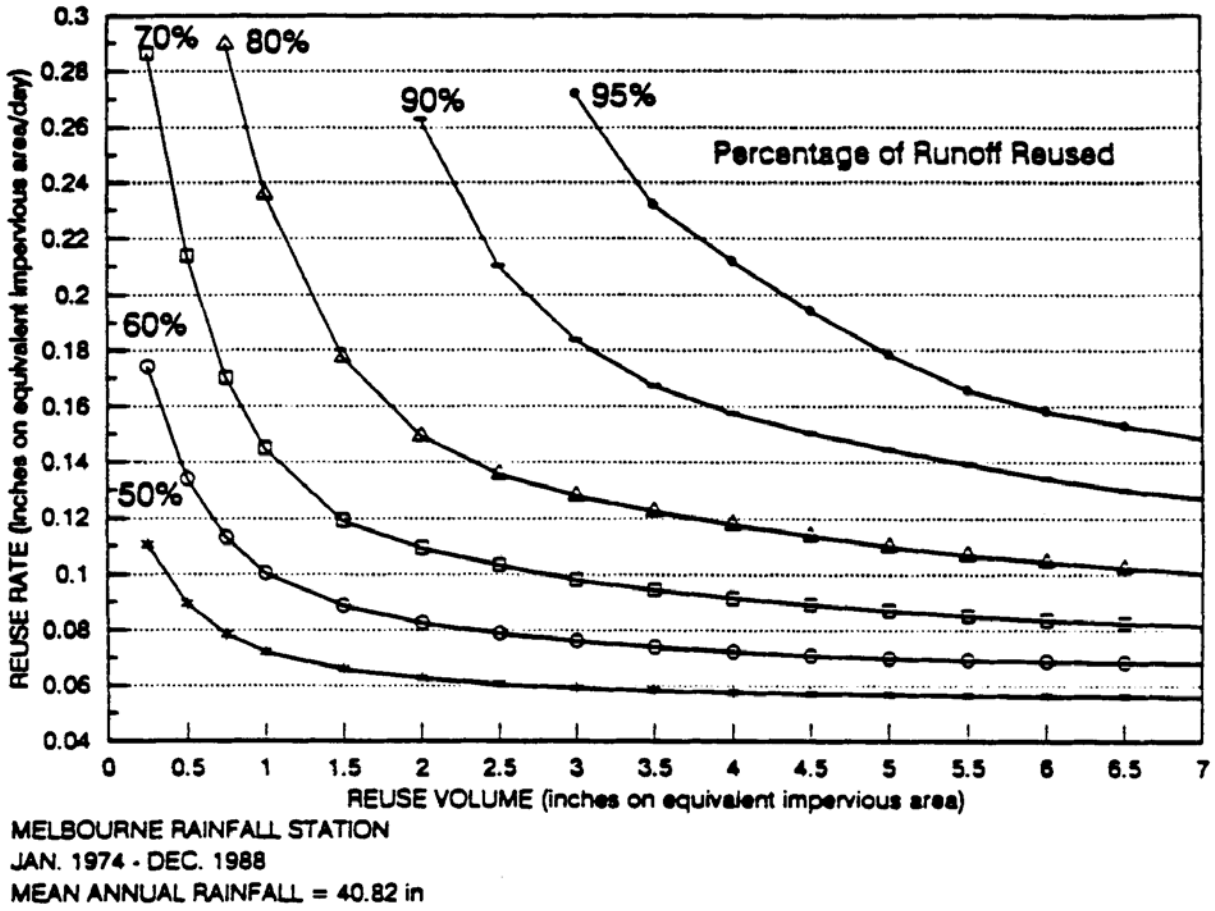


Figure 29-8. REV Chart for Melbourne

30.0 Methodology and Design Examples for Filtration

30.1 Calculating Recovery Time Utilizing Darcy's Equation

The Darcy's equation can be utilized to calculate recovery times for filtration systems. The Darcy Equation for saturated flow through porous media is written:

$$V = K\,i \tag{30-1}$$

where: V = Velocity of flow through the porous media (*ft/hr*)
K = Permeability rate of filter media (*ft*/*hr*)
i = Hydraulic gradient (*ft/ft*)

The rate of flow (Q) passing a given cross-sectional area of saturated soil (A) is:

$$Q = V\,A \tag{30-2}$$

where: Q = Rate of flow (ft^3/*hr*)
A = Area of flow (ft^2)

Combining equations 30-1 and 30-2:

$$Q = K\,i\,A \tag{30-3}$$

Equation 30-3 can be applied in a number of acceptable ways to design filtration systems. These methodologies include incremental drawdown analysis, flow nets, and analytical adaption of the falling head equation. The method selected should take into account the fact that the flow rate varies over time as the filter system recovers the treatment volume.

In the incremental drawdown analysis, the flow through the filter system is evaluated incrementally with respect to pond stage elevation to determine the recovery time. The instantaneous rate of discharge (Q) is calculated at various stages of drawdown or storage elevations in the basin. The time necessary to draw down each increment of storage is summed and compared to the desired recovery time. The design (eg., length) of the filter system is usually finalized by trial and error until the desired recovery time is achieved. See section 30.7 for detailed design examples.

The methodology in the following sections describes the incremental drawdown analysis and the associated variables used in the analysis. Applicants proposing to utilize other methods are encouraged to consult with District staff prior to application submittal.

30.2 Hydraulic Gradient

The hydraulic gradient (i) between two points is equal to the difference in hydraulic head at each point divided by the distance between the points as measured along the flow path. The hydraulic gradient (i) may be expressed as:

$$i = \frac{\Delta H}{D} \tag{30-4}$$

where: i = Hydraulic gradient
ΔH = Difference in hydraulic head between the free water surface in the basin and a horizontal reference plane (usually chosen passing through the flow line of the filter pipe) (*ft*)
D = Distance of the path of flow through the porous media (*ft*)

The hydraulic gradient (i) can be readily obtained from scaled drawings of the filtration system (see Figures 30-1 and 30-2). The details within the construction plans should provide sufficient information to reproduce a scaled drawing to measure flow lengths.

For side-bank filters, the flow path varies with the drop in water surface elevation (Figure 30-1). The flow path for each increment can be assumed to be the average of the flow paths below the top elevation of the given increment. For example, for increment #2 of Figure 30-1, the average flow path can be assumed to be:

$$\text{Average Flow Path for Increment \#2} = \frac{D2 + D3 + D4 + D5}{4} \tag{30-5}$$

For increment #4 in Figure 30-1, the average flow path can be assumed to be:

$$\text{Average Flow Path for Increment \#4} = \frac{D4 + D5}{2} \tag{30-6}$$

For vertical filters the flow path distance (D) is constant for each increment of the analysis (Figure 30-2).

30.3 Permeability

The permeability (K) should be selected with respect to surrounding soils. Once the system is constructed, soils will migrate into the filter and reduce the conductivity. Therefore, design permeabilities of the filter which are far greater than the permeability of the surrounding soils should be avoided. In Table 30-1, below, recommended permeability (K) values are given for each soil type.

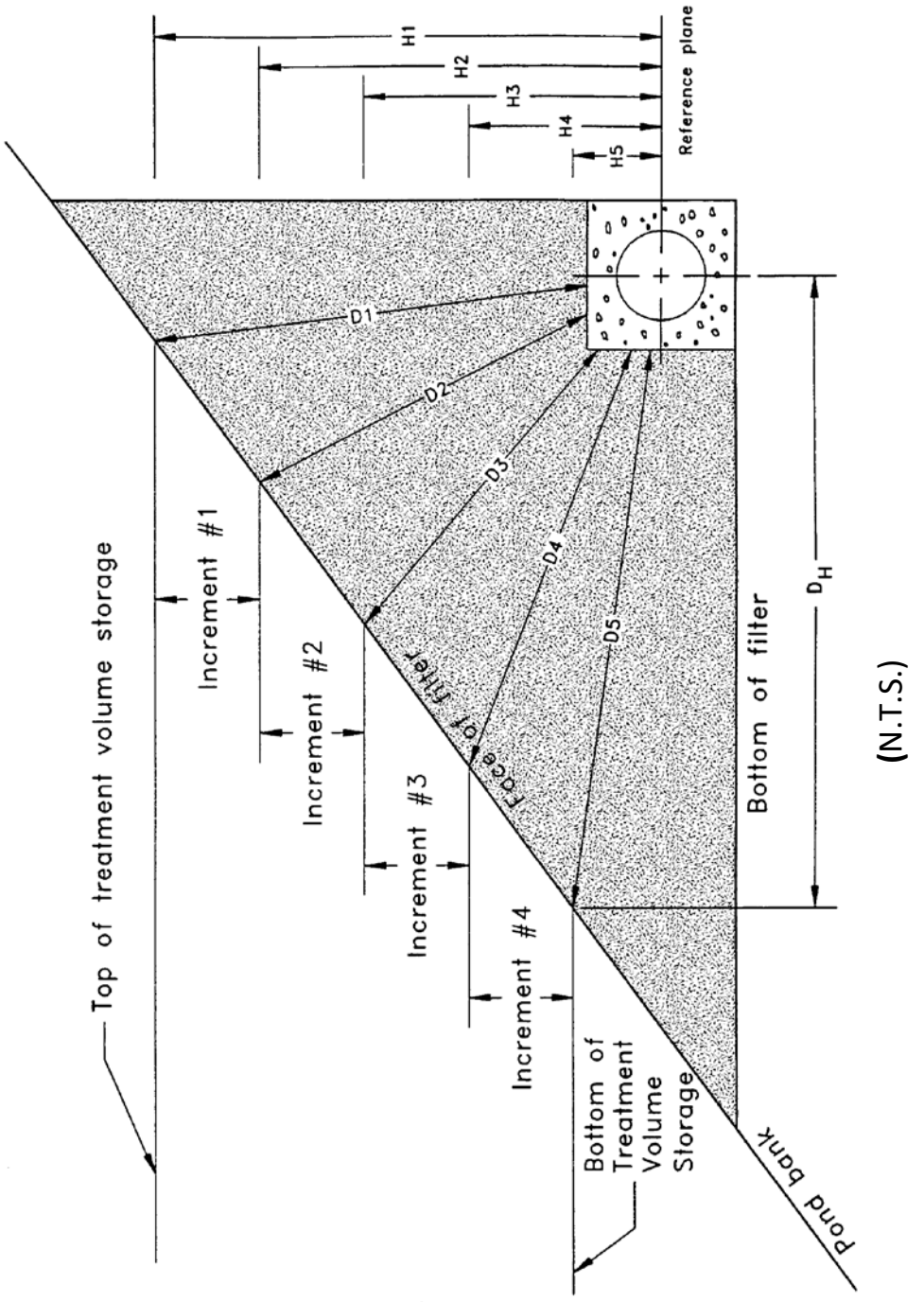


Figure 30-1. Cross-section of Side-bank Filter Illustrating the Parameters Used in Calculating Hydraulic Gradient (i) for Lateral Flow Conditions (adapted from Livingston et al 1988)

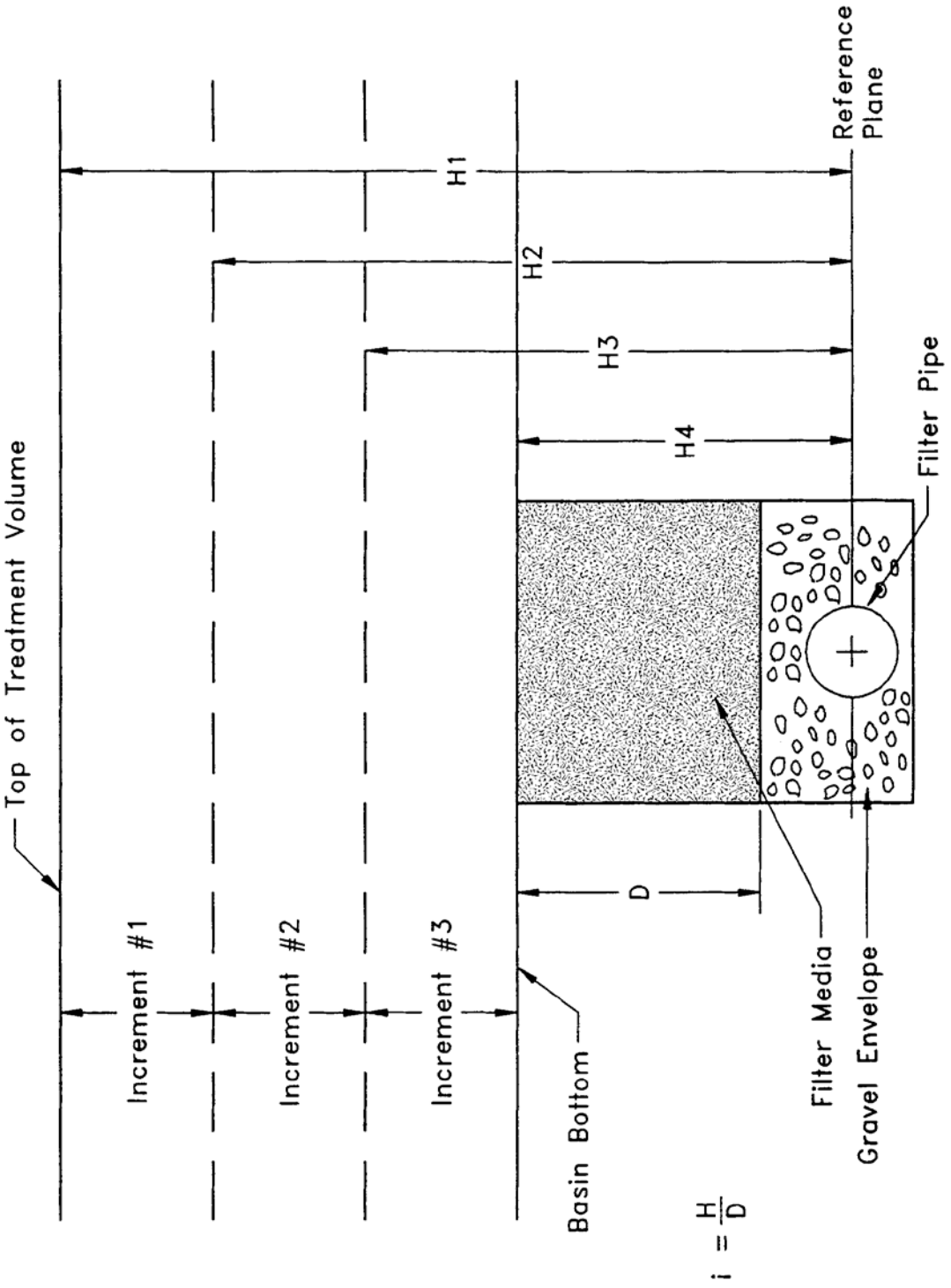


Figure 30-2. Cross-section of Basin-bottom Filter Illustrating the Parameters Used in Calculating Hydraulic Gradient (i) for Vertical Flow Conditions

For "wet" filter systems, a permeability (*K*) for Soil Type "A" may be utilized since most soil particles will settle out in the wet pond prior to reaching the filter media. Permeability values should be reduced by 25% when sod is proposed to be laid over the filter media. On the other hand, *K* values may be increased by 25% when a gravel envelope is placed around the perforated pipe (Harper and Herr, 1993).

Table 30-1. Recommended Permeability (*K*) Values

Soil Type	K (*ft/hr*)
A	2.5
B	2.0
C	1.0
D	0.5
A/D	2.5
B/D	1.5
C/D	0.5

30.4 Flow Area

The flow area (*A*) for use in equation 30-3 is the cross-sectional flow area of the filter media and is calculated as:

$$A = W\ L \tag{30-7}$$

where: W = Width of saturated filter media perpendicular to the direction of flow (*ft*)
L = Length of filter media (*ft*)

For vertical filters, the width of filter media (*W*) remains constant with the drop in water surface elevation. See example problem #2 in section 30-7 for example calculation for vertical filters.

However, for sidebank filters, the width of saturated filter media (*W*) can vary along the flow path (*D*) as flow converges toward the perforated drain pipe and with the falling water surface elevation. The design filter width (*W*) for sidebank filters should be taken as the average of the converging saturated filter width. One method of estimating the design filter width (*W*) is to take the average of the saturated filter width at the filter surface and the width of the saturated filter media at the drain pipe (or gravel envelope as appropriate). Another method is to utilize the saturated filter width at the midpoint of the flow path through the filter media as the design filter width (*W*).

30.5 Incremental Drawdown Analysis

The discharge rate (Q) can be calculated at the various increments of drawdown or stages in the basin by substituting Equation 30-4 into equation 30-3:

$$Q = K \frac{\Delta H}{\Delta D} A \qquad (30\text{-}8)$$

To calculate the recovery time of the system, the flow rate (Q) can be expressed as a function of time ($Q = V/t$), substituted in Equation 33-8 and rearranged to solve for time (t) as follows:

$$t = \frac{V}{K \frac{\Delta H}{\Delta D} A} \qquad (30\text{-}9)$$

where: t = Time (*hrs*)
V = Volume to be discharged (ft^3).

Equation 30-9 can be solved for each increment of treatment volume and the time calculated to drawdown each increment summed to give the total recovery time for the filter design. Example formats for calculating the recovery time utilizing the incremental Darcy's method for side-bank and vertical filters is presented in Figures30-4 and 30-5, respectively. Example problems utilizing this methodology is given below in section 30.7.

The increment of analysis, although not a direct parameter of Darcy's equation, is an important parameter which effects the length of filter required to meet the rule criteria. To produce the most accurate result, the increment should not be larger than 0.1 feet. Smaller increments may be appropriate when the depth in the detention basin of the required treatment volume is shallow (e.g., if the treatment volume is only 0.2 feet deep).

30.5.1 Alternative Methodologies

Besides the incremental analysis presented above, other acceptable methodologies exists for designing filtration systems. The incremental method presented on page 6-274 of *The Florida Land Development Manual* (Livingston et al 1988) is acceptable for designing side bank filters (Harper and Herr 1993). The only difference between this methodology and that presented above is the calculation of the flow path distance (D) variable used in determining the hydraulic gradient (i) (equation 303-3) for side bank filters. For vertical filters, the flow path distance (D) is the same between the two methodologies.

The Falling Head equation presented on page 6-268 of *The Florida Land Development Manual* (Livingston et al 1988) is acceptable for designing vertical filters (Harper and Herr 1993).

30.6 Safety Factor

A safety of 2 is recommended when designing filtration systems (see section 22.4). The methodologies and permeability values recommended above for designing filter systems are conservative so designers utilizing these procedures are not required to provide a safety factor. The only exception is when the incremental method is utilized for designing vertical filters. In this case, a safety factor of 2 is recommended since Harper and Herr (1993) report that this procedure overpredicts recovery times by about a factor of 2.

30.7 Pipe Capacity

The capacity of the pipe must be always checked to ensure that the pipe can convey the design flow rates. This can be readily calculated using a modified form of the Manning's Equation:

$$d_i = \left(\frac{1630\ Q_p\ n}{\sqrt{S}} \right)^{3/8} \qquad (30\text{-}10)$$

where: d_i = Inside pipe diameter (*in*)
n = Manning's coefficient of roughness
Q_p = Peak design discharge rate (*cfs*)
S = Slope of the pipe (*ft/ft*)

If the pipe cannot convey the peak flow rate, additional head losses must be considered in the recovery time or a larger size pipe must be used.

30.8 Example Design Calculations for Filter Systems

Example Problem #1. Side Bank Filter

Given:

Commercial development
Class III receiving waters
Project area = 0.66 acres
Project percent impervious (not including pond area) = 37%
Off-site drainage area = 0 acres
Seasonal high groundwater elevation at the proposed basin = 5.7 ft
Design tailwater elevation = 5.6 ft
Off-line treatment
Type B soils
4:1 side slopes

Side-bank filter with square cross-section gravel envelope around the perforated pipe (gravel envelope width = 3")
Pipe n = 0.016; Pipe S = 0.0012

The proposed detention basin has the following stage-storage relationship:

Stage (ft)	Storage (ac-ft)	Storage (ft^3)
6.3	0.000	0
6.4	0.010	436
6.5	0.022	958
6.6	0.034	1481
6.7	0.047	2047
6.8	0.064	2788

Objective: Design a side bank filter using the incremental method

Design Calculations:

Step 1. Calculate the required treatment volume.

For off-line treatment by filtration, the rule requires a treatment volume of 1 inch of runoff or 2.5 inches times the impervious area, whichever is greater.

$$\textit{Treatment volume required (one inch of runoff)} = (0.66\ ac.)(1\ inch) = 0.055\ ac\text{-}ft$$
$$12\ in/ft$$

$$\textit{(2.5 inches times \% imp.)} = (0.66\ ac)(2.5\ in.)(0.37) = 0.051\ ac\text{-}ft$$
$$12\ in/ft$$

Therefore, *treatment volume* = 0.055 *ac-ft* or 2396 ft^3

Step 2. Set the elevation of the filter pipe and control structure.

Set the filter pipe invert at or above the seasonal high water table and design tailwater elevation. Therefore, set the filter pipe invert elevation at 5.7 ft.

Set an overflow weir at the top of the treatment volume storage to discharge runoff volumes greater than the treatment volumes. Utilizing the stage-storage relationship, 0.055 ac-ft of storage is between 6.7 and 6.8 feet. Interpolate between 6.7 and 6.8 ft. to find the weir elevation:

$$\textit{Weir elevation} = (6.8 - 6.7\ ft) \times \frac{(0.055\ ac\text{-}ft - 0.047\ ac\text{-}ft)}{(0.064\ ac\text{-}ft - 0.047\ ac\text{-}ft)} + 6.7\ ft = 6.75\ ft$$

$$\textit{Treatment volume depth} = 6.75 - 6.3\ ft = 0.45\ ft$$

Step 3. Determine the *K* value

From Table 30-1, the permeability (*K*) = 2.0 *ft/hr* for Type B soils

Add 25% to the *K* value since a gravel envelope is utilized.

$$\text{Design } K = 2.0\ ft/hr \times 1.25 = 2.5\ ft/hr$$

Step 4. Size the filter to draw down the treatment volume in at least 72 hours.

For a selected pipe diameter, length, and slope, utilize the incremental Darcy's equation to determine the recovery time for a side-bank filter with a gravel envelope. If the drawdown time is greater than 72 hours or the pipe diameter is inadequate to convey the flows, the pipe variables must be adjusted and the drawdown time recalculated until the desired results are obtained.

Trial 1: Pipe diameter = 6 in.
Pipe length = 200 feet

The calculations for trial #1 are shown in Figure 30-5. For this trial, the drawdown is greater than the required 72 hours. Therefore, increase the pipe length for trial #2.

Trial 2: Pipe diameter = 6 in.

Pipe length = 280 feet

From this trial (Figure 30-6), the time to recover the required treatment volume is less than 72 hours. Also, the selected pipe diameter is adequate to convey the peak flow rate. Therefore, the design for trial #2 is adequate.

Additional Steps.

In a typical design, the applicant would also design the following:

(a) Filter media to meet the required specifications
(b) Cleanout and inspection ports
(c) Filter fabric to prevent the filter media from migrating into the gravel envelope and perforated pipe.

Example Problem #2

Given:

Treatment Volume = 3710 ft^3
K = 2.5 ft/hr
Basin side slopes = 3:1
Basin floor elevation = 20.7 ft
Vertical filter with a square cross-section gravel envelope around the perforated pipe (gravel envelope width = 3")
Pipe *n* = 0.016

The proposed detention basin has the following stage-storage relationship:

Stage (ft)	Storage (ft^3)
22.0	15445
21.9	11827
21.8	8478
21.7	5394
21.6	2569
21.5	0

Objective: Design a vertical filter using the incremental method

Design Calculations:

Step 1. Determine the *K* value. From section 30.6, a safety factor of 2 will be required since the incremental method is being used to design the filter system.

Design *K* (with safety factor of 2) = 2.5/2 = 1.25 *ft/hr*

Add 25% to the K value to account for the gravel envelope around the filter pipe.

Design *K* = 1.25 *ft/hr* x 1.25 = 1.56 *ft/hr*

Step 2. Determine the pipe invert elevation and calculate the recovery time.

Trial #1: Pipe inside diameter = 6.00 inches
Pipe length = 50 feet

Pipe invert elevation = Bottom of basin elev. - depth of filter media - gravel envelope width - pipe diameter

$$\text{Pipe invert} = 21.5\text{ ft} - 2\text{ ft} - \frac{3\text{ in}}{12\text{ in/ft}} - \frac{6\text{ in}}{2\text{ in/ft}} = 18.75\text{ ft}$$

This trial (Figure 30-7) shows that, the time to recover the required treatment volume is less than 72 hours. The pipe diameter is also adequate to convey the peak flow rate. Therefore, the design for trial #1 is adequate.

30.9 References

Harper, H.H. and J.L. Herr. 1993. *Treatment Efficiency of Detention with Filtration Systems.* St. Johns River Water Management District, Special Publication SJ93-SP12, Palatka, Florida.

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management.* Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

Incremental Method for Calculating Drawdown Time for Side-bank Filter Systems Using Darcy's Equation

Project Name :

Date:

Project No. :

Basin Information	
Filter Permeability (k)	=
Basin side slope (hV)	=
Top of treatment volume: Elevation	=
Bottom of treatment volume: Elevation	=
Number of increments	=

Filter Pipe Information	
Length of pipe (L)	=
Pipe diameter (d)	=
Pipe invert elevation	=
Horizontal distance to edge	=
Envelope height above pipe (b) =	
Average envelope width	=
Manning's n	=
Slope (ft per ft)	=

Elevation (ft.)	Storage (cf)	Storage Increment (V) (cf)	Flow Distance (D) (ft.)	Change in Elevation (H) (ft.)	Hydraulic Gradient (i)	Average Filter Flow Area (A) (sf)	Instant-aneous Discharge (Q) (cfh)	Average Discharge Per Increm. (Qave) (cfh)	Drawdown Time Per Increm. (t) (hrs.)

Total Drawdown Time =

Pipe capacity (inside dia) =

i = H / D

Q = k i A

i = V / Qave

Total Drawdown Time = Sum of drawdown times for each increment

D = (D1 + D2 + ... +Dn) / n

Horizontal distance to edge = Distance from the center of the pipe to the edge of the pond bottom

Average envelope width = distance between pipe and edge of envelope measured along the flow distances (D)

Figure 30-3. Example Format for Calculating Drawdown Time for Side-bank Filter Systems

Incremental Method for Calculating Drawdown Time for Vertical Filter Systems Using Darcy's Equation

Project Name :

Date:

Project No. :

Basin Information

Filter permeability (k)	=
Top of treatment volume: Elevation	=
Bottom of treatment volume: Elevation	=
Number of increments	=

Filter Pipe Information

Length of pipe (L)	=
Pipe diameter (d)	=
Pipe invert elevation	=
Depth of filter media (D)	=
Width of filter media (W)	=
Manning's n	=
Slope (ft per ft)	=

Elevation (ft.)	Storage (cf)	Storage Increment (V) (cf)	Change in Elevation (H) (ft.)	Hydraulic Gradient (i)	Average Filter Flow Area (A) (sf)	Instant-aneous Discharge (Q) (cfh)	Average Discharge Per Increm. (Qave) (cfh)	Drawdown Time Per Increm. (t) (hrs.)

i = H / D

Q = k i A   t = V / Qave

Total Drawdown Time = Sum of drawdown times for each increment

Total Drawdown Time =

Pipe capacity (inside dia) =

Figure 30-4. Example Format for Calculating Drawdown Time for Vertical Filter Systems

Incremental Method for Calculating Drawdown Time for Side-bank Filter Systems Using Darcy's Equation

Project Name : Example #1
Project No. : Trial #1

Basin Information

Filter permeability (k)	=	2.50 ft/hr
Basin side slope (h/v)	=	4
Top of treatment volume: Elev.	=	6.75 ft
Bottom of treatment volume: Elev.	=	6.30 ft
Number of increments	=	5

Filter Pipe Information

Length of pipe (L)	=	200 ft.
Pipe diameter (d)	=	6.0 in.
Pipe invert elevation	=	5.70 ft.
Horizontal distance (Dh)	=	3.90 ft.
Envelope height above pipe	=	3.00 in.
Average envelope width	=	3.00 in.
Manning's n	=	0.016
Slope (ft per ft)	=	0.0012

Elevation (ft.)	Storage (cf)	Storage Increment (V) (cf)	Average Flow Distance (D) (ft.)	Change in Elevation (H) (ft.)	Hydraulic Gradient (i)	Average Filter Flow Area (A) (sf)	Instant-aneous Discharge (Q) (cfh)	Average Discharge Per Increm. (Qave) (cfh)	Drawdown Time Per Increm. (t) (hrs.)
6.75	2396		2.51	0.80	0.32	185.5	148.1		
		349						132.2	2.64
6.70	2047		2.66	0.75	0.28	164.9	116.3		
		566						93.5	6.05
6.60	1481		2.84	0.65	0.23	123.7	70.7		
		523						54.1	9.67
6.50	958		3.03	0.55	0.18	82.5	37.4		
		522						25.9	20.15
6.40	436		3.22	0.45	0.14	41.2	14.4		
		436						7.2	60.58
6.30	0		3.42	0.35	0.10	0	0.0		

Total Drawdown Time	=	99.1 hrs
Pipe capacity (inside dia)	=	3.62 in.

Figure 30-5. Calculations for Example Problem #1; Trial #1

Incremental Method for Calculating Drawdown Time for Side-bank Filter Systems Using Darcy's Equation

Project Name : Example #1
Project No. : Trial #2

Basin Information

Filter permeability (k)	=	2.50 ft/hr
Basin side slope (h/v)	=	4
Top of treatment volume: Elev.	=	6.75 ft
Bottom of treatment volume: Elev.	=	6.30 ft
Number of increments	=	5

Filter Pipe Information

Length of pipe (L)	=	280 ft.
Pipe diameter (d)	=	6.0 in.
Pipe invert elevation	=	5.70 ft.
Horizontal distance (Dh)	=	3.90 ft.
Envelope height above pipe	=	3.00 in.
Average envelope width	=	3.00 in.
Manning's n	=	0.016
Slope (ft per ft)	=	0.0012

Elevation (ft.)	Storage (cf)	Storage Increment (V) (cf)	Average Flow Distance (D) (ft.)	Change in Elevation (H) (ft.)	Hydraulic Gradient (i)	Average Filter Flow Area (A) (sf)	Instant-aneous Discharge (Q) (cfh)	Average Discharge Per Increm. (Qave) (cfh)	Drawdown Time Per Increm. (t) (hrs.)
6.75	2396		2.51	0.80	0.32	259.8	207.3		
		349						185.1	1.89
6.70	2047		2.66	0.75	0.28	230.9	162.9		
		566						130.9	4.32
6.60	1481		2.84	0.65	0.23	173.2	99.0		
		523						75.7	6.91
6.50	958		3.03	0.55	0.18	115.4	52.4		
		522						36.3	14.39
6.40	436		3.22	0.45	0.14	57.7	20.2		
		436						10.1	43.27
6.30	0		3.42	0.35	0.10	0	0.0		

Total Drawdown Time = **70.8** hrs
Pipe capacity (inside dia) = 4.11 in.

Figure 30-6. Calculations for Example Problem #1; Trial #2

Incremental Method for Calculating Drawdown Time for Vertical Filter Systems Using Darcy's Equation

Project Name : Example #2
Project No. :

Basin Information

Filter permeability (k)	=	1.56 ft/hr
Top of treatment volume: Elev.	=	22.00 ft
Bottom of treatment volume: Elev.	=	21.50 ft
Number of increments	=	5

Filter Pipe Information

Length of pipe (L)	=	50 ft.
Pipe diameter (d)	=	6.0 in.
Pipe invert elevation	=	18.75 ft.
Depth of Filter Media (D)	=	2.00 ft.
Width of Filter Media (W)	=	3.00 ft.
Manning's n	=	0.016
Slope (ft per ft)	=	0.0012

Elevation (ft.)	Storage (cf)	Storage Increment (V) (cf)	Change in Elevation (H) (ft.)	Hydraulic Gradient (i)	Average Filter Flow Area (A) (sf)	Instant-aneous Discharge (Q) (cfh)	Average Discharge Per Increm. (Qave) (cfh)	Drawdown Time Per Increm. (t) (hrs.)
22.00	15445							
		3618	3.00	1.50	150.0	351.0	345.2	10.48
21.90	11827							
		3349	2.90	1.45	150.0	339.3	333.5	10.04
21.80	8478							
		3084	2.80	1.40	150.0	327.6	321.8	9.58
21.70	5394							
		2825	2.70	1.35	150.0	315.9	310.1	9.11
21.60	2569							
		2569	2.60	1.30	150.0	304.2	298.4	8.61
21.50	0							
			2.50	1.25	150.0	292.5		

Total Drawdown Time = 47.8 hrs
Required pipe capacity (inside dia) = 5.01 in.

Figure 30-7. Calculations for Example Problem #2

31.0 [Reserved]

PART XI
METHODOLOGIES FOR CALCULATING WATER BUDGETS

32.0 Methodologies for Calculating Water Budgets

32.1 Description of Water Budgets

A water budget is an accounting of water movement onto, within, and off of an area. Developing a water budget provides an overall view of sources with excess water and sources with water needs. A management plan can be devised to link excess water to water needs. On-site storage in canals and reservoirs allows this link to span over time.

On-site harvesting runoff reduces the offsite loading of nutrients and is considered a treatment practice. Water use efficiency is increased by reuse, resulting in less offsite water needed to meet onsite water demands.

All agricultural operations must implement a Conservation Plan which addresses harvesting runoff. Individual permittees are required to maximize on-site harvesting runoff to satisfy irrigation, freeze protection and pest control needs. (subsection 19.2.4 of this Manual)

The purpose of developing a water budget is to quantify the reduction in offsite discharge by harvesting runoff for a typical year. Individual components of supply, storage, use, and movement must be estimated on a monthly basis for an average year. Each component value should be representative of the unique situation of the soil, crop, operation, and management.

The following parameters are used to calculate water budgets. Examples of a water budget using these parameters are included at the end of section 33 of this Manual.

32.2 Reservoir and Canal Storage

Canals and reservoirs provide storage of excess water until the water is needed. For both types of water bodies, any volume above the downstream control elevation is assumed to be discharged downstream.

For the water budget, only the volume which can be moved from storage to a point of need should be considered to be harvested. The harvested runoff volume is dependent on the most limiting feature of the flow path, e.g. pump inlet, reservoir bottom, culvert inverts, field topography.
Secondary canals and field ditches can normally be omitted without affecting the accuracy of the water budget.

32.3 Rainfall

Average monthly rainfall depths can be found in the District's Technical Publication SJ 86-4, "Rainfall Analysis for Northeastern Florida; Part II: Summary of Monthly and Annual Rainfall Data" and Weather Bureau publications entitled "Climatic Summary of the United States", and the "Annual Summaries of Climatological Data". The District's Technical Memorandum; "30 Year Mean; Blaney - Criddle; Supplemental Irrigation Requirement" provides average monthly rainfall depths for at least one location in each county. Average rainfall depths should represent a minimum of 30 years of rain gage data collected by NOAA stations or other reliable sources.

32.4 Effective Rainfall

Effective rainfall (R_e) is the precipitation retained by the soil to meet evapotranspiration requirements. It does not include precipitation lost to deep percolation below the root zone nor to surface runoff.

Since there are no records of effective rainfall available, the effective portion of the precipitation must be estimated from the total precipitation.

SCS (now NRCS) analyzed 50 years of rainfall data at each of 22 stations to develop a method to estimate the monthly effective rainfall. Based on their findings, the monthly effective rainfall can be calculated by:

$$R_e = (0.70917\ R^{0.82416} - 0.11556)(10^{0.02426u})\ (F)$$

where: R = average effective monthly rainfall, in.;
R_e = average total monthly rainfall, inches;
u = monthly evapotranspiration, inches;
F = soil water storage factor.

The soil water storage factor is estimated by:

$$F = (0.531747 + 0.295164D - 0.057697D^2 + 0.003804D^3\ )$$

where D is the net application depth or the usable soil water storage in inches. Typical net application depths for Florida soils range from 1.5 inches for sandy soils, soils with naturally shallow water tables, or soils planted with shallow rooted crops to 4.0 inches for well drained loamy soils used to grow deep rooted crops.

In situations where the rooting depth is limited by shallow water tables, the effective rainfall must be adjusted to account for the upflux of water from the water table to the root zone. The net application depth should be based on the average rooting depth (i.e., average water table depth plus the depth of water which is capable of moving up into the root zone by capillary action.)

The average monthly effective rainfall, R_e , cannot exceed the average monthly rainfall, R, or average monthly evapotranspiration, u. If the estimated R_e exceeds either, then R must be reduced to the smaller of the two. USDA-NRCS publication Irrigation Water Requirements; Technical Release No. 21 discusses this procedure in greater detail.

32.5 Evapotranspiration (Potential and Actual)

Potential Evapotranspiration (PET) is the depth of water evaporated from the soil plus the transpiration from plants assuming the transpiration is not limited by soil water availability. PET may be calculated by any well documented method.

32.6 Evaporation from the Reservoir

M.A. Kohler (1959) reported the average annual lake evaporation ranges from 45 inches per year near the District's northern border to 48 inches per year near the District's southern border. Average monthly lake evaporation data may be available for a few sites, but is unavailable for the majority of the District. A record length of at least 20 years should be used calculate average monthly evaporation.

If lake evaporation data is not available for a lake near the project site, the average annual evaporation can be estimated from Figure 32-1. Average Annual Lake Evaporation (inches), from “Evaporation Maps for the United States”. Monthly lake evaporation can be estimated by proportioning the annual evaporation similarly to the distribution of monthly pan evaporation for a nearby location. Pan evaporation is published in "Climatological Data: Florida" by the NOAA Climatic Data Center, Asheville, North Carolina. Summary of the pan evaporation data for northeast Florida locations is given in Table 32-1.

In the monthly water budget, surface evaporation from the reservoir must be completely satisfied for prior to allocating reservoir water for irrigation.

32.7 Net Irrigation Required

The net irrigation required (NIR) is the depth of supplemental water above precipitation, stored soil moisture, or groundwater, that is required to allow plants to transpire without limitation due to the lack of available water. This volume must be determined for each field with a different crop or fields under different planting dates. Monthly NIR values for a typical year are computed by:

$$NIR = (PET - R_e) \times A$$

where:

NIR = monthly net irrigation volume, ac-in.;
PET = monthly potential evapotranspiration, inches;

R_e = monthly effective rainfall, inches;
A = field acreage.

If R_e is greater than the PET, then NIR is equal to zero since all of the water required to meet PET is supplied by precipitation.

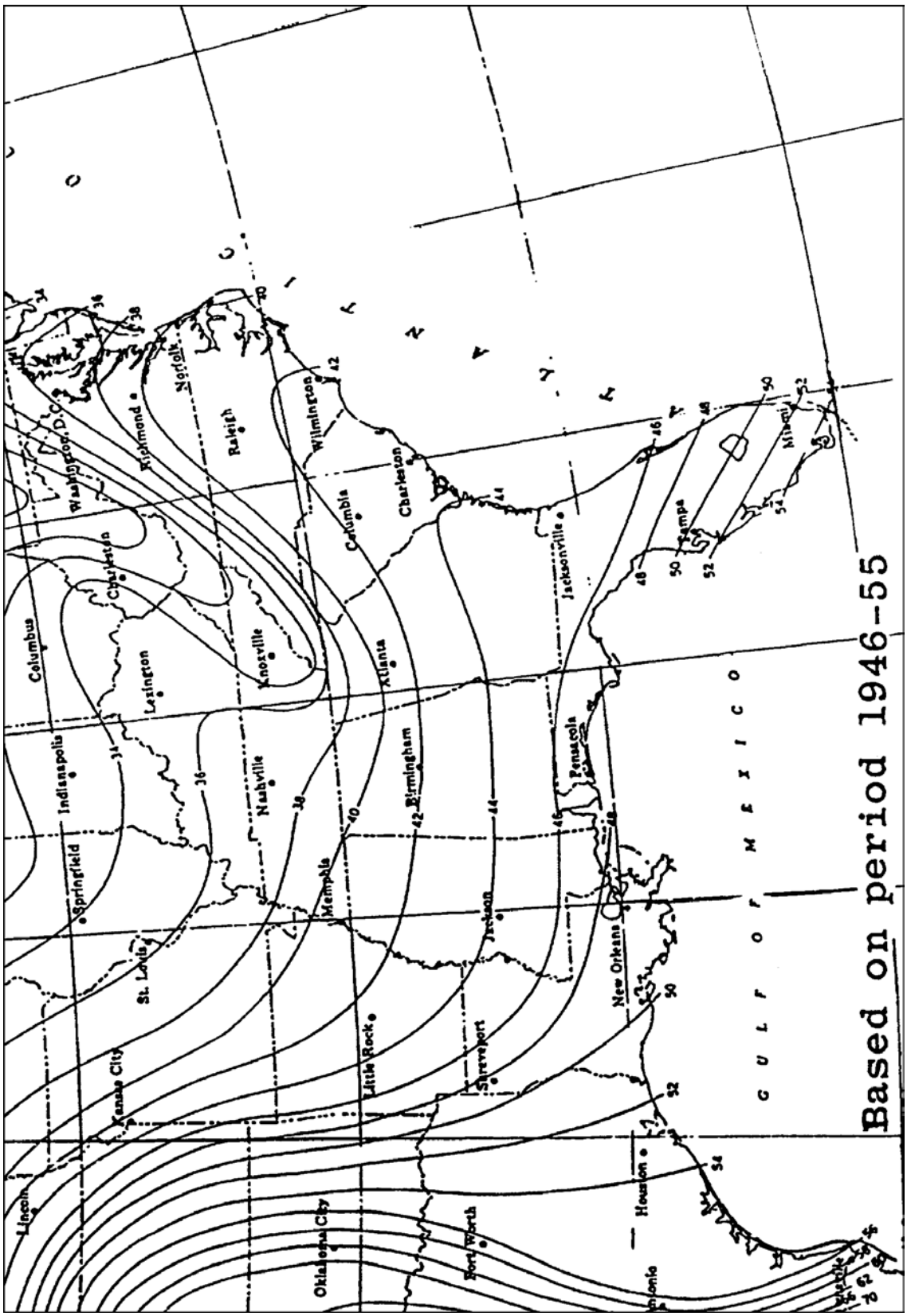


Table 32-1. Mean monthly pan evaporation and percent of annual pan evaporation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						Gainesville (1953–1990)							
Mean	2.93	3.64	5.52	6.94	7.92	7.51	7.10	6.57	5.66	4.92	3.49	2.74	64.94
%	4.51	5.61	8.50	10.69	12.20	11.56	10.93	10.12	8.1	7.58	7.37	42..	100.00
						Lake Alfred (1965–1990)							
Mean	3.54	4.30	6.42	7.69	8.70	7.80	7.76	7.39	6.56	5.69	4.12	3.29	73.26
%	4.83	5.87	8.76	10.50	11.87	10.65	10.60	10.09	8.95	7.77	5.62	4.49	100.0
						Lake City (1965-1990)							
Mean	3.04	3.65	5.04	6.83	7.78	7.57	7.55	6.80	5.90	5.05	3.70	3.04	65.95
%	4.61	5.53	7.64	10.36	11.80	11.48	11.45	10.31	8.94	7.66	5.61	4.61	100.0
						Lisbon (1960–1990)							
Mean	2.47	3.16	5.07	6.55	7.40	6.81	6.78	6.24	5.21	4.38	2.83	2.37	59.27
%	4.16	5.33	8.55	11.05	12.49	11.49	11.44	10.53	8.79	7.39	4.78	4.00	100.0
						Vero Beach (1952–1990)							
Mean	3.40	4.09	5.79	6.88	7.63	7.25	7.17	6.83	6.04	5.44	3.89	3.22	67.63
%	5.03	6.05	8.56	10.17	11.28	10.72	10.60	10.10	8.93	8.05	5.75	4.76	100.0

Taken from "Climatological Data: Florida" by the NOAA Climatic Data Center, Asheville, North Carolina.

32.8 Gross Irrigation Required

The gross irrigation required (GIR) is the depth of water that must be supplied to provide the NIR. Losses due to evaporation, deep seepage, and leaks in the irrigation distribution system plus the non-uniformity of applied water reduces the efficiency of the irrigation system.

Less efficient irrigation systems require more water to be distributed to meet the NIR. The total water volume required, which must be supplied by the surface water or groundwater source, is:

$$GIR = NIR / I_e$$

where:

GIR = monthly gross irrigation volume, acre-in.;
NIR = monthly net irrigation volume, acre-in.
I_e = irrigation efficiency, as a decimal

Typical application efficiencies for different types of irrigation systems are listed in Table 32-2.

All water supplied by the reservoir to meet the GIR is considered harvested runoff and represents a reduction in the potential offsite discharge volume.

32.9 Other Water Sources (Groundwater and Off-Site Surface Water)

Groundwater and off-site surface water sources need to be identified and the volume from these sources has to quantified. If these other water sources are used to meet NIR, then the additional water would not increase the volume entering into the reservoir or being discharged off-site. If these other contributing water sources are providing water for freeze protection, nematode control, or soil oxidation control, then this volume, adjusted for any evaporation or deep seepage losses, must be routed to the reservoir.

In order to maximize harvesting runoff as required by section 40C-44.066(1)(b), all available water in the reservoir must be used prior to using groundwater or offsite surface water sources unless it is impractical due to specific circumstances.

Table 32-2: Irrigation system irrigation efficiencies+*

Sprinkler Irrigation Systems

System Type	**Range**	**Average**
Solid Set Systems	0.70 - 0.80	0.75
For Container Nurseries	0.15 - 0.50	0.20
Guns		
Portable Guns	0.60 - 0.70	0.65
Traveling Guns	0.65 - 0.75	0.70
Center Pivot and Lateral Move Systems	0.70 - 0.85	0.75
Periodic Move Laterals	0.65 - 0.75	0.70

Hand-Move or Portable		
Lateral End-Tow Systems		
Side-Roll Systems		
Side-Move Systems		

System Type	**Range**	**Average**
Micro Irrigation Systems		
Drip or Line Source		
Systems Surface		
Subsurface	0.75 - 0.90	0.85
Spray Systems	0.75 - 0.95	0.85
Bubbler Systems	0.70 - 0.90	0.80
	0.70 - 0.85	0.80

System Type	**Range**	**Average**
Subirrigation (Seepage) Systems		
Open Field Ditch Systems		
Open Field Conveyance Systems		
Flow Through		
Tailwater Recycle	0.20 - 0.70	0.50
Semi-Closed Conveyance Systems	0.30 - 0.80	0.60
Flow Through	0.30 - 0.70	0.50
Tailwater Recycle	0.40 - 0.80	0.60
Subsurface Conduit Systems	0.40 - 0.80	0.60

Surface (Flood) Systems	**Range**	**Average**
Crown Flood Systems	0.25 - 0.75	0.50
Continuous Flood (Paddy) Systems	0.25 - 0.75	0.50

*****Irrigation system application efficiencies for well-designed and well-managed irrigation systems in Florida.
+Taken from IFAS Bulletin 247, Efficiencies of Florida Agricultural Irrigation Systems; June 1988, by Smajstrla, A.G., et al.

32.10 Volume of Water Entering the Reservoir

Reservoir storage recharge is a combination of all stormwater runoff (RO) from the fields plus any off-site water entering the project area which is not used to meet the PET. Minimum RO volume from a field is the non-effective rainfall amount minus seepage loss and may be calculated by:

$$RO = (R - R_e) \times A - S_1$$

where:

RO = monthly runoff from rain, acre-inches;
R = monthly rainfall, inches;
R_e = monthly effective rain, inches;
A = field acreage;
S_1 = deep and lateral seepage losses, acre-inches.

Seepage losses must be quantified using standard methods.

32.11 Volume of Water Discharged Off-site

The maximum water stage in the reservoir is assumed to be the lowest control elevation of the discharge structure(s). Any storage volume over this stage will be discharged off-site.

32.12 Seepage to/from the Reservoir/Farm

Seepage between the reservoir and agricultural fields can normally be neglected since the water is still within the system. Typical reservoir designs are not conducive for offsite groundwater to seep into the reservoir. Seepage from the reservoir can normally be neglected unless the surface water elevations or groundwater elevations in the offsite areas adjacent to the reservoir are more than 1.5 feet lower than the reservoir control elevation. If this is the case, the outgoing seepage can be estimated by a form of Darcy's law:

$$Q = (- Kah/L) \times W \times days$$

where:

Q = seepage flow, ft^3/month;
K = effective hydraulic conductivity, ft/day;
a = vertical area of flow per foot of perimeter, ft^2/ft
h = average hydraulic head, feet;

L = average seepage flow length, feet;
W = length of perimeter seepage face, feet;
days = number of days in the month

Darcy's law can also be used to estimate the seepage onto the fields from off-site or the seepage from the fields to off-site areas.

32.13 Reduction in Volume Discharged by Harvested Runoff

The reduction in the off-site discharge is equal to the volume of water returned from the reservoir to the fields to meet NIR or provide freeze protection, nematode control, or soil oxidation control. This relation may be mathematically represent as:

$$RD = [1 – (VD / PVD)] \times 100$$

where:

RD = reduction of offsite discharge, %
VD = estimated volume discharge offsite, ac-ft
PVD = estimated volume discharged offsite if no water was recycled onsite, ac-ft

PART XII
METHODOLOGIES AND DESIGN GUIDELINES FOR AGRICULTURAL SURFACE WATER MANAGEMENT SYSTEMS UTILIZING WET DETENTION SYSTEMS

33.0 Methodologies and Design Guidelines for Agricultural Surface Water Management Systems Utilizing Wet Detention Systems

33.1 Design High Water Level

The design high water level is to be determined for pumped systems in the Upper St. Johns River Hydrologic Basin and the Ocklawaha River Hydrologic Basin by modeling the 25-year 96-hour storm through the pond. All other systems must model the 25-year 24-hour storm through the pond.

As an alternative to modeling the required storm event, the applicant may estimate the design high water level by adding the stage at which the peak discharge out of the pond is equal to the peak discharge into the pond plus the rainfall depth of the design storm event. Maximum peak discharge from the pond based on a stage equal to the design high water level can not exceed pre- development peak discharge.

33.2 Dike Freeboard

To address public safety concerns, a minimum 1.5 foot freeboard should be provided above the maximum high water level. If the farm and pond is surrounded by an existing dike, then the freeboard on the farm side of the pond may be reduced to 1.0 foot.

33.3 Maintenance Access

Detention basins must be designed to accommodate maintenance equipment access and to facilitate regular maintenance, mowing, and vegetation control.

33.4 Water Budget Calculations - Example

Given:

Citrus grove proposed near Titusville (Class III receiving waters) Project area = 240 acres; Proposed land use - 224 acres of citrus grove irrigated by micro-irrigation systems; fair condition; 80 acres on Class B soils (Curve number = 65) and 144 acres on Class C soils (Curve number = 76). A 16 acre wet detention pond will be constructed on Class C soils. Off-site drainage area = 40 acres of fair pasture on Class C soils; Curve number = 79. Design tailwater elevation = 65.0 ft. Wet Season groundwater elevation = 66.0 ft. Reservoir control elevation = 66.0 feet.

The following assumptions were made to provide the most accurate and realistic management of the water:

1. The volume of water entering the pond is totaled for the month prior to any water being distributed.

2. Use of pond water is prioritized as follows: i) evaporation; ii) irrigation; iii) offsite discharge.

3. The volume of water remaining at the end of the month in excess of the permanent pool volume is discharged offsite.

4. None of the treatment volume may be used to meet evaporation or irrigation requirements.

5. Only the permanent pool volume above the return structure invert elevation may be recycled to the farm as irrigation water.

Components of the water budget are described below.

Column A. Month - Start the year with a month in which the reservoir is expected to be full. October is usually a good month to start with since it is the last month of the wet season.

Column B. Reservoir stage at the beginning of the month. It is assumed to be equal to the control elevation for the first month. Based on stage vs storage volume relationship and column C.

Column C. Reservoir volume at the beginning of the month (B.O.M.). For the first month, it is assumed to equal the permanent pool volume and must equal the End of the Month Reservoir Volume (column T) for the last month of the budget. For other months, the B.O.M. volume is equal to the E.O.M volume of the previous month.

Column D. Monthly rainfall volume falling on the pasture. Estimated by multiplying monthly rainfall depth (column AA) by pasture acreage.

Column E. Monthly potential evapotranspiration volume for the pasture. Estimated by multiplying monthly potential evapotranspiration rates (column BB) by pasture acreage. Potential evapotranspiration rates were calculated using the Modified Blaney-Criddle Method.

Column F. Actual evapotranspiration volume from the pasture. Estimated by multiplying monthly effective rainfall (column CC), the only water source for the pasture, by the pasture acreage.

Column G. Runoff volume from the pasture routed to the pond. This volume is calculated by multiplying the pasture acreage by the difference between the rainfall

and effective rainfall (column AA - column CC). Values were divided by 12 to convert acre-inches to acre-feet.

Column H. Monthly rainfall volume falling on the citrus grove. Estimated by multiplying monthly rainfall depth (column AA) by citrus acreage.

Column I. Monthly potential evapotranspiration volume for the citrus. Estimated by multiplying monthly potential evapotranspiration rates (column DD) by citrus acreage. Potential evapotranspiration rates were calculated using the Modified Blaney-Criddle Method.

Column J. Actual evapotranspiration volume from the citrus. Actual evapotranspiration volume cannot exceed the potential evapotranspiration volume (column I) nor may it exceed the sum of effective rainfall multiplied by the citrus acreage plus the Net Irrigation Volume (column L).

Column K. Net Irrigation volume provide to the citrus acreage. This volume may not exceed the Net Irrigation Required for citrus (column EE) times the citrus acreage nor may this volume exceed the pond water available for irrigation multiplied by the expected irrigation efficiency. An irrigation efficiency of 0.75 was selected for the micro-irrigation system of this example (see Table 31-2).

Column L. Gross Irrigation volume provided to the citrus grove from the pond. This volume is calculated by dividing the Net Irrigation volume (column L) by the irrigation efficiency.

Column M. Lost Irrigation is the volume of water which is provided to meet the irrigation demands of the citrus grove, but was lost due to evaporation, deep seepage, lateral seepage, etc. This volume is the difference between column M and column L.

Column N. Runoff volume from the citrus grove routed to the pond. This volume is calculated by multiplying the citrus acreage by the difference between the rainfall and effective rainfall (column AA - column FF). Values were divided by 12 to convert acre-inches to acre-feet.

Column O. Precipitation volume falling on the pond. This volume is calculated by multiplying the pond area by the monthly rainfall (column AA).

Column P. Pond Evaporation volume. This volume is calculated by multiplying the pond area by the evaporation rate from an open water body (column GG). Evaporation must be satisfied prior to any water being used for irrigation or being discharged offsite.

Column Q. Maximum Pond Volume - Pond Evaporation is computed by summing the B.O.M. Pond Volume (column C) and the runoff volumes routed to the pond (columns G & N) minus the pond evaporation (column P).

Column R. Pond Volume - Irrigation is the Maximum Pond Volume (column Q) minus the Gross Irrigation Volume (column L).

Column S. Overflow from Pond is the pond volume (column R) in excess of the permanent pool volume.

Column T. End of the Month Pond Volume is the smaller value of the pond volume (column R) and the pond permanent pool volume.

Column AA. Rainfall depths used should represent the mean value for 20 years or longer. Values used for this example were taken from SJRWMD Technical Memorandum, "30 Year Mean, Blaney - Criddle, Supplemental Irrigation Requirements". SJRWMD's Technical Publication SJ 86-4, Rainfall Analysis for Northeast Florida, Part II, "Summary of Monthly and Annual Rainfall Data" gives long term rainfall average for 43 sites in northeast Florida.

Column BB. Potential Evapotranspiration rate for pasture estimated by the Blaney - Criddle Method using crop growth stage coefficient Figure No. 17.

Column CC. Effective Rainfall for the pasture acreage estimated by the Soil Conservation Service method. A net irrigation depth of 2 inches was used assumed based on type "C" soils. Mean monthly rainfall depths (column AA) were assumed.

Column DD. Potential Evapotranspiration rate for citrus estimated by the Blaney - Criddle Method using crop growth stage coefficient Figure No. 10. The coefficients reported in Figure No. 10 assumes complete field cover. Since it is impractical to have 100% field cover by the trees, the potential evapotranspiration rate was corrected using a factor of 0.84.

Column EE. Net Irrigation Required is the additional depth of water required by the crop to allow the crop to transpire without limitation due to insufficient available water. This depth is equal to the potential evapotranspiration rate (column DD) minus the effective rainfall for the citrus grove (column FF), but can not less than zero.

Column FF. Effective Rainfall for the citrus acreage estimated by the Soil Conservation Service method. A net irrigation depth of 2 inches was used assumed based on type "B" and "C" soils. Mean monthly rainfall depths (column AA) were assumed.

Column GG. Monthly pan evaporation. Values were selected for the closest location site from Table 31-1.

Column HH. Pond Evaporation for individual months were estimated by distributing the annual lake evaporation, estimated as 46 inches from Figure 31-1, based on the fraction of monthly pan evaporation (column GG) to the annual pan evaporation. For example, the pond evaporation for October would be:

(2.47 inches/ 59.27 inches) x 46.0 inches = 1.92 inches.

Column II. The Volume routed to the pond is the sum of runoff from the pasture, sum of column G, and runoff from the groves, sum of column N. A 46 percent reduction of the offsite discharge is expected for the agricultural operation. This reduction results from reuse of the pond water and evaporation from the pond. This reduction is estimated from the ratio of volume discharge to the potential discharge volume, which the volume routed to the pond:

WATER BUDGET EXAMPLE

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Month	B.O.M. Pond Stage (ft)	B.O.M. Pond Vol. (ac-ft)	Rainfall Pasture (ac-in)	P.E.T. Pasture (ac-in)	A.E.T. Pasture (ac-in)	Pasture to Pond (ac-in)	Rainfall Citrus (ac-in)	P.E.T. Citrus (ac-in)	A.E.T. Citrus (ac-in)	Net Irr. Citrus (ac-ft)	Gross Irrig. Citrus (ac-ft)	Lost Irr. (ac-ft)	Citrus to Pond (ac-ft)	Rainfall Pond (ac-in)	Pot. Pond Ev. (ac-in)	Theor. Max. Vol – Evap (ac-ft)	Pond Volume –Irrg (ac-ft)	Overflow from Pond (ac-ft)	E.O.M. Pond Volume (ac-ft)
Oct.	66.0	54.2	214	183	130	7.0	1196	741	741	5.2	7.0	1.7	43.1	85	31	108.9	101.9	-47.7	54.2
Nov.	66.0	54.2	89	109	54	2.9	497	506	506	17.5	23.4	5.8	16.8	36	39	73.6	50.2	0.0	50.2
Dec.	65.7	50.2	81	65	47	2.8	452	358	358	8.0	10.7	2.7	15.9	32	63	66.3	55.6	-1.4	54.2
Jan.	66.0	54.2	78	58	45	2.7	435	352	352	8.2	11.0	2.7	15.1	31	81	67.9	56.9	-2.7	54.2
Feb.	66.0	54.2	122	57	57	5.4	681	305	305	0.0	0.0	0.0	31.4	49	92	87.3	87.3	-33.1	54.2
Mar.	66.0	54.2	128	140	79	4.1	719	605	605	15.3	20.4	5.1	24.8	51	85	80.4	60.0	-5.8	54.2
Apr.	66.0	54.2	81	191	56	2.1	455	737	737	37.3	49.8	12.4	13.8	32	84	65.8	16.0	0.0	16.0
May	63.6	16.0	130	262	94	3.0	728	959	814	29.0	38.7	9.7	21.8	52	77	38.7	0.0	0.0	0.0
June	62.5	0.0	251	292	174	6.4	1404	1057	1057	17.9	23.9	6.0	46.9	100	65	56.3	32.4	0.0	32.4
July	64.6	32.4	305	326	215	7.5	1707	1183	1183	13.1	17.4	4.4	56.7	122	54	102.2	84.8	-30.6	54.2
Aug.	66.0	54.2	280	303	194	7.2	1568	1111	1111	14.6	19.4	4.9	52.6	112	35	120.4	101.0	-46.8	54.2
Sept.	66.0	54.2	300	247	190	9.2	1678	932	932	0.0	0.0	0.0	62.2	120	29	133.1	133.1	-78.9	54.2
		Totals	2057	2234	1334	60.3	11520	8846	8701	166.2	221.6	55.4	401.1	823	736	1000.8	779.2	-247.0	44.3

0 = PASTURE W.B. 0 = CITRUS W.B 0 = POND W.B.

ACRES -> 40 AC OF PASTURE 224 ACRES OF CITRUS 16 AC OF POND

Table 33-1

	AA	BB	CC	DD		EE	FF	GG	HH	II
	Rainfall	P.E.T.	Eff. Rain	P.E.T.		N.I.R.	Eff. Rain	Pan. Evap.	P.E.	
Oct.	5.34	4.57	3.25	3.31	Irr. Coeff. = 0.75	0.29	3.03	2.47	1.92	Volume routed to the Pond (ac-ft) = 461
Nov.	2.22	2.72	1.36	2.26		0.94	1.32	3.16	2.45	
Dec.	2.02	1.62	1.17	1.60		0.43	1.17	5.07	3.93	
Jan.	1.94	1.46	1.12	1.57		0.44	1.13	6.55	5.08	% Reduction of offsite discharge = 46
Feb	3.04	1.43	1.43	1.36		0.00	1.36	7.40	5.74	
Mar	3.21	3.51	1.97	2.70		0.82	1.88	6.81	5.29	
Apr	2.03	4.77	1.40	3.29		2.00	1.29	6.78	5.26	
May	3.25	6.56	2.36	4.28		2.21	2.08	6.24	4.84	
June	6.27	7.30	4.34	4.72		0.96	3.76	5.21	4.04	
July	7.62	8.15	5.37	5.28		0.70	4.58	4.38	3.40	
Aug.	7.00	7.58	4.84	4.96		0.77	4.18	2.83	2.20	
Sept.	7.49	6.17	4.74	4.16		0.00	4.16	2.37	1.84	
Totals	51.43	55.84	33.35	39.49		9.56	29.94	59.27	46.00	= Estimated annual lake evaporation
	(Inches)	Pasture (inches)	Pasture (inches)	Citrus (inches)		Citrus (inches)	Citrus (inches)		Pond (inches)	

33.5 References

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PART XIII
METHODOLOGIES FOR CALCULATING PEAK DISCHARGE

34.0 Methodologies for Calculating Peak Discharge

34.1 Rainfall

(a) Duration: See subsection 3.2.1 of this Manual for duration to be used.

(b) Frequency: See subsection 3.2.1of this Manual for frequency to be used.

(c) Intensity: See section 36.0 of this Manual for discussion of rainfall intensity and distribution.

34.2 Antecedent Moisture Conditions

Use average wet season (AMC II). This average condition is defined by SCS as 1.4 to 2.1 inches of rainfall in the five day period prior to a storm event. Further information on antecedent moisture can be obtained in USDA, Soil Conservation Service, 1972. National Engineering Handbook, section 4, Hydrology.

34.3 Upper Soil Zone Storage

Soil storage is taken into account through use of the SCS curve number (see section 34.8). In areas of sandy soils, the standard SCS method may not accurately predict the available soil storage. A shallow water table or hardpan confining layer may reduce the amount of available soil storage. A deep water table and no confining layer will allow storage of a large amount of water in the soil.

For projects on sandy soils where the depth to the average wet season water table or to a confining layer has been accurately determined, the original curve number may be modified to reflect these conditions.

34.4 Surface Storage

Surface storage in depressional areas may be considered if stage-storage calculations are included. Discharge from these areas during storm events must also be considered and appropriate stage-discharge calculations must also be provided.

34.5 Time of Concentration

Many of the accepted runoff computation methods require determination of the time of concentration. A recommended method for this is described in publications of the Soil Conservation Service (TR 55, Chapter 3 and National Engineering Handbook, Section 4, Chapter 15). It involves dividing the flow into three types: overland, storm sewer, and channel flow.

(a) Overland flow: The travel time for overland flow is the time it takes water to travel from the uppermost part of the watershed to a storm sewer system or defined channel. This type of flow is significant in small watersheds because a higher proportion of the travel time is due to overland flow. If the slope and land use of the overland segment are known, the average flow velocity can be read from Figure 34.5-1. The travel time is then computed by dividing the overland flow length by the average velocity.

(b) Storm sewer flow: The average flow velocity in storm sewers can be determined during Manning's equation with average conduit sizes and slopes. The travel time through the storm sewers is computed by dividing the length of flow by the average velocity.

(c) Channel flow: The average velocity in an open channel can be determined using Manning's equation (see section 36.3). Flow depth to be used can be the design flow or bankfull flow. The travel time in an open channel is computed by dividing the channel length by the average velocity.

34.6 Tailwater Conditions

Receiving water stage can affect the amount of flow which will discharge from the project to the receiving water. This stage may be such that tailwater exists in portions of the project system, reducing the effective flow or storage area. Typical examples of this are illustrated in Figures 34.6-1 (gravity) and 34.6-2 (pumped).

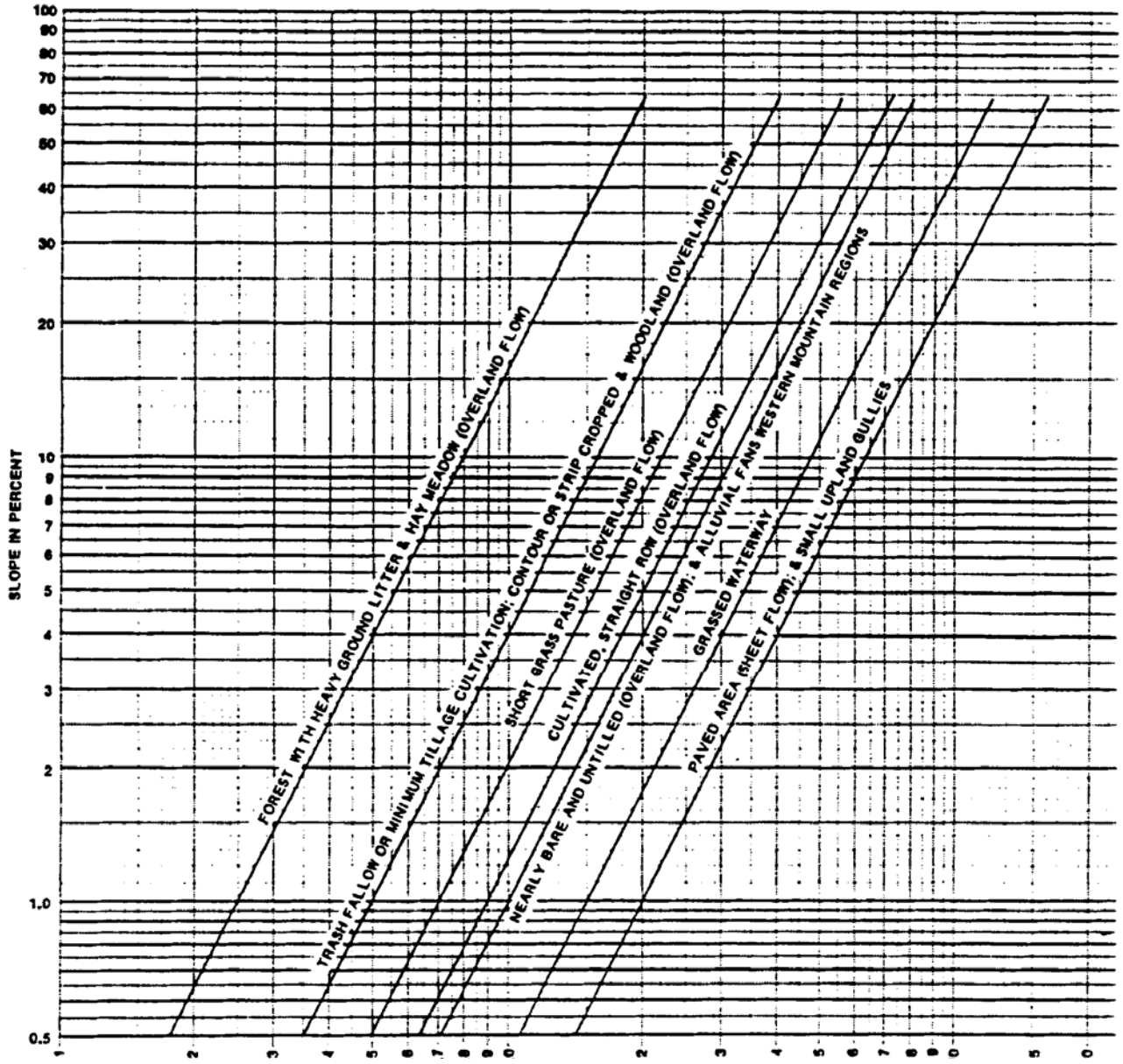


Figure 34.5-1 Velocity in feet per second

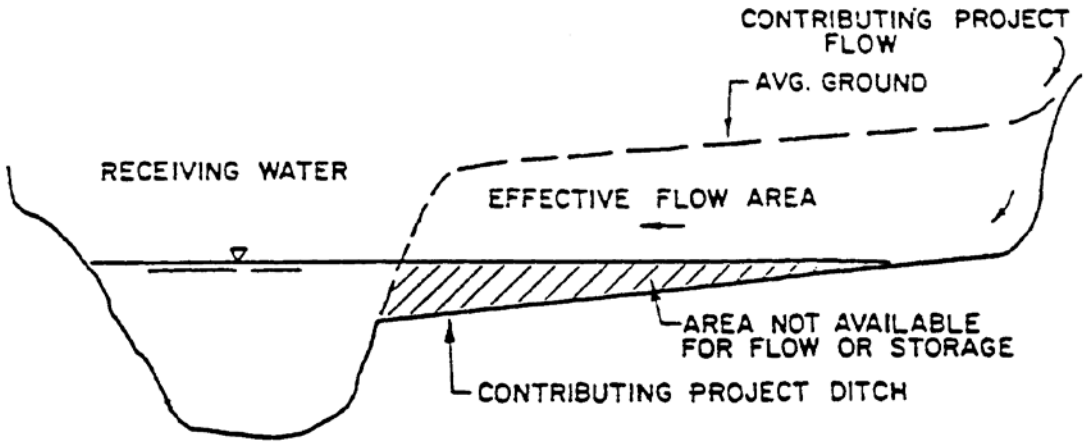
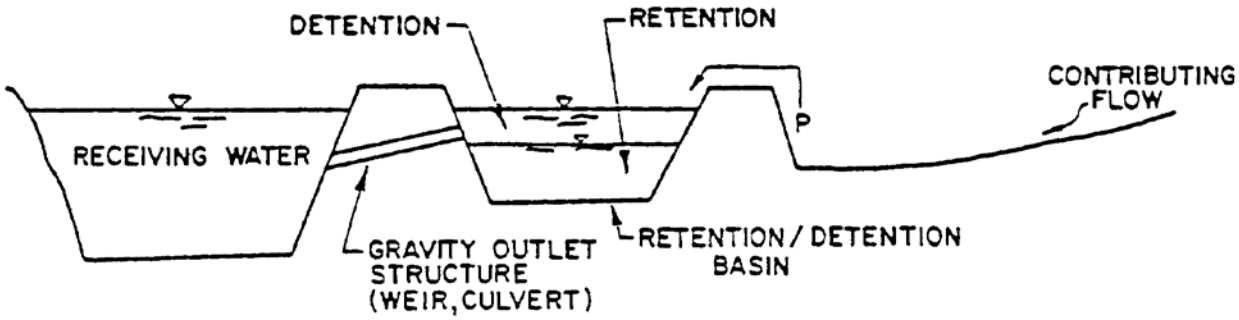


Figure 34.6-1

The stage in the receiving water should be considered to be the maximum stage which would exist in the receiving water from a storm equal to the project design storm. Lower stages may be used if the applicant can show that the flow from his project will reach the receiving water prior to the time of maximum stage in the receiving water.

Figure 34.6-2



34.7 Changes in Land Use

Post-development conditions will generally include changes in land use and land cover from the pre-development conditions. All curve numbers, calculations of time of concentration, etc. should reflect these changes.

34.8 Runoff Estimation

One of the recommended methods for estimation of runoff volume from rainfall information has been developed by the United States Department of Agriculture's Soil Conservation Service (SCS) (now NRCS).

The runoff equation used by SCS was developed by Victor Mockus and others and presented in the Soil Conservation Service's National Engineering Handbook, Section 4, Hydrology. The relationship between accumulated rainfall and accumulated runoff was derived from experimental data for numerous soils, vegetative cover and land treatment measures.

The equation is:

$$R = \frac{(P - Ia)^2}{(P - Ia) + S}$$

where: R = accumulated direct runoff (inches)
P = accumulated rainfall (inches)
Ia = initial abstraction including surface storage, interception, and infiltration prior to runoff (inches)
S = potential maximum retention (inches)

The relationship between Ia and S was developed from experimental watershed data. The empirical relationship used in the SCS runoff equation is:

$$Ia = 0.2S$$

Substituting 0.2S for Ia in the runoff equation, above, yields:

$$R = \frac{(P - 0.2S)^2}{(P + 0.8S)}$$

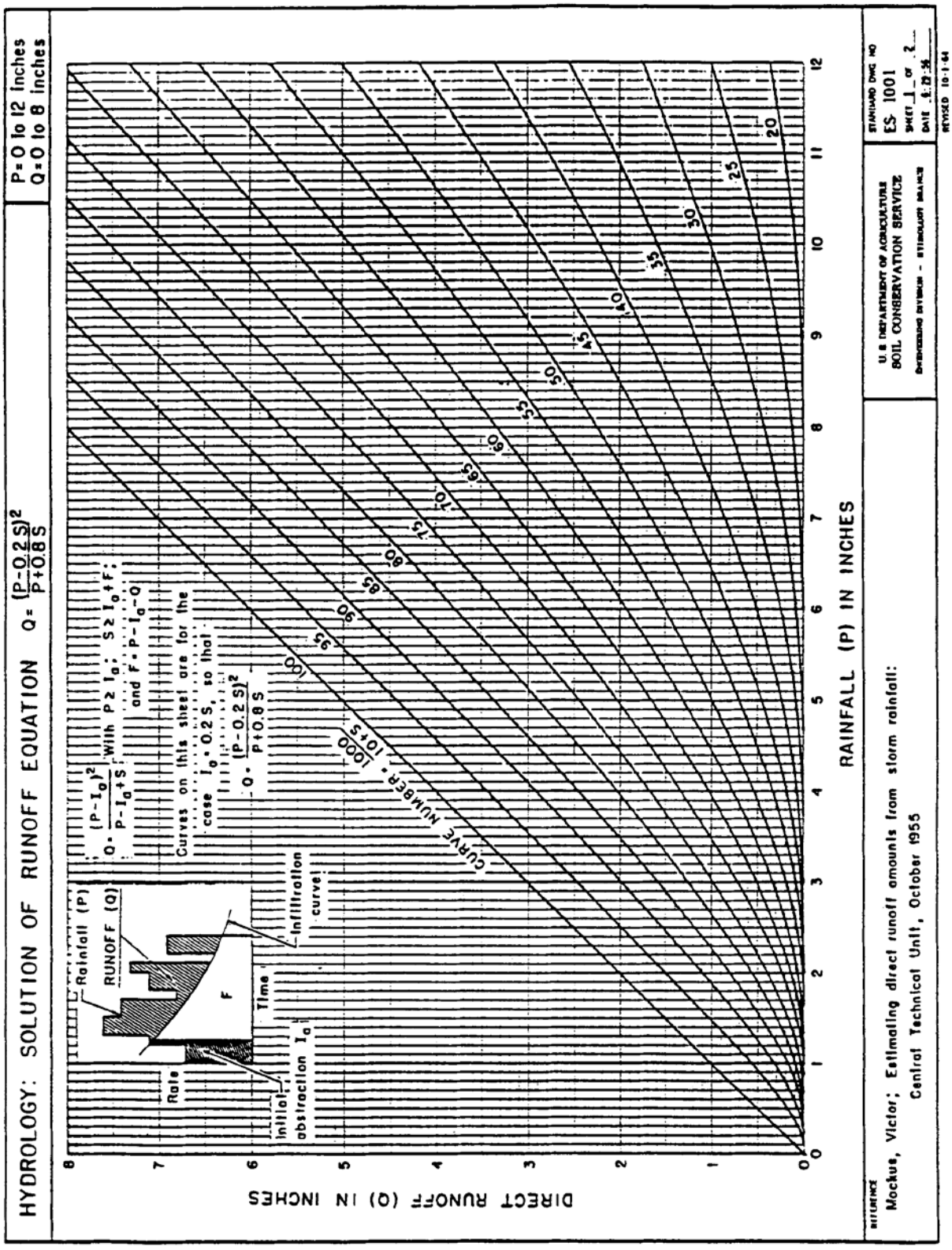

HYDROLOGY: SOLUTION OF RUNOFF EQUATION $Q = \frac{(P-0.2S)^2}{P+0.8S}$
P=0 to 12 inches
Q=0 to 8 inches
DIRECT RUNOFF (Q) IN INCHES
RAINFALL (P) IN INCHES
CURVE NUMBER = 1000/(10+S)
Rainfall (P)
RUNOFF (Q)
F
Time
Rate
Initial abstraction I_a
Infiltration curve
$Q = \frac{(P-I_a)^2}{P-I_a+S}$ With $P \geq I_a$; $S \geq I_a + F$; and $F = P - I_a - Q$
Curves on this sheet are for the case $I_a = 0.2S$, so that $Q = \frac{(P-0.2S)^2}{P+0.8S}$
REFERENCE
Mockus, Victor; Estimating direct runoff amounts from storm rainfall: Central Technical Unit, October 1955
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
STANDARD DWG NO
ES- 1001
SHEET 1 OF 2
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Figure 34.8-1

Table 34.8-1
Peak Discharge / Inch Runoff For Florida
(cfs / inch)

		Drainage Area in Acres											
Slope	CN (Curve Numbers)	2	4	6	8	10	20	40	60	80	100	200	400
Flat	60	1	3	3	4	5	8	14	18	22	25	39	61
	65	2	3	4	5	5	9	15	19	24	27	43	67
	70	2	3	4	5	6	10	16	21	26	30	48	74
	75	2	3	4	5	6	10	17	23	28	33	53	83
	80	2	3	4	6	7	11	19	25	31	36	58	92
	85	2	3	5	6	8	12	21	28	34	40	65	104
	90	2	3	5	6	8	13	23	31	38	45	74	118
	95	2	4	5	7	8	15	26	35	43	51	85	138
Moderate	60	2	3	5	6	7	12	21	28	34	40	64	102
	65	2	3	5	6	7	13	22	30	37	43	70	112
	70	2	3	5	6	8	14	23	32	40	47	76	123
	75	2	4	5	7	8	14	25	34	43	50	83	135
	80	2	4	5	7	8	15	27	37	46	54	91	148
	85	2	4	5	7	9	16	29	40	50	59	100	164
	90	2	4	6	7	9	17	31	43	54	64	110	184
	95	2	4	6	8	9	18	33	47	59	71	123	208
Steep	60	2	4	5	7	9	16	28	39	49	59	98	162
	65	2	4	6	7	9	17	30	42	52	62	106	175
	70	2	4	6	7	9	17	31	44	55	66	113	189
	75	2	4	6	8	9	18	33	46	58	70	121	204
	80	2	4	6	8	9	18	34	48	61	74	129	221
	85	2	4	6	8	9	19	35	50	65	78	139	240
	90	2	4	6	8	9	19	36	53	68	83	149	261
	95	2	4	6	8	9	19	37	55	72	88	161	287

Source: USDA, SCS "Interim Runoff Procedure for Florida," Florida Bulletin 210-1-2

A graphical solution of this equation is shown in Figure 34.8-1. The S values are transformed into curve numbers (CN) by the following equation:

$$CN = \frac{1000}{S + 10}$$

Peak discharges can be determined from the runoff volume using Table 34.8-1. Peak discharge (cfs) per inch of runoff volume are given for various drainage areas, slopes and curve numbers. This table should be used for watersheds of less than 600 acres. Larger or non-homogeneous watersheds should be subdivided into hydrologic sub-areas and their peak discharges determined by any of the flood-routing methods listed in subparagraphs 3.2.3(a)(1)-(4) of this Manual.

These peak discharges can be further modified to account for parameters such as actual land slope, watershed shape and depressional surface storage. Further information concerning the use of these modifications is given in the sample problems at the end of this section and in reference number six.

34.9 Detention Basin Design

One of the most common procedures for assuring that post- development peak discharge rates do not exceed pre-development rates is the use of detention basins. These basins store the runoff and release it off-site through a control structure at the required rate. Detention is defined as the collection and temporary storage of stormwater with subsequent gradual release at a specified rate. In addition, the purpose of detention basins can be expanded to include partial treatment to improve water quality by removal of pollutants. Retention and filtration, if properly designed, are the primary techniques used to accomplish these means. Retention is defined as the prevention of discharge of a given volume of stormwater runoff by complete on-site storage. Removal of the water is caused only by percolation, evaporation, or evapotranspiration. Filtration is the selective removal of suspended matter from stormwater by passing it through fine textured granular media such as porous soil, sand and gravel, or other aggregate, which may be used in conjunction with filter fabric and/or underdrain pipe.

The following discussion relates to detention only and the water quantity considerations involved in design. For water quantity control, detention basins require some type of spillway outlet structure. This may be a culvert, weir, or vegetated overflow. These control structures must be designed to discharge at a rate not to exceed the pre-development rate for the required design storm. Discharge rates are a function of the headwater in the basin and the tailwater outside the basin. Tailwater conditions outside the basin should be considered to be the maximum stage which would exist in the receiving water from a storm equal to the project design storm. Lower stages may be used if the applicant can show that the flow from his project will reach the receiving water prior to the time of maximum stage in the receiving water. The headwater in the basin is a function of the inflow, available

storage, and outflow. Modeling of the relationships between these variables can be accomplished using any conventional flood routing technique. Stage-storage and stage-discharge curves for the basin and outlet structure are required. When constructing a stage-discharge curve, it must be determined what portion of the outlet structure will control the flow rate for various headwater conditions. For example, a culvert with a flashboard riser will initially be controlled by the capacity of the riser (weir control). As headwater increases the control will shift to the hydraulic capacity of the culvert (pipe control). Culvert flow may be controlled by the entrance conditions (inlet control) or the tailwater conditions (outlet control). In all the above situations, whichever control allows the smallest discharge must be used.

Basin criteria require that when designing an outlet structure to control discharge for a large storm event (25-year frequency) the structure's performance during less severe storm events (10-year frequency) must also be checked. If an outlet is sized to meet the pre- and post-development peak discharge criteria for a 25-year storm event, during a 10-year event the headwater/tailwater condition may be such that the structure will discharge substantially more than the pre-development peak rate. This is illustrated in the following example:

On-site storage is to be provided to meet the pre-and post-development peak discharge criteria for the 10- and 25-year frequency storms (see Figure 34.9-1). The 25-year pre-development discharge is 100 cfs and the 10-year is 50 cfs. The 25-year tailwater elevation in the receiving water is 10.0 ft. and the 10-year is 5.0 ft. The detention basin has a 48" CMP outlet and is sized so that the 25-year stage is elevation 12.5 ft. and the 10-year is 9.0 ft. This gives a 25-year outflow of 100 cfs for 2.5 feet of head and outlet control. Checking the outflow for the 10-year storm gives a discharge of 65 cfs for 4 feet of head and inlet control, an increase over the 50 cfs pre-development flow.

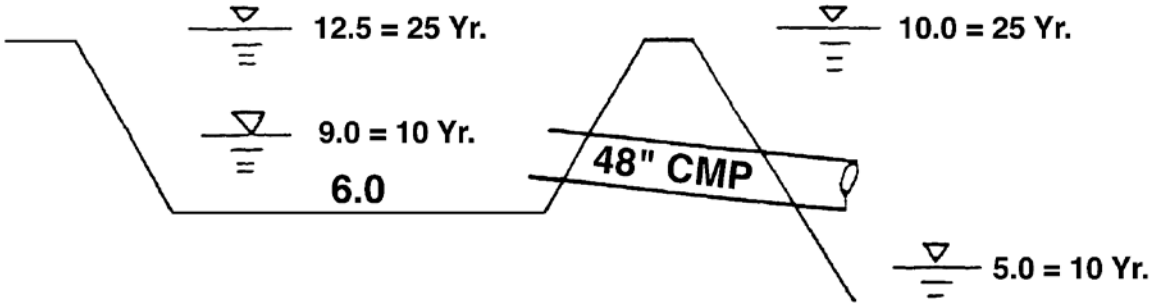

Figure 34.9-1

In a situation such as this it may be necessary to use a smaller pipe or revise the outlet structure design to incorporate additional features such as a two-stage outlet. This will insure that pre-development discharge does not exceed post-development discharge for both the 10-year and 25-year storm events.

Another requirement for detention basins is to be able to draw down the water level to restore storage capacity within a maximum of 14 days following a storm event. If this cannot be accomplished with the primary outlet structure, a small bleed-down pipe equipped with gate valve may be required.

Other recommended design considerations include:

(a) anti-vortex devices on riser culverts;

(b) basin side slopes of 4:1 or flatter;

(c) maximum depths of four to six feet over 80% of the basin area;

(d) seeding and mulching, if necessary, of all exposed earth surfaces;

(e) erosion control measures at the spillway inlet and outlet;

(f) layouts which avoid rectangular shapes and blend in with the natural contours;

(g) provisions should be made for prompt maintenance including mowing of vegetation and visual inspection of the outlet structure for possible problems; and

(h) trash racks on the outlet structure if the possibility exists for debris to accumulate and block the opening.

34.10 References

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PART XIV
METHODOLOGIES FOR CALCULATING RAINFALL DATA

35.0 Methodologies for Calculating Rainfall Data

35.1 24-Hour Storms

35.1.1 Rainfall depth: Rainfall depths for 24-hour duration events can be found in any of the sources listed in paragraph 3.2.6(a) of this Manual.

35.1.2 Rainfall Distributions: For 24-hour rainfall events, recommended methods for distribution of this rainfall throughout the 24 hours are:

(a) A statistical analysis of the historical hourly rainfall data.

(b) The SCS-Type II distribution: This method has been described in the SCS TP-149 publication (see Reference 11). See Table 35.1-1 for a breakdown of this distribution. The accumulative distribution is shown in Figure 35.1-1.

(c) The SCS Interim Runoff Procedure for Florida (Modified NRCS-Type II Distribution): This method is described in an SCS report by Roger Cronshey, Hydraulic Engineer (May 1980). This distribution was developed on the same lines as the SCS type II rainfall, but uses the data from HYDRO-35. A generalized depth-duration curve was derived for the State of Florida in the form of ratios of t-hour depth to 24-hour depth. The ratios are given by:

$$\text{Ratio} = 0.5\, t^{0.74} \quad 0 < t < .65 \text{ hrs.}$$

$$\text{Ratio} = 0.411\, t\, 0.28 \quad 0.65 \text{ hr.} < t < 24 \text{ hrs.}$$

in which t = duration in hours. Incremental depths (for the required time step) are calculated on the basis of the foregoing relations and rearranged so that the largest depth occurs prior to 12 hours in the distribution. The second largest is placed after the first and the third placed before the first. Alternating the remaining rainfall amounts continued in the same manner until the entire 24-hour distribution has been established. See Table 35.1-1 for a breakdown of this distribution.

Table 35.1-1. Rainfall Ratios (Accumulated Total/24 Hour Total)

Time (hr.)	NRCS Type II	NRCS Type II FL. Modified
0.0	.000	.000
0.5	.005	.006
1.0	.011	.012
1.5	.017	.019
2.0	.022	.025
2.5	.029	.032
3.0	.035	.039
3.5	.042	.047
4.0	.048	.054
4.5	.056	.062
5.0	.064	.071
5.5	.072	.080
6.0	.080	.089
6.5	.090	.099
7.0	.100	.110
7.5	.110	.122
8.0	.120	.134
8.5	.134	.148
9.0	.147	.164
9.5	.163	.181
10.0	.181	.201
10.5	.204	.226
11.0	.235	.258
11.5	.283	.308

12.0	.663	.607
12.5	.735	.719
13.0	.772	.757
13.5	.799	.785
14.0	.820	.807
14.5	.835	.826
15.0	.850	.842
15.5	.865	.857
16.0	.880	.870
16.5	.889	.882
17.0	.898	.893
17.5	.907	.904
18.0	.916	.913
18.5	.925	.923
19.0	.934	.931
19.5	.943	.940
20.0	.952	.948
20.5	.958	.955
21.0	.964	.962
21.5	.970	.969
22.0	.976	.976
22.5	.982	.983
23.0	.988	.989
23.5	.994	.995
24.0	1.000	1.000

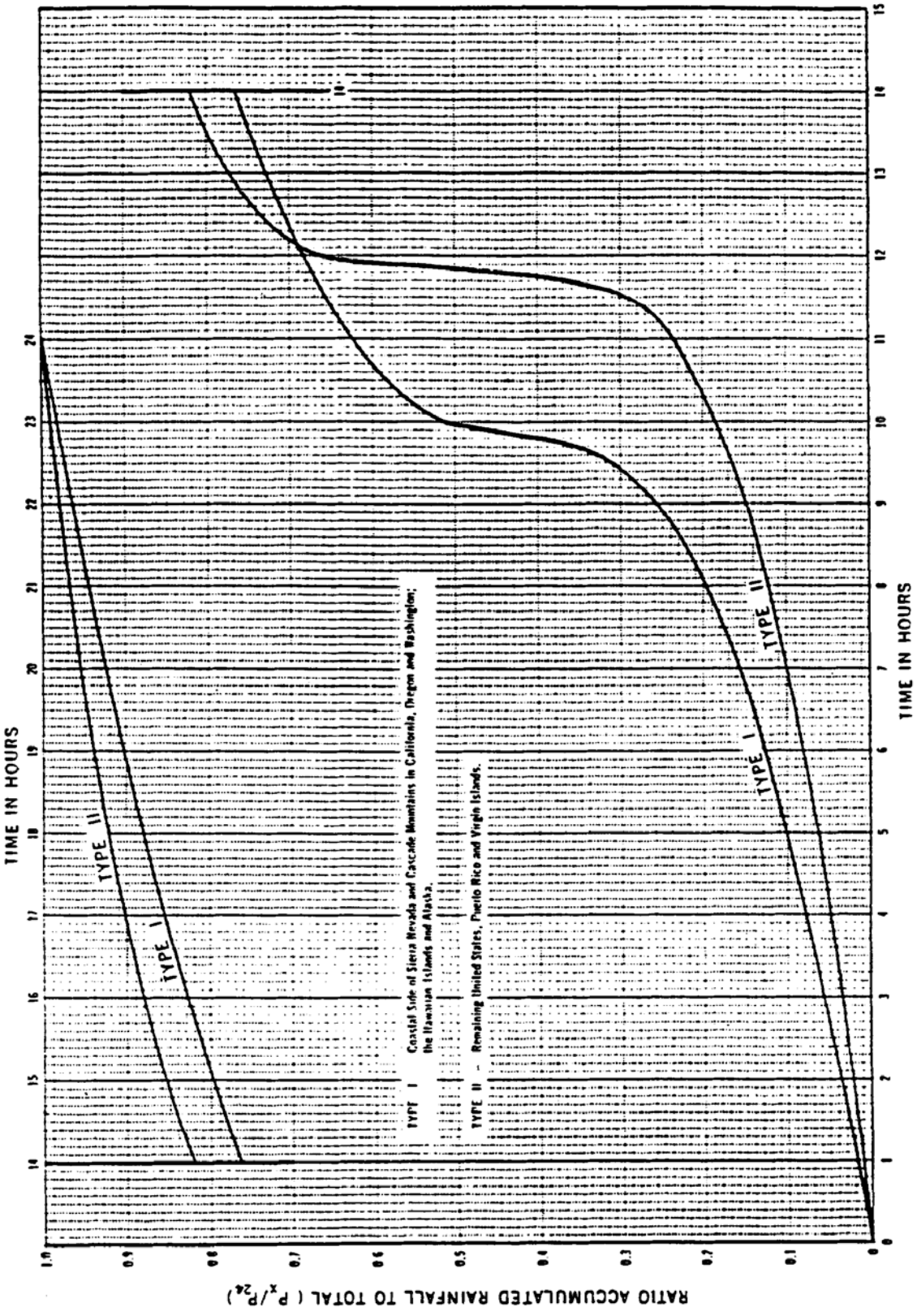
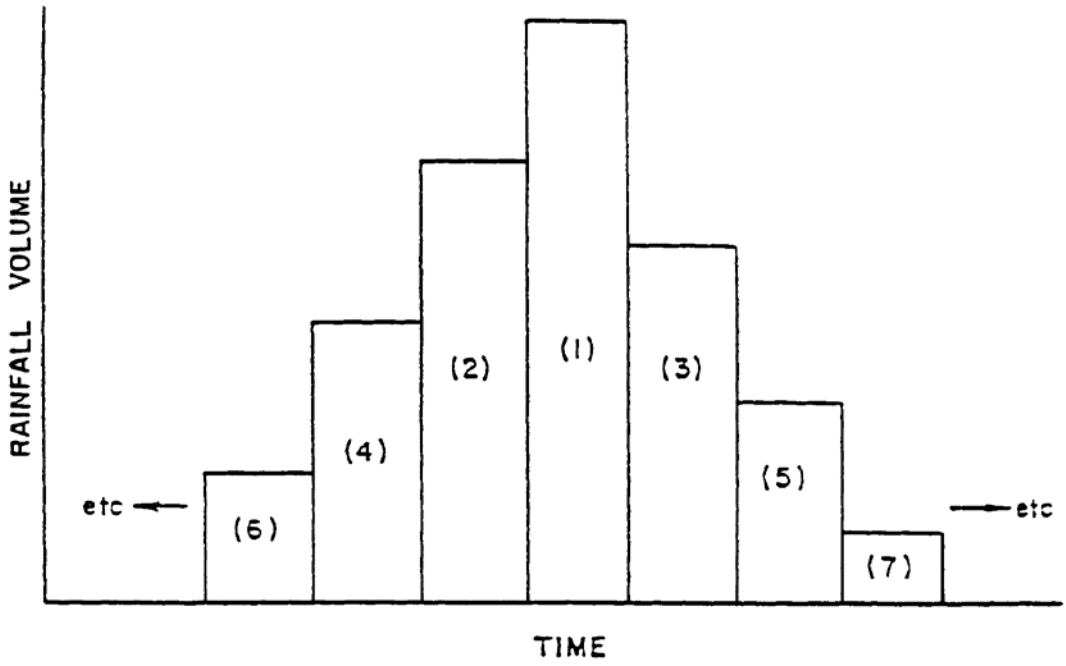


Figure 35.1-1 Twenty-four Hour Rainfall Distribution (SCS)

Figure 35.1-2 Arrangement of Incremental Depths in a Synthetic Storm (HEC-1)



(d) Derivation from depth-duration curve (HEC-1 Type): When depth-duration data are available, HEC-1 manual recommends the following procedure:

1. Compute incremental precipitation depths at the desired time steps, and

2. Rearrange incremental depths so that the second largest value precedes the largest value, the third largest value follows the largest value, the fourth largest precedes the second largest, etc. This arrangement is shown in Figure 35.1-2. Numbers (1), (2), etc. in Figure 35.1-2 represent the order of incremental depths with (1) for the largest.

(e) HEC-1 PMP (Probable Maximum Precipitation) type distribution: The HEC-1 Manual describes the following procedure for distributing PMP.

1. Divide each 24-hour period into four 6-hour periods and distribute 24-hour rainfall according to the following ratios among 6-hour periods:

First 6 hour period: $\frac{0.4(R24 - R12)}{R24}$

Second 6-hour period: $\frac{(R12 - R6)}{R24}$

Third 6-hour period: $\frac{R6}{R24}$

Fourth 6-hour period: $\frac{0.6(R24 - R12)}{R24}$

in which R6, R12, and R24 are the maximum 6-hour, 12-hour, and 24-hour rainfall amounts, respectively.

2. Assume uniform distribution in each 6-hour period except during the peak 6-hour period.

3. For distributing the peak 6-hour rainfall, the HEC-1 manual provides default values. These default values may be used only if other satisfactory distribution is not available.

(f) Any other generally accepted and well documented method.

35.2 Four Day Storms

35.2.1 Rainfall Depth: The District has developed a dimensionless four day rainfall distribution in terms of the peak 24-hour rainfall. This is presented in subsection 35.2.3. The applicant may use this distribution or may develop his own as described in the following sections.

Rainfall depths for a given return period can be obtained either from the generalized charts published by the National Weather Service or by detailed statistical analysis of station data. The NWS publications HYDRO-35 (1977), TP-40 (1961), and TP-49 (1964) generalized charts published by the National Weather Service or by detailed statistical analysis of station data. The NWS publications HYDRO-35 (1977), TP-40 (1961), and TP-49 (1964) provide the necessary generalized data. HYDRO-35 provides 5-, 10-, 15-, 30-, and 60-minute rainfall values; TP-40 provides 2-, 3-, 6-, 12-, and 24-hour values, while TP-49 provides 2-, 4-, 7-, and 10-day values. TP-40 also includes 30-minute and 1-hour values, but these should be ignored since HYDRO-35 contains updated data.

Considerable additional data have been added since the publication of TP-40 and TP-49 for rain gage stations throughout the District. Thus, the estimates of rainfall

depths based on present data may be regarded as more accurate. However, while the determination of rainfall depths by statistical analysis is encouraged, the designer should exercise care in judiciously selecting the necessary techniques since these are not standardized. The following example illustrates some of the available procedures.

Example: Determine 100-year rainfall depths for different durations for the City of Palatka.

(a) Rainfall depths from the NWS charts.

The following rainfall depths are read from the NWS publications:

Table 35.2-1

Duration	100-Year Rainfall Depth (inches)	Source
5 minutes	0.85	HYDRO-35
10 minutes	1.53	HYDRO-35
15 minutes	2.00	HYDRO-35
30 minutes	3.18	HYDRO-35
60 minutes	4.40	HYDRO-35
2 hours	5.2 (5.4)	TP-40
3 hours	6.0	TP-40
6 hours	7.1	TP-40
12 hours	8.9 (8.5)	TP-40
24 hours	10.4 (10.2)	TP-40
2 days	12.2	TP-49
4 days	14.5	TP-49

Plot a rainfall depth-duration curve with the above data on a log-log graph paper and smoothen the values for consistency. The depth-duration curve for the above data (Table 35.2-1) shows that the 2-hour, 12-hour, and 24-hour values should be slightly adjusted; the adjusted values are shown in parentheses in the above table.

(b) Rainfall Depths by Statistical Analysis

This method consists of deriving annual series of maximum precipitation for each duration from the observed data and conducting frequency analysis on the annual series of data. However, most stations in the District, including Palatka, have only non-recording rain gages which provide "observational-day" amounts. Thus, data for less than 24 hours are not available for most stations. Even for 24-hour and greater durations, the observational-day amounts need to be adjusted to obtain n-hour precipitation because the actual storms do not exactly confine to observational-days. For example, the 24-hour maximum rainfall of a given year may commence to occur at any clock hour of an observational-day and extend into the next observational-day. As a result, this rainfall amount will be reported on two observational-days. If no other rainfall is associated, all of the rainfall reported on the two consecutive days comes from this 24-hour event; this is an extreme case. In practice, the observational-day amounts are converted into n-hour values either by multiplying the former by a factor or by adding a portion of the adjacent day rainfall to the former. In the present example (Palatka data), 1-, 2-, 3-, and 4-(observational) day maximum rainfall amounts were converted into 24-, 48-, 72-, and 96-hour precipitation by adding one half of the larger adjacent day precipitation as recommended by Hershfield (1963). Results of frequency analysis by log Pearson type 3 distribution (Rao, 1980) are shown below:

Table 35.2-2. Rainfall Frequency Analysis for Palatka (1949-1980)

Duration	Rainfall Depth for Return Period			Maximum Values	
	10 yr	25 yr.	100 yr.	Observed	N-Hour
(1)	(2)	(3)	(4)	(5)	(6)
24-hr	7.0 (7.0)	8.9 (8.2)	12.2 (10.4)	8.6	11.3
48-hr	7.7 (8.1)	9.8 (9.9)	13.5 (12.2)	14.1	14.5
72-hr	8.7	11.1	15.4	14.9	16.5
96-hr	9.6 (9.5)	12.3 (11.8)	17.1 (14.5)	18.1	18.2

The NWS values are shown in parentheses (Cols. 2-4) for a comparison. A comparison of 100-year rainfall estimates with maximum observed values (Col. 5) indicates that the NWS values are underestimates. For obtaining consistency of results, the NWS suggests to plot the values obtained by frequency analysis as a depth duration curve on a log-log graph paper and smoothen the curve if necessary. This is shown for 100-year values in Figure 35.2-1 (dashed line). The 24-hour value falls away from the line, thus this value needs adjustment. The (dashed) line is extended backwards until it smoothly joined the NWS curve in the less-than-24-hour portion. The

accepted curve consists of the dashed portion, and the NWS curve for other durations. The values read from the accepted curve are as follows:

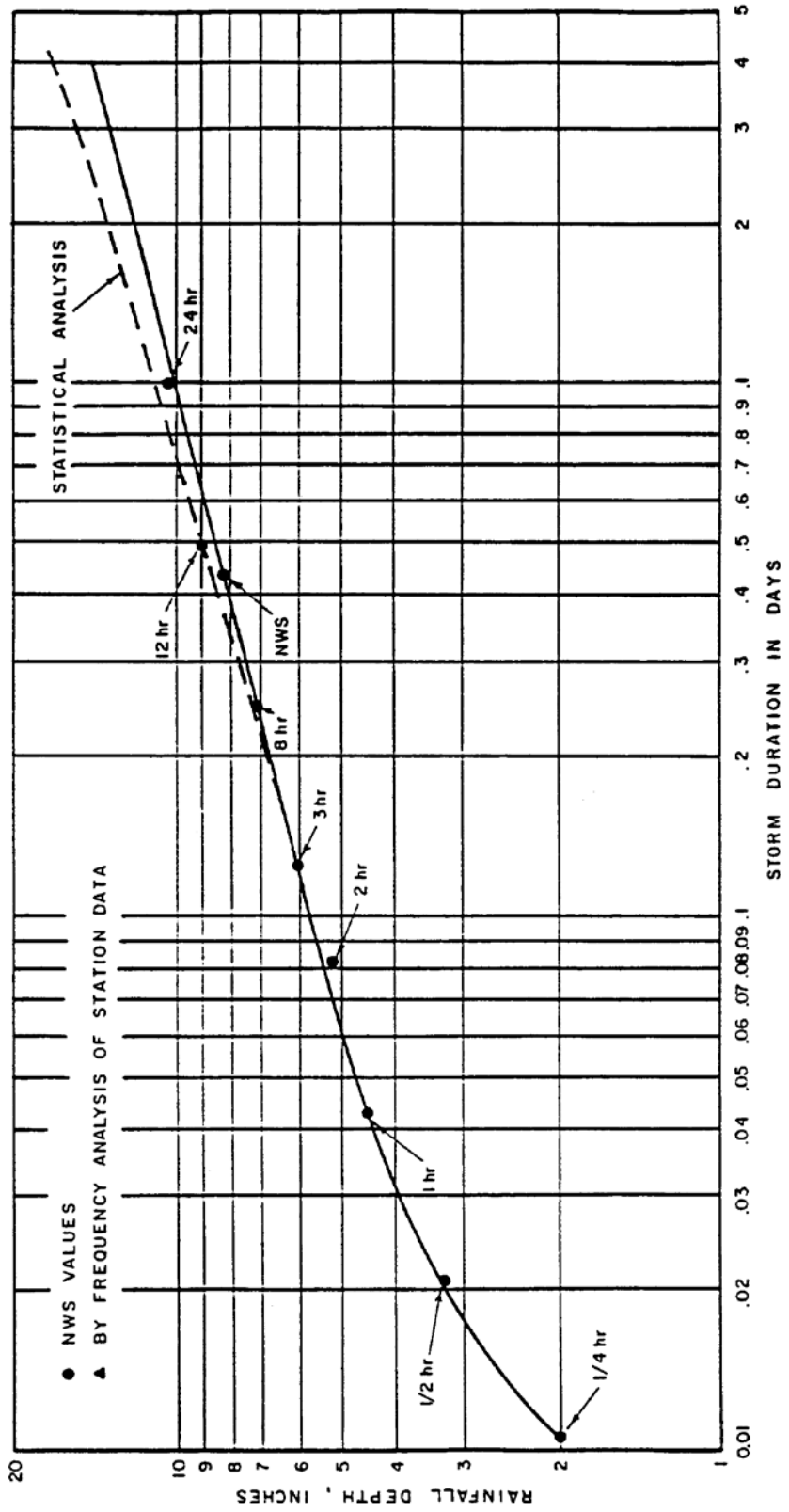


Figure 35.2-1 Rainfall Depth Duration Curve for Palatka (T=100 Yr.)

TABLE 35.2-3

Duration	100-Yr. Rainfall (Inches)
5 minutes	0.85 (Accepted from HYDRO-35)
10 minutes	1.53 (Accepted from HYDRO-35)
15 minutes	2.0 (Accepted from HYDRO-35)
30 minutes	3.2 (Accepted from HYDRO-35)
60 minutes	4.4 (Accepted from HYDRO-35)
2 hours	5.4
3 hours	6.0
6 hours	7.3
12 hours	8.9
24 hours	11.1
48 hours	13.5
72 hours	15.4
96 hours	17.1

35.2.2 Rainfall Distribution

The 4-day duration rainfall distribution shall be calculated assuming:

(a) The maximum 24-hour rainfall occurs on day three of the 4-day duration storm;

(b) Difference between the 2-day rainfall and the 24-hour rainfall occurs on day two, and;

(c) The difference between the 3-day rainfall and the 2-day rainfall occurs on day four;

(d) The difference between the 4-day rainfall and the 3-day rainfall occurs on the first day.

Example: For the City of Palatka, for the values determined by frequency analysis the 24-hour, 100-year depths are as follows:

Time (hrs)	Rainfall Depth (in.)	Incremental Depth (in.)
24	11.1	11.1
48	13.5	2.4
72	15.4	1.9
96	17.1	1.7

The four day distribution as suggested above is shown in Figure 35.2-2.

The distribution for each day of the four day period shall be calculated:

(a) For day three (maximum 24-hour rainfall) use any one of the methods described in Subsection 35.1.2 for a 24-hour duration.

(b) For other days use the above or a uniform distribution for each day.

35.2.3 Four Day Dimensionless Rainfall Distribution

This distribution has been developed by the District using NWS rainfall amounts and a distribution as described in Subsection 35.2.2. The distribution is in terms of accumulated rainfall as a percentage of the peak 24-hour rainfall. It uses an NRCS Type II distribution on the third day and a uniform distribution for the remaining days. Table 35.2-4 shows this distribution.

Figure 35.2-2 Four Day Rainfall Distribution (Basis COE HEC-1)

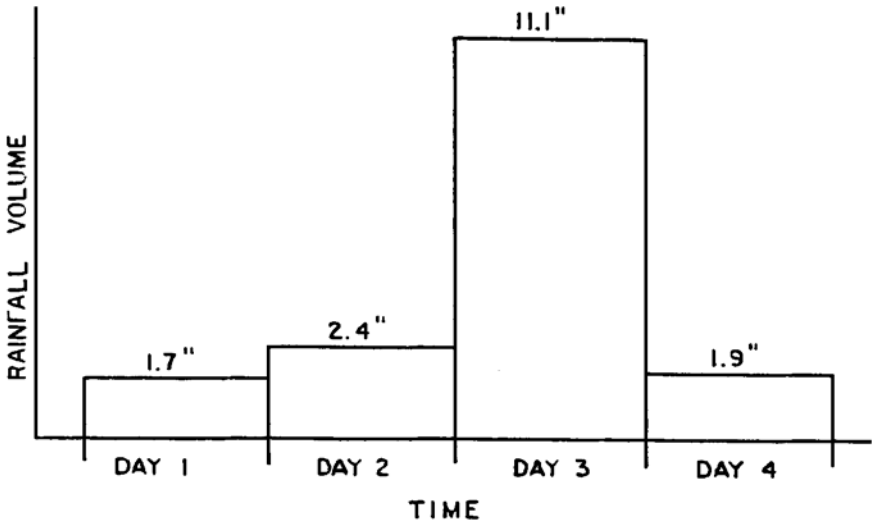

11.1"
RAINFALL VOLUME
2.4"
1.7"
1.9"
DAY 1
DAY 2
DAY 3
DAY 4
TIME

Table 35.2-4

Time (hours)	Accumulated Total/Peak 24 Hour Total (%)
0	0
4	1.4
8	2.8
12	4.2
16	5.6
20	7.0
24	8.4
28	11.7
32	15.1
36	18.4
40	21.7
44	25.1
48	28.4
50	30.6
52	33.2
54	36.4
56	40.4
58	46.5
59	51.9
59.5	56.7
60	94.7
60.5	101.9
61	105.6
62	110.4

64	116.4
66	120.0
68	123.6
70	126.0
72	128.4
76	130.9
80	133.4
84	135.9
88	138.4
92	140.9
96	143.4

35.3 References

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PART XV
PROCEDURES FOR DETERMINATION OF FLOODPLAIN ELEVATIONS AND FLOODWAY ENCROACHMENT LIMITS USING NORMAL DEPTH ANALYSIS

36.0 Procedure for Determination of Floodplain Elevations and Floodway Encroachment Limits Using Normal Depth Analysis

36.1 Introduction

This section provides guidelines for the determination of floodplain elevations and floodway encroachment limits along watercourses where such determinations are not currently available. The procedure recommended is based on a direct application of Manning's equation and is commonly referred to as Normal Depth Analysis.

In order to assess the impact of a proposed project on the water resources (as discussed in section 3.3), the following must be determined: The flood stage elevations and the extent of the floodplain during storms with 10 and 100 year frequencies, and the floodway. The floodway is the channel of a watercourse, plus any adjacent floodplain areas that must be kept free from encroachment in order to convey the 100 year flood without substantial increases in floodstages. A District-wide minimum standard limits the increase in floodstage to a one foot maximum increase.

NOTE: The one foot increase cited above is used in the initial determination of the floodway itself and is not meant to allow subsequent heightening of the 100 year flood elevation, once the limits of the floodway have been so set. That is, in order to determine that portion of the floodplain which will be designated as the floodway, one begins at the outer limits of the floodplain and assumes full development inward, toward the river or stream channel, on both sides of the flood hazard area, until the point is reached where development will cause the 100 year flood elevation to rise by one foot. The area remaining between this boundary and the channel is the floodway, and because any further development here would necessarily increase the 100 year flood elevation by more than one foot, no such development can be permitted.

Normal depth analysis provides a reasonable estimate of flood stages. It is a relatively simple procedure requiring a minimal amount of data. It assumes a uniform flow condition wherein the discharge, waterway cross section, mean velocity, and depth remain essentially constant through a reach of stream. While these circumstances rarely exist under natural conditions, normal depth analysis provides a reasonable close approximation in most cases. The exception is where there is a downstream control such as a bridge or a dam, which obstructs the flow and causes a backwater effect or when non-uniform flow is evident in the stream reach. In those cases, a detailed analysis of the backwater effect and non-uniform flow conditions must be provided by the applicant when establishing the floodplain

and floodway. The use of the Corps of Engineers HEC-2 model for such an analysis is discussed in reference (1) and (2). Any other acceptable method may also be used.

36.2 Data Required for Analysis

The following information is required for the use of normal depth analysis in determining the floodplain elevations during the 10-year and 100-year storms and floodway encroachment limits:

(a) The 10-year and 100-year flood flows: These flood discharges should be determined from a frequency analysis where streamflow data are available. When streamflow data are available, the flood flows can be determined by using regression equation or any other acceptable procedure. The District will, if requested by the applicant, determine the 10-year and 100-year peak discharge.

(b) One or more representative channel cross sections (including channel and overbank flow areas) at the area of interest. The cross section should be taken perpendicular to the direction of the flood flow. The cross section should be representative of the reach of stream in the vicinity of the area of concern. If the stream reach adjacent to the area of interest is more than 300 feet in length, more than one cross section should be taken.

(c) Slope of water surface determined from known flood profiles or average channel bed slope in the reach by field survey. Figure 36.2-1 depicts a typical situation and illustrates some of the data requirements.

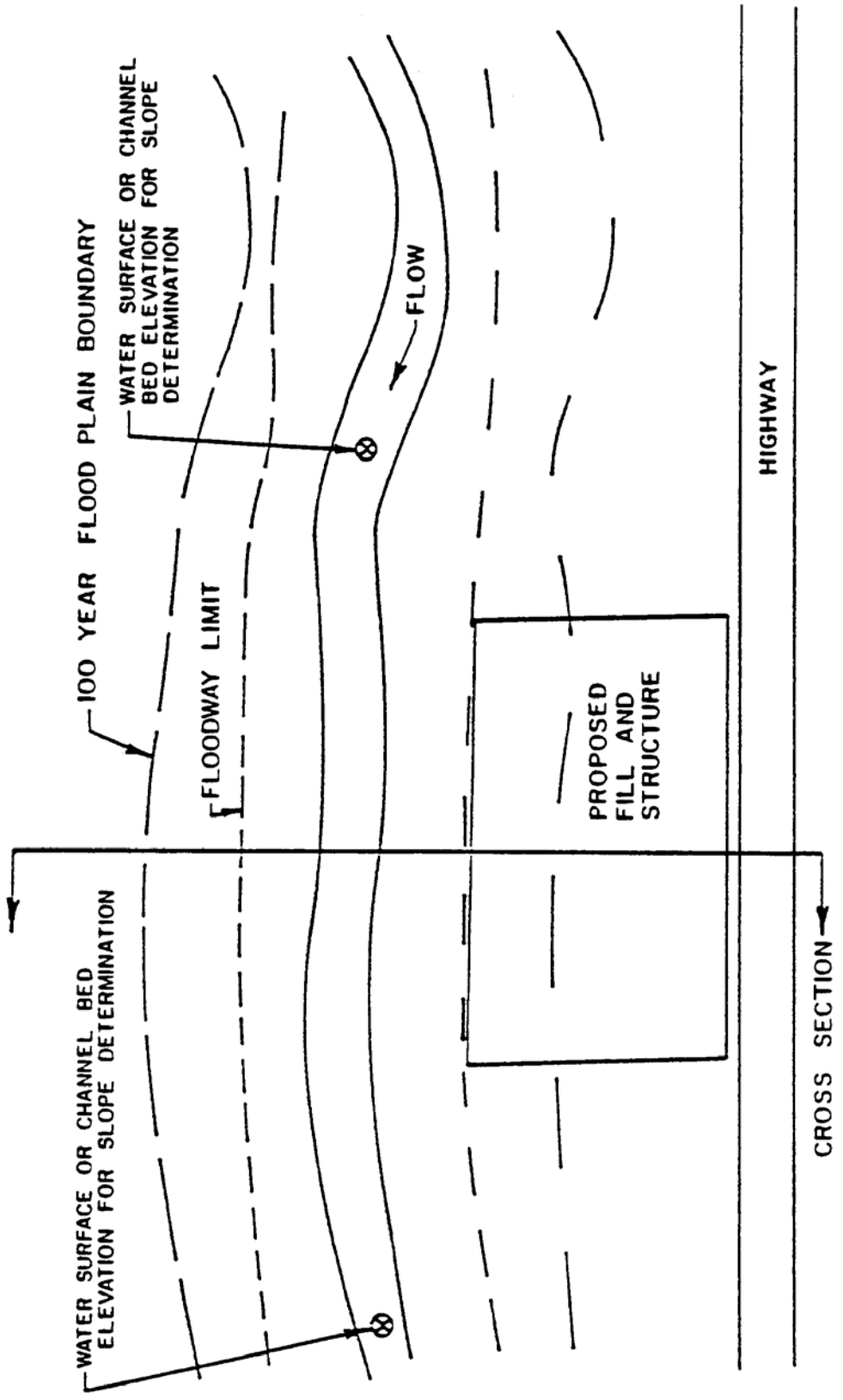

Figure 36.2-1 Typical Floodplain Encroachment

36.3 Manning's Equation

The basic formula in determining flood stage and floodway encroachment limits is Manning's equation:

$$Q = KS^{1/2} = \frac{1.49}{n} AR^{2/3}\ S^{1/2} \qquad 36\text{-}1$$

in which:

Q = Discharge in cubic feet per second,

K = Conveyance of the channel section = $\frac{1.49}{n} AR^{2/3}$

n = Manning's roughness coefficient,
R = Hydraulic radius in feet = A/P,
A = Cross sectional area through which flow occurs in square feet
P = Wetted perimeter in feet,
S = Slope of the energy gradient of streamflow in feet per foot.

The roughness coefficient "n" in eq. 36-1is to be evaluated from field investigation by an experienced engineer. For further discussion and assistance in the selection of an appropriate "n" value, see Barnes (1967) or Chow (1959).

During uniform flow, the slopes of the energy gradient of streamflow, the water surface profile, and the river bed are equal. As a result, the slope of the energy gradient, S, can be approximated as either the channel bed slope or the water surface slope.

36.4 Procedure for the Determination of Flood Stage

(a) Divide the channel section into several Subsections or segments each having a reasonably uniform roughness coefficient, A_1, A_2, A_3, --A_n as is shown in Figure 36.4-1.

(b) Determine "n" value for each individual Subsection.

(c) Select a flood stage, y_1 as a first estimate.

(d) Determine cross section area, hydraulic radius and compute conveyance, K, for each Subsection based on floodstage y_1.

(e) Calculate the total discharge Q1 that corresponds to the stage y_1; as described in Table 36~~15~~.4-1.

(f) If Q_{100}>Q1, increase flood stage y_2 by small increment.
If Q_{100}<Q1, decrease flood stage y_2 by small increment.
Follow steps (d) and (e) to determine Q_2.

(g) Repeat step (f) until several Q values above and below Q_{100} are established.

(h) Plot a stage vs. discharge curve from which a stage corresponding to Q_{100} can be determined.

Example 1: A representative cross section for a reach of stream adjacent to a newly proposed development is shown in Figure 36.4-1. The roughness coefficients for each segment of the cross section are also shown in the figure. The slope of channel bed in this stream reach is about 0.36%. Determine the 100-year flood elevation for Q_{100}=7,900 cfs.

Solution: Detailed calculation is shown in Table 36~~15~~.4-1 for $y_1$and y_2.

At stage y_1 = 121.0 ft., Q = 7,154 cfs.

At stage y_2 = 122.0 ft., Q = 8,639 cfs.

At stage y_3 = 121.5 ft., Q = 7,875 cfs.

A stage - discharge curve for y_1, y_2, and y_3 is used to estimate the flood stage for Q_{100} as 121.52 ft. (Figure 36.4-2)

TABLE 36.4-1. NORMAL DEPTH ANALYSIS

Stage	Sub-sect no.	A	P	R	$R^{2/3}$	n	k
121.0(y_1)	1	118	44	2.68	1.93	0.07	4,846
	2	120	20	6.0	3.30	0.07	8,427
	3	237	25	9.48	4.47	0.07	22,544
	4	230	24	9.58	4.50	0.035	44,060
	5	160	20	8.0	4.0	0.09	10,592
	6	90	15	6.0	3.30	0.09	4,915
	7	280	40	7.0	3.65	0.09	16,914
	8	144	29	4.97	2.91	0.09	6,935
							119,233

$Q_1 = KS^{1/2} = 119{,}233 \times 0.06 = 7{,}154$ cfs

122.0(y_2)	1	163	47	3.47	2.30	0.07	7,978
	2	140	20	7.0	3.65	0.07	10,874
	3	262	25	10.48	4.8	0.07	26,762
	4	245	24	10.20	4.7	0.035	49,019
	5	180	20	9.0	4.33	0.09	12,899
	6	105	15	7.0	3.65	0.09	6,343
	7	320	40	8.0	4.0	0.09	21,184
	8	174	32	5.44	3.10	0.09	8,927
							143,986

$Q_2 = KS^{1/2} = 145{,}217 \times 0.06 = 8{,}639$ cfs

36.5 Determination of Floodway Limits

To determine floodway encroachment limits, it is first necessary to estimate the total conveyance capacity that can be lost due to encroachment without increasing the 100-year flood stage by more than one foot. Floodway limits are then determined based on the assumption that the entire conveyance capacity outside of the floodway will eventually be lost. Whenever possible, the floodway limits should be set so that an equal degree of encroachment (loss of conveyance) can occur on both sides of the stream course. In some cases, equal encroachment on both sides may not be possible

because the conveyance of the overbank flow area on one side of the channel is relatively small in comparison with that of the other side. In this situation, the floodway limits should be further adjusted so that each limit will lie at a minimum distance away from the permanent channel. The minimum distance is one channel width. The floodway limits can be determined using the following procedure. The 100-year floodplain and flood stage must already be determined from existing reports, or if necessary, the Normal Depth Analysis used in Example 1. The summarized steps are outlined as follows:

(a) Add allowable increment in stage (one foot) to the 100 year flood stage to obtain a new flood stage.

(b) Calculate new conveyance K' and discharge Q' for the entire cross section under new flood stage and determine the increases in conveyance, K = K' - K, and discharge, Q = Q' - Q.

(c) Adjust the floodway limits by trial and error, so that the decrease in conveyance within the floodplain on each side of the channel due to assumed filling equals K2/2 as computed in step (b).

(d) If necessary, further adjust floodway encroachment limits so that each limit is at least one channel width away from the permanent channel.

Example 2: Define the floodway limits for the problem in Example 1.

Solution:

Regulatory flood discharge, Q = 7,900 cfs

Regulatory (100 year) flood stage = 121.5 feet

Permissible flood stage after assumed filling = 121.5 ft. + 1.0ft. = 122.5 ft.

Conveyance of the stream at stage y = 121.5 ft., $K = Q/(S^{1/2}) = 7{,}900/0.06 = 131{,}700$

Calculation of conveyance at stage y = 122.5 is shown in Table 36.4-2.

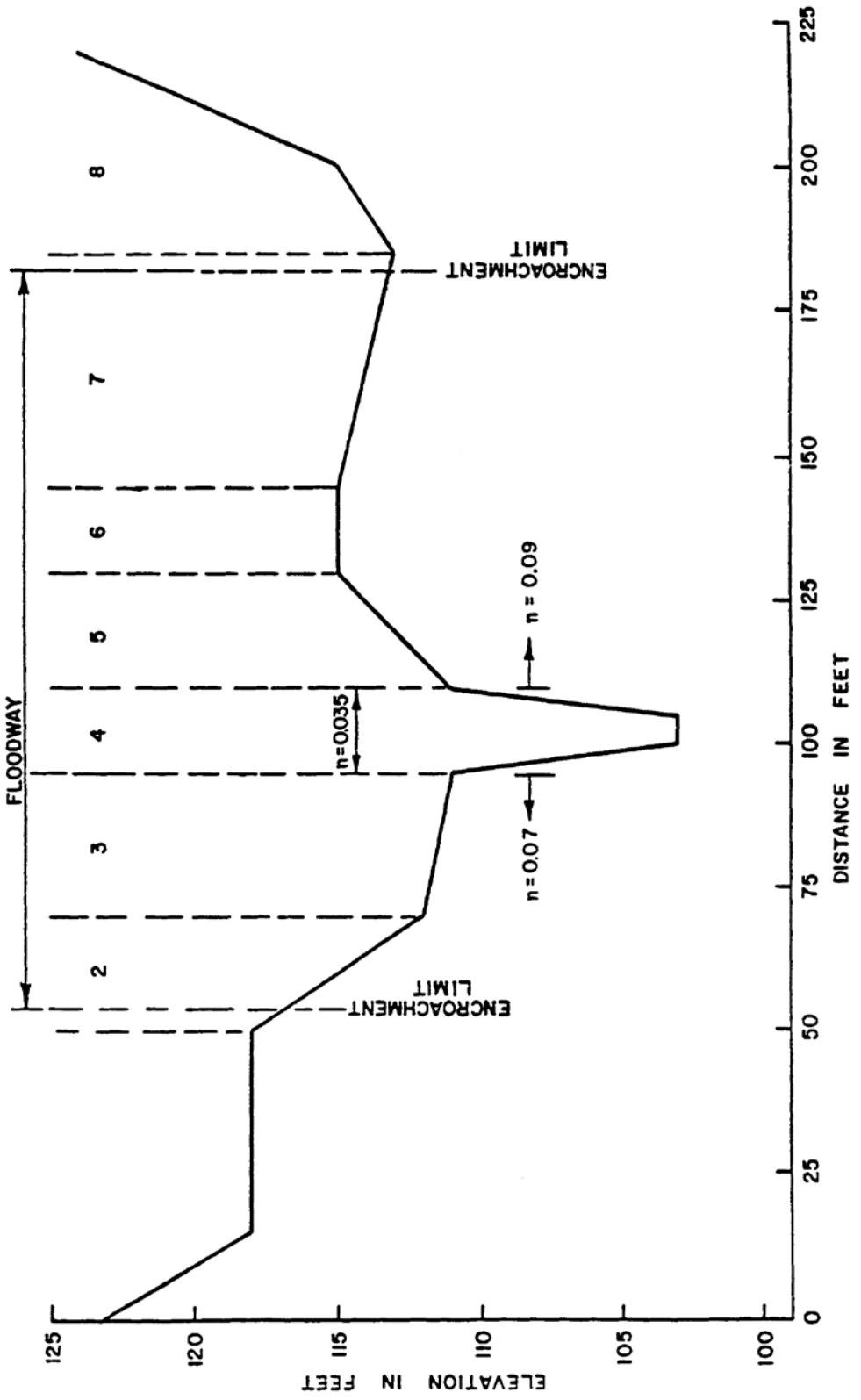

Figure 36.4-1 Typical Channel Cross section

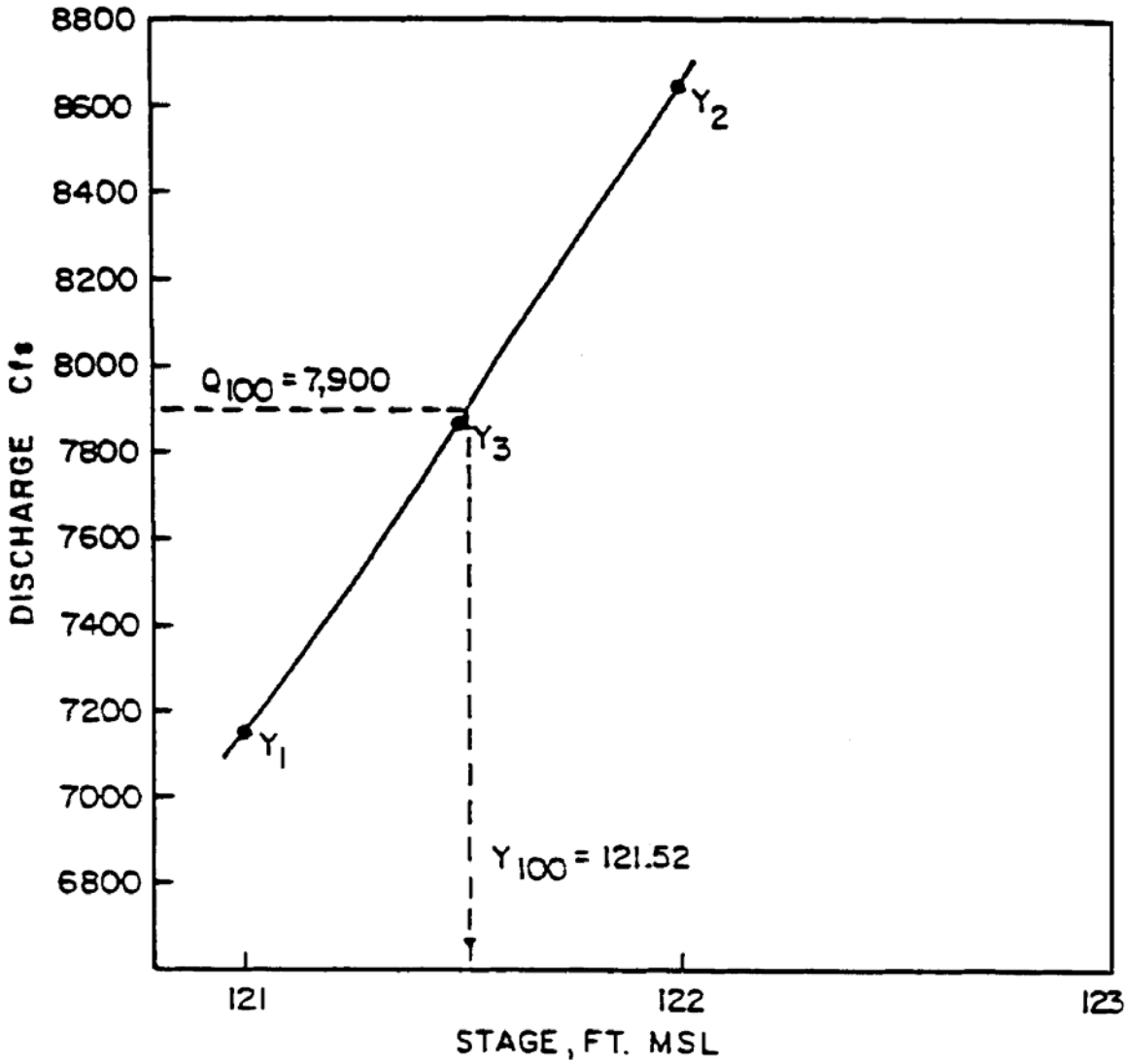

Figure 36.4-2 Stage-Discharge Relationship

Table 36.4-2

Stage	Sub-sect No.	A	P	R	$R^{2/3}$	n	k
122.5	1	187	49	3.82	2.44	07	9,714
	2	150	20	7.5	3.82	07	12,199
	3	274.5	25	11	4.95	07	28,982
	4	252.5	24	10.5	4.8	035	51,595
	5	190	20	9.5	4.5	.09	14,159
	6	112.5	15	7.5	3.82	09	7,117
	7	340	40	8.5	4.16	.09	23,422
	8	188	34	5.53	3.12	09	9,127
							156,315

Increase in conveyance by allowing one foot increase in stage above regulatory flood stage, K = 156,315 - 131,700 = 24,615.

The permitted decrease in conveyance due to encroachment in either side of the channel is K/2 = 12,308.

From Table 36.4-2, one can anticipate the lines of floodway limit to be within Subsections 2 and 7, which are shown in Figure 36.2-1. The exact location of the floodway limits is determined by trial and error.

36.6 References

Bonner, Vernon R., Floodway Determinations Using Computer Program HEC-2. U.S. Army Corps of Engineers Training Documents 5, May 1974.

U.S. Army Corps of Engineers, HEC-2 Water Surface Profiles Users Manual (with supplement)., November, 1976, Exhibit 9A: Users Manual Supplement for Floodway Determinations.

Barns, Harry H., "Roughness Characteristics of Natural Channels," U.S. Geological Survey Water Supply Paper No. 1849, 1967.

Chow, Ven Te, "Open-Channel Hydraulics," McGraw-Hill Book Company, Inc., 1959, Chapter 5.

PART XVI
STANDARDS FOR DAMS AND IMPOUNDMENTS

37.0 Standards for Dams and Impoundments

37.1 Hazard Classification

Every structure will be given hazard potential classification to reflect the damage which might occur in the event of a structural or operational failure. The damage potential will take into account a number of factors including, but not limited to: physical characteristics and degree of development of the site and area downstream; relationship of the site to industrial and residential areas; use of downstream properties throughout the reach of the potential damage; geological considerations; public and private uses of the impoundment or reservoir; probable future downstream development, and natural resources in the site area.

The following broad categories are established to permit the association of criteria with the damage that might result from a failure:

Class A. Structures located in rural or agricultural areas where failure may damage farm buildings, agricultural land or other agricultural resources. No loss of human life would be expected.

Class B. Structures located in predominantly rural or agricultural areas where failure would damage private or public property but such damage would be relatively minor and of short duration. Loss of human life would be possible but unlikely.

Class C. Structures located where failure will likely cause any of the following: Loss of human life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways or major railroads.

37.2 Storage Capacity

The storage capacity is defined as the volume of water impounded by the structure below the emergency spillway crest; or if no emergency spillway is used, the volume of water impounded below the top of the structure, less any freeboard.

37.3 Height

The height of the structure is defined as the vertical distance as measured from the lowest elevation of the structure crest to the lowest point of natural ground, including any stream channel, along the downstream toe of the structure.

37.4 Probable Maximum Precipitation (PMP)

In some situations where substantial risk of loss of life exists, it is appropriate to evaluate a structure against what appears to be the worst possible condition. The probable maximum precipitation is accepted as the standard for this type of evaluation. The PMP is almost always beyond the possibility of control with conventional flood protection measures. If it were to occur, flooding would be extensive and damage would be severe. Consideration of the PMP in design serves only to eliminate the possibility of the addition of a sudden structural failure to already serious flood conditions.

The 24-hour PMP value to be used for projects in the SJRWMD is 31.0 inches. This value is for drainage areas of 200 square miles. Apply the following adjustment factors for other drainage areas:

Drainage Area (mi2)	% of 200 mi² PMP
500	92
100	105
50	111
20	118
10	123

The 24-hour rainfall distribution is to be determined as explained in section 35.0.

37.5 References

Linsley, Kohler and Paulhus, 1975. Hydrology for Engineers. McGraw Hill Book Company, New York. 460 pp.

U.S. Department of Interior, Bureau of Reclamation, Design of Small Dams, 1974.

U.S. Weather Bureau, Hydrometeorological Report 33, "Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian...," 1956.

PART XVII
DESIGN AND OPERATION OF MULTI-PURPOSE IMPOUNDMENTS TO PROVIDE LOW FLOW BENEFITS

38.0 Design and Operation of Multi-Purpose Impoundments to Provide Low Flow Benefits

38.1 Determination of 5-Year 30-Day Low Flow

The objective is to determine the 5-year 30-day low flow from the project under pre-development conditions. The 5-year 30- day low flow is the average flow during the most critical 30- day period of a drought with 5-year return frequency. If substantial streamflow records exist at the project site, the 5-year 30-day flow can be determined using statistical analysis. In most cases, however, such data does not exist and one of the following procedures may be used by the applicant.

Method 1: Use average 5-year, 30-day flow contribution based on location of project.

1. Determine the total land area (both project acreage and other off-site land) contributing water to stream at the location of the impoundment (square miles).

2. From Figure 38.1-1, determine the average 5-year, 30-day low flow per square mile in the region of the project, q (cfs/sq.mi.).

3. Q(cfs) = Area Contributing to Impoundment X q.

Method 2: Use nearest streamflow data.

1. Determine the total land area (both project and other lands draining into project) contributing water to the stream at the location of the impoundment.

2. Obtain the following information from the District:

   a. The 5-year, 30-day low flow in the receiving water at the nearest stream gage location to the project site.

   b. The total area contributing streamflow to the receiving water at the stream gage location.

3. Determine the pre-development 5-year low flow from the project site as:

$$Q = \frac{\text{Area Contributing to Impoundment}}{\text{Area Contributing to Stream Gage}} \times \text{5-year, 30 day low flow at stream gage}$$

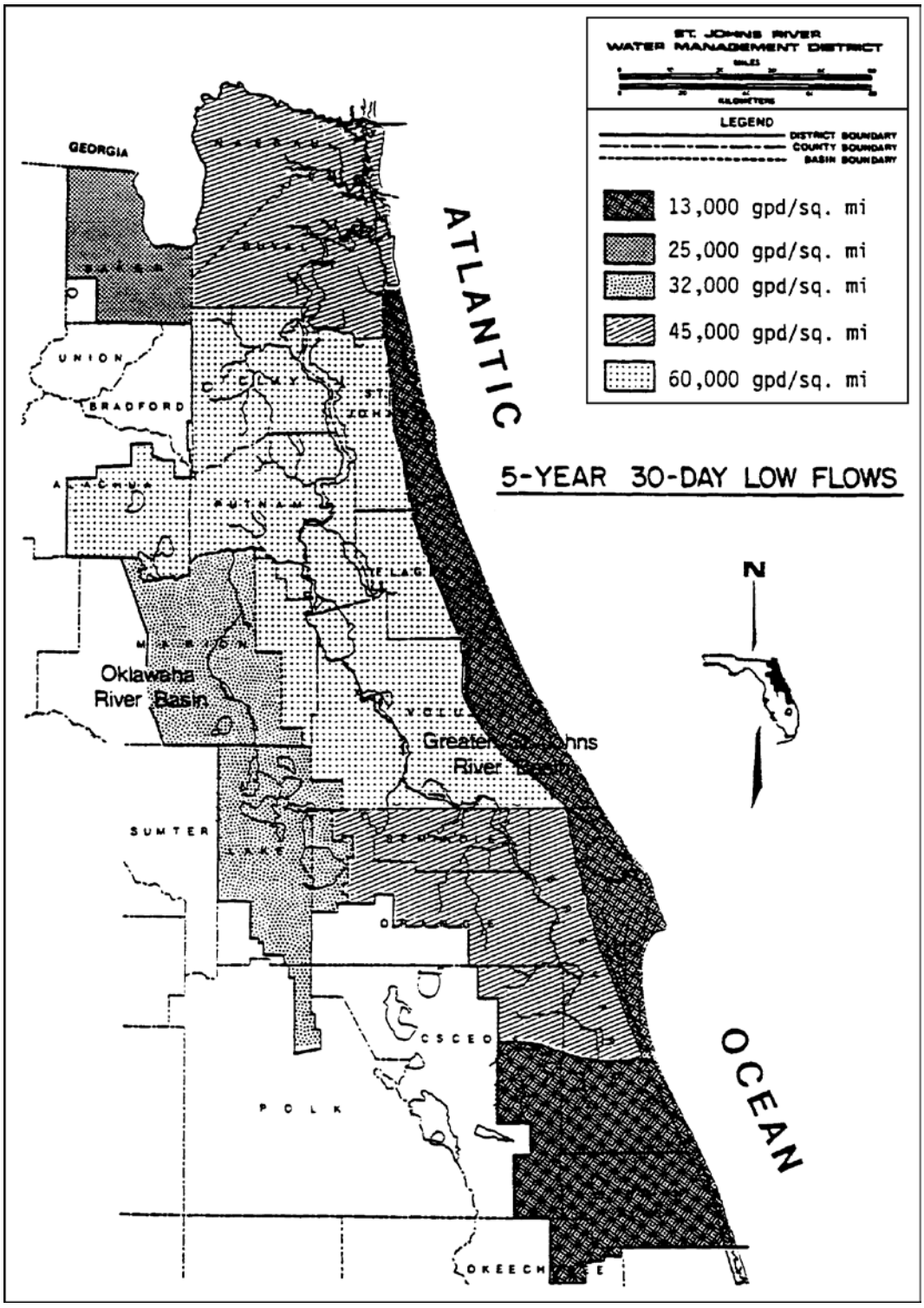

Figure 38.1-1 Average 5-Year, 30-Day Low Flow Contribution Per Square Mile

An example: A 6.2 square mile agricultural project is proposed in eastern Osceola County as shown in Figure 38.1-2. An impoundment of a stream (with streamflow during the 5-year, 30- day drought frequency) is proposed for stormwater management and irrigation benefits. The pre-development 5-year, 30-day low flow at the outlet of the impoundment is calculated below:

Using Method 1: (see Figure 38.1-1)

$$Q = 8.4 \text{ sq. mi. X } 0.07 \text{ cfs/sq. mi.} = 0.6 \text{ cfs}$$

Using Method 2:

$$\text{At stream gage, 5-year, 30-day low flow} = 1.4 \text{ cfs}$$

$$Q = \frac{8.4}{17.4} \times 1.4 = 0.7 \, cfs$$

38.2 Design Guidelines

The criteria in subsection 3.5.1 specifies that the structure must be designed so as to provide a minimum low flow discharge as determined in the previous section. The following guidelines should be considered in the design: 1) the outlet structure should provide the capability of discharging the 5- year, 30-day low flow (as calculated in the previous section) when the water storage is at the average dry season design stage (the stage corresponding to the average conservation storage during the dry season); 2) the outlet structure should provide for the discharge of all available impounded water.

A typical design of an impoundment according to these guidelines is shown in Figure 38.2-1. A gated culvert is at the bottom of the impoundment to provide for discharge of available water to maintain historical low flows. The culvert would be sized to discharge the 5-year, 30-day low flow discharge when the impoundment is at the average dry season design stage (the stage corresponding to the permanent storage during the dry season).

38.3 Operation of Impoundment to Provide Necessary Low Flow

In order to assist in the preservation of existing low flow conditions in the receiving water, the minimum low flow discharge should occur whenever water is available in the impoundment. However, low flow discharge may be discontinued, if desired, during periods when low streamflow conditions are not critical. This period will be presumed to be during the months of June through October unless a water shortage condition is declared by the District.

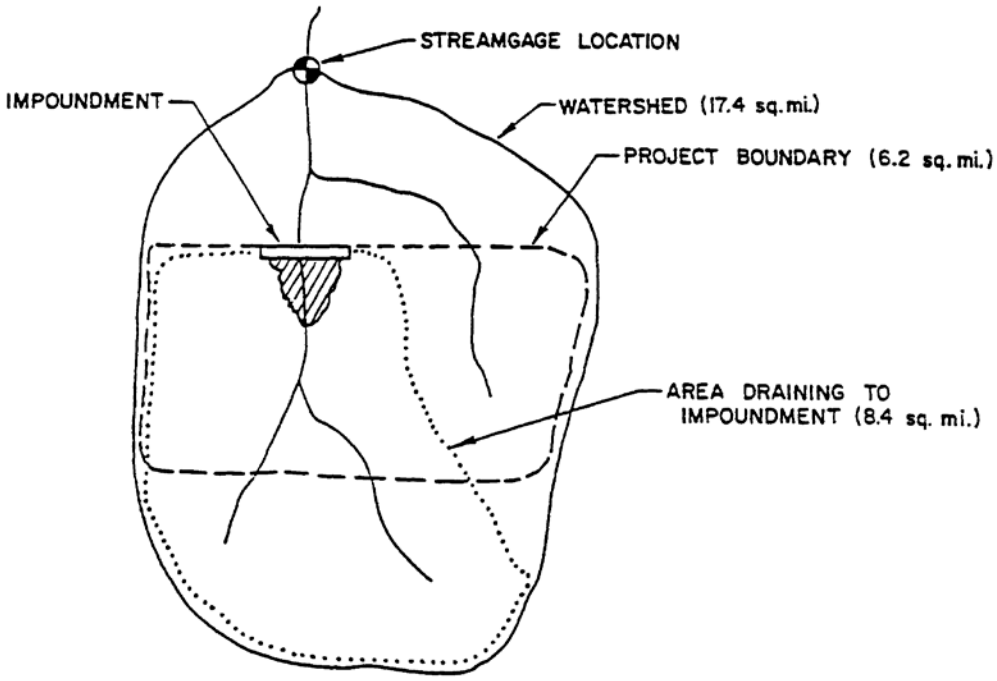

Figure 38.1-2 Example 6.2 Square Mile Agricultural Project

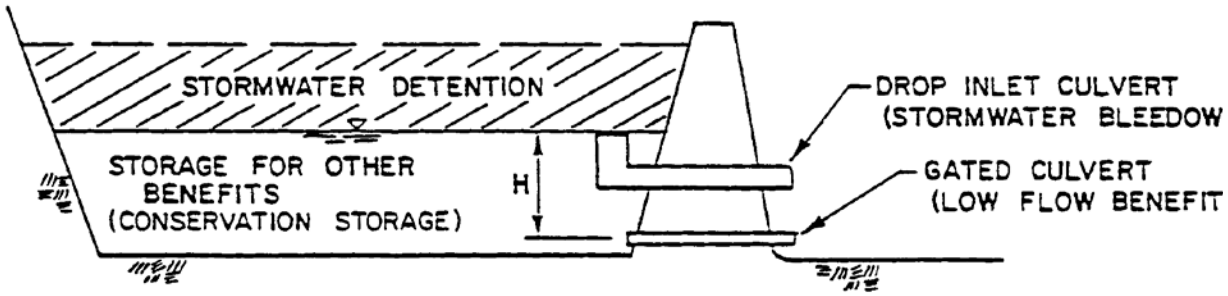

Figure 38.2-1 Typical Design Elements in Multi-Purpose Impoundment

The actual low flow discharge made from the impoundment will depend on the current water stage in the impoundment. When water storage in the impoundment is below the average dry season design stage, actual discharge may be less than the 5-year, 30-day low flow discharge. The discharge will be made according to the stage-discharge relationship (provided by the applicant) for the particular outlet structure.

PART XVIII
FLEXIBILITY FOR STATE TRANSPORTATION PROJECTS AND FACILITIES

39.0 Flexibility for State Transportation Projects and Facilities

State linear transportation projects and facilities (collectively referred to as "projects" in this section) often have unique design limitations. In recognition of this, subsection 373.413(6), F.S. requires the Agency to consider and balance the expenditure of public funds for stormwater treatment with the benefits to the public in providing the most cost-efficient and effective method of achieving the treatment objectives of stormwater management systems when reviewing such projects. To accomplish this, alternatives to on-site treatment for water quality will be considered including regional stormwater treatment systems, off-site compensating treatment, and incorporation of off-site runoff into the treatment system for the project.

The incorporation of comingling of off-site runoff into the treatment system for the project is often a more cost effective design when compared to routing off-site runoff around the system. In most cases the comingling of off-site stormwater runoff into the system will also provide for increased pollutant removal when compared to the design option of routing it around the treatment system even if the treatment system is designed to only meet the design and performance standards of Volume II for the runoff from just the on-site project area. However, for undeveloped or unimproved offsite areas co-mingling into an onsite FDOT retention type treatment system, the design capacity of the on-site system may need to be evaluated in order to ensure that there is no harm to the existing conditions. Such instances should be evaluated on a case by case basis.

C. DEP GUIDANCE DOCUMENTS

October 1, 2013

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

4049 Reid Street

Palatka, FL 32177-1429

(386) 329-4500

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

TO: George Roberts, Chair, NWFWMD
Jon P. Steverson, Executive Director, NWFWMD
Donald J. Quincy, Chair, SRWMD
Ann Shortelle, Executive Director, SRWMD
Lad Daniels, Chair, SJRWMD
Hans G. Tanzler III, Executive Director, SJRWMD
Carlos Beruff, Chair, SWFWMD
Blake Guillory, Executive Director, SWFWMD
Daniel O'Keefe, Chair, SFWMD
Ernie Barnett, Interim Executive Director, SFWMD

THROUGH: Herschel T. Vinyard Jr.
Secretary

FROM: Greg Munson
Deputy Secretary, Water Policy and Ecosystem Restoration

SUBJECT: Guidance on Proposed Implementation of Statutory Provision for Treatment of Offsite Flows to New or Altered Linear Transportation Projects

DATE: August 13, 2013

Treatment of stormwater run-off from state roads and other locations has long been critical to protecting our state's water. A variety of treatment strategies has been, and will continue to be, an important tool in that treatment. HB 599 (2012) provides the Florida Department of Environmental Protection (FDEP) and the Florida Department of Transportation (FDOT) the opportunity to provide greater environmental benefit within the existing stormwater projects, and this guidance memorandum is intended to achieve those benefits.

This guidance also recognizes the importance of coordination between the FDEP, the FDOT, and each water management district in providing the most cost-efficient and effective method for water quality treatment in FDOT's stormwater management systems. This coordination also will result in an overall benefit to the environment.

Background

HB 599 (2012), enacted as Chapter 2012-174, Laws of Florida, amended Chapter 373, F.S. to create the following provision as Section 373.413(6):

> *It is the intent of the Legislature that the governing board or department exercise flexibility in the permitting of stormwater management systems associated with the construction or*

alteration of systems serving state transportation projects and facilities. Because of the unique limitations of linear facilities, the governing board or department shall balance the expenditure of public funds for stormwater treatment for state transportation projects and facilities with the benefits to the public in providing the most cost-efficient and effective method of achieving the treatment objectives. In consideration thereof, the governing board or department shall allow alternatives to onsite treatment, including, but not limited to, regional stormwater treatment systems. ***The Department of Transportation is responsible for treating stormwater generated from state transportation projects but is not responsible for the abatement of pollutants and flows entering its stormwater management systems from offsite sources; however, this subsection does not prohibit the Department of Transportation from receiving and managing such pollutants and flows when cost effective and prudent.*** *Further, in association with right-of-way acquisition for state transportation projects, the Department of Transportation is responsible for providing stormwater treatment and attenuation for the acquired right-of-way but is not responsible for modifying permits for adjacent lands affected by right-of-way acquisition when it is not the permittee. The governing board or department may establish, by rule, specific criteria to implement the management and treatment alternatives and activities under this subsection.*

This memo proposes an implementation strategy for that portion of the statute, which addresses offsite flows (see bolded section). This statutory provision recognizes that, similar to any other type of new construction or development project, FDOT must treat the stormwater flows generated from a transportation project. It is expected that such treatment will satisfy the requirements of the ERP rules, including the presumptive and other technical criteria found in the various Applicant's Handbook as implemented by the water management districts (WMDs). FDEP supports adherence to these requirements.

This provision also states that FDOT is not responsible for treating offsite flows ("abatement of pollutants and flows") which enter its project area from properties outside of its right-of-way that would otherwise normally discharge to, or in the direction of, the FDOT project area. FDOT generally has four options in dealing with offsite flows that would be intercepted by a linear transportation project:

1) Bypass offsite flows around the project's treatment system;
2) Accept offsite flows and direct them to a treatment system that is designed to treat the transportation project and the entire offsite flow;
3) Accept offsite flows and direct them to a treatment system that is designed to treat only the project; or
4) Accept offsite flows and direct them to a treatment system that is designed to treat the project and partially treat the off-site property.

We believe this statute intends to allow any of the four options at FDOT's discretion based on their analysis of "cost effective and prudent" as long as the minimum treatment required for the project, i.e. "*treating stormwater generated from state transportation project,*" is provided.

Empirical nutrient loading model results (Harper methodology) show that, in all cases involving wet detention treatment, even when the treatment facility is designed for only the project area, there is an overall environmental benefit achieved by comingling (i.e. the net pollutant reduction is greater).

The same modeling shows that for retention type treatment systems, when the offsite lands provide equal or greater nutrient loading when compared to the FDOT project, there is also an overall environmental benefit achieved by comingling even when the treatment facility is designed for only the project area. Thus, in these cases, the water quality at downstream points of discharge from the comingled system will be equal to or better than those systems that by-pass offsite flows. Based upon these results, FDEP supports allowing comingling in these cases without requiring further analysis as long as the proposed treatment pond meets the ERP design requirements for the run-off from the project area and results in an overall environmental benefit.

The same empirical nutrient loading model results (Harper methodology) show that where undeveloped or unimproved offsite lands flow into onsite FDOT dry retention ponds, the water quality at downstream points of discharge from the comingled system may, in some cases, be worse than those systems that by-pass offsite flows. As such, these designs should be evaluated on a case by case basis to ensure that environmental protection is not diminished. FDOT estimates that this situation occurs in a small portion of its projects (estimated 6 to 10 projects in a year) and has agreed to work with FDEP for at least a one year period to have each of these "case by case" projects reviewed by a coordination team composed of the FDEP Stormwater Engineer, FDOT Central Office Drainage Engineer, FDOT District Drainage Engineer, WMD reviewer, and project engineer. The goal of the group is to maintain a consistent application across the state with the FDEP representative and the FDOT Central Office representative being a constant and to provide data that may allow us to update this guidance in the future.

Additionally, FDEP has encouraged project "planning and update meetings" to share information between FDOT Districts, the WMDs and FDEP District Offices, and these meetings are frequently occurring. The planning and update meetings will help to address and alleviate concerns about offsite impacts to water quality during the permitting of these projects.

Proposed Implementation

There have been many discussions between FDEP and WMD staff, as well as with FDOT staff, related to implementing s. 373.413(6), F.S., including consideration of drafting rule language under Statewide ERP. The current draft of the proposed Statewide ERP rule only makes a reference to the statutory language. Since rulemaking is discretionary under the statute, it is proposed that a "design aid" be added to the Applicant Handbook in lieu of specific rule language. The current recommended design aid is as follows:

> *State linear transportation projects and facilities (collectively referred to as "projects" in this section) often have unique design limitations. In recognition of this, subsection 373.413(6), F.S. requires the Agency to consider and balance the expenditure of public funds for stormwater treatment with the benefits to the public in providing the most cost-efficient and effective method of achieving the treatment objectives of stormwater management systems when reviewing such projects. To accomplish this, alternatives to on-site treatment for water quality will be considered including regional stormwater treatment systems, off-site compensating treatment, and incorporation of off-site runoff into the treatment system for the project.*

The incorporation or comingling of off-site runoff into the treatment system for the project is often a more cost effective design when compared to routing off-site runoff around the system. In most cases the comingling of off-site stormwater runoff into the system will also provide for increased pollutant removal when compared to the design option of routing it around the treatment system even if the treatment system is designed to only meet the design and performance standards of Volume II for the runoff from just the on-site project area. However, for undeveloped or unimproved offsite areas co-mingling into an onsite FDOT retention type treatment system, the design capacity of the on-site system may need to be evaluated in order to ensure that there is no harm to the existing conditions. Such instances should be evaluated on a case by case basis.

This design aid language is proposed as an addendum to the rule package and not a specific rule as part of Chapter 62-330, FAC (including the Applicant's Handbooks).

cc: Ananth Prasad, Secretary, FDOT
Jeff Littlejohn, P.E., Deputy Secretary, Regulatory Programs, FDEP
Tom Beck, Ph.D., AICP, Director, Office of Water Policy, FDEP
Mark P. Thomasson, P.E., Director, Water Resources Management, FDEP
Rick Renna, P.E., State Hydraulics Engineer, FDOT

2. [Placeholder for Guidance related to Dredge Disposal Sites]

D. FORMS

October 1, 2013

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

4049 Reid Street

Palatka, FL 32177-1429

(386) 329-4500

District Form 40C-41.063(4)

Local Government Notification

LOCAL GOVERNMENT NOTIFICATION

_____ hereby provides notification that the
(name of local governmental entity)

development proposal, submitted to the St. Johns River Water Management District, known as _____
(project name)

being proposed by _____
(applicant name)

which is located in Section _____ Township _____ Range _____ and which Consists of _____ acres has been reviewed by the local government. After such review, all necessary final action has been taken by the government entity to determine, and such determination has been made, that the proposed activity is consistent with the local comprehensive plan and is in compliance with any local development regulation in effect in the area where the development will take place.

_____
Name and title of officer or employee of Local Government authorized to execute notification

_____
Signature of above officer or employee

_____
Date

40C-44.061(2)(d)1.

Form EN-14M

St. Johns River Water Management District
Division of Regulatory Services

Condition Compliance

Permit Issued to: ______________________________ Permit Number: ____________________________ Date: ____________________
Month Year

Operations Logs/Day of Month/Please show day of month and time pump(s) is turned on and day of month and time pump(s) is turned off.

Pump No.	Indicate am or pm	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	29	30	31	Total Hours
	Time on																																
	Time off																																
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Form 40C-44.061(2)(d)2.

Form EN-52

St. Johns River Water Management District
Division of Regulatory Services

Condition Compliance

Permit Issued to: _____ Permit Number: _____ Date: _____
Month Year

Operations Logs/Day of Month/Please show day of month and water level

Pond Number Or Name	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	29	30	31

Form 40C-44.101(2)

SUPPLEMENTAL INFORMATION FOR AGRICULURAL SYSTEMS

SUPPLEMENTAL INFORMATION FOR AGRICULTURAL SYSTEMS

Instructions: This form is a supplement for agricultural systems that meet the requirements of 40C-44 (F.A.C.). The information required by this supplement is in addition to the information required by Section A of the ERP application (Form 62-330.060(1)). ***Existing agricultural systems should complete Part 1 of this supplement. New agricultural projects should complete Part 2 of this supplement.*** Both existing and proposed agricultural projects should complete Tables 1 and 2 as applicable. If the project exceeds one or more of the thresholds identified in paragraphs (a) through (h) or paragraph (j) of subsection 62-330.020(2), F.A.C., or in subsection 1.2.2 of Volume II, additional sections of the ERP application (Form 62-330.060(1)) must also be completed, as applicable.

PART 1: EXISTING AGRICULTURAL OPERATIONS

A. Does this agricultural operation have a consent order? If yes, please provide the permit or consent order number ( ) and, for consent orders, the expiration date: .

B. Provide a map, or maps, delineating:

1. ☐ A general location map (USGS 7 ½' Quadrangle) delineating the agricultural operation and nearby highways and water bodies.
2. ☐ Property boundaries of the agricultural operation on an aerial photo
3. ☐ The existing topography, drainage patterns and basin boundaries within the agricultural operation. Identify and quantify the area of any lands outside the agricultural operation which contribute runoff to the agricultural operation.
4. ☐ The existing land use (crop) or land cover.
5. ☐ The location of existing surface water works (ditches, canals, levees, pumps, ponds, irrigation gates, etc.).
6. ☐ Rights-of-way and easements for the existing drainage system, if any.
7. ☐ Soil types used to determine hydrologic soil group.
8. ☐ For agricultural operations proposing minor alteration, wetlands delineated on a land cover map.

C. ☐ Provide drawings depicting existing surface water works (ditches, canals, levees, pumps, ponds, outfall structures, irrigation gates, etc.). Provide approximate levee cross-sections and top elevations, ditch and canal side slopes and bottom elevations, pump intake inverts, irrigation gate inverts, discharge structure control elevations, etc., with supporting documentation. If this information has been supplied to the District previously as an As-Built drawing and no subsequent changes have been made, reference to the appropriate permit number is sufficient.

D. ☐ Provide all available pump hour records or maintenance records to document the level and frequency of pump use. Provide pump curves, flow measurements or other information to document pump capacity. For data that has previously been supplied to the District, in compliance with a permit or Consent Order, reference to the appropriate permit number is sufficient.

E. ☐ Provide available records of pond stages. For data that has previously been supplied to the District, in compliance with a permit or Consent Order, reference the appropriate permit number is sufficient.

F. ☐ Describe any existing treatment facilities (ponds, grassed waterways, overland flow areas, wetland filtration, etc.) for the agricultural operation.

G. ☐ Provide copies of all available water quality data which characterizes discharge off-site (to surface or groundwater). For data which has been supplied to the District previously in compliance with a permit condition or Consent Order, reference to the appropriate permit number is sufficient.

H. ☐ Is the agricultural operation used for disposal or reuse of domestic wastewater or sludge? If yes, provide copies of relevant documents or contracts.

I. ☐ Provide the name(s) of the water body which receives discharge from the system.

J. ☐ Develop a monthly water budget for the agricultural operation for an average rainfall year. The water budget should be a composite of water budgets developed for each land use. Include all sources of incoming water, the proportion of rain that is effective and the portion that would run off, and all mechanisms by which water is removed.

1. ☐ Parameters which must be considered for land areas are:

   a. ☐ Rainfall
   b. ☐ Effective rainfall
   c. ☐ Surface runoff entering from other sites
   d. ☐ Incoming groundwater seepage
   e. ☐ Irrigation volume (gross and net) from surface sources
   f. ☐ Irrigation volume (gross and net) from groundwater sources
   g. ☐ Irrigation efficiency, based on irrigation method
   h. ☐ Potential evapotranspiration
   i. ☐ Actual evapotranspiration
   j. ☐ Excess water leaving the fields/groves

2. ☐ Parameters which must be considered for water bodies (ponds):

   a. ☐ Rainfall
   b. ☐ Evaporation
   c. ☐ Water volume returned to fields Water stage
   d. ☐ Stored volume

3. ☐ For each parameter, give the reference or methodology used to determine its value. Clearly state acreage for each land use and water body. Select the first month of the water budget such that the assumed initial volume of the on-site water bodies is equal to their final volume. Show computational checks on the overall water budget and the individual water budgets for each field or water body.

4. ☐ Compute the decrease in off-site discharge credited to any detention ponds.

K. Does the agricultural operation have a currently valid Conservation Plan? ☐ Yes ☐ No. To what extent has the Conservation Plan been implemented? Attach a copy of the Conservation Plan, if available.

L. If applicable, describe minor alterations needed to implement a management practice recommended by a Conservation Plan or listed in Section 40C-44.066, F.A.C. If the applicant is not the property owner (e.g., property lessee), provide lease agreement or other document which authorizes the proposed alterations.

M. Complete Table 1 and 2, as applicable.

PART 2: PROPOSED AGRICULTURAL OPERATIONS (construction or major alterations)

A. Indicate any previous consent orders for this project area. Include issuance and expiration dates.

B. Provide pre-development site information, including:

1. ☐ A map, or maps of the same scale, of the project area and vicinity (at a scale no smaller than one inch equals 800' and on a sheet(s) no larger than 24" x 36") delineating:

    a. ☐ Existing land use or land cover
    b. ☐ Existing topography, drainage patterns and basin boundaries within the agricultural operation
    c. ☐ The area of any lands outside the agricultural operation which contribute runoff to the agricultural operation
    d. ☐ The existing surface water works (ditches, canals, levees, pumps, ponds, irrigation gates, etc.)
    e. ☐ Rights-of-way and easements for the existing drainage system, if any
    f. ☐ Wetlands delineated on a land cover map at the same scale as the site plan
    g. ☐ Soil types used to determine hydrologic soil group
    h. ☐ Normal and wet season water table elevations
    i. ☐ Ten year and, if applicable, 100 year flood elevation and floodplain boundary of any lake, stream or other watercourse located on or adjacent to the site
    j. ☐ Limits of waters of the state

2. ☐ Provide a recent aerial photograph at the same scale as the site plan, with project boundaries delineated on the photograph.

C. Provide a description of the on-site wetlands, including:

1. The acreage of wetlands existing on the site:

2. A discussion of the proposed alterations or disturbances to the wetland areas:

3. A discussion of the wetlands that will be preserved in their natural or existing state:

D. Provide post-development site information, including construction plans and specifications (on sheets no larger than 24" x 36"). Include:

1. ☐ Proposed land use and land cover.

2. ☐ Proposed construction schedule, including sequence of any major phases, an estimated start and completion date.

3. ☐ Location, size and design capacity of all surface water works (ditches, canals, levees, pumps, ponds, outfall structures, irrigation gates, etc.).

4. ☐ Location and details of all water control structures, control elevations of the control structures, and any seasonal water level regulation schedules.

5. ☐ Post-development drainage basin boundaries showing the direction of flows, taking into account any off-site runoff being directed through or around the system.

6. ☐ Location of all water bodies, with details of size, side slopes and depths.

7. ☐ Provide pump specifications and operating curves for a range of possible operating conditions.

8. ☐ Rights-of-way and easements for the system, including all on-site and off-site areas to be reserved for water management purposes.

9. ☐ Any temporary construction which might affect the surface water management system prior to completion of the system.

10. ☐ All erosion and sediment control measures to be implemented during each phase of construction prior to completion of the system, intended to prevent violations of state water quality standards.

11. ☐ Proposed maintenance practices and schedules

12. ☐ If applicable, proposed wetland mitigation plans and details

E. Provide design analysis, including:

1. ☐ Pre-development and post-development drainage calculations as follows:

   a. ☐ Runoff characteristics, including area, runoff curve number or runoff coefficient, SCS hydrologic soil group and time of concentration for each drainage hydrologic unit

   b. ☐ Water table elevations (normal and average wet season) including aerial extent and magnitude of any proposed water table drawdown.

   c. ☐ Receiving water elevations (normal, wet season, design storm).

   d. ☐ Design storms used including duration, frequency, and time distribution.

   e. ☐ Runoff hydrograph(s) for each drainage basin for all required storm events.

   f. ☐ State-storage computations for any storage area, such as a reservoir, detention area or channel storage, used in storage routing.

   g. ☐ Stage-discharge computations for any storage areas at a selected control point, such as structure control or natural restriction.

   h. ☐ Flood routings through on-site conveyance and storage areas.

   i. ☐ Water storage profiles and elevations in the primary surface water management system for the required design storm event(s).

j. ☐ Runoff peak rates and volumes discharged from the system for the design storm event(s).

2. ☐ Calculations to demonstrate water quality treatment in compliance with Section 40C-44.026.

3. ☐ Engineering analysis of floodplain storage and conveyance, if applicable, including:

a. ☐ Hydraulic calculations for all proposed traversing works.

b. ☐ Backwater water surface profiles showing upstream impact of traversing works.

c. ☐ Location and volume of encroachment with 10 year floodplain.

d. ☐ Plan for compensating storage.

e. ☐ Provide a description of the engineering methodology, assumptions and references and a copy of all such computations, engineering plans and specifications used to analyze the system. If a computer program is used for the analysis, provide the name and a description of the program.

F. ☐ Develop a monthly water budget for the agricultural operation for an average rainfall year. The water budget should be a composite of water budgets developed for each land use. Include all sources of incoming water, the proportion of rain that is effective and the portion that would run off, and all mechanisms by which water is removed.

1. ☐ Parameters which must be considered for land areas are:

a. ☐ Rainfall
b. ☐ Effective rainfall
c. ☐ Surface runoff entering from other sites
d. ☐ Incoming groundwater seepage
e. ☐ Irrigation volume (gross and net) from surface sources
f. ☐ Irrigation volume (gross and net) from groundwater sources
g. ☐ Irrigation efficiency, based on irrigation method
h. ☐ Potential evapotranspiration
i. ☐ Actual evapotranspiration
j. ☐ Excess water leaving the fields/groves

2. ☐ Parameters which must be considered for water bodies (ponds):

a. ☐ Rainfall
b. ☐ Evaporation
c. ☐ Water volume returned to fields
d. ☐ Water stage
e. ☐ Stored volume

3. ☐ For each parameter, give the reference or methodology used to determine its value. Clearly state acreage for each land use and water body. Select the first month of the water budget such that the assumed initial volume of the on-site water bodies is equal to their final

volume. Show computational checks on the overall water budget and the individual water budgets for each field or water body.

4. ☐ Compute the decrease in off-site discharge credited to any detention ponds.

G. ☐ Provide Special Basin Information, including:

1. ☐ Wekiva Recharge Protection Basin – For projects within the Wekiva Recharge Protection Basin (basin boundary defined in Chapter 40C-41, F.A.C.), provide design analysis to demonstrate compliance with Wekiva Recharge Protection criteria, including: pre- and post-development recharge from the project area.

2. ☐ Lake Apopka Hydrologic Basin – For projects within the Lake Apopka Hydrologic Basin (basin boundary defined in Chapter 40C-41, F.A.C.) or that will discharge water to Lake Apopka or its tributaries, provide design analysis to demonstrate compliance with the Lake Apopka Hydrologic Basin criteria, including: pre-development total phosphorus and post-development total phosphorus discharged from the project area.

H. Complete Table 1 and 2, as applicable.

TABLE 1 - SUMMARY OF LAND USE AND AGRICULTURAL PRACTICES - ROW CROPS AND CITRUS - Typical Year

Parcel #: Acreage:

	Jan.	Feb.	March	April	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.
Crops For the Year planting dates harvesting dates												
Seed Bedding and Cultivation dates times type depth												
Fertilizer dates types rates												
Pesticides dates types rates												
Desired Water Table Depths during cropping during fallow												
Irrigation dates amount irrigation method water source												

Note: Parcel = land under the same crops and cultivation practices during the year.
Identify each parcel on a map.

TABLE 2 - SUMMARY OF LAND USE AND AGRICULTURAL PRACTICES – PASTURE -Typical Year

Parcel #: Acreage:

	Jan.	Feb.	March	April	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.
Pasture Rotation and Animal Density Months Cow/calf unit per acre												
Type of Vegetation And Condition												
Schedule of Pasture Management Practices (mowing, seeding, etc.)												
Fertilizer dates types rates												
Pesticides dates types rates												
Desired Water Table Depths during cropping during fallow												
Irrigation dates amount irrigation method water source water source												

Note: Parcel = land under the same crops and cultivation practices during the year.
Identify each parcel on a map.

E. RULES

June 1, 2018

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

4049 Reid Street

Palatka, FL 32177-1429

(386) 329-4500

CHAPTER 62-330
ENVIRONMENTAL RESOURCE PERMITTING

62-330.437	General Permit for the Installation of Fences
62-330.439	General Permit for Construction or Maintenance of Culverted Driveway or Roadway Crossings, and Bridges of Artificial Waterways
62-330.441	Noticed General Permit for Public Navigation Channel and Canal Infrastructure by the West Coast Inland Navigation District within Lee County (Transferred)
62-330.443	General Permit to the Florida Department of Transportation, Counties, and Municipalities for Minor Bridge Alteration, Placement, Replacement, Removal, Maintenance, and Operation
62-330.447	General Permit to the Florida Department of Transportation, Counties, and Municipalities for Minor Activities within Existing Rights-of-Way or Easements
62-330.448	General Permit to Counties and Municipalities to Pave Existing County or Municipally Owned and Maintained Roads, Including the Repair and Replacement of Bridges That Are Part of the Roadway
62-330.449	General Permit for Construction, Operation, Maintenance, Alteration, Abandonment or Removal of Airport Airside Stormwater Management Systems
62-330.450	General Permit for Construction, Alteration, and Operation of Urban Infill and Redevelopment Activities in Conformance with the Conceptual Approval Permit in Rule 62-330.055, F.A.C.
62-330.451	General Permit to Counties, Municipalities, and other Agencies to Conduct Stormwater Retrofit Activities
62-330.453	General Permit for Installation, Maintenance, Repair, and Removal of Underground Utility Lines
62-330.455	General Permit for the Construction of Aerial Pipeline, Cable, and Conduit Crossings of Certain Waters
62-330.457	General Permit for Subaqueous Utility Crossings of Artificial Waterways
62-330.458	General Permit for the Construction and Maintenance of Electric Power Lines by Electric Utilities
62-330.459	General Permit for Relocation of Aerial Electric and Communication Lines Associated with Road Improvement Projects
62-330.463	General Permit for Breaching Mosquito Control Impoundments and for the Construction and Operation of Culverts and Associated Water Control Structures in Mosquito Control Impoundments by Governmental Mosquito Control Agencies
62-330.467	General Permit for Breaching Mosquito Control Impoundments by Governmental Mosquito Control Agencies (Repealed)
62-330.474	General Permit for Certain Minor Activities
62-330.475	General Permit for Single-family Residential Activities in Isolated Wetlands
62-330.476	General Permit for Private Single-Family Residences within Jupiter Farms, Palm Beach County
62-330.477	General Permit for Single Family Residential Lots within the Indian Trail Water Control District
62-330.483	General Permit to the Department and Water Management Districts to Conduct Minor Activities
62-330.485	General Permit to the Department and Water Management Districts for Environmental Restoration or Enhancement
62-330.487	General Permit to the Department and Water Management Districts to Change Operating Schedules for Water Control Structures
62-330.488	General Permit to Governmental Entities for Certain Public Use Facilities at Public Natural Areas
62-330.490	General Permit for the Reclamation of Eligible Phosphate Lands Mined Before July 1, 1975
62-330.491	Noticed General Permit for Raising the Height of Existing Earthen Embankments for Impoundments at Facilities for Mining Sand and Limestone (Repealed)
62-330.492	General Permit for Prospecting for Limestone, Sand, and Peat
62-330.493	General Permit to Perform Prospecting Activities for Phosphate Minerals
62-330.494	General Permit for Temporary Dragline Crossings of Waterways for Mining Activities
62-330.495	General Permit for Low Water Crossings for Mining Activities
62-330.496	General Permit for Dry Borrow Pits of Less than Five Acres (Repealed)
62-330.500	General Permit for Construction, Operation, Maintenance, Alteration, Abandonment or Removal of Minor Silvicultural Surface Water Management Systems (Repealed)
62-330.501	General Permit for Temporary Agricultural Activities within the South Florida Water Management District

62-330.505	General Permit to the U.S. Forest Service for Minor Works within National Forests
62-330.550	General Permit for Construction, Operation and Maintenance of Nonproduction-related Agricultural Facilities
62-330.600	General Permit for the Construction of Artificial Reefs
62-330.602	General Permit for Installation and Maintenance of Intake and Discharge Pipes Associated with Marine Bivalve Facilities (Repealed)
62-330.630	General Permit to U.S. Army Corps of Engineers for Environmental Restoration or Enhancement Activities
62-330.631	General Permit to Governmental Entities for Limited Environmental Restoration or Enhancement Activities
62-330.632	General Permit for the Restoration, Establishment and Enhancement of Low Profile Oyster Habitat
62-330.635	General Permit for Soil Remediation
62-330.901	Noticed General Permit Forms (Repealed)

62-330.010 Purpose and Implementation.

(1) This chapter, together with the rules and all documents it incorporates by reference, implements the comprehensive, statewide environmental resource permit (ERP) program under section 373.4131, F.S.

(2) The ERP program governs the following: construction, alteration, operation, maintenance, repair, abandonment, and removal of stormwater management systems, dams, impoundments, reservoirs, appurtenant works, and works (including docks, piers, structures, dredging, and filling located in, on or over wetlands or other surface waters, as defined and delineated in chapter 62-340, F.A.C.) (any one or a combination of these may be collectively referred to throughout this chapter as “projects” or “systems”).

(3) The responsibilities for implementing this chapter are described in Operating and Delegation Agreements between the Department of Environmental Protection (“Department”), the water management districts (“Districts”), and local governments (“delegated local governments”). The Agreements are incorporated by reference in rule 62-113.100, F.A.C. The term “Agency” applies to the Department, a District, or a delegated local government, as applicable, throughout this chapter.

(4) This chapter is used in conjunction with an Applicant’s Handbook, in two volumes, as follows:

(a) Applicant’s Handbook Volume I, “General and Environmental” (hereinafter “Volume I”) applies statewide to all activities regulated under chapter 62-330, F.A.C. It includes explanations, procedures, guidance, standards, and criteria on what is regulated by this chapter, the types of permits available, how to submit an application or notice for a regulated activity to the Agencies, how applications and notices are reviewed, the standards and criteria for issuance, and permit duration and modification. Volume I, including Appendices G, H, and I only, is incorporated by reference herein, (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09390 and http://www.flrules.org/Gateway/reference.asp?No=Ref-09391).

(b) An Applicant’s Handbook Volume II (hereinafter “Volume II”), has been adopted for use within each District. Each District’s Volume II is incorporated by reference herein and in the rules listed below, which also are incorporated by reference herein. These rules and Handbook Volumes are available as provided in subsection (5), below.

1. Northwest Florida Water Management District – “Department of Environmental Protection and Northwest Florida Water Management District Environmental Resource Permit Applicant’s Handbook – Volume II (Design and Performance Standards Including Basin Design and Criteria),” including all appendices, is incorporated by reference herein (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09392 and http://www.flrules.org/Gateway/reference.asp?No=Ref-03173) or from the Agency as provided in subsection (5).

2. Suwannee River Water Management District, Applicant’s Handbook Volume II, is incorporated by reference herein, (August, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09398), and in subsection 40B-400.091(2), F.A.C., (October 14, 2013) (https://www.flrules.org/Gateway/reference.asp?No=Ref-02523).

3. St. Johns River Water Management District, Applicant’s Handbook Volume II, is incorporated by reference herein, (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09405), and in subsections 40C-4.091(1) (June 1, 2018) (https://www.flrules.org/Gateway/reference.asp?No=Ref-09411), and 40C-44.091(1), F.A.C., (June 1, 2018) (https://www.flrules.org/Gateway/reference.asp?No=Ref-09410).

4. Southwest Florida Water Management District, Applicant’s Handbook Volume II, is incorporated by reference herein, (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-03176), and in rule 40D-4.091, F.A.C., (October 1, 2013) (https://www.flrules.org/Gateway/reference.asp?No=Ref-02527).

5. South Florida Water Management District, Applicant's Handbook Volume II, including Appendices A through D, is incorporated by reference herein, (October 1, 2013) (https://www.flrules.org/Gateway/reference.asp?No=Ref-02528) and in paragraph 40E-4.091(1)(a), F.A.C., (May 22, 2016) (https://www.flrules.org/Gateway/reference.asp?No=Ref-02529).
A copy of the incorporated material identified above may be obtained from the Agency Internet site, https://floridadep.gov/water/water/content/water-resource-management-rules#ERP, or as described in subsection 62-330.010(5), F.A.C.

(5) A copy of Volumes I and II and the other Agreements, rules, forms, and other documents incorporated by reference in this chapter also may be obtained from the Agency Internet site or by contacting staff in an Agency office identified in Appendix A of Volume I.

(6) This chapter explains how to submit notices and applications for activities regulated under part IV of chapter 373, F.S., and provides the standards for Agency review and action, which must not be harmful to the water resources and not be inconsistent with the overall objectives of the Agency. This chapter also includes procedures for petitions for a formal determination of the landward extent of wetlands and surface waters under chapter 62-340, F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.418, 373.4131, 373.4145, 403.805(1) FS. Law Implemented 373.409, 373.413, 373.4131, 373.414(9), 373.4141, 373.4142, 373.4145, 373.416, 373.423, 373.426, 373.428, 373.429, 373.441 FS. History–New 10-1-13, Amended 6-1-18.

62-330.020 Regulated Activities.

(1) A permit under this chapter is not required for activities that qualify for:

(a) Operation and routine custodial maintenance of projects legally in existence under chapter 403 or part IV of chapter 373, F.S., provided the terms and conditions of the permit, exemption, or other authorization for such projects continue to be met, and provided the activity is conducted in a manner that does not cause violations of state water quality standards. However, this exemption shall not apply to any project that is altered, modified, expanded, abandoned, or removed;

(b) An exemption listed in rule 62-330.051 or 62-330.0511, F.A.C., or in section 1.3 (District-specific exemptions) of the applicable Volume II;

(c) The "grandfathering" provisions of section 373.4131(4), 373.414(11), (12)(a), (13), (14), (15), or (16), F.S.; or

(d) The "10/2" general permit for upland stormwater systems authorized in section 403.814(12), F.S.

(2) Unless the activity qualifies under subsection (1), above, a permit is required prior to the construction, alteration, operation, maintenance, removal, or abandonment of any project that, by itself or in combination with an activity conducted after October 1, 2013, cumulatively results in any of the following:

(a) Any project in, on, or over wetlands or other surface waters;

(b) A total of more than 4,000 square feet of impervious and semi-impervious surface areas subject to vehicular traffic;

(c) A total of more than 9,000 square feet of impervious and semi-impervious surface area;

(d) A total project area of more than five acres;

(e) A capability of impounding more than 40 acre-feet of water;

(f) Any dam having a height of more than 10 feet, as measured from the lowest elevation of the downstream toe to the dam crest;

(g) Any project that is part of a larger common plan of development or sale;

(h) Any dry storage facility storing 10 or more vessels that is functionally associated with a boat launching area;

(i) Any project exceeding the thresholds in section 1.2 (District-specific thresholds) of the applicable Volume II, or

(j) Any modification or alteration of a project previously permitted under part IV of chapter 373, F.S.

(3) Construction and operation of projects under subsection (2), above, are subject to the additional limitations in paragraph 3.1.4(f) of Volume I.

(4) The following types of permits are available:

(a) A general permit, as provided in rule 62-330.052, F.A.C., and rules 62-330.410 through 62-330.635, F.A.C.;

(b) An individual permit, as provided in rule 62-330.054, F.A.C.; and,

(c) A conceptual approval permit, as provided in rule 62-330.055 or 62-330.056, F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.117, 373.118, 373.409, 373.413, 373.4131, 373.4132, 373.4145, 373.416, 373.426, 403.0877 FS. History–New 10-1-13, Amended 6-1-18.

62-330.021 Definitions.

Terms used in this chapter are defined in section 2.0 of Volume I and section 2.1 of Volume II.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9),373.4141, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4141, 373.4145, 373.416, 373.418, 373.426 FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.021, Amended 10-1-13.

62-330.050 Procedures for Review and Agency Action on Exemption Requests.

(1) A notice to the Agency is not required to conduct an activity that is exempt under rule 62-330.051, F.A.C., except where required in a specific exemption. Persons are encouraged, but not required, to use any available electronic self-certification service of the Agency to confirm that the activity meets the exemption.

(2) If a person desires Agency verification of qualification to conduct an exempt activity (other than for silviculture, for which the procedures in rule 62-330.0511, F.A.C., apply), and a self-certification is not available or the person chooses not to use a self-certification, they may submit a written or electronic Form 62-330.050(1) – "Request for Verification of an Exemption," (June 1, 2018), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-09360), or a letter that clearly requests an exemption verification. A copy of the form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. Such request must include:

(a) The processing fee prescribed in rule 62-330.071, F.A.C. Only one exemption verification processing fee shall be assessed if the request contains multiple exempt activity types on a single parcel;

(b) A location map(s) of sufficient detail to allow someone who is unfamiliar with the area to locate the site of the activity;

(c) Drawings, calculations, and other supporting information to clearly depict and describe the proposed activities;

(d) The tax parcel identification number from the local government tax rolls;

(e) Contact information for the person requesting the verification; and,

(f) Authorization signed by the property owner allowing Agency staff to inspect the location of the proposed activities.

(3) Additional information on completing and submitting a request for verification of an exemption is contained in sections 3.2, 4.2, 4.2.1, 4.3, and 4.4 of Volume I.

(4) The Agency shall take reasonable efforts to determine within 30 days of receipt of a request whether the submitted materials demonstrate the activity qualifies for an exemption or, if they do not, what information would enable the Agency to make such a determination. If those materials are not received within 60 days of the Agency's request, the Agency shall advise the person that it cannot verify that the activity qualifies for an exemption. The materials submitted and responses received shall not be considered an application for a general, conceptual approval, or individual permit unless requested in writing.

(5) If, after receipt of an application for a permit, the Agency determines the proposed activity qualifies in whole for an exemption under this chapter, the Agency shall make such determination within 30 days of receipt of the application and refund any processing fees received in excess of those required under rule 62-330.071, F.A.C.

(6) The Agency will consider exempt activities included in an application to conduct other activities as part of an entire application requiring a permit, and will review and act upon the entire application at one time. However, an applicant may request the Agency separately determine whether specific activities that are part of the application qualify for an exemption. In such a case, the applicant shall pay an additional processing fee for the exemption verification, but only one additional exemption verification processing fee will be required even if more than one kind of exempt activity is included. In accordance with section 10.27(d) of Volume I, the Agency with consider the secondary impacts arising from activities described in section 403.813(1), F.S., that are very closely linked and causally related to the activities proposed in the application.

(7) The Agency's determination of qualification for an exemption is subject to chapter 120, F.S. Self-certification is not an Agency action subject to chapter 120, F.S., unless the Agency determines the self-certification does not meet all of its applicable terms and conditions.

(8) Activities conducted in accordance with an exemption under this chapter remain subject to other applicable permitting, authorization, and performance requirements (including, but not limited to, those governing the "take" of listed species) of the Agencies, the Board of Trustees, and other federal, state, and local government entities.

(9) The following apply when specified in an exemption in rule 62-330.051, F.A.C.:

(a) Activities shall not exceed a permitting threshold in section 1.2 of the applicable Volume II;

(b) Construction, alteration, and operation shall not:

1. Adversely impound or obstruct existing water flow, cause adverse impacts to existing surface water storage and conveyance capabilities, or otherwise cause adverse water quantity or flooding impacts to receiving water and adjacent lands;

2. Cause an adverse impact to the minimum flows and levels established pursuant to section 373.042, F.S.;

3. Cause adverse impacts to a Work of the District established pursuant to section 373.086, F.S.;

4. Adversely impede navigation or create a navigational hazard;

5. Cause or contribute to a violation of state water quality standards. Turbidity, sedimentation, and erosion shall be controlled during and after construction to prevent violations of state water quality standards, including any antidegradation provisions of paragraphs 62-4.242(1)(a) and (b), subsections 62-4.242(2) and (3) and rule 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters due to construction-related activities. Erosion and sediment control best management practices shall be installed and maintained in accordance with the guidelines and specifications described in the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual* (Florida Department of Transportation and Florida Department of Environmental Protection, June 2007*)*, incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02530), and the *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual* (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02531); nor

6. Allow excavated or dredged material to be placed in a location other than a self-contained upland disposal site, except as expressly allowed in an exemption in rule 62-330.051, F.A.C.

(c) When performed in waters accessible to federally- or state-listed aquatic species, such as manatees, marine turtles, smalltooth sawfish, and Gulf sturgeon, all in-water work shall comply with the following:

1. All vessels associated with the project shall operate at "Idle Speed/No Wake" at all times while in the work area and where the draft of the vessels provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

2. All deployed siltation or turbidity barriers shall be properly secured, monitored, and maintained to prevent entanglement or entrapment of listed species.

3. All in-water activities, including vessel operation, must be shut down if a listed species comes within 50 feet of the work area. Activities shall not resume until the animal(s) has moved beyond a 50-foot radius of the in-water work, or until 30 minutes elapses since the last sighting within 50 feet. Animals must not be herded away or harassed into leaving. All onsite project personnel are responsible for observing water-related activities for the presence of listed species.

4. Any listed species that is killed or injured by work associated with activities performed shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1(888)404-3922 and ImperiledSpecies@myFWC.com.

Copies of incorporated materials identified above may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.4145, 403.805(1) FS. Law Implemented 373.109, 373.406, 373.4131, 373.4145, 403.813(1), 668.003, 668.004, 668.50 FS. History–New 10-1-13, Amended 6-1-18.

62-330.051 Exempt Activities.

The activities meeting the limitations and restrictions below are exempt from permitting. However, if located in, on, or over state-owned submerged lands, they are subject to a separate authorization under chapters 253 and 258, F.S., as applicable.

(1) Activities conducted in conformance with the District-specific exemptions in section 1.3 of Volume II applicable to the location of the activity.

(2) Activities conducted in conformance with the exemptions in section 373.406, or 403.813(1), F.S.

(3) Aquatic Plant and Organic Detrital Control and Removal –

(a) Disking and tilling of exposed lake bottoms in accordance with a permit issued by the Florida Fish and Wildlife Conservation Commission or an exemption under chapter 369, F.S.

(b) Organic detrital material removal in accordance with section 403.813(1)(r) or (u), F.S.

(c) Aquatic plant control where the activity qualifies for an exemption authorized under section 369.20, F.S., or in a permit from the Florida Fish and Wildlife Conservation Commission under section 369.20 or 369.22, F.S.; and the harvested plant material is not disposed of in wetlands or other surface waters, or in a manner that adversely affects water quality or flood control.

(d) The mechanical harvesting or shredding of aquatic plants and incidentally associated sediments, including subsequent side

casting of the harvested or shredded material, provided:

1. The activity is authorized and conducted by the Florida Fish and Wildlife Conservation Commission, under section 369.20 or 369.22, F.S.;

2. The work involves no dredging and is the minimum amount necessary for maintaining existing navigation corridors and preventing flooding, and in no case shall exceed five total acres of harvesting, shredding, and sidecasting;

3. The work is performed in a manner that does not adversely affect water quality or flood control; and

4. Notice of intent to use this exemption is provided to the Agency five days before performing any work.

(4) Bridges, Driveways, and Roadways –

(a) The replacement and repair of existing open-trestle foot bridges and vehicular bridges in accordance with Section 403.813(1)(l), F.S.

(b) Construction, alteration, or maintenance, and operation, of culverted driveway or roadway crossings and bridges of wholly artificial, non-navigable drainage conveyances, provided:

1. The construction project area does not exceed one acre and is for a discrete project that is not part of a larger plan of development that requires permitting under this chapter. However, these limitations shall not preclude use of this exemption to provide access to activities that qualify for the general permit in section 403.814(12), F.S.;

2. The culvert or bridge shall be sized and installed to pass normal high water stages without causing adverse impacts to upstream or downstream property;

3. Culverts shall not be larger than one, 24-inch diameter pipe, or its hydraulic equivalent, and must not reduce the upstream hydraulic discharge capacity;

4. The crossing shall not:

a. Be longer than 30 feet from top-of-bank to top-of-bank;

b. Have a top width of more than 20 feet or a toe-to-toe width of more than 40 feet; and,

c. Have side slopes steeper than three feet horizontal to one foot vertical;

5. There are no more than two crossings on any total land area, with a minimum distance of 500 feet between crossings;

6. If dewatering is performed, all temporary work and discharges must not cause flooding or impoundment, downstream siltation, erosion, or turbid discharges that violate state water quality standards;

7. Any temporary work shall be completely removed and all upstream and downstream areas that were disturbed shall be restored to pre-work grades, elevations and conditions; and,

8. All work shall comply with subsection 62-330.050(9), F.A.C.

(c) Minor roadway safety construction, alteration, maintenance, and operation, provided:

1. There is no work in, on, or over wetlands other than those in drainage ditches constructed in uplands;

2. There is no reduction in the capacity of existing swales, ditches, or other systems legally in existence under chapter 403 or Part IV of chapter 373, F.S.;

3. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.; and

4. The work is limited to:

a. Sidewalks having a width of six feet or less;

b. Turn lanes less than 0.25 mile in length, and other safety-related intersection improvements; and

c. Road widening and shoulder paving that does not create additional traffic lanes and is necessary to meet current, generally accepted roadway design and safety standards.

(d) Resurfacing and repair of existing paved roads, and grading of existing unpaved roads, provided:

1. Travel lanes are not paved that are not already paved;

2. No substantive changes occur to existing road surface elevations, grades, or profiles; and

3. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(e) Repair, stabilization, paving, or repaving of existing roads, and the repair or replacement of vehicular bridges that are part of the road, where:

1. They were in existence on or before January 1, 2002, and have:

a. Been publicly-used and under county or municipal ownership and maintenance thereafter, including when they have been presumed to be dedicated in accordance with section 95.361, F.S.;

b. Subsequently become county or municipally-owned and maintained; or

c. Subsequently become perpetually maintained by the county or municipality through such means as being accepted by the county or municipality as part of a Municipal Service Taxing Unit or Municipal Service Benefit Unit; and

2. The work does not realign the road or expand the number of traffic lanes of the existing road, but may include safety shoulders, clearing vegetation, and other work reasonably necessary to repair, stabilize, pave, or repave the road, provided that the work is constructed using generally accepted roadway design standards;

3. Existing bridges are not widened more than is reasonably necessary to properly connect the bridge with the road to match the width of the roadway travel lanes and safely accommodate the traffic expected;

4. No debris from the original bridge shall be allowed to remain in wetlands or other surface waters;

5. Roadside swales or other effective means of stormwater treatment are incorporated as part of the work;

6. No more dredging or filling of wetlands or water of the state is performed than is reasonably necessary to perform the work in accordance with generally accepted roadway design standards;

7. Notice of intent to use this exemption is provided to the Agency 30 days before performing any work; and

8. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(f) The repair of existing concrete bridge pilings by the Florida Department of Transportation, counties, and municipalities, through the construction of pile jackets, provided the permanent outer form is composed of inert materials and the quantity of material shall not exceed 300 cubic yards of dredging or 300 cubic yards of filling per project. The following conditions shall also apply:

1. Although the bottom sediments within the forms may be removed by jetting or pumping, and may not be recoverable, erosion and sediment control best management practices, including turbidity curtains or similar devices, shall be used in accordance with the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual* to prevent violations of state water quality standards.

2. Immediately following completion of any work that involves disturbance of the shoreline or banks of wetlands or other surface waters, the shoreline and banks shall be stabilized with native vegetation or riprap to prevent erosion; in areas where native wetland vegetation was disturbed, the stabilization shall consist of the same species planted in a manner to achieve stability and coverage of a similar wetland community as previously existed. Temporary erosion controls for all exposed soils within wetlands and other surface waters shall be completed within seven calendar days of the most recent construction activity. Prevention of erosion of exposed earth into wetlands and other surface waters is a construction priority and completed slopes shall not remain unstabilized while other construction continues.

3. Pilings shall not be installed or replaced to add additional traffic lanes.

4. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(5) Dock, Pier, Boat Ramp and Other Boating-related Work –

(a) Installation or repair of pilings and dolphins associated with private docking facilities or piers that are exempt under section 403.813(1)(b), F.S.;

(b) Installation of private docks, piers, and recreational docking facilities, and installation of local governmental piers and recreational docking facilities, in accordance with section 403.813(1)(b), F.S. This includes associated structures such as boat shelters, boat lifts, and roofs, provided:

1. The cumulative square footage of the dock or pier and all associated structures located over wetlands and other surface waters does not exceed the limitations in section 403.813(1)(b), F.S.;

2. No structure is enclosed on more than three sides with walls and doors;

3. Structures are not used for residential habitation or commercial purposes, or storage of materials other than those associated with water dependent recreational use; and

4. Any dock and associated structure shall be the sole dock as measured along the shoreline for a minimum distance of 65 feet, unless the parcel of land or individual lot as platted is less than 65 feet in length along the shoreline, in which case there may be one exempt dock allowed per parcel or lot.

(c) Construction of private docks or piers of 1,000 square feet or less of over-water surface area in artificial waters in accordance with section 403.813(1)(i), F.S., and within residential canal systems legally in existence under chapter 403 or part IV of chapter 373, F.S. This includes associated structures such as roofs and boat lifts, provided the cumulative square footage of the dock or pier and all associated structures located over wetlands and other surface waters does not exceed 1,000 square feet.

(d) Replacement or repair of existing docks and piers, including mooring piles, in accordance with section 403.813(1)(d), F.S., provided the existing structure is still functional or has been rendered non-functional within the last year by a discrete event, such as

a storm, flood, accident, or fire.

(e) The construction and maintenance to design specifications of boat ramps in accordance with section 403.813(1)(c), F.S., where navigational access to the proposed ramp currently exists:

1. In artificial waters and residential canal systems; or

2. In any wetland or other surface waters when the ramps are open to the public; and

3. The installation of docks associated with and adjoining boat ramps constructed as part of the above ramps is limited to an area of 500 square feet or less over wetlands and other surface waters.

(f) The construction, installation, operation, or maintenance of floating vessel platforms or floating boat lifts in accordance with section 403.813(1)(s), F.S.

(g) The removal of derelict vessels, as defined in section 823.11(1), F.S., by federal, state, and local agencies, provided:

1. The derelict vessel case has been completed as specified in section 705.103, F.S., and has been entered into the Statewide Derelict Vessel Database maintained by the Florida Fish and Wildlife Conservation Commission;

2. All work is done in a manner that, to the greatest extent practicable, avoids additional dredging or filling, grounding or dragging of vessels, and damage to submerged resources such as seagrass beds, oyster beds, coral communities, mangroves, other wetlands, and live bottom; and

3. An absorbent blanket or boom shall be immediately deployed on the surface of the water around the derelict vessel if fuel, oil, or other free-floating pollutants are observed during the work.

(h) The installation of a pile-supported boat lift within an existing mooring area at a docking facility that is legally in existence, provided:

1. Such installation does not conflict with a condition of a permit issued thereunder;

2. The boat lift does not include additional structures, such as platforms, cat walks, and roofs.

(6) Construction, alteration, maintenance, operation, and removal of freshwater fish attractors by the Florida Fish and Wildlife Conservation Commission, U.S. Forest Service, and county and municipal governments, provided:

(a) The material is limited to clean concrete, rock, brush, logs, or trees;

(b) The material is firmly anchored to the bottom of the waterbody;

(c) The size of an individual fish attractor shall be limited to one quarter of an acre in area;

(d) The top of the fish attractor shall be at least three feet below the water surface at expected average low water depth, as determined based on best available information for the waterbody at the specific location of the attractor;

(e) The attractor shall be outside any posted navigational channels and shall not cause a navigational hazard;

(f) No material is placed on or in areas vegetated by native aquatic vegetation; and

(g) The provisions of paragraph 62-330.050(9)(c), F.A.C., also shall apply to protect listed species during the work.

(7) Maintenance and Restoration –

(a) Maintenance dredging under section 403.813(1)(f), F.S.

(b) Maintenance of insect control structures, dikes, and irrigation and drainage ditches under section 403.813(1)(g), F.S.

(c) The restoration of existing insect control impoundment dikes, and the connection of such impoundments to tidally influenced waters under section 403.813(1)(p), F.S., provided:

1. The restored section of dike is limited to 100 feet in length;

2. The connection shall provide sufficient cross-sectional area to allow beneficial tidal influence;

3. Dredging and filling are limited to that needed to restore the dike to original design specifications; and

4. The final elevation of the dredge area shall be within two feet of immediately adjacent bottom elevations.

(d) Alteration and maintenance of treatment or disposal systems under rule 62-340.700, F.A.C.

(e) Construction and maintenance of swales in accordance with section 403.813(1)(j), F.S.

(f) Placement of wooden, composite, metal, or other non-earthen construction mats to provide temporary access to maintain or repair projects within wetlands, provided:

1. There is no cutting or clearing of wetland trees having a diameter four inches (circumference of 12 inches) or greater at breast height;

2. The maximum width of the construction access area shall be 15 feet;

3. Mats shall be removed as soon as practicable after equipment has completed passage through, or work has been completed at, each location along the alignment of the project, but in no case longer than seven days after equipment has completed work or

passage through that location; and

4. Areas disturbed for access shall be restored to natural grades immediately after the work is complete.

(g) Port dredging under section 403.813(3), F.S.

(h) The following activities undertaken by the National Oceanic and Atmospheric Administration's (NOAA) Florida Keys National Marine Sanctuary:

1. Seagrass restoration following the procedures of the Final Programmatic Environmental Impact Statement for Seagrass Restoration in the Florida Keys National Marine Sanctuary (NOAA 2004), which is incorporated by reference herein (June 1, 2018) (https://www.flrules.org/Gateway/reference.asp?No=Ref-09440) and available as provided in subsection 62-330.010(5), F.A.C.; and

2. Coral restoration following the procedures of the Final Programmatic Environmental Impact Statement for Coral Restoration in the Florida Keys and Flower Garden Banks National Marine Sanctuaries (NOAA 2010), which is incorporated by reference herein (June 1, 2018) (https://www.flrules.org/Gateway/reference.asp?No=Ref-009441) and available as provided in subsection 62-330.010(5), F.A.C.

(8) The installation of aids to navigation, including bridge fender piles, "No Wake" and similar regulatory signs, and buoys associated with such aids, in accordance with section 403.813(1)(k), F.S.

(9) Pipes or Culverts –

(a) Repair or replacement, provided:

1. The pipes or culverts have equivalent hydraulic capacity to those being repaired or replaced;

2. The invert elevation shall not be changed; and

3. The pipes or culverts function to discharge or convey stormwater, and are not associated with the repair, replacement, or alteration of a dam, spillway, or appurtenant works.

(b) Construction, alteration, operation, maintenance, and removal of outfall pipes, together with associated headwalls, and energy dissipation baffles, rocks, and other scour-reduction devices at the outfall locations, provided:

1. The pipes extend less than 20 feet in, on, or over wetlands or other surface waters;

2. The outfall is part of an activity that is exempt under part IV of chapter 373, F.S., or qualifies for the general permit in section 403.814(12), F.S.;

3. The outfall is designed to prevent erosion and scour;

4. Work in natural waterbodies, wetlands, and Outstanding Florida Waters is limited to 0.03 acre;

5. No activities occur in seagrasses;

6. Within waters accessible to manatees, submerged or partially submerged outfall pipes having a diameter larger than eight inches shall have grating such that no opening is larger than eight inches; and

7. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(c) The extension of existing culverts and crossing approaches, and the installation of scour protection structures at such locations, when done to accommodate an activity that does not require a permit under this chapter, provided:

1. Work in wetlands or other surface waters is limited to a total of 100 cubic yards of dredging and filling, and no more than 0.10 acre at any culvert extension or crossing approach location; and

2. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(10) The construction, alteration, maintenance, removal or abandonment of recreational paths for pedestrians, bicycles, and golf carts, provided:

(a) There is no work in, on, or over wetlands or other surface waters other than those in drainage ditches constructed in uplands;

(b) There is no reduction in the capacity of existing swales, ditches, or other stormwater management systems legally in existence under chapter 403 or part IV of chapter 373, F.S.;

(c) The paths have a width of eight feet or less for pedestrian paths, and 14 feet or less for multi-use recreational paths;

(d) The paths are not intended for use by motorized vehicles powered by internal combustion engines or electric-powered roadway vehicles, except when needed for maintenance or emergency purposes; and

(e) The paths comply with the limitations and restrictions in subsection 62-330.050(9), F.A.C.

(11) Sampling and Testing –

(a) Collection of seagrass, macroalgae, and macrobenthos in accordance with the terms and conditions of a permit or license issued by the Florida Fish and Wildlife Conservation Commission.

(b) Construction, operation, maintenance, and removal of scientific sampling, measurement, and monitoring devices, provided:

1. The device's purpose is solely to collect scientific or technical data, such as staff gages, tide and current gages, meteorological stations, water recording, biological observation and sampling, and water quality testing and improvement. Parshall flumes and other small weirs installed primarily to record water quantity and velocity are authorized, provided the amount of fill is limited to 25 cubic yards;

2. The device and any associated structures or fill, such as foundations, anchors, buoys, and lines, is removed to the maximum extent practicable at the end of the data collection or sampling;

3. The site is restored to pre-construction conditions within 48 hours of completion of use of the device; and

4. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(c) An exemption for geotechnical, geophysical, and cultural resource data surveys, mapping, sounding, sampling, and coring associated with beach restoration and nourishment projects and inlet management activities as provided in section 403.813(1)(v), F.S.

(d) Geotechnical investigations, including soil test borings, standard penetration tests, and other work involving boring, auguring, or drilling for the purposes of collecting geotechnical data, together with clearing for temporary access corridors to perform these investigations, subject to the following:

1. Excavation at each soil boring, auguring, or coring location is limited to no more than one foot in diameter. The total area of work authorized in wetlands and other surface waters is limited to 0.5 acre, including all excavations and clearing for temporary access corridors.

2. No drilling fluid or dredged material shall be left above grade in a wetland or other surface water.

3. Boreholes suspected to have penetrated a confining layer shall be grouted from the bottom up by means of a tremie pipe and the severed materials shall be removed from the wetland or other surface waters.

4. This exemption shall not apply to borings used to place seismographic charges for oil and gas exploration.

5. This exemption does not supersede the exemption in section 403.813(1)(v), F.S., for geotechnical, geophysical, and cultural resource data surveys, mapping, sounding, sampling, and coring associated with beach restoration and nourishment projects and inlet management activities.

6. Turbidity, sedimentation, and erosion shall be controlled during and after investigations to prevent violations of state water quality standards due to construction related activities.

7. Drilling activities associated with construction of wells must comply with chapter 62-532, F.A.C.

8. Temporary vehicular access within wetlands during construction shall be performed using vehicles generating minimum ground pressure to minimize rutting and other environmental impacts. Within forested wetlands, the permittee shall choose alignments that minimize the destruction of mature wetland trees to the greatest extent practicable. When needed to prevent rutting or soil compaction, access vehicles shall be operated on wooden, composite, metal, or other non-earthen construction mats. In all cases, access in wetlands shall comply with the following:

a. Access within forested wetlands shall not include the cutting or clearing of any native wetland tree having a diameter four inches or greater at breast height;

b. The maximum width of the construction access area shall be limited to 15 feet;

c. All mats shall be removed as soon as practicable after equipment has completed passage through, or work has been completed, at any location along the alignment of the project, but in no case longer than seven days after equipment has completed work or passage through that location; and

d. Areas disturbed for access shall be restored to natural grades immediately after the maintenance or repair is completed.

(12) Construction, Replacement, Restoration, Enhancement, and Repair of Seawall, Riprap, and Other Shoreline Stabilization –

(a) Construction, replacement, and repair of seawalls or riprap in artificially created waterways under section 403.813(1)(i), F.S., and within residential canal systems legally in existence under chapter 403 or part IV of chapter 373, F.S, including only that backfilling needed to level the land behind seawalls or riprap.

(b) The restoration of a seawall or riprap under section 403.813(1)(e), F.S., where:

1. The seawall or riprap has been damaged or destroyed within the last year by a discrete event, such as a storm, flood, accident, or fire or where the seawall or riprap restoration or repair involves only minimal backfilling to level the land directly associated with the restoration or repair and does not involve land reclamation as the primary project purpose. See section 3.2.4 of Volume I for factors used to determine qualification under this provision;

2. Restoration shall be no more than 18 inches waterward of its previous location, as measured from the waterward face of the

existing seawall to the face of the restored seawall, or from the waterward slope of the existing riprap to the waterward slope of the restored riprap; and

3. Applicable permits under chapter 161, F.S., are obtained.

(c) The construction of seawalls or riprap in wetlands or other surface waters between and adjoining existing seawalls or riprap at both ends in accordance with section 403.813(1)(o), F.S. For purposes of this exemption, riprap is subject to the same length and orientation limitations as a seawall.

(d) Installation of batter piles, king piles, or a seawall cap, used exclusively to stabilize and repair seawalls, provided they do not impede navigation.

(e) Restoration of an eroding shoreline with native wetland vegetative enhancement plantings, provided:

1. The length of shoreline is 500 linear feet or less;

2. Plantings are native wetland plants appropriate for the site obtained from commercially-grown stock;

3. Plantings extend no farther than 10 feet waterward of the approximate mean high water line (MHWL) or ordinary high water line (OHWL);

4. All invasive and exotic vegetative species along the shoreline is removed in conjunction with the planting to the extent practicable;

5. Biodegradable natural fiber logs or mats that are secured in place, such as with the use of wooden stakes, may be used if necessary to support the vegetative plantings; and

6. No fill is placed other than that needed to support the vegetative plantings, except that a breakwater is authorized to be installed concurrent with the planting if permanent wave attenuation is required to maintain the shoreline vegetation, provided:

a. The waterward toe of the breakwater extends no more than 10 feet waterward of the approximate MHWL or OHWL, with a top height of no more than the mean or ordinary high water elevation;

b. The breakwater is composed predominantly of natural oyster shell cultch (clean and fossilized oyster shell) or other stable, non-degradable materials such as oyster reef, reef balls, boulders, clean concrete rubble, riprap, rock sills, or triangular concrete forms. Oyster shell cultch, if used, shall be enclosed in mesh bags having openings of no more than three inches, or securely fixed to matting prior to placement in the water. Oyster bags and mats must be anchored to prevent movement of shell from the project area;

c. The breakwater shall not be placed over, or within three feet (in any direction) of any submerged grassbed or existing emergent marsh vegetation;

d. The breakwater shall be placed in units so that there is at least one opening measuring at least five feet in width located every 75 linear feet along the breakwater, with a minimum of one opening, to allow the flow of water and the passage of fish and aquatic wildlife;

e. All equipment used during construction shall be operated from, and be stored in uplands; and

f. All work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(13) Single-Family Residences and Associated Residential Improvements –

(a) The construction, alteration, maintenance, removal, and abandonment of one individual single-family dwelling unit, duplex, triplex, or quadruplex, and associated residential improvements, that:

1. Do not involve any work in wetlands or other surface waters;

2. Are not part of a larger common plan of development or sale requiring a permit or modification of a permit under part IV of chapter 373, F.S.; and

3. Comply with the limitations and restrictions in subsection 62-330.050(9), F.A.C.

(b) The construction, alteration, maintenance, removal, and abandonment of one individual single-family dwelling unit, duplex, triplex, or quadruplex, and associated residential improvements if it will be located:

1. Within the boundaries of a valid permit issued under part IV of chapter 373, F.S., and it was accounted for under the permit; or

2. Within the boundaries of a development that predates the applicable effective date for the permitting program established under part IV of chapter 373, F.S., provided the activity does not involve any work in wetlands or other surface waters.

(c) Construction, operation, or maintenance of a stormwater management facility designed to serve single-family residential projects in conformance with section 403.813(1)(q), F.S.

(14) Utilities –

(a) Installation of overhead transmission lines in accordance with section 403.813(1)(a), F.S.

(b) Installation of subaqueous transmission and distribution lines in accordance with section 403.813(1)(m), F.S.

(c) Replacement or repair of subaqueous transmission and distribution lines in accordance with section 403.813(1)(n), F.S.

(d) Activities necessary to preserve, restore, repair, remove, or replace an existing communication or utility pole or aerial transmission or distribution line, provided there is no dredging or filling in wetlands or other surface waters except to remove poles and replace them with new poles, and temporary mats needed to access the site in accordance with paragraph 62-330.051(7)(f), F.A.C. The activity must not increase the voltage of existing power lines or relocate existing poles or lines more than 10 feet in any direction from their original location.

(e) Installation, removal, and replacement of utility poles that support telecommunication lines or cables, or electric distribution lines of 35kV or less, together with the bases and anchoring devices to support those poles. “Anchoring device” shall mean steel guy wires fastened to the ground, without the need for dredging, and “base” shall mean a concrete or steel foundation not exceeding four feet in radius, used to support a utility pole. Work must comply with the following:

1. No more than 15 utility poles shall be installed, removed, or replaced in wetlands;

2. There shall be no permanent placement of fill other than utility poles and anchoring devices;

3. Work shall not occur in forested wetlands located within 550 feet from the mean or ordinary high water line of an Aquatic Preserve or a named waterbody designated as an Outstanding Florida Water or an Outstanding National Resource Water;

4. Vehicle usage in wetlands shall be conducted so as to minimize tire rutting and erosion impacts;

5. There shall be no dredging or filling to create fill pads or access roads, except to place temporary mats for access within the utility right-of-way in wetlands. All temporary mats shall be removed as soon as practicable, but in no case longer than seven days after equipment has completed passage through, or work has been completed, at any location along the alignment of the project;

6. Temporary disturbance to wetlands shall be limited to a length of 0.5 mile, a width of 30 feet, and a total area of 0.5 acre;

7. Maintenance of the utility right-of-way in wetlands shall be limited to a cleared corridor of up to 15 feet wide and a total area of 0.25 acre;

8. Except for the authorized permanent structures, pre-work ground elevations and contours shall be restored within 30 days of completion of the work;

9. Water jets shall not be used unless they are a pre-engineered part of the pole and the water for the jets is either recirculated on site or is discharged in a self-contained upland disposal site;

10. The installation of the utility poles and associated bases and anchoring devices shall not interfere with navigation or impede water flow in wetlands; and

11. Work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(f) Excavation or dredging of temporary trenches to install utilities such as communication cables, water lines, and electrical lines, provided:

1. Material is not deposited within wetlands or other surface waters other than that needed to backfill the trench to restore ground to pre-work grades;

2. Backfilling is performed to restore pre-work grades within 24 hours of disturbance; and

3. Work is conducted in compliance with subsection 62-330.050(9), F.A.C.

(g) Construction, alteration, maintenance, removal, or abandonment of communication tower sites with 0.5 acre or less of impervious or semi-impervious surface such as access roads, buildings, and equipment pads. The design of above-grade access roads shall not adversely affect the conveyance of surface water flows. No activities, including access to the site, shall be located in wetlands or other surface waters or within a 100-year floodplain.

(h) Construction, alteration, maintenance, removal, or abandonment of electrical distribution substation and electrical switching station sites with one acre or less of impervious or semi-impervious surface such as access roads, buildings, and equipment pads. The design of above-grade access roads shall not adversely affect the conveyance of surface water flows. The site must be surrounded by swales, as defined in section 403.803(14), F.S., or other type of equivalent treatment, and must not have a direct discharge to an Outstanding Florida Water. No activities, including access to the site, may be located in wetlands or other surface waters, or within a 100-year floodplain.

(i) Installation and repair of water intake lawn irrigation waterlines and closed-loop air conditioning cooling lines laid on the bottoms of waters of the state for an individual private single-family or multi-family residence, provided that the intake diameter is less than six inches, or its hydraulic equivalent.

(15) Modification or reconstruction of an existing conveyance system constructed prior to the need to obtain a permit under part

IV of chapter 373, F.S., provided:

(a) The work is conducted by a city, county, state agency, or District;

(b) The system alteration is not intended to serve new development; and

(c) The system does not:

1. Discharge directly to Outstanding Florida Waters;

2. Increase pollution loading;

3. Change points of discharge in a manner that would adversely affect the designated uses of wetlands or other surface waters;

4. Result in new adverse water quantity impacts to receiving waters and adjacent lands;

5. Pipe and fill wetlands and other surface waters, including irrigation or drainage ditches; and

6. Replace a functional treatment swale that was authorized under chapter 62-25, F.A.C., or part IV of chapter 373, F.S.

(16) The construction, alteration, maintenance, or filling of wholly-owned, artificial surface waters that:

(a) Were or are created entirely from uplands;

(b) Are isolated such that they do not connect to any other wetlands or other surface waters;

(c) Are not excavated within three feet above any aquitard or karst materials;

(d) Involve no more than a total of 0.5 acre of work in wetlands within the artificial waterbody;

(e) Do not impound water above any surrounding natural grade elevation, or have the capability of impounding more than 40 acre-feet of water;

(f) Were or are not created to provide mitigation under part IV of chapter 373, F.S.;

(g) Excavated materials shall not be used off-site for commercial, industrial, or construction use;

(h) Were not permitted for stormwater treatment or management under chapter 62-25, F.A.C., or part IV of chapter 373, F.S.;

(i) All excavated material shall be deposited and fully contained within uplands;

(j) Are not a farm pond as defined in section 403.927, F.S.; and

(k) Work is conducted in accordance with paragraph 62-330.050(9)(b), F.A.C.;

(17) The construction, alteration, operation, maintenance, repair, reclamation, or abandonment of a dry borrow pit for excavation of sand and other soil materials, provided that all of the following conditions are met:

(a) Notice of intent to use this exemption is provided to the Agency 30 days before performing any work.

(b) The area of excavation for the borrow pit shall be less than five acres, when measured at the natural land surface grade of the pit.

(c) The borrow pit shall be constructed entirely in uplands for the purpose of using the borrow materials as appropriately permitted, authorized, or as exempted. If excavated materials will be used off-site for commercial, industrial, or construction use, the borrow pit is subject to the mine reclamation requirements under part III of chapter 378, F.S.

(d) Borrow pits under this exemption must meet the following conditions:

1. Does not include construction or maintainance of any embankment above the natural land surface grade as a part of the work to construct the pit and remove the soil materials.

2. No above-grade roads are constructed as access to the pit area.

3. Shall not impact wetlands.

4. Shall not be excavated deeper than three feet above seasonal high water level, any surficial aquifer, aquitard, or karst materials.

5. The pit area shall be protected at all times by adequate fencing and gating structures to limit access and provide for safety.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.4145, 403.805(1) FS. Law Implemented 373.406, 373.4131, 373.4145, 373.415, 403.813(1) FS. History–New 10-1-13, Amended 6-1-18.

62-330.0511 No-fee Noticed Exemptions for Construction, Operation, Maintenance, Alteration, Abandonment, or Removal of Minor Silvicultural Surface Water Management Systems.

(1) Silviculture activities conducted and noticed in conformance with the best management practices and procedures below shall qualify for this no-fee noticed exemption. The Agencies shall not be compelled to verify qualification for these exemptions following receipt of the notice required in subsection (2), below. However, if a person desires written Agency verification of compliance with this rule, they shall follow the noticing and fee requirements of rule 62-330.050, F.A.C. These exemptions apply to:

(a) Any person constructing, operating, maintaining (including repairing or replacing), altering, abandoning, or removing

silvicultural roads, and other minor activities designed to place the property into silvicultural use or to perpetuate the maintenance of the property in silvicultural use; and

(b) The U.S. Forest Service to construct, operate, maintain, alter, abandon, or remove surface water management systems.

(2) The construction, operation, maintenance, alteration, abandonment, or removal of the minor silvicultural surface water management system described below shall be initiated only after a completed "Notice of Intent to Construct a Minor Silvicultural System," Form 62-330.0511(1), (October 1, 2013), incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02510), is received by the Agency, or is properly addressed and stamped and deposited in the United States mail, in which case the postmark date shall be the date of receipt. Persons may also submit annual schedules of proposed silvicultural surface water management systems that meet the requirements of this section, including completed notices for each activity. A copy of the above form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(3) Activities required to implement the following projects qualify for the exemption under this rule:

(a) A permanent culverted fill road with a road surface of 28 feet or less in width placed in or crossing a stream or other watercourse of less than 10 cubic feet per second average discharge at the location of the work or with a drainage area upstream of the work of less than 10 square miles. The design of the work must allow for conveyance of normal flows and for overtopping during large storm events, and any fill placed in wetlands associated with the stream or other watercourse must be less than 0.5 acre in area. Under this paragraph, the fill material shall be no more than 24 inches above culvert structures. The fill material on the road approaches shall be no more than 24 inches above grade except within an area of 100 feet of either side of a culvert. The road must be designed with culvert inlets positioned at or below natural grade of the bed of the stream or other watercourse to prevent the permanent impoundment of water, and to provide an overflow area or areas which will prevent erosion and adverse effects to water levels upstream and downstream of the road.

(b) A temporary culverted fill road or a temporary bridge up to 50 feet long, with a road surface of 28 feet or less in width placed in or crossing a stream or other watercourse of less than 10 cubic feet per second average discharge at the location of the work or a drainage area upstream of the work of less than 10 square miles. The design of the work must allow for conveyance of existing flow during the period of installation and use and any fill placed in wetlands associated with the stream or other watercourse must be less than 0.5 acre in area. The work must be designed only to facilitate the temporary movement of equipment and must be removed immediately after the operation for which the crossing was needed is complete or within 30 months of the filing of the notice in subsection (2), above, whichever is sooner.

(c) A permanent bridge up to 100 feet in length and 28 feet or less in width supported on pilings or trestles, placed in or crossing a stream or other watercourse of less than 10 cubic feet per second average discharge at the location of the work or with a drainage area upstream of the work of less than 10 square miles. The design of the work and associated approach roads, if any, must allow for conveyance of normal flows and for overtopping during large storm events and any fill placed in wetlands associated with the stream or other watercourse must be less than 0.5 acre in area. The height limitation for fill on the bridge approach roads shall be a maximum of 24 inches above natural grade.

(d) A permanent culverted fill road or bridge with a road surface of 28 feet or less in width, placed in or crossing a wetland or other impoundment, excluding reservoirs created by dams, where the road surface area over the wetland or other impoundment is less than 0.5 acre. Such crossings must be located in a manner which minimizes the area of wetlands being filled. Fill material for crossings of isolated wetlands or other isolated impoundments may be excavated from the wetland being crossed, provided that all excavation takes place immediately adjacent to the road surface and that the excavated area consists only of narrow trenches which are not connected to ditches constructed or maintained for drainage purposes. In addition, such excavations shall not result in drainage from the wetland.

(e) Temporary stream channel diversions necessary to complete the works described in paragraph (3)(a), (b), or (c), above, provided that the area used for the temporary diversion is restored to its previous contours and elevations.

(f) Clearing and snagging in a stream or other watercourse within 50 feet of the center line of a culverted fill road or a bridge described in paragraph (3)(a), (b), or (c), above, necessary to construct said work.

(g) A permanent low water, hard surfaced crossing in a stream, other watercourse, wetland or other impoundment consisting of the placement of rock or similar material no more than 12 inches higher than the bed of the stream, other watercourse or impoundment. Such crossings must be designed only to facilitate the movement of equipment by creating a stable foundation in shallow streams, other watercourse, wetlands or other impoundments. Temporary low water, hard surfaced crossings may be

constructed using logs, but must be removed immediately following the completion of the silvicultural operation or within 30 months of the filing of the Notice of Intent in subsection (2), whichever is sooner.

(h) Upland field ditches of a temporary nature to facilitate only harvesting, site preparation, and planting, with a maximum cross-sectional area of 18 square feet spaced no closer than 660 feet from any other parallel ditch. After seedling establishment, the ditches shall be allowed to revegetate naturally. The person will not be required to fill field ditches after seedling establishment.

(i) Above grade, unpaved, upland silvicultural roads with an average road surface width of 28 feet within a construction corridor up to 50 feet in width. These roads must also incorporate sufficient culverts at grade to prevent alteration of natural sheet flow and may have associated borrow ditches. Road ditches shall be constructed only to obtain road material for the associated road and to provide only enough storage to maintain a dry road surface. Such road ditches must not provide drainage to the tract adjoining the road, other than to provide drainage of the road surface and minor, incidental drainage of abutting lands. These road ditches may be connected to other roadside ditches that were constructed pursuant to an Agency permit or that were exempt from permitting under part IV of chapter 373, F.S., but must not connect directly or indirectly to any works onsite or off-site which are designed or constructed to provide drainage or conveyance or which would result in drainage or conveyance. Road ditches must be separated from wetlands and other surface waters by a buffer strip of indigenous ground cover and a water turnout prior to said buffer strip. However, road ditches may discharge directly to a wetland when the slope of the uplands within 1,000 feet of the edge of the wetland is equal to or less than two percent, provided the ditch does not result in drainage of the wetland and provided that the ditch does not create a hydrologic connection between two or more wetlands. The width of the buffer strip shall be no less than 35 feet, or 50 feet when located adjacent to an Outstanding Florida Water, an Outstanding National Resource Water, or Class I waters.

(j) Upland borrow areas needed to obtain fill material for crossings of streams, other watercourses, wetlands, and other impoundments authorized by this exemption. These upland borrow areas must not provide drainage and must not be hydrologically connected to roadside ditches or field ditches.

(4) The systems identified in subsection (3), above, must meet the following performance standards:

(a) Except for those areas to be filled for crossings as provided in this section, the activities must not convert wetlands or other surface waters to uplands.

(b) A road or bridge must be designed to convey normal water flow while being adequately stabilized to allow for overtopping during storm events without washing out.

(c) A permanent road or bridge placed in or crossing a stream, other watercourse, wetland or other impoundment may be placed no closer than 0.5 mile from any traversing work which traverses the same stream, other watercourse, wetland or impoundment. A low water crossing or temporary road or bridge placed in or crossing a stream, other watercourse, wetland or other impoundment may be placed no closer than 0.25 mile from any traversing work which traverses the same stream, other watercourse, wetland, or other impoundment. The spacing limitation shall be measured along the stream, other water course, wetland or other impoundment. Notwithstanding the spacing limitation in this paragraph, at least one low water crossing, road or bridge crossing of any stream, other watercourse, wetland or other impoundment may be constructed to each upland area being managed for silviculture that would not otherwise be accessible if these spacing limitations were met.

(d) A low water crossing, road, or bridge placed in or crossing a stream, other watercourse or impoundment must not cause increased velocities downstream of the work that would cause scour outside of the area of clearing and snagging described in paragraph (3)(f), above.

(e) A low water crossing, road, or bridge placed in or crossing a stream, other watercourse or impoundment must not cause increased flooding on property not owned by the person.

(f) Erosion control measures must be undertaken to limit the transfer of suspended solids into the receiving waterbody during and after construction of the proposed work. After removing any temporary crossing, disturbed portions of the stream bank and stream channel shall be restored to approximate their original shape and flow capacity. Erodible ground area associated with the crossing shall be stabilized with riprap, mulch or seeded for appropriate ground cover vegetation within 72 hours after removal.

(g) Upland field ditches may connect only to works that are permitted by the Agency, or exempt from permitting under part IV of chapter 373, F.S., and only if the connection will not cause the work to exceed its conveyance capacity or to increase flooding on property not owned by the person; however, this section does not authorize connection to works without the consent of the owner of the work. Field ditches will be presumed to meet the erosion control requirements of paragraph (4)(f), above, when they are separated from streams, other watercourses, wetlands or other impoundments by a buffer strip of undisturbed vegetation and provided the integrity of this buffer is maintained. The width of the buffer strip shall be the width of the total Special Management

Zone (primary zone and secondary zone) as described in the *Silviculture Best Management Practices Manual* (2008), published by the Division of Forestry, Florida Department of Agriculture and Consumer Services, incorporated by reference herein
(#1 http://www.flrules.org/Gateway/reference.asp?No=Ref-03131,
#2 http://www.flrules.org/Gateway/reference.asp?No=Ref-03132,
#3 http://www.flrules.org/Gateway/reference.asp?No=Ref-03133,
#4 http://www.flrules.org/Gateway/reference.asp?No=Ref-03134,
#5 http://www.flrules.org/Gateway/reference.asp?No=Ref-03135,
#6 http://www.flrules.org/Gateway/reference.asp?No=Ref-03136,
#7 http://www.flrules.org/Gateway/reference.asp?No=Ref-03137,
#8 http://www.flrules.org/Gateway/reference.asp?No=Ref-03138,
#9 http://www.flrules.org/Gateway/reference.asp?No=Ref-03139,
#10 http://www.flrules.org/Gateway/reference.asp?No=Ref-03140, and
#11 http://www.flrules.org/Gateway/reference.asp?No=Ref-03141), a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. However, field ditches may discharge directly to a wetland when the slope of the uplands within 1,000 feet of the edge of the wetland is equal to or less than two percent, provided the ditch does not result in drainage of the wetland and provided that the ditch does not create a hydrologic connection between two or more wetlands.

(h) In addition to the performance standards in paragraphs (4)(a) through (g), above, the person undertaking the activities must use the best management practices set forth in the *Silviculture Best Management Practices Manual* referenced in paragraph (4)(g), above.

(i) If climatic or flow conditions prevent the removal of a temporary crossing within the time frame specified in this section, the applicant may re-submit the application identified in subsection (2), above, to extend the time period for removal and restoration of the temporary crossing. The person must provide a written explanation and evidence supporting the need to reauthorize the crossing and must specify the additional time needed to remove the crossing, which may not exceed one year.

(5) Activities are authorized by the exemptions above for the following durations:

(a) One year to complete construction, alteration, abandonment, or removal of the silvicultural surface water management system; and

(b) Permanent for operation and maintenance of the silvicultural surface water management system.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.4145, 403.805(1) FS. Law Implemented 373.406(2), 373.4131, 373.4145, 373.415, 403.813(1) FS. History–New 10-1-13, Amended 6-1-18.

62-330.052 General Permits – General.

Rules 62-330.401 through 62-330.635, F.A.C., contain the procedures to submit a notice to use a general permit, the procedures for their review, the general conditions that apply to them, and the terms and specific conditions of each general permit. Those provisions do not apply to activities that qualify for the general permit in section 403.814(12), F.S.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 373.426 FS. History–New 10-1-13.

62-330.054 Individual Permits.

(1) An individual permit is required for activities that require a permit if they:

(a) Do not qualify for a general permit in rules 62-330.410 through 62-330.635, F.A.C.; and

(b) Are not proposed for conceptual approval under rule 62-330.055 or 62-330.056, F.A.C.

(2) Except as otherwise provided in subsection (4), below, an application for an individual permit shall be:

(a) Prepared using the form and procedures in rule 62-330.060, F.A.C.;

(b) Submitted in accordance with sections 4.2.3, 4.3, and 4.4 of Volume 1; and

(c) Reviewed and acted on in accordance with rules 62-330.062, 62-330.071, 62-330.075, 62-330.090, 62-330.301, and 62-330.302, F.A.C., and the Applicants Handbook.

(3) An application for a mitigation bank permit shall be processed as a type of individual permit, but also is subject to the requirements in chapter 62-342, F.A.C. If there is a conflict between this chapter and chapter 62-342, F.A.C., chapter 62-342, F.A.C., will control.

(4) An individual permit required solely pursuant to both paragraph 62-330.020(2)(i), F.A.C., and chapter 40C-44, F.A.C., shall be reviewed and acted upon in accordance with chapter 40C-44, F.A.C., (October 1, 2013), incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02533), and application for such permit shall be made in accordance with that chapter. A copy of chapter 40C-44, F.A.C., may be obtained as provided in subsection 62-330.010(5), F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.4136, 373.414(9), 373.4145, 373.416, 373.418, 373.426 FS. History–New 10-1-13, Amended 6-1-18.

62-330.055 Conceptual Approval Permits for Urban Infill or Redevelopment.

A county or municipality may request a conceptual approval permit for activities occurring within urban infill and redevelopment areas or community redevelopment areas created under chapter 163, F.S. Following approval of the conceptual permit, any construction, alteration, operation, maintenance or removal consistent with the conceptual permit may be authorized under a notice of intent to use the general permit for urban infill and redevelopment in rule 62-330.450, F.A.C.

(1) An urban infill or redevelopment conceptual approval permit shall be reviewed as provided below and in rule 62-330.056, F.A.C., but does not have to meet all of the stormwater quality and quantity design and performance criteria of Volume II, provided the county or municipality submits a stormwater management master plan for the urban infill or redevelopment area that includes the following:

(a) Identification of the proposed urban infill or redevelopment area and the total contributing drainage area, including any major drainage basins and sub-basins;

(b) Identification of the receiving waters associated with the proposed urban infill or redevelopment area; and

(c) Calculation and assignment of the predevelopment annual loading of pollutants of concern as determined during the permit application review, on a drainage basin or sub-basin basis, for all areas to be included within the conceptual approval permit. Loadings must be specific to the types of land use and must be expressed as a "mass per area" basis. The basin or sub-basin loading assignments will serve as the pollutant goal for future urban infill or redevelopment in each of those areas (target pollutant load). Future development that meets the predevelopment pollutant load assignment will be presumed to meet the net improvement requirements of paragraph (2)(a), below.

(2) An application for a conceptual approval permit for urban redevelopment and infill activities shall also include the following:

(a) A demonstration that the redevelopment will achieve a net improvement of the quality of stormwater in accordance with section 373.4131(1)(b)2., F.S.

(b) Documentation of the rate and volume of stormwater discharges existing as of the date of the application, and information sufficient to estimate the maximum rate and volume of stormwater discharges that will exist as of the date of issuance of the conceptual approval permit.

(c) A commitment that activities within the redevelopment area will use stormwater best management practices (BMPs) to the maximum extent practicable.

(d) Provisions demonstrating that the individual or regional stormwater management systems within the urban infill or redevelopment area will be operated and maintained in perpetuity, consistent with the terms and conditions of the conceptual approval permit.

(e) An identification of proposed construction and no-construction areas.

(f) An estimate of the maximum extent of impacts to wetlands and other surface waters and details of any proposed mitigation for those impacts.

(g) An estimate of the maximum amount of anticipated impervious surface and description of the stormwater treatment system for those areas.

(h) An identification of the general location and types of activities proposed on any state-owned submerged lands.

(i) A timetable for redevelopment, including the requested duration of the conceptual approval permit.

(3) Consistent with the approved stormwater management master plan, the conceptual approval permit will:

(a) Provide a ledger that indicates the target pollutant load (mass per area) for each drainage basin or sub-basin. Any general permit for construction that is submitted in association with the conceptual permit must demonstrate that the proposed project does not exceed the target pollutant load for the receiving waters.

(b) Provide the annual pollutant load (mass per area) for each type of land use category, and the pollutant removal efficiency for

the anticipated BMPs to be employed. Activities requested under the general permit in rule 62-330.450, F.A.C., that use the BMPs approved in the stormwater master plan, that reduce impervious surfaces, or that otherwise meet the pollutant loading target in the stormwater master plan, and that also comply with all the terms and conditions of the general permit, will result in a debit to the ledger. Once the entire pollutant load target is reached for the receiving waters, no more development is allowed under the general permit.

(c) Contain specific conditions necessary to ensure that the future applications for permits to construct, alter, operate, maintain, remove, or abandon systems authorized in the conceptual approval permit are consistent with the redevelopment conceptual approval permit and the general permit in rule 62-330.450, F.A.C.

(d) Allow the rate and volume of stormwater discharges for stormwater management systems within the urban infill or redevelopment area to continue up to the maximum rate and volume of stormwater discharges allowed under section 373.4131(1)(b)4., F.S.

(4) If changes are proposed to the design of existing or future phases, or where there have been changes to state water quality standards, special basins, or site characteristics during the duration of the conceptual approval permit, the applicant must modify the conceptual approval permit if it wishes to continue to rely on it as a basis that reasonable assurance exists for the Agency to issue future construction or operation permits under the terms and conditions of this section. If the permittee fails to do this, the conceptual approval permit can no longer be relied upon as a basis, in part or whole, under which permits to construct or operate future phases will be issued, and the Agency will reevaluate the terms and conditions of the conceptual approval permit at the time a permit application is received to construct the next phase of activities included in the original conceptual approval permit, or at the next requested extension of the conceptual approval permit duration in accordance with subsection 62-330.056(11), F.A.C., whichever occurs first.

(5) Issuance of the conceptual approval permit and activities undertaken under the general permit in rule 62-330.450, F.A.C., must comply with the provisions of section 373.4131(1)(b)1., F.S.

(6) An individual permit under this chapter is required for the construction, alteration, operation, maintenance, abandonment, or removal of activities covered by this conceptual approval permit that involve work in wetlands or other surface waters. The following must occur before the Agency can determine that the general permit in rule 62-330.450, F.A.C., can be used to construct roads, parking areas, buildings, and other structures within the project area authorized by that individual permit, or on lands served by a stormwater management system authorized by that individual permit:

(a) The individual permit must be obtained;

(b) Dredging and filling necessary to prepare the land for future construction, including construction of any required stormwater management systems, must be completed in accordance with the individual permit; and

(c) Any mitigation required to offset adverse impacts from the work in wetlands and other surface waters must be initiated in conformance with the individual permit. When the applicant proposed the recording of a conservation easement over land as part of its mitigation, then a conservation easement acceptable to the agency must be recorded over the mitigation land consistent with the permitted mitigation plan. If the applicant proposed credits from a mitigation bank or regional offsite mitigation area as part of its mitigation, then such credits must be purchased consistent with the permitted mitigation plan.

(7) An urban infill or redevelopment conceptual permit shall be issued for 20 years, unless a shorter duration is requested. The permit shall be renewed at the request of the permittee for another 20 years, unless a shorter duration is requested, subject to activities remaining in compliance with this section and the terms and conditions of the general permit in rule 62-330.450, F.A.C.

Rulemaking Authority 373.026, 373.043, 373.044, 373.4131, 373.4145, 373.418, 380.06, 403.805(1) FS. Law Implemented 373.026, 373.409, 373.413, 373.4131, 373.4141, 373.4142, 373.4145, 373.416, 380.06 FS. History–New 10-1-13, Amended 6-1-18.

62-330.056 Other Conceptual Approval Permits.

(1) A conceptual approval permit is available for an applicant who desires approval of design concepts for a master or future plan to construct, alter, operate, maintain, remove, or abandon projects that require an individual permit under this chapter. This includes activities that are to be developed in phases, such as phased development master plans and projects for which an Application for Development Approval has been made pursuant to part I of chapter 380, F.S., and whenever an applicant has not yet developed detailed design or construction plans for a future activity.

(2) A conceptual approval permit does not authorize any construction, alteration, operation, maintenance, removal, or abandonment, or the establishment and operation of a mitigation bank. Issuance of a conceptual approval permit does not relieve the

holder of such a permit of any requirements to obtain a permit to construct, alter, operate, maintain, remove, or abandon projects that require a permit under this chapter, or to establish and operate a mitigation bank.

(3) An application for a conceptual approval permit shall be prepared and submitted using the procedures in rule 62-330.060, F.A.C., and sections 4.2.3, 4.2.3.1, 4.3, and 4.4 of Volume I. An application for conceptual approval for a mitigation bank also shall include the materials required by chapter 62-342, F.A.C.

(4) The application shall be reviewed and acted on in accordance with this section, rules 62-330.062, 62-330.071, 62-330.075, 62-330.090, 62-330.301, and 62-330.302, F.A.C., and the Applicant's Handbook. Agency review and action also shall be in accordance with chapter 62-342, F.A.C., when the conceptual approval application involves a mitigation bank.

(5) An application for a conceptual approval permit may include a request for a permit to construct and operate the first phase of the activities. In such a case, a separate application and processing fee to construct and operate the first phase shall not be required. In all other cases, an individual permit to construct, alter, operate, maintain, remove, or abandon projects authorized by the conceptual approval permit must be obtained prior to initiating such activities.

(6) Any delineation of wetlands or other surface waters submitted as part of the conceptual approval permit application, including supporting documentation, shall not be considered binding unless a specific condition of the permit or a formal determination under rule 62-330.201, F.A.C., provides otherwise.

(7) Issuance of a conceptual approval permit is a determination that the conceptual plans are, within the extent of detail provided in the conceptual approval permit application, consistent with applicable rules at the time of issuance. A conceptual approval permit provides the conceptual approval permit holder with a rebuttable presumption, during the duration of the conceptual approval permit, that the engineering design and scientific principles upon which the conceptual approval permit are based (within the extent of detail provided in the conceptual approval permit) are likely to meet applicable rule criteria for issuance of permits for subsequent phases of the project, provided all of the following are met at the time of receipt of a complete application to construct or operate the future phases:

(a) The application to construct and operate the future phases remains consistent with the designs and conditions of the issued conceptual approval permit. Primary areas for consistency comparisons include the size, location and extent of the activities proposed, the type and nature of the activities, percent imperviousness, allowable discharge and points of discharge, location and extent of wetland and other surface water impacts, mitigation plans implemented or proposed, control elevations, extent of stormwater reuse, detention and retention volumes, and the extent of flood elevations.

If an application for construction of any portion of the land area contained within the conceptual approval permit is based upon designs that are inconsistent with the conceptual approval permit, the application will be reviewed to determine the extent to which the inconsistency will affect the designs and conditions for the remainder of the lands contained in the conceptual approval permit. If the inconsistency will materially affect those designs and conditions, then the applicant must demonstrate that the holder of the conceptual approval permit agrees to that inconsistency. In such a case, the holder of the conceptual approval permit may:

1. Modify the conceptual approval permit to conform to the revised design;

2. Abandon reliance on the conceptual approval permit; or

3. Rely on those portions of the conceptual approval permit for only those areas that were not affected by the inconsistency.

(b) There are no changes to state water quality standards, that would be affected by activities authorized in the conceptual approval permit that have not already been authorized for construction or operation.

(c) There have been no amendments to Florida law governing special basin criteria that would affect future activities authorized by the conceptual approval permit that have not already been authorized for construction.

(d) There are no substantive changes in the site characteristics that would affect whether the design concepts approved in the conceptual approval permit can continue to be reasonably expected to meet the conditions for authorizing construction of future phases. This shall include such things as designation of an affected waterbody as impaired, changes in the designation of listed species, and changes to nesting, denning, and critical designation status of listed species that exist within the lands served by the project area.

(8) If changes are proposed to the design of existing or future phases, or where there have been changes to state water quality standards, special basins, or site characteristics as described in paragraphs (7)(a) through (d), above, during the duration of a conceptual approval permit, the applicant must modify the conceptual approval permit if it wishes to continue to rely on it as a basis that reasonable assurance exists for the Agency to issue future construction or operation permits under the terms and conditions of this section. If the permittee fails to do this, the conceptual approval permit can no longer be relied upon as a basis, in part or whole,

under which permits to construct or operate future phases will be issued, and the Agency will reevaluate the terms and conditions of the conceptual approval permit at the time a permit application is received to construct the next phase of activities included in the original conceptual approval permit, or at the next requested extension of the conceptual approval permit duration in accordance with subsection 62-330.056(11), F.A.C., whichever occurs first.

(9) The duration of a conceptual approval permit, other than for urban infill and redevelopment, is 20 years, provided a permit under this chapter is issued for the initial phase of construction or alteration, the authorized construction or alteration has begun within five years of the date the conceptual approval permit was issued, and the work remains in compliance with the terms and conditions of both the conceptual approval permit and all permits authorizing construction or alteration. The time periods of this subsection will be tolled if the reviewing agency is notified in writing, within five years of issuance of the conceptual approval permit, that administrative review under either of the following is pending:

(a) The project approved by the conceptual approval permit is undergoing Development of Regional Impact review pursuant to section 380.06, F.S., and an administrative appeal of that review has been filed; or

(b) The issuance of the construction permit for the first phase is under administrative review pursuant to section 120.569 or 120.57, F.S.

If notice is given as provided above, the five-year time period for obtaining a permit and commencing construction shall be tolled until the date of final action resolving such administrative appeal or review, including any judicial review.

(10) If a permit for construction or alteration of the initial phase is not obtained from the Agency and construction commenced within five-years of issuance of the conceptual approval permit, the conceptual approval permit will expire five years from its date of issuance.

(11) Prior to expiration of the conceptual approval permit, the permittee may submit a request to modify its duration. However, the application will be reviewed in consideration of the factors in subsections 62-330.056(7) and (8), F.A.C., at the time of submittal of each request to extend the duration and each subsequent permit application to construct another phase of the projects under the conceptual approval permit. Where substantive changes in the design are proposed by the applicant, or are required to address the factors in paragraphs (7)(b) through (d), above, the permittee must submit an application for a major modification of the conceptual approval permit, which must be approved prior to the Agency issuing a permit to construct or alter future phases.

(12) A permit under this chapter shall not be required to construct or alter projects consistent with a conceptual approval permit issued under part IV of chapter 373, F.S., prior to October 1, 2013; such construction or alteration shall continue to be governed by the rules in effect prior to October 1, 2013, unless modifications are proposed that will require a permit under this chapter in accordance with subsection 62-330.315(4), F.A.C.

(13) Conceptual approvals for ports are available under section 373.4133, F.S.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 373.426 FS. History–New 10-1-13, Amended 6-1-18.

62-330.060 Content of Applications for Individual and Conceptual Approval Permits.

Materials to include in an application or notice for a permit are described below. Applicants are encouraged to have a pre-application meeting or discussion with Agency staff prior to submitting the application or notice.

(1) An application for an individual permit or conceptual approval permit shall be made on Form 62-330.060(1), "Application for Individual and Conceptual Approval Environmental Resource Permit and Authorization to Use State-Owned Submerged Lands," including the information required in the applicable Sections A through H (June 1, 2018), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-09361), a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C., or by use of the equivalent e-application form of the applicable Agency. Attachments 1, 2, and 3 of the form (containing agency contacts and a summary of the application fees related to applications and notices) are not incorporated by reference, but are available at https://floridadep.gov/water/submerged-lands-environmental-resources-coordination/content/forms-environmental-resource.

(2) The application must include all material requested in the application form; the processing fee in accordance with rule 62-330.071, F.A.C.; and other information needed to provide reasonable assurance that the proposed activities meet the conditions for issuance in rule 62-330.301, F.A.C., the additional conditions for issuance in rule 62-330.302, F.A.C., and the Applicant's Handbook.

(3) The applicant must certify that it has sufficient real property interest over the land upon which the activities subject to the

application will be conducted, as required in Section A of Form 62-330.060(1) and Section 4.2.3(d) of the Applicant's Handbook Volume I. The applicant or the applicant's authorized agent must sign Part 4.A. of the application, and the applicant must sign Part 4.B. If the applicant's authorized agent signs Part 4.A, the applicant also must sign Part 4.C.

(4) An application for an individual permit also constitutes an application to operate and maintain the project. The application must specify the entity that will operate and maintain the project. If the applicant proposes an entity other than the current owner to operate and maintain the proposed project, documentation must be included demonstrating how such entity will meet the requirements of sections 12.3 through 12.3.4 of Volume I. A homeowner's or property owner's association ("HOA" or "POA," respectively) draft association documents designating the HOA or POA as the operating entity, and prepared in conformance with sections 12.3 through 12.3.4 of Volume I, shall satisfy this requirement. This provision of the association documents may not be modified without a permit modification in accordance with rule 62-330.315, F.A.C.

Rulemaking Authority 373.044, 373.113, 373.171, 373.4131 FS. Law Implemented 373.042, 373.413, 373.4131, 373.416, 668.003, 668.004, 668.50 FS. History–New 10-1-13, Amended 6-1-18.

62-330.061 Submittal of Applications and Notices to Agency Offices.

Rulemaking Authority 373.026, 373.043, 373.044, 373.118, 373.4131, 373.4145, 373.418, 403.805(1), 668.003, 668.004, 668.50 FS. Law Implemented 373.026, 373.118, 373.413, 373.4131, 373.4145, 373.416, 373.426, 668.003, 668.004, 668.50 FS. History–New 10-1-13, Repealed 11-26-15.

62-330.062 Water Quality Certification and Coastal Zone Consistency Concurrence.

(1) A State Water Quality Certification under Section 401 of the Clean Water Act, 33 U.S.C. Section 1341, shall be provided as described below.

(a) A complete application for an individual or conceptual approval permit shall constitute an application for certification of compliance with state water quality standards for activities that require an associated Department of the Army permit or license under Section 404 of the Clean Water Act, 33, U.S.C. 1344. Issuance of the individual or conceptual approval permit under this chapter shall constitute certification of compliance with water quality standards, unless water quality certification is waived in accordance with paragraph (1)(c), below.

(b) State water quality certification is granted when an activity meets all the terms and conditions of a general permit under rule 62-330.052, F.A.C., and the applicable rules 62-330.401 through 62-330.635, F.A.C.

(c) State water quality certification is waived for activities:

1. That are not regulated under rule 62-330.020, F.A.C.

2. That are exempt under rule 62-330.051 or 62-330.0511, F.A.C.

3. That require net improvement of water quality under section 373.414(1)(b), F.S., including permits issued under rule 62-330.055, F.A.C.

4. When the individual or conceptual approval permit is not issued or denied within 365 days of the date the application is deemed complete by the Agency.

5. When the permit or authorization expressly waives water quality certification.

(2) A complete application for an individual or conceptual approval permit for activities located in or seaward of coastal counties, and, in whole or in part, in, on, or over wetlands or other surface waters, shall also constitute a request for the State's concurrence that the activities are consistent with the enforceable policies included in the Florida Coastal Management Program (FCMP) under the "Coastal Zone Management Act" (CZMA), 16 U.S.C. Sections 1451-1466, and its implementing regulations, 15 C.F.R. Part 930. In accordance with section 380.23, F.S.:

(a) Qualification for a general permit, or issuance of an individual or conceptual approval permit shall constitute the state's concurrence that the activity is consistent with the enforceable policies included in the FCMP.

(b) Applications for federally permitted or licensed activities that qualify for an exemption under section 373.406 or 403.813(1), F.S., and this chapter, or the "10/2" general permit under section 403.814(12), F.S., are not eligible to be reviewed for federal consistency with part IV of chapter 373, F.S. The U.S. Army Corps of Engineers (Corps) or any designated federal, state or local agency administering general permits on behalf of the Corps under 33 C.F.R. Section 325.2(b)(2) may presume such exempt activities are consistent with the permitting Agency's authorities within the FCMP, provided the activity receives any applicable authorization to use and occupy state-owned submerged lands under chapter 253, F.S., and, as applicable, chapter 258, F.S.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.418, 380.23(4), 403.0877, 403.805(1) FS. Law Implemented 373.026(7), 373.109, 373.117, 373.118, 373.413, 373.4131, 373.4141, 373.4145, 373.416, 373.426, 373.428, 380.23, 403.0877 FS. History–New 10-1-13, Amended 6-1-18.

62-330.071 Fees.

(1) A processing fee is required to be submitted with an application, notice, or petition under this chapter. The amount of the fee is specified in the following rules of the applicable Agency where the application, notice, or petition is submitted. The rules in paragraphs (b) through (e), below, are incorporated by reference herein. A copy of the incorporated material may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(a) Department or Northwest Florida Water Management District – rule 62-4.050, F.A.C.

(b) Suwannee River Water Management District – rule 40B-1.706, F.A.C., (October 1, 2013), (https://www.flrules.org/Gateway/reference.asp?No=Ref-02534)

(c) St. Johns River Water Management District – rule 40C-1.603, F.A.C., (October 1, 2013), (https://www.flrules.org/Gateway/reference.asp?No=Ref-02535)

(d) Southwest Florida Water Management District – rule 40D-1.607, F.A.C., (October 1, 2013), (https://www.flrules.org/Gateway/reference.asp?No=Ref-02536)

(e) South Florida Water Management District Rule – rule 40E-1.607, F.A.C., (October 1, 2013), (https://www.flrules.org/Gateway/reference.asp?No=Ref-02537).

(f) The processing fee for applications, notices, or petitions that are the responsibility of a local government delegated to implement this chapter under section 373.441, F.S., shall be established by the local government in accordance with the Delegation Agreement between the Department and the local government incorporated by reference in chapter 62-113, F.A.C.

(2) Processing fees submitted in the form of a check shall be made payable to the Agency. Electronic payment will be in accordance with the procedures established by the applicable Agency.

(3) If an applicant withdraws an application for individual or conceptual approval permit prior to Agency action, any processing fee submitted with that application shall be applied to the processing fee for a new application or notice received from the same applicant if done within 365 days from when the original application was withdrawn, provided the activity is located within all or part of the same project area. In such a case, additional processing fees will be required only to collect the balance due for the activities proposed in the revised application or notice. Processing fees previously paid for an application or notice that was denied by the Agency shall not be applied to a new or revised application or notice.

(4) A processing fee shall not be assessed for applications and notices under this chapter submitted by the Army, Navy, Air Force, Coast Guard, Marine Corps, or National Guard branches of the U.S. Department of Defense.

Rulemaking Authority 373.026(7), 373.043, 373.109, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 218.075, 373.109, 373.4131, 373.4145, 373.418, 373.421 FS. History–New 10-1-13, Amended 6-1-18.

62-330.075 Additional Requirements and Procedures for Concurrent Review of Related Applications.

(1) A single application shall be submitted and reviewed for activities that require both an individual permit under this chapter and a proprietary authorization under chapter 253 or 258, F.S., to use state-owned submerged lands. In such cases, the application shall not be deemed complete, and the timeframes for approval or denial shall not commence, until all information required by applicable provisions of part IV of chapter 373, F.S., and proprietary authorization under chapter 253 or 258, F.S., and rules adopted thereunder for both the environmental resource permit and the proprietary authorization is received.

(2) No application under this section shall be approved until all the requirements of applicable provisions of part IV of chapter 373, F.S., and proprietary authorization under chapter 253 or 258, F.S., and rules adopted thereunder for both the individual permit and the proprietary authorization are met. The approval shall be subject to all conditions of the regulatory permit and proprietary authorization, and any additional conditions imposed by such statutes or rules.

(3) For an application reviewed under this section for which a request for proprietary authorization to use state-owned submerged lands has been delegated to the Agency to take final action without action by the Board of Trustees of the Internal Improvement Trust Fund, the Agency shall issue a consolidated notice of intent to issue or deny the individual permit and the proprietary authorization within 60 days of receiving a complete application under this section. Waiving or tolling the timeframes for final action on the application under this section shall constitute a waiver or tolling of the timeframes for final action on the

individual or conceptual approval permit application.

(4) For an application reviewed under this section for which the request for proprietary authorization to use state-owned submerged lands has not been delegated to the Agency to take final action without action by the Board of Trustees of the Internal Improvement Trust Fund, the application shall be reviewed and final agency action taken in accordance with the procedures in sections 373.427(2)(a) through (c), F.S. The recommended consolidated intent, as required in section 373.427(2)(a), F.S., shall be considered issued when the Agency submits it for publication on the Board of Trustees' agenda, and releases it to the applicant and to any person to whom notice is required under rule 62-330.090, F.A.C.

(5) Upon the issuance of the consolidated notice or recommended consolidated notice of intent to issue or deny pursuant to subsection (4), above, the Agency shall be deemed to be in compliance with the timeframes for approval or denial in section 120.60(1), F.S. Failure to satisfy these timeframes shall not result in approval by default of the application to use state-owned submerged lands. Also, if an administrative proceeding under sections 120.569 and 120.57, F.S., is properly requested on both the individual or conceptual approval permit and the proprietary authorization under this section, the review shall be conducted as a single consolidated administrative proceeding, and final agency action shall not be taken on either authorization until the administrative proceeding is concluded.

(6) Appellate review of any consolidated order under this section is governed by section 373.4275, F.S.

(7) For an activity requiring a permit under section 161.041, F.S., and an individual or conceptual approval permit under this chapter, a joint coastal permit shall be required, as provided in chapter 62B-49, F.A.C., in place of the individual or conceptual approval permit under this chapter.

(8) This section shall be applicable to all applications for individual or conceptual approval permits under this chapter, and proprietary authorizations under chapter 253 or 258, F.S., to use state-owned submerged lands, that are received by the Agency after October 1, 2013. If an applicant requests that its application for an individual or conceptual approval permit under this chapter, and proprietary authorizations under chapter 253 or 258, F.S., to use state-owned submerged lands, received prior to October 1, 2013, be processed under this rule, such request shall be granted if the applications for both are incomplete as of October 1, 2013.

(9) Nothing in this section shall be construed to limit an applicant's ability to make separate applications for stages, phases, or portions of a project separate from an activity requiring both a proprietary authorization under chapter 253 or 258, F.S., and an individual or conceptual approval permit under this chapter.

Rulemaking Authority 161.055, 253.03(7), 253.77, 258.43, 373.026, 373.043, 373.044, 373.4131, 373.418, 373.427, 403.805(1) FS. Law Implemented 120.60, 161.041, 161.055, 253.03, 253.77, 258.42, 258.43, 373.026, 373.413, 373.4131, 373.416, 373.427, 373.4275 FS. History–New 10-1-13, Amended 6-1-18.

62-330.090 Processing of Individual and Conceptual Approval Permit Applications.

(1) The Agency shall review, notice, and issue a request for any required additional information in accordance with section 5.5.3 of Volume I.

(2) Pending applications shall be exempt from changes in the rules adopted after an application has been deemed complete except as otherwise provided by law or in this chapter.

(3) If an applicant submits a processing fee in excess of the required fee, the Agency shall begin processing the application and shall refund to the applicant the amount received in excess of the required fee. If an applicant fails to provide the complete processing fee, the Agency will inform the applicant of the amount of additional fee required, and the application will not be complete until the complete processing fee is received, along with the other materials that have been timely requested in accordance with section 5.5.3 of Volume I. The Agency cannot be compelled to issue a permit in advance of receipt of the required fee or any other material required by the Agency to deem an application complete.

(4) If a substantial revision is submitted to a pending application, other than revisions proposed to reduce adverse impacts identified by the Agency, the applicant shall pay the difference between the processing fees already submitted and any additional fees required for the revised application under rule 62-330.071, F.A.C. In such a case, the time frames in section 5.5.3 of Volume I for processing the application shall be restarted.

(5) In addition to the procedures in this section, processing of the application will be performed in accordance with sections 5.5 through 5.6 of Volume I.

(6) A permit shall only be issued to an entity meeting the requirements of section 4.2.3(d) of Volume I.

(7) The Agency shall cause a "Recorded Notice of Environmental Resource Permit" Form No. 62-330.090(1), (June 1, 2018),

incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-09362), a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C., to be recorded in the public records of the county where the property is located unless otherwise noted in the permit. This notice shall not be considered an encumbrance upon the property. Such notice need not be recorded when the entire activity:

(a) Is for an individual, single-family residence, duplex, triplex, or quadruplex that is not part of a larger common plan of development or sale proposed by the permittee, except when the permit specifies that recording is necessary to ensure future owners are advised of long-term operational and maintenance requirements, or conservation provisions;

(b) Is authorized by a general permit under this chapter;

(c) Is temporary (not to exceed one year) in nature;

(d) Has no long term maintenance or operation requirements associated with it;

(e) Is located within lands encumbered by a real property interest held by a federal, state, county, or municipal government entity, including a school, university, or college;

(f) Is a utility within an easement recorded in the official records; or

(g) Is within the permit area of an existing permit for which a Notice has already been recorded, and the permit modification does not change the permit area.

Rulemaking Authority 373.026(7), 373.043, 373.116, 373.118, 373.413, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.109, 373.118, 373.4131, 373.4141, 373.4145 FS. History–New 10-1-13, Amended 6-1-18.

62-330.100 Purpose and Intent.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.406(5), 373.414, 373.415, 373.418, 373.4211(22), (25), 373.461, 380.06(9), 403.805(1) FS. Law Implemented 373.019, 373.042, 373.0421, 373.085, 373.086, 373.109, 373.118, 373.119, 373.129, 373.136, 373.403, 373.406, 373.413, 373.4135, 373.4136, 373.414, 373.4141, 373.415, 373.416, 373.417, 373.418, 373.419, 373.421(2)-(6), 373.4211(22), 373.439, 373.461, 380.051, 380.06(9), 403.813(1), 403.414, 403.0877 FS. History–New 12-7-92, Formerly 17-330.100, Amended 10-3-95, Repealed 10-1-13.

62-330.200 Rules Adopted by Reference.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.406(5), 373.414, 373.415, 373.418, 373.461, 380.06(9), 403.0877 FS. Law Implemented 373.019, 373.042, 373.0421, 373.085, 373.086, 373.109, 373.118, 373.119, 373.129, 373.136, 373.403, 373.406, 373.413, 373.4135, 373.4136, 373.414, 373.4141, 373.415, 373.416, 373.417, 373.418, 373.419, 373.421(2)-(6), 373.4211(22), (25), 373.422, 373.423, 373.426, 373.427, 373.429, 373.430, 373.433, 373.436, 373.439, 373.461, 380.06(9), 403.0877, 403.813(1) FS. History–New 12-7-92, Formerly 17-330.200, Amended 10-3-95, 6-6-96, 8-21-00, 9-4-05, 12-5-05, 6-5-06, 8-2-06, 8-2-06, 8-1-10, Repealed 10-1-13.

62-330.201 Formal Determinations of the Landward Extent of Wetlands and Other Surface Waters.

(1) A real property owner, an entity having a contract to purchase real property, an entity having the power of eminent domain, or any other person who has legal or equitable interest in real property, may petition the Agency for a formal determination of the landward extent of wetlands and other surface waters for that property pursuant to section 373.421(2), F.S. A formal determination means the Agency will make a binding determination of the landward extent (boundaries) of wetlands and other surface waters as defined by chapter 62-340, F.A.C. A formal determination is binding on the real property for which that determination is sought for as long as the determination is valid, in accordance with sections 373.421(2) and (3), F.S. If the petitioner is not the owner of the land, the petitioner must provide the Agency with information sufficient to contact the current owner, and the Agency shall provide notice of receipt of the petition to the landowner.

(2) Procedures for the submittal, review, noticing, and action on a petition for a formal determination are contained in sections 7.2 through 7.2.7 of Volume I. The petition shall be submitted using Form 62-330.201(1), "Petition for a Formal Determination of the Landward Extent of Wetlands and Other Surface Waters," (June 1, 2018), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-09363). It shall be submitted with the fee prescribed in rule 62-330.071, F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.421(2), 403.0877 FS. Law Implemented 120.54(5)(a), 373.026, 373.4131, 373.421(2), 373.441 FS. History–New 7-4-95, Amended 8-14-96, 8-16-98, 2-19-03, Formerly 62-343.040, Amended 10-1-13, 6-1-18.

62-330.301 Conditions for Issuance of Individual and Conceptual Approval Permits.

(1) To obtain an individual or conceptual approval permit, an applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal, or abandonment of the projects regulated under this chapter:

(a) Will not cause adverse water quantity impacts to receiving waters and adjacent lands;

(b) Will not cause adverse flooding to on-site or off-site property;

(c) Will not cause adverse impacts to existing surface water storage and conveyance capabilities;

(d) Will not adversely impact the value of functions provided to fish and wildlife and listed species by wetlands and other surface waters;

(e) Will not adversely affect the quality of receiving waters such that the state water quality standards set forth in chapters 62-4, 62-302, 62-520, and 62-550, F.A.C., including the antidegradation provisions of paragraphs 62-4.242(1)(a) and (b), F.A.C., subsections 62-4.242(2) and (3), F.A.C., and rule 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in subsections 62-4.242(2) and (3), F.A.C., will be violated;

(f) Will not cause adverse secondary impacts to the water resources. In addition to the criteria in this subsection and in subsection 62-330.301(2), F.A.C., in accordance with section 373.4132, F.S., an applicant proposing the construction, alteration, operation, maintenance, abandonment, or removal of a dry storage facility for 10 or more vessels that is functionally associated with a boat launching area must also provide reasonable assurance that the facility, taking into consideration any secondary impacts, will meet the provisions of paragraph 62-330.302(1)(a), F.A.C., including the potential adverse impacts to manatees;

(g) Will not adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to section 373.042, F.S.;

(h) Will not cause adverse impacts to a Work of the District established pursuant to section 373.086, F.S.;

(i) Will be capable, based on generally accepted engineering and scientific principles, of performing and functioning as proposed;

(j) Will be conducted by a person with the financial, legal and administrative capability of ensuring that the activity will be undertaken in accordance with the terms and conditions of the permit, if issued; and

(k) Will comply with any applicable special basin or geographic area criteria established as follows:

1. Within the Northwest Florida Water Management District, Sections 13.0 through 13.4 (Special Basin Criteria for Sensitive Karst Areas, including Appendix A) of Volume II.

2. Within the Suwannee River Water Management District, Section 5.9 (Sensitive Karst Areas) of Volume II.

3. Within the St. Johns River Water Management District:

a. Chapter 40C-41, F.A.C., “Surface Water Management Basin Criteria,” (October 1, 2013), incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02551).

b. Sections 13.0 through 13.8.3 (Part VI, Basin Criteria), of Volume II.

4. Within the South Florida Water Management District:

a. Chapter 40E-41, F.A.C., “Surface Water Management Basin and Related Criteria,” (December 1, 2011), incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02554).

b. Chapter 40E-63, F.A.C., “Everglades Program,” (November 9, 2010), incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02557).

c. For activities within the Outstanding Florida Waters of Monroe County, rules 62-312.400 through 62-312.460, F.A.C.

Copies of incorporated material may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(2) In instances where an applicant is unable to meet state water quality standards because existing ambient water quality does not meet standards and the system will contribute to this existing condition, the applicant must implement mitigation measures that are proposed by, or acceptable to, the applicant that will cause net improvement of the water quality in the receiving waters for those parameters that do not meet standards.

(3) In addition to the criteria in chapter 62-330, F.A.C., applications for a mitigation bank must also meet the criteria of chapter 62-342, F.A.C.

(4) The standards and criteria used to determine whether the reasonable assurances required in this section and rule 62-330.302, F.A.C., have been provided, including the provisions for elimination or reduction of impacts and mitigation to offset adverse impacts, are contained in Volume I, incorporated by reference in subsection 62-330.010(4), F.A.C., and Volume II, incorporated by reference in subsection 62-330.010(4), F.A.C., for the applicable District.

(5) Forms for demonstrating that an applicant has met the financial responsibility requirements of sections 10.3.7 through 10.3.7.9 of Volume I shall be in substantial conformance with the forms incorporated by reference below, a copy of which may be

obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(a) Form 62-330.301(1), "Performance Bond to Demonstrate Financial Assurance for Mitigation," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09364).

(b) Form 62-330.301(2), "Irrevocable Letter of Credit to Demonstrate Financial Assurance for Mitigation," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09365).

(c) Form 62-330.301(3), "Standby Trust Fund Agreement to Demonstrate Financial Assurance for Mitigation," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09367).

(d) Form 62-330.301(4), "Trust Fund Agreement to Demonstrate Financial Assurance for Mitigation," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09368).

(e) Form 62-330.301(5), "Escrow Agreement," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09369).

(f) Form 62-330.301(6), "Guarantee Bond to Demonstrate Financial Assurance for Mitigation," (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02488).

(6) Forms for recording of a conservation easement in the public records in favor of the Agency shall be in substantial conformance with the forms incorporated by reference below, a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. The use of these forms shall constitute consistency with section 704.06, F.S. Where the applicant demonstrates that project specific conditions necessitate deviation from language of the accepted forms, alternative language shall be accepted provided that the intent of section 704.06, F.S., and section 10.3.8 of Volume I continue to be met:

(a) Form 62-330.301(8), "Deed of Conservation Easement–Standard," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09370).

(b) Form 62-330.301(9), "Deed of Conservation Easement–Standard, with Third Party Beneficiary Rights," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09371).

(c) Form 62-330.301(10), "Deed of Conservation Easement–Passive Recreational Uses," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09372).

(d) Form 62-330.301(11), "Deed of Conservation Easement–Riparian Uses," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09373).

(e) Form 62-330.301(12), "Deed of Conservation Easement–for Local Governments," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09374).

(f) Form 62-330.301(13), "Deed of Conservation Easement–Third Party Beneficiary Rights to the U.S. Army Corps of Engineers," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09375).

(g) Form 62-330.301(14), "Declaration of Restrictive Covenants," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09376).

(h) Form 62-330.301(15), "Declaration of Restrictive Covenants–Insert," (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02496).

(i) Form 62-330.301(16), "Temporary Easement for Construction Access," (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02497).

(j) Form 62-330.301(17), "Permanent Access Easement," (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02498).

(k) Form 62-330.301(18), "Joint Deed of Conservation Easement–Standard (within Broward County)," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09377).

(l) Form 62-330.301(19), "Joint Deed of Conservation Easement–Standard, with Third Party Beneficiary Rights (within Broward County)," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09378).

(m) Form 62-330.301(20), "Joint Deed of Conservation Easement–Passive Recreational Uses (within Broward County)," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09379).

(n) Form 62-330.301(21), "Joint Deed of Conservation Easement–Riparian Uses (within Broward County)," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09380).

(o) Form 62-330.301(22), "Joint Deed of Conservation Easement–Local Governments (within Broward County)," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09381).

(p) Form 62-330.301(23), "Joint Deed of Conservation Easement–Third Party Beneficiary Rights to the U.S. Army Corps of Engineers (within Broward County)," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09382).

(q) Form 62-330.301(24), “Deed of Conservation Easement for Mitigation Banks–Third Beneficiary Rights to U.S. Army Corps of Engineers,” (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09383).

(7) An overwater pier, dock, or similar structure located in a deepwater port listed in section 311.09, F.S., does not require treatment of stormwater runoff from its impervious surfaces subject to the requirements of section 373.406(12), F.S.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.042, 373.409, 373.413, 373.4131, 373.4132, 373.4142, 373.4145, 373.416, 373.426, 373.429, 704.06 FS. History–New 10-1-13, Amended 6-1-18.

62-330.302 Additional Conditions for Issuance of Individual and Conceptual Approval Permits.

(1) In addition to the conditions in rule 62-330.301, F.A.C., to obtain an individual or conceptual approval permit under this chapter, an applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, repair, removal, and abandonment of a project:

(a) Located in, on, or over wetlands or other surface waters will not be contrary to the public interest, or if such activities significantly degrade or are within an Outstanding Florida Water, are clearly in the public interest, as determined by balancing the following criteria as set forth in sections 10.2.3 through 10.2.3.7 of Volume I:

1. Whether the activities will adversely affect the public health, safety, or welfare or the property of others;

2. Whether the activities will adversely affect the conservation of fish and wildlife, including endangered or threatened species, or their habitats;

3. Whether the activities will adversely affect navigation or the flow of water or cause harmful erosion or shoaling;

4. Whether the activities will adversely affect the fishing or recreational values or marine productivity in the vicinity of the activity;

5. Whether the activities will be of a temporary or permanent nature;

6. Whether the activities will adversely affect or will enhance significant historical and archaeological resources under the provisions of section 267.061, F.S.; and

7. The current condition and relative value of functions being performed by areas affected by the proposed activities.

(b) Will not cause unacceptable cumulative impacts upon wetlands and other surface waters as set forth in sections 10.2.8 through 10.2.8.2 of Volume I.

(c) Located in, adjacent to or in close proximity to Class II waters or located in Class II waters or Class III waters classified by the Department of Agriculture and Consumer Services as approved, restricted, conditionally approved, or conditionally restricted for shellfish harvesting will comply with the additional criteria in section 10.2.5 of Volume I.

(d) Involving vertical seawalls in estuaries or lagoons will comply with the additional criteria provided in section 10.2.6 of Volume I.

(2) When determining whether an applicant has provided reasonable assurances that the permitting standards of this chapter will be met, the Agency shall consider the applicant’s violation of any rules adopted pursuant to sections 403.91 through 403.929, F.S. (1984 Supp.), as amended, or part IV, chapter 373, F.S., and efforts taken by the applicant to resolve these violations.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.414(9), 403.805(1) FS. Law Implemented 373.042, 373.413, 373.4131, 373.414, 373.416, 373.426, 380.23 FS. History–New 10-1-13, Amended 6-1-18.

62-330.310 Operation and Maintenance.

(1) The permit authorizing construction or alteration must be converted to the operation and maintenance phase once the construction or alteration has been completed. The construction or alteration authorized under an individual permit must be certified to be in compliance with the permit before conversion of the permit to the operation and maintenance phase. Procedures for converting the permit to the operation and maintenance phase, and transferring the permit to the perpetual operation and maintenance entity are described in sections 12.2 and 12.2.1 of Volume I.

(2) If a separate entity is to operate and maintain the project, the entity must have the financial, legal, and administrative capability to perform operation and maintenance, as described in sections 12.1 through 12.3.4 of Volume I. Transfer of the permit to the operation and maintenance entity that was approved as part of the permit does not require a permit modification.

(3) If the permittee desires to change or add operation and maintenance entities after the permit is issued, or to allow for multiple entities to operate portions of the project, a permit modification under rule 62-330.315, F.A.C., must be requested and approved before transfer of the permit to the new entity or entities. Such permit modification request must include a demonstration

that the new entity or entities meet the requirements of subsection (2), above. If an interdependent system will have multiple operation and maintenance entities, that modification request must also demonstrate that each entity that will operate and maintain an interdependent part of the system has the capability to operate and maintain all parts of the system necessary to remain in compliance with all conditions of the permit.

(4)(a) For individual permits NOT associated with an individual, private single-family dwelling unit, duplex, triplex, or quadruplex:

1. Upon completion of construction, and following the general conditions in paragraphs 62-330.350(1)(f) and (g), F.A.C., the permittee shall submit both of the following to the permitting Agency:

a. Form 62-330.310(1), "As-Built Certification and Request for Conversion to Operation Phase," which is incorporated by reference herein (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09384); and

b. Form 62-330.310(2), "Request for Transfer of Environmental Resource Permit to the Perpetual Operation and Maintenance Entity," which is incorporated by reference herein (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09385).

2. The permit will be converted to the operation and maintenance phase upon a certification by the permittee and concurrence by the Agency that the entire project, or an independent portion of the project, has been constructed in compliance with the permit.

3. The permit will be transferred to the operation and maintenance entity once the Agency has verified that the entity meets the requirements of section 12.3 of Volume I, all applicable operation and maintenance documents have been recorded in accordance with section 12.3.4 of Volume I, and the entity has accepted responsibility for operation and maintenance of the project or independent portion of the project. The entity is required to sign Form 62-330.310(2), except when the operation and maintenance entity has been accepted at the time of issuance of the permit for the construction phase, or as part of a permit modification.

(b) For individual permits for an individual, private single family dwelling unit, duplex, triplex, or quadruplex, the permit will automatically convert to the operation and maintenance phase upon completion of construction and the Agency's receipt from the permittee, in accordance with the general conditions in paragraph 62-330.350(1)(f), F.A.C., of a completed Form 62-330.310(3), "Construction Completion and Inspection Certification for Activities Associated with a Private Single-Family Dwelling Unit," (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09386), which is incorporated by reference herein, certifying that the project was constructed in accordance with the permit.

(c) Copies of the above forms may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(5) Projects authorized under a general permit shall, upon completion, be operated and maintained in perpetuity by the permittee and subsequent owners of the land on which the project is located.

(6) The operation and maintenance entity or entities shall remain liable for compliance with the terms of the permit in perpetuity, unless the permit is transferred in accordance with rule 62-330.340, F.A.C., or the permit is modified in accordance with subsection (3), above.

(7)(a) The operation phase of mining activities subject to the land reclamation requirements of chapter 378, F.S., shall terminate, without the need to apply for abandonment of the permit, after the mine, or its subunits as applicable:

1. Has been successfully reclaimed in accordance with chapter 378, F.S., other than lands disturbed by mining operations that are not subject to the requirements of chapter 378, F.S.;

2. Has met all success requirements of the individual permit issued under part IV of chapter 373, F.S.; when the construction phase of the permit includes all phases of construction, abandonment, reclamation, and final success determination over reclaimed lands; and

3. Does not contain components that require long-term operation or maintenance, such as: stormwater management systems; achievement of mitigation success criteria; work in conservation easements requiring a permit under this chapter; state-owned submerged lands authorizations; dams; above-grade impoundments; works; water control structures; erosion and sedimentation controls; or dewatering pits.

(b) If a mine is already operating under an operation and maintenance phase of an individual permit, such operation and maintenance phase shall be allowed to terminate upon successful completion of all phases of reclamation and receipt of final success determinations by the Agency over lands reclaimed in accordance with the rules adopted pursuant to chapter 378, F.S.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.416, 373.418, 403.805(1) FS. Law Implemented 373.118, 373.4131, 373.4141, 373.416, 373.419, 373.426, 373.429 FS. History–New 10-1-13, Amended 6-1-18.

62-330.311 Inspections and Reporting.

(1) The operation and maintenance entity shall provide for the inspection of the permitted project after conversion of the permit to the operation and maintenance phase as provided in section 12.4 of Volume I. Minimum inspection frequencies will be established in Volume II for each District as applicable, but actual inspection and reporting frequencies for the specific project are subject to revision through permit conditions, based on site- and activity-specific operational and maintenance requirements.

(2) Within 30 days of any failure of a stormwater management system or deviation from the permit, a report shall be submitted to the Agency using Form 62-330.311(1), "Operation and Maintenance Inspection Certification," (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02502), incorporated by reference herein, describing the remedial actions taken to resolve the failure or deviation.

(3) The operation and maintenance entity of a regional stormwater management facility must notify the Agency on an annual basis, using Form 62-330.311(2), "Regional Stormwater Management System Annual Report," (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02503), incorporated by reference herein, of all new systems and their associated stormwater volumes that have been allowed to discharge stormwater into the regional facility, and must confirm that the maximum allowable treatment volume of stormwater authorized to be accepted by the regional facility has not been exceeded.

(4) A copy of the above forms may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(5) Permits issued prior to the effective date of this section shall continue to be inspected and reported on in accordance with the terms and conditions of the existing permit. However, a permittee may request a modification of the permit to reflect inspection and reporting in accordance with this rule.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.416, 373.418, 403.805(1) FS. Law Implemented 373.118, 373.4131, 373.4141, 373.423, 668.003, 668.004, 668.50 FS. History–New 10-1-13, Amended 6-1-18.

62-330.315 Modification of Permits.

(1) Modifications to an unexpired individual or conceptual approval permit may be requested by the permittee and will be processed as a minor or a major modification, as described below and in section 6.2 of Volume I. Permit modification fees are set forth in rule 62-330.071, F.A.C.

(2) Minor modifications may be requested in accordance with section 6.2 of Volume I. Minor modifications are not subject to the public notification requirements of section 5.5 of Volume I. The following types of requests will be considered as minor modifications:

(a) To extend the duration of the construction phase of an individual permit by up to five years, subject to the provisions of subsection 62-330.320(2), F.A.C.;

(b) To correct errors or typographical mistakes;

(c) To incorporate changes requested by the Agency;

(d) To change due dates for reporting or performance deadlines;

(e) To transfer a permit upon a change in ownership or control;

(f) To make minor technical changes; or

(g) To make other minor changes that do not substantially alter the permit authorization, increase permitted off-site discharge, increase the environmental impact of the project, decrease required retention, decrease required detention, decrease required flood control elevations, or decrease pollution removal efficiency. Factors that will be considered in determining whether a change is minor are described in section 6.2.1 of Volume I.

(3) Any application for modification that does not qualify for a minor modification as described above shall be processed as a major modification. An application for a major modification of a permit shall be submitted and processed in the same manner as a new permit application, and those portions of the project proposed for, or affected by, the modification shall be reviewed using the same criteria as a new application.

(4) Modifications of an unexpired permit issued under one or more of the following rules as they were in effect prior to October 1, 2013: chapter 62-330, 62-343, 62-346, 40B-4, 40B-400, 40C-4, 40C-40, 40C-42, 40C-44, 40C-400, 40D-4, 40D-40, 40D-400, 40E-4, 40E-40, or 40E-400, F.A.C., shall be in accordance with the rules under which the permit was issued, except that such modification shall be processed and reviewed under this chapter (effective after October 1, 2013) if:

(a) The modification is reasonably expected to lead to additional or substantially different water resource impacts;

(b) The permittee chooses to modify the permit under this chapter; or

(c) The modification does not qualify as a minor modification under subsection (2), above.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.026(7), 373.043, 373.109, 373.118, 373.413, 373.4131, 373.4141, 373.4142, 373.4145, 373.416, 373.418, 373.429 FS. History–New 10-1-13, Amended 6-1-18.

62-330.320 Duration of Permits.

Unless revoked, extended or otherwise modified, the duration of a permit under this chapter is:

(1) General permit – Five years to construct, commencing from the date notice is received by the Agency, or the date the Agency verifies compliance with the terms and conditions of the general permit in accordance with rule 62-330.402, F.A.C., whichever is later.

(2) Individual permit – Five years from the date of issuance to construct, except:

(a) Less than five years for activities such as temporary or experimental work, or when a shorter duration is needed; or

(b) More than five years when the applicant specifically requests a longer duration and provides reasonable assurance that:

1. The activity for which the permit is to be granted cannot reasonably be expected to be completed within five years after commencement of construction; and

2. The impacts of the activity, considering its nature, the size of the project, and any required mitigation, can be accurately assessed and offset where appropriate, and the terms of the permit can be met for the duration of the permit requested.

(3) Operation and maintenance – in perpetuity following:

(a) Construction in conformance with the terms and conditions of a general permit; or

(b) Conversion from the construction to the operation phase of an individual permit in accordance with rule 62-330.310, F.A.C.

(4) Conceptual approval permit – As provided in rule 62-330.055 or 62-330.056, F.A.C.

(5) Mitigation bank permit – As provided in rule 62-342.750, F.A.C.

(6) A modification to extend the duration of the construction phase of an individual permit shall be granted if the extension request is received in writing by the Agency before expiration of the construction phase; and:

(a) The activity remains consistent with plans, terms, and conditions of the permit and the Agency's rules in effect when the extension is granted; and

(b) The request can be approved in consideration of subparagraphs (2)(b)1. and 2., above.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118, 373.413, 373.4131, 373.4136, 373.4142, 373.4145, 373.416, 373.426 FS. History–New 10-1-13, Amended 6-1-18.

62-330.340 Transfer of Permit Upon Change in Ownership or Control.

(1) Permits in the Operation and Maintenance Phase – Projects constructed in accordance with the terms and conditions of a general permit are automatically authorized to be operated and maintained by the permittee and subsequent owners. A permittee with a valid individual permit in the operation and maintenance phase under this chapter or chapter 62-342, F.A.C., shall notify the Agency electronically or in writing within 30 days of a change in ownership or control of the entire real property, project, or activity covered by the permit. A processing fee is not required for this notice. The permit shall automatically transfer to the new owner or person in control, except in cases of abandonment, revocation, or modification of a permit as provided in sections 373.426 and 373.429, F.S. If a permittee fails to provide written notice to the Agency within 30 days of the change in ownership or control, or if the change does not include the entire real property or activity covered by the permit, then the transfer shall be governed by subsections (2) through (4), below.

(2) Except as provided in subsection (1), above, and in section 6.3.1 of Volume I, or as otherwise required in an individual or conceptual approval permit, or for activities authorized under a general permit, a permittee shall notify the Agency electronically or in writing within 30 days of any change in ownership or control of any portion of the real property upon which an activity is permitted under this chapter or chapter 62-342, F.A.C. A person who obtains an interest in or control of such real property shall:

(a) Request transfer of the permit to become the new permittee or modification of the permit to become a co-permittee; or

(b) Provide written documentation of the following:

1. Certification that the permittee continues to retain sufficient real property interest over the land upon which the activities subject to the permit will be conducted as described in section 4.2.3(d) of Volume I; and

2. Authorization for Agency staff with proper identification to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

(3) The person requesting transfer of the permit shall submit to the Agency a completed Form 62-330.340(1), "Request to

Transfer Environmental Resource Permit," incorporated by reference herein (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09387), a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C., together with the permit modification fee prescribed by the Agency as set forth in rule 62-330.071, F.A.C. A proposed new permittee shall demonstrate that it has sufficient real property interest in or control over the land consistent with subsection 62-330.060(3), F.A.C.

(a) The Request to Transfer Environmental Resource Permit shall be processed in the same manner as a minor modification as provided in subsection 62-330.315(2), F.A.C.

(b) The proposed new permittee shall include demonstration or documentation with the request that it meets the requirements for being an acceptable operation and maintenance entity provided in subsections 62-330.310(2) and (3), F.A.C., if applicable.

(4) Upon receipt of the completed Request to Transfer Environmental Resource Permit form and applicable processing fee, the Agency shall approve the permit transfer unless it determines that the proposed permittee or co-permittee has failed to provide reasonable assurances that it qualifies to be a permittee or that it can meet the permit conditions.

(a) If the Agency proposes to deny the transfer, it shall provide both the current permittee and the proposed permittee with notice of proposed agency action of denial, and of the right to request an administrative hearing pursuant to chapter 120, F.S.

(b) Failure of the permittee to notify the Agency in writing within 30 days of a change in ownership or control shall not, by itself, render a permit invalid. When it does not appear the current permittee has met the requirements of subsection (2), above, or has not otherwise approved or been made aware of the request to transfer the permit, upon transfer of the permit to the new permittee, the Agency will provide notice to the former permittee, at its last known address, advising of the permit transfer, together with a notice of rights under chapter 120, F.S.

(5) A permittee from whom the permit is transferred shall:

(a) Be jointly and severally liable with the new owner or permittee for compliance with the permit and for any corrective actions that may be required as a result of violations of the permit or Agency rule on the property prior to permit transfer; and

(b) Remain jointly and severally liable for any corrective actions that are required as a result of any violations of the permit that occurred prior to the change in ownership or control of the property upon which the permitted project or activity is located.

(6) Upon transfer of a permit, the new permittee shall comply with all terms and conditions of the permit.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118, 373.109, 373.413, 373.4131, 373.4142, 373.4145, 373.416, 373.426, 373.429, 668.003, 668.004, 668.50 FS. History–New 10-1-13, Amended 6-1-18.

62-330.350 General Conditions for Individual Permits.

(1) The following general conditions are binding on all individual permits issued under this chapter, except where the conditions are not applicable to the authorized activity, or where the conditions must be modified to accommodate project-specific conditions.

(a) All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under chapter 373, F.S.

(b) A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

(c) Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation, June 2007)*, and the *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008)*, which are both incorporated by reference in subparagraph 62-330.050(9)(b)5., F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.

(d) At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice," (October 1, 2013), (http://www.flrules.org/Gateway/reference.asp?No=Ref-02505), incorporated by reference herein, indicating the expected start and completion dates. A copy of this form may be obtained

from the Agency, as described in subsection 62-330.010(5), F.A.C., and shall be submitted electronically or by mail to the Agency. However, for activities involving more than one acre of construction that also require a NPDES stormwater construction general permit, submittal of the Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, DEP Form 62-621.300(4)(b), shall also serve as notice of commencement of construction under this chapter and, in such a case, submittal of Form 62-330.350(1) is not required.

(e) Unless the permit is transferred under rule 62-330.340, F.A.C., or transferred to an operating entity under rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms, and conditions of the permit for the life of the project or activity.

(f) Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:

1. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex – "Construction Completion and Inspection Certification for Activities Associated with a Private Single-Family Dwelling Unit" [Form 62-330.310(3)]; or

2. For all other activities – "As-Built Certification and Request for Conversion to Operation Phase" [Form 62-330.310(1)].

3. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

(g) If the final operation and maintenance entity is a third party:

1. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as-built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.4 of Volume I) as filed with the Florida Department of State, Division of Corporations, and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.

2. Within 30 days of submittal of the as-built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation and Maintenance Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.

(h) The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

(i) This permit does not:

1. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in chapter 62-330, F.A.C.;

2. Convey to the permittee or create in the permittee any interest in real property;

3. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or

4. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

(j) Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.

(k) The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.

(l) The permittee shall notify the Agency in writing:

1. Immediately if any previously submitted information is discovered to be inaccurate; and

2. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

(m) Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

(n) If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, stone tools, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all

activities involving subsurface disturbance in the vicinity of the discovery. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section (DHR), at (850)245-6333, as well as the appropriate permitting agency office. Project activities shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and the proper authorities notified in accordance with section 872.05, F.S. For project activities subject to prior consultation with the DHR and as an alternative to the above requirements, the permittee may follow procedures for unanticipated discoveries as set forth within a cultural resources assessment survey determined complete and sufficient by DHR and included as a specific permit condition herein.

(o) Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under rule 62-330.201, F.A.C., provides otherwise.

(p) The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under chapter 62-330, F.A.C., or cause violations of state water quality standards.

(q) This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

(r) A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with subsection 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

(2) In addition to those general conditions in subsection (1), above, the Agency shall impose any additional project-specific special conditions necessary to assure the permitted activities will not be harmful to the water resources, as set forth in rules 62-330.301 and 62-330.302, F.A.C., Volumes I and II, as applicable, and the rules incorporated by reference in this chapter.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.116, 373.117, 373.409, 373.413, 373.4131, 373.4142, 373.4145, 373.416, 373.418, 373.419, 373.422, 373.423, 373.426, 373.428, 403.0877 FS. History–New 10-1-13, Amended 6-1-18.

62-330.351 General Conditions for Conceptual Approval Permits.

The following general conditions are binding on all conceptual approval permits issued under this chapter, except where the conditions are not applicable to the activity or where the conditions must be modified to accommodate project-specific situations. In addition to these general conditions, the Agency shall impose any additional special conditions necessary to assure the permitted activities will not be harmful to the water resources, as set forth in rules 62-330.301 and 62-330.302, F.A.C., Volumes I and II, as applicable, and the rules incorporated by reference in this chapter.

(1) This permit does not authorize any construction, alteration, maintenance, operation, removal, or abandonment, except where such activities are specifically authorized as the first phase of an individual permit or are authorized to occur in accordance with a general permit or exemption under chapter 62-330, F.A.C.

(2) This permit does not:

(a) Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in chapter 62-330, F.A.C.;

(b) Convey to the permittee or create in the permittee any interest in real property;

(c) Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or

(d) Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

(3) The permittee shall notify the Agency in writing:

(a) Immediately if any previously submitted information is discovered to be inaccurate; and

(b) Within 30 days of any conveyance or division of ownership or control of the property or the system, the name and contact information for the new owner.

(4) Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample, and test the project site to ensure conformity with the permit.

(5) Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans

or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under rule 62-330.201, F.A.C., provides otherwise.

(6) This conceptual approval permit only authorizes design concepts for a master or future plan to construct, alter, operate, maintain, remove, or abandon projects that require a permit under part IV of chapter 373, F.S. It does not authorize any construction, alteration, operation, maintenance, removal, or abandonment, or the establishment and operation of a mitigation bank, or relieve the permit holder of any requirements to obtain such permits.

(7) Subsequent applications to construct and operate activities shall be prepared and submitted using the applicable procedures in rules 62-330.052, 62-330.054, 62-330.060, and 62-330.402, F.A.C., and sections 4.2.2, 4.2.3, 4.3, and 4.4 of Volume I. An application for conceptual approval for a mitigation bank shall also include the materials required by chapter 62-342, F.A.C.

(8) Issuance of this conceptual approval permit is a determination, within the level of detail provided in the application, that the activities approved in this permit are consistent with applicable rules at the time of issuance. This permit provides the conceptual approval permit holder with a rebuttable presumption, during the duration of this permit, that the engineering design and scientific principles upon which the conceptual approval permit approved herein are likely to meet applicable rule criteria for issuance of permits for subsequent phases of the project, provided all of the following are met at the time of receipt of a complete application to construct and operate the future phases:

(a) The application to construct and operate the future phases remains consistent with the designs and conditions of this permit. Primary areas for consistency comparisons include the size, location, and extent of the activities proposed, the type and nature of the activities, percent imperviousness, allowable discharge and points of discharge, location and extent of wetland and other surface water impacts, mitigation plans implemented or proposed, control elevations, extent of stormwater reuse, detention and retention volumes, and the extent of flood elevations.

If an application for construction of any portion of the land area covered by this permit is inconsistent with the design concepts and conditions approved herein, the application will be reviewed to determine the extent to which the inconsistency will affect the designs and conditions for the remainder of the lands contained in this permit. If the inconsistency will materially affect those designs and conditions, then the applicant must demonstrate that the holder of this permit agrees to that inconsistency. In such a case, the holder of the conceptual approval permit may:

1. Modify the conceptual approval permit to conform to the revised design;

2. Abandon reliance on the conceptual approval permit; or

3. Rely on those portions of the conceptual approval permit for only those areas that were not affected by the inconsistency.

(b) There are no changes to state water quality standards that would be affected by activities authorized in the conceptual approval permit that have not already been authorized for construction or operation.

(c) There have been no amendments to Florida law governing special basin criteria that would affect future activities authorized by the conceptual approval permit that have not already been authorized for construction.

(d) There are no substantive changes in the site characteristics that would affect whether the design concepts approved in the conceptual approval permit can continue to be reasonably expected to meet the conditions for authorizing construction of future phases. This shall include such things as changes in the designation of listed species, and changes to nesting, denning, and critical designation status of listed species that exist within the lands served by the project area.

(9) If changes are proposed to the design of existing or future phases, or where there have been changes to state water quality standards, special basins, or site characteristics as described in conditions paragraphs (3)(a) through (d), above, during the duration of this permit, the applicant must modify this permit if it wishes to continue to rely on this permit as a basis that reasonable assurance exists for the Agency to issue future construction or operation permits under the terms and conditions of this permit. If the permittee fails to do this, this conceptual approval permit can no longer be relied upon as a basis, in part or whole, under which permits to construct or operate future phases will be issued, and the Agency will reevaluate the terms and conditions of this permit at the time a permit application is received to construct the next phase of activities, or at the next requested extension of this permit's duration in accordance with subsection 62-330.056(11), F.A.C., whichever occurs first.

Rulemaking Authority 373.026(7), 373.118(1), 373.043, 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.116, 373.117, 373.118(1), 373.406(5), 373.409, 373.413, 373.4131, 373.414(9), 373.4142, 373.4145, 373.416, 373.418, 373.419, 373.422, 373.423, 373.426, 373.428, 403.0877 FS. History–New 6-1-18.

62-330.360 Emergency Authorizations and Actions.

When the Agency has determined that immediate action is necessary to abate an emergency condition, the Agency shall use one of the following measures below to authorize the work. “Emergency conditions” are defined as those that pose an imminent or existing serious threat or danger and require immediate action to protect the public health, safety or welfare, or the water resources of the Agency, including the health of aquatic and wetland-dependent species; a public water supply; or recreational, commercial, industrial, agricultural or other reasonable uses. Carelessness or the lack of planning on the part of an applicant for an emergency authorization shall not be sufficient grounds to warrant the granting of an emergency authorization.

(1) Issuance of an emergency order under section 373.119(2), F.S. The order shall recite the factual basis for it in accordance with section 120.569(2)(n), F.S., and include all conditions (including a limitation on the duration of the emergency authorization) required to ensure that the activity authorized or directed does not exceed that necessary to abate the threat. When the activity conducted under the order has an operational or maintenance aspect that continues beyond the emergency, any permits required under this chapter shall be applied for as soon as practicable.

(2) Authorization of construction to begin when the Agency has already received an application for a permit under this chapter, and the applicant has submitted a written request for the work to commence prior to issuance of the permit, together with documentation of the emergency conditions that exist. However, if required upon issuance of the permit, the work initiated shall be modified as necessary to comply with the terms and conditions of the permit.

(3) Issuance of an emergency field authorization when an application is not currently under consideration by the Agency. The entity requesting the emergency field authorization shall complete an “Emergency Field Authorization” Form 62-330.360(1), (June 1, 2018) (http://www.flrules.org/Gateway/reference.asp?No=Ref-09388), which is incorporated by reference herein. A copy of this form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. The activity authorized by the emergency field authorization may commence upon approval by the Agency’s field representative. The recipient of an emergency field authorization is responsible for compliance with all the terms and conditions of the authorization. Within 90 days of issuance of an emergency field authorization, the recipient shall either restore the site to the conditions existing before the emergency, or apply for an application to perform the work in accordance with the requirements for obtaining verification of an exemption or permit, as applicable, under this chapter.

Rulemaking Authority 373.026(7), 373.043, 373.4131, 373.4145, 373.418, 403.805(1) FS. Law Implemented 120.569(2), 373.026(7), 373.119, 373.413, 373.4131, 373.4145, 373.416, 373.418, 373.426, 373.439 FS. History–New 10-1-13, Amended 6-1-18.

62-330.395 Variances.

(1) In addition to a variance available under section 120.542, F.S., the Agencies are authorized to grant a variance from the provisions of section 373.414, F.S., paragraph 62-330.301(1)(e), F.A.C., and rule 62-330.302, F.A.C., pursuant to section 373.414(17), F.S. A person seeking a variance under section 373.414(17), F.S., must demonstrate that any hardship asserted as a basis of the need for a variance is peculiar to the affected property and not self-imposed, and that the grant of a variance will be consistent with the general intent and purpose of this chapter.

(a) Any person seeking a variance under section 373.414(17), F.S., shall file a petition for a variance containing the following information:

1. The petitioner’s name and signature;

2. The statute or rule from which the variance is sought;

3. Facts showing that a variance should be granted for one of the reasons in section 403.201, F.S.;

4. The time period for which the variance is sought, including the reasons and facts supporting the time period;

5. The requirements the petitioner can meet, including the date or time when the requirements will be met;

6. The steps or measures the petitioner is taking to meet the requirement from which the variance is sought. If the request is pursuant to section 403.201(1)(b), F.S., the petitioner shall include a schedule when compliance will be achieved; and

7. The fee prescribed in rule 62-330.071, F.A.C.

(b) The Agency shall review the application within 30 days after receipt to determine if the petition is complete. If the petition is determined to be incomplete, the petitioner shall be afforded an opportunity to supply additional information before the Agency evaluates the petition.

(c) The Agency shall prepare a notice of intended agency action regarding the petition for a variance, and shall publish it one time in the *Florida Administrative Register*. For variance petitions processed by the Department, the petitioner shall also publish notice of intended agency action one time, at its expense, in a newspaper of general circulation, as defined in section 50.031, F.S., in

the county in which the property for which the variance is sought is located. For variance petitions processed by the District, the District will cause the notice of intended agency action to be published, one time, in a newspaper of general circulation, as defined in section 50.031, F.S., in the county in which the property for which the variance is sought is located.

(2) Renewals of variances shall be applied for in the same manner as the initial variance.

Rulemaking Authority 373.043, 373.044, 373.113, 373.4131, 373.414(9), (17) FS. Law Implemented 373.4131, 373.414(9), (17), 403.201 FS. History–New 10-1-13, Amended 6-1-18.

62-330.401 Policy and Purpose of General Permits.

(1) General permits authorize activities that, if conducted consistent with the permit requirements, will cause minimal individual and cumulative adverse impacts to the water resources of the Agencies. Mitigation is neither necessary nor required to offset those impacts except when provided for in the general permit. Persons using a general permit must comply with the notice requirements of rule 62-330.402, F.A.C., the general conditions in rule 62-330.405, F.A.C., and all of the terms, conditions, and limitations of the specific general permit.

(2) The general permit in section 403.814(12), F.S., is not a general permit under this chapter and does not require submittal of the notice specified in subsection 62-330.402(1), F.A.C.

(3) General permits that apply to municipalities are also for use by agencies of the United States Department of Defense.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Amended 2-19-03, 10-1-07, Formerly 62-341.201, Amended 10-1-13.

62-330.402 Submittal and Processing of General Permits.

(1) A person wishing to construct, operate, maintain, alter, abandon, or remove projects under a general permit shall provide notice using Form 62-330.402(1), "Notice of Intent to Use an Environmental Resource General Permit," (June 1, 2018), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-09389), a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. The notice must be received by the applicable Agency at least 30 days prior to initiating the activities authorized by the general permit, or at such other time as specified in the general permit. Notices for general permits that identify the reviewing agency as the Department shall be submitted to the Department instead of a District.

(2) The notice for a general permit must include the processing fee prescribed in rule 62-330.071, F.A.C. If a single notice includes more than one general permit, a separate fee shall be required for each general permit.

(3) The specific procedures of a general permit shall govern if they differ from the procedures in this rule.

(4)(a) Within 30 days of receiving Form 62-330.402(1), the Agency shall determine whether the activity qualifies for a general permit. If the activity does not qualify or the notice does not contain all the required information, the Agency will notify the person as provided in section 5.3.2 of Volume I.

(b) If the notice does not demonstrate that the requested activity qualifies for a general permit due to errors or omissions, the person shall have 60 days to amend the notice as provided in section 5.3.3 of Volume I. An additional processing fee will not be required if the person submits additional information demonstrating compliance with the general permit within that 60 days. Alternatively, the person may request that the submitted information be processed as an application for an individual permit, which must be supplemented with the information required in rule 62-330.060, F.A.C., and sections 4.2.3, 4.3, and 4.4 of Volume I, or the person may withdraw the notice for a general permit.

(c) If the activities do not qualify for a general permit, the processing fee submitted for the general permit shall be applied to the processing fee required for an individual permit, as provided in section 5.3.4 of Volume I. The processing fee will not be returned if the person withdraws the notice or if qualification for the general permit is denied.

(5) The Agency will place notice of the proposed use of a general permit on the Agency website within 10 days of receipt of the request.

(6) At their discretion, persons qualifying for a general permit may publish a notice of qualification to use a general permit in a newspaper of general circulation in the affected area. The Agency will not publish, or require the person to publish, such notice.

Rulemaking Authority 373.044, 373.113, 373.118, 373.413, 373.4131 FS. Law Implemented 373.116(2), 373.118(3), 373.413, 373.4131, 373.416, 373.426, 668.003, 668.004, 668.50 FS. History–New 10-1-13, Amended 6-1-18.

62-330.405 General Conditions for All General Permits.

The following general permit conditions are binding upon the permittee and are enforceable under chapter 373, F.S. These conditions do not apply to the general permit for stormwater management systems under section 403.814(12), F.S.

(1) The general permit is valid only for the specific activity indicated. Any deviation from the specified activity and the conditions for undertaking that activity shall constitute a violation of the permit and may subject the permittee to enforcement action and revocation of the permit under chapter 373, F.S.

(2) The general permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any construction, alteration, operation, maintenance, removal or abandonment authorized by this permit; and it does not authorize any violation of any other applicable federal, state, local, or special district laws (including, but not limited to, those governing the "take" of listed species).

(3) The general permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the general permit.

(4) The general permit does not relieve the permittee from liability and penalties when the permitted activity causes harm or injury to: human health or welfare; animal, plant or aquatic life; or property. It does not allow the permittee to cause pollution that violates state water quality standards.

(5) Section 253.77, F.S., provides that a person may not commence any excavation, construction, or other activity involving the use of state-owned or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required consent, lease, easement, or other form of authorization authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on state-owned lands.

(6) The authorization to conduct activities under a general permit may be modified, suspended or revoked in accordance with chapter 120, F.S., and section 373.429, F.S.

(7) The general permit is not transferable to a new third party. To be used by a different permittee, a new notice to use a general permit must be submitted in accordance with rule 62-330.402, F.A.C. Activities constructed in accordance with the terms and conditions of a general permit are automatically authorized to be operated and maintained by the permittee and subsequent owners in accordance with subsection 62-330.340(1), F.A.C. Any person holding the general permit, persons working under the general permit, and owners of land while work is conducted under the general permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to sale, conveyance, or other transfer of ownership or control of the permitted project, activity, or the real property at which the permitted project or activity is located.

(8) Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the permitted system to ensure conformity with the plans and specifications approved by the general permit.

(9) The permittee shall maintain any permitted project or activity in accordance with the plans submitted to the Agency and authorized in the general permit.

(10) A permittee's right to conduct a specific activity under the general permit is authorized for a duration of five years.

(11) Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be implemented and maintained immediately prior to, during, and after construction as needed to stabilize all disturbed areas, including other measures specified in the permit to prevent adverse impacts to the water resources and adjacent lands. Erosion and sediment control measures shall be installed and maintained in accordance with the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation, June 2007)*, available at https://www.flrules.org/Gateway/reference.asp?No=Ref-04227, and the *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008)*, available at http://publicfiles.dep.state.fl.us/DEAR/Stormwater_Training_Docs/erosion-inspectors-manual.pdf.

(12) Unless otherwise specified in the general permit, temporary vehicular access within wetlands during construction shall be performed using vehicles generating minimum ground pressure to minimize rutting and other environmental impacts. Within forested wetlands, the permittee shall choose alignments that minimize the destruction of mature wetland trees to the greatest extent practicable. When needed to prevent rutting or soil compaction, access vehicles shall be operated on wooden, composite, metal, or other non-earthen construction mats. In all cases, access in wetlands shall comply with the following:

(a) Access within forested wetlands shall not include the cutting or clearing of any native wetland tree having a diameter four inches or greater at breast height;

(b) The maximum width of the construction access area shall be limited to 15 feet;

(c) All mats shall be removed as soon as practicable after equipment has completed passage through, or work has been completed, at any location along the alignment of the project, but in no case longer than seven days after equipment has completed work or passage through that location; and

(d) Areas disturbed for access shall be restored to natural grades immediately after the maintenance or repair is completed.

(13) Barges or other work vessels used to conduct in-water activities shall be operated in a manner that prevents unauthorized dredging, water quality violations, and damage to submerged aquatic communities.

(14) The construction, alteration, or use of the authorized project shall not adversely impede navigation or create a navigational hazard in the water body.

(15) Except where specifically authorized in the general permit, activities must not:

(a) Impound or obstruct existing water flow, cause adverse impacts to existing surface water storage and conveyance capabilities, or otherwise cause adverse water quantity or flooding impacts to receiving water and adjacent lands; or

(b) Cause an adverse impact to the maintenance of surface or ground water levels or surface water flows established pursuant to section 373.042, F.S., or a Works of the District established pursuant to section 373.086, F.S.

(16) If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, stone tools, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section (DHR), at (850)245-6333, as well as the appropriate permitting agency office. Project activities shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and the proper authorities notified in accordance with section 872.05, F.S.

(17) The activity must be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed, and must comply with any applicable District special basin and geographic area criteria.

(18) The permittee shall comply with the following when performing work within waters accessible to federally- or state-listed aquatic species, such as manatees, marine turtles, smalltooth sawfish, and Gulf sturgeon:

(a) All vessels associated with the project shall operate at “Idle Speed/No Wake” at all times while in the work area and where the draft of the vessels provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

(b) All deployed siltation or turbidity barriers shall be properly secured, monitored, and maintained to prevent entanglement or entrapment of listed species.

(c) All in-water activities, including vessel operation, must be shut down if a listed species comes within 50 feet of the work area. Activities shall not resume until the animal(s) has moved beyond a 50-foot radius of the in-water work, or until 30 minutes elapses since the last sighting within 50 feet. Animals must not be herded away or harassed into leaving. All onsite project personnel are responsible for observing water-related activities for the presence of listed species.

(d) Any listed species that is killed or injured by work associated with activities performed shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1(888)404-3922 and ImperiledSpecies@myFWC.com.

(e) Whenever there is a spill or frac-out of drilling fluid into waters accessible to the above species during a directional drilling operation, the FWC shall be notified at ImperiledSpecies@myfwc.com with details of the event within 24 hours following detection of the spill or frac-out.

(19) The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any activity authorized by the general permit.

(20) The permittee shall immediately notify the Agency in writing of any submitted information that is discovered to be inaccurate.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.044, 373.118(1), 373.129, 373.136, 373.406(5), 373.413, 373.4131, 373.414(9), 373.4145, 373.416, 373.422, 373.423, 373.429, 403.814(1) FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.215, Amended 10-1-13, 6-1-18.

62-330.407 General Permit for Geotechnical Investigations in Wetlands or other Surface Waters.

Rulemaking Authority 373.044, 373.113, 373.118, 373.171, 373.4131 FS. Law Implemented 253.034(1), 373.118, 373.406(5), 373.4131, 373.414(9), 403.814(1) FS. History–New 10-1-13, Repealed 6-1-18.

62-330.410 General Permit for Dredging by the West Coast Inland Navigation District in Sarasota and Manatee Counties.

(1) A general permit is granted to the West Coast Inland Navigation District ("WCIND") to dredge public navigation channels and canals within the trafficsheds listed in Table 1 "Trafficsheds, Dredge Depth Limits, and Trafficshed Report Identification Numbers for Use in General Permit 62-330.410" effective [October 1, 2013] (http://www.flrules.org/Gateway/reference.asp?No=Ref-03207), and Figure 1, "Trafficshed Locations" effective August 4, 2002 (http://www.flrules.org/Gateway/reference.asp?No=Ref-03208), and as described in the reports identified in paragraphs (1)(a) through (d), below. Table 1, Figure 1, and the reports are incorporated by reference herein; a copy of each may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.:

(a) Antonini, Gustavo A., and Paul Box, September 1996, A Regional Waterway Systems Management Strategy for Southwest Florida, TP-83, Florida Sea Grant College Program, Gainesville, Florida, (http://www.flrules.org/Gateway/reference.asp?No=Ref-03143);

(b) Swett, Robert A., Gustavo A. Antonini and Sharon Schulte, July 1999, Regional Waterway Management System for North Manatee County, TD-2, Florida Sea Grant College Program, Gainesville, Florida, (http://www.flrules.org/Gateway/reference.asp?No=Ref-03125);

(c) Antonini, Gustavo A., David Fann, and Robert A. Swett, November 7, 2000, Miguel Bay, Florida: Inventory of Boats, Depths and Signs; and a Waterway Restriction Analysis, TP-2A, Florida Sea Grant College Program, Gainesville, Florida, (http://www.flrules.org/Gateway/reference.asp?No=Ref-03147);

(d) Antonini, Gustavo A., Robert Swett, Sharon Schulte and David Fann, July 1998, Regional Waterway Management System for South Sarasota County, TD-1, Florida Sea Grant College Program, Gainesville, Florida, (http://www.flrules.org/Gateway/reference.asp?No=Ref-03146).

(2) This general permit is further limited as follows:

(a) The area to be dredged shall not contain any live seagrass beds, oyster beds or bars, coral communities, or attached macro-marine algae communities. However, this shall not prevent dredging of incidental individual specimens or scattered (less than one percent coverage within the area to be dredged) occurrences of seagrasses, oysters, or attached macro-algae. To the extent individual or clumped oysters are to be dredged, they shall be relocated to the maximum extent practicable to locations previously approved by the Department.

(b) Channel alignments shall follow existing channels and previously dredged areas to the maximum extent practicable.

(c) Dredging shall not exceed the maximum depths shown in Table 1.

(d) No more than 6,500 cubic yards of dredged material shall be removed over a five-year period within each trafficshed, beginning with the first project authorized under this general permit within the trafficshed. Within 30 days following the conclusion of each dredging event, a report shall be submitted to the local district office of the Department that includes the volume of material excavated from each channel and canal within the trafficshed, and the cumulative total volume of material excavated for the trafficshed under this general permit. This report shall be included with any subsequent notices to dredge channels or canals within the same trafficshed.

(e) The dredging activity is restricted to Class III waters, or Class II waters that are classified by the Department of Agriculture and Consumer Services under chapter 5L-1, F.A.C., as unclassified, prohibited, restricted, or conditionally restricted for shellfish harvesting.

(f) For purposes of this general permit, the term "public navigation channels and canals" shall include the Intracoastal Waterway and any other waterway as determined by the WCIND Board to make a significant contribution to boat traffic in the four county district, including access channels connecting the inland waterways to residential canal systems.

(3) All work under this general permit shall be conducted in conformance with the following specific conditions:

(a) Prior to submittal of a notice to use this general permit, the WCIND shall conduct at least one pre-application meeting with the Department to discuss project designs, implementation details, and any resource concerns, including approval of any oyster relocation sites in accordance with paragraph 62-330.410(2)(a), F.A.C.

(b) Each dredging event for a trafficshed shall require a separate notice to use this general permit. Multiple channels within a single trafficshed may be included in one notice. Each notice shall be submitted with:

1. Scaled plan and cross-sectional drawings that clearly identify the length, width, and depth (referenced to mean lower low water) of the area or areas to be dredged within each channel and canal, locations of any hydraulic pipelines between the dredge

areas and the dredged material disposal sites, and identification of the channels, canals, and names of the trafficsheds that are to be dredged from Table 1;

2. Identification of the source document described in subsection (1) and reference data that specifically describe the project proposed for dredging within the trafficshed. All document titles, page numbers, figures, and other relevant information to the trafficshed must be identified;

3. The location, dimensions, and estimated volumes of dredged material disposal sites, including the location of any oyster relocation or habitat restoration areas required under paragraph 62-330.410(2)(a), F.A.C. If barges or temporary stockpile areas are to be used for temporary disposal and transport, the type and volume capacity of such barges and stockpile areas, including controls that will be used to prevent dredge material runoff from the barges and stockpile areas also must be described;

4. The estimated volume of each proposed dredging area;

5. The dredging and disposal methods, and proposed duration of each;

6. Identification of any special water classifications for the areas to be dredged, such as the water class (rule 62-302.400, F.A.C.); shellfish classification under chapter 5L-1, F.A.C., (approved, conditionally approved, restricted, conditionally restricted, prohibited, or unclassified); aquatic preserve, state park, or state recreation area designation under chapter 258, F.S.; and Outstanding Florida Water or Outstanding National Resource Water designation under rule 62-302.700, F.A.C.;

7. An updated (prepared between May through September within one year prior to the proposed dredging) resource inventory of the areas to be dredged, including the presence of live seagrasses (distinguishing between beds and scattered seagrass growth), oysters (distinguishing between beds, bars, and scattered occurrences), coral communities, or attached macro-marine algae communities (distinguishing between beds and scattered occurrences). This resource inventory must also include all areas within any requested mixing zones associated with the dredging project (including outfall pipes from the dredge material disposal area), and all areas that will be occupied by dredging equipment (including cables, pipelines, dredges, barges, and stockpiling/disposal of dredged material);

8. If the notice applies to a trafficshed that was subject to previous use of this general permit, such notice also shall clearly identify the extent of all previously authorized dredging within the trafficshed by the WCIND; the date of all such dredging events; the estimated cubic yards excavated from each channel and canal, and for the trafficshed as a whole; and the permit numbers assigned to such prior use of this general permit for the trafficshed,

9. The estimated date the dredging activities are planned to begin and the estimated length of time it will take to complete the project. If the project will be accomplished in phases, the estimated starting and ending date of each phase must also be submitted; and,

10. A plan for monitoring water quality in accordance with the requirements of paragraph (3)(e), below.

(c) All dredged material resulting from the activities authorized by this general permit shall be removed and deposited on a self-contained, upland dredged material disposal site. The only exceptions shall be: oyster relocations required under paragraph 62-330.410(2)(a), F.A.C.; or where dredged materials are to be used as part of a habitat restoration plan authorized by the Agency under part IV of chapter 373, F.S., in which case any discharge of dredged material shall be in compliance with all terms of that authorization. In all cases, the dredging operation, the discharge of dredged material, and the dredged material disposal site shall be designed, located, and operated such that there are no water quality violations in wetlands or other surface waters outside of a mixing zone established under paragraph (3)(d), below.

(d) The permittee shall prevent violations of state water quality standards immediately outside of a mixing zone of no more than 150 meters in radius from the dredge site and from any discharge point associated with a dredge material disposal area. This shall minimally consist of: using and maintaining in a functional condition erosion and sediment control devices and best management practices, including turbidity curtains or similar devices; managing dredge pumping rates and volumes so as to minimize discharges from dredged material disposal sites; and managing dredged material disposal site dikes, berms, and water control structures so as to minimize erosion, breaches, and discharges. Mixing zones shall be designed to avoid live seagrass beds, oyster beds and bars, and attached macro-algae communities to the maximum extent practical.

(e) Water quality monitoring shall occur following the monitoring plan required under subparagraph (3)(b)10., above. This shall minimally consist of monitoring at the dredge site, at the location of any waters receiving outfall from dredged material disposal sites, and at background and down-gradient locations in the water body where dredging is occurring and surrounding the dredged material disposal sites. This monitoring shall be designed to measure turbidity and any metals or other toxic materials that have been identified as having a likelihood of entering the water column. All monitoring for turbidity shall occur at intervals not to exceed four

hours during active dredging operations and when there is a discharge from dredge material disposal sites; monitoring for other parameters shall be at intervals specified in the monitoring plan under subparagraph (3)(b)10., above. Results of this monitoring and a copy of the logs shall be submitted to the local office of the Department in accordance with the reporting plan submitted under subparagraph (3)(b)10., above.

(f) In the event the water quality monitoring required under this general permit detects violations of state water quality standards, dredging shall cease immediately until the source of the violation is resolved and the receiving waters again meet applicable water quality standards.

(g) After dredging, the trafficshed shall be marked with appropriate aids to navigation in order to prevent damage to seagrass beds and to minimize turbidity. The permittee is advised that chapter 327, F.S., governs the placement and marking of such aids to navigation.

(h) In addition to the conditions in subsection 62-330.405(18), F.A.C., the following additional manatee conditions shall apply:

1. The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel shall be responsible for observing water-related activities for the presence of manatees.

2. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act of 1978. If the dredging activity results in any manatee being harmed, harassed, or killed as a result of construction activities, the Department will refer the matter to the Florida Fish and Wildlife Conservation Commission for appropriate action.

3. Temporary signs concerning manatees shall be posted prior to and during dredging activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign that reads “Caution: Boaters” must be posted. A second sign measuring at least 8 1/2 inches by 11 inches explaining the requirements for “Idle Speed/No Wake” and the shut-down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at www.MyFWC.com/manatee. Questions concerning these signs can be sent to ImperiledSpecies@myfwc.com.

(i) Work under this general permit shall not commence until the Department has provided written confirmation to the notice required under paragraph 62-330.410(3)(b), F.A.C., that the applicant qualifies to use the general permit.

(4) For activities located outside of aquatic preserves and outside of state parks, state preserves, and state recreation areas, this general permit constitutes consent of use by the Board of Trustees of the Internal Improvement Trust Fund (BOT) under Chapter 253, F.S., to enter upon and use state-owned submerged lands to the extent necessary to complete the permitted activities. However, specific written authorization from the BOT is required to use or alter state-owned submerged lands within aquatic preserves, state parks, state preserves, and state recreation areas under chapter 258, F.S.

(5) Dredged material removed from state-owned submerged lands under this general permit shall be exempt from the payment of severed dredged material fees in accordance with section 253.77, F.S. However, dredged material with economic value, such as beach quality sand, shall be used for public purposes to the maximum extent practicable.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1), 403.814(1) FS. Law Implemented 253.002, 253.77(4), 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.426, 403.813(1)(f), 403.813(2), 403.814(1) FS. History–New 8-4-02, Formerly 62-341.490, Amended 10-1-13.

62-330.411 General Permit for Public Navigation Channel and Canal Infrastructure by the West Coast Inland Navigation District within Charlotte County.

(1) A general permit is granted to the West Coast Inland Navigation District (“WCIND”) to dredge public navigation channels and canals within the trafficsheds and secondary channel systems which have been determined by the WCIND Board to make a significant contribution to public boating traffic, as listed in Robert A. Swett, David A. Fann, and Elizabeth Staugler, Maps of Charlotte County General Permit Trafficshed Channels and Secondary Channels, Florida Sea Grant College Program, Gainesville, Florida (July 2014) (SGEF-209), incorporated by reference herein (12/15) (http://www.flrules.org/Gateway/reference.asp?No=Ref-06200). Copies of SGEF-209 may be obtained from the Department as described in subsection 62-330.010(5), F.A.C.

(2) The following terms are defined for the purpose of this general permit:

(a) “Trafficshed” means an area that contains a concentration of boats that use a common channel, exclusive to the trafficshed,

to gain access to secondary access channels and, ultimately, to deep, open water.

(b) “Secondary channel system” means those channels that provide access to two or more trafficsheds.

(c) “Corals” means true stony corals (order Scleractinia), hydrocorals (order Milleporina), and soft corals and other octocorals (subclass Octocorallia).

(d) “Seagrass” means rooted, vascular plants of the families Potamogetonaceae, Hydrocharitaceae and Cymodoceae.

(e) “Communities” means assemblages of attached benthic organisms with a coverage density of at least one percent, and does not include incidental individual (or clumped) specimens.

(3) In addition to the requirements of rule 62-330.405, F.A.C., this general permit is further limited as follows:

(a) Areas to be dredged shall not contain communities of corals, sponges (Porifera), oysters (Crassostrea spp.) or macroalgae.

(b) To the maximum practicable extent, dredging alignments shall follow existing channels and previously dredged areas, minimize impacts to seagrass communities and avoid adverse impacts to adjacent seagrass, coral, sponge or oyster communities that may reasonably be expected to result from turbidity, deposition of dredged material or sloughing of channel side slopes.

(c) Dredging alignments are limited to a top width of 30 feet and a bottom width of 20 feet, and shall not exceed the depths shown in SGEF-209. Overdredging is not allowed.

(d) Seagrasses and incidental individual (or clumped) oysters, corals or sponges within dredge areas shall be relocated to viable recipient sites, using scientifically accepted methods, to the maximum practicable extent.

(e) This general permit shall not apply to dredging within the limits of an area subject to a valid individual permit issued under part IV of chapter 373, F.S.

(4) Prior to each submittal of notice to use this general permit, WCIND shall conduct a pre-application meeting with the Department to review the specific details of the proposed project. For projects within an aquatic preserve, the meeting shall include the manager (or designated staff) of that aquatic preserve. The Department shall notify FWC prior to the pre-application meeting to provide FWC staff the opportunity to participate in the meeting. At the pre-application meeting, WCIND shall present all information necessary to complete Form 62-330.402(1), F.A.C., specifically including the following:

(a) Scaled plan and cross-sectional drawings that clearly identify:

1. The location, length, width, depth at local mean lower low water (MLLW) and estimated volume of each area to be dredged;

2. The locations of any hydraulic pipelines, barges and dredged material transfer sites;

3. The locations, dimensions and volumetric capacity of all proposed dredged material stockpile and disposal areas, including erosion and sedimentation controls; and,

4. The location and dimensions of all proposed turbidity mixing zones, including work areas to be enclosed within turbidity curtains as described in paragraph (6)(c), below. Such zones shall be of the minimum necessary extent, shall not encompass communities of seagrass, coral, sponge, oysters or macroalgae and shall be evaluated in accordance with rule 62-4.244, F.A.C.

(b) A Benthic Resource Inventory (BRI) consisting of scaled, plan-view depictions of the locations, dimensions and qualitative descriptions of the coverage and density for all seagrasses, oysters, corals, sponges and macroalgae within the areas specified under subparagraph (4)(b)1., below, including incidental specimens to be relocated pursuant to paragraph (3)(d), above. The benthic resource inspections conducted to prepare the BRI shall:

1. Be conducted along at least two transects lying parallel to and five feet within the sides of the dredging alignment, with additional transects conducted every 25 feet throughout all proposed turbidity mixing zones and all areas to receive relocated organisms;

2. Be conducted during May through September within one year prior to submittal; and,

3. Be conducted using scientifically accepted methods by individuals experienced and knowledgeable in benthic resource identification. Additionally, if the project is within an aquatic preserve, the manager (or staff) of that preserve shall be given at least two weeks prior notice and reasonable opportunity to accompany those individuals performing the inspections.

(c) A turbidity monitoring plan that includes the following information:

1. The relative locations of all proposed compliance monitoring stations, which shall be located adjacent to and directly downcurrent of the dredging sites, outfalls from dredged material disposal sites and other areas of active work, including the surrounding floating turbidity barriers and other approved mixing zones, if applicable,

2. The locations of the proposed background monitoring stations, which shall be within the same waterbody as the compliance monitoring stations, representative of ambient conditions for that waterbody and outside the influence of the areas of active work; and,

3. Assurance that monitoring shall be performed in accordance with chapter 62-160, F.A.C., including Department procedure "DEP-SOP-001/01 FT 1600 Field Measurement of Turbidity," which is incorporated in paragraph 62-160.800(1)(a), F.A.C., including the specifications of any non-standard sensors to be used.

(5) Each dredging event for a trafficshed or secondary channel system shall require a separate notice to use this general permit. Multiple areas within a single trafficshed or secondary channel system may be included in one notice.

(6) All work under this general permit shall comply with the following specific conditions:

(a) Relocation of seagrasses, corals, sponges or clumped oysters shall be performed in a manner that avoids adverse impacts to water quality or adjacent submerged resources.

(b) Dredged material resulting from the activities authorized by this general permit shall be removed and deposited on a self-contained, upland disposal site, with the following exceptions:

1. Seagrass, oyster, coral or sponge relocations as required by paragraph (3)(d) of this general permit, or

2. Where such deposition is authorized by a valid permit under part IV of chapter 373, F.S.

(c) Floating turbidity curtains shall be installed and maintained in a manner that effectively contains turbidity within the work area, at all times around areas of active in-water work, including dredging, discharge and spoil transfer. Use of these curtains shall not impede navigation or cause adverse sedimentation or other impacts to benthic communities located outside the work area.

(d) WCIND shall monitor in-situ turbidity in accordance with the Department-approved turbidity monitoring plan, described in paragraph (4)(c), above. Turbidity samples shall be collected at each compliance and background station within four hours prior to commencement of any period of in-water work, and shall continue to be collected every four hours thereafter until in-water work ceases, including at least one additional set of samples within four hours after work ceases. Each station shall be sampled at surface, mid-depth and one foot above bottom, or at mid-depth only, for waters less than five feet deep at the time of sampling. Samples shall be collected with a Kemmerer, Van Dorn or a similar sampler that is designed to collect in-situ water samples. Samples shall be analyzed immediately after collection with a turbidimeter that produces results in Nephelometric measurements. Detailed reports of all monitoring data shall be retained by WCIND and made available to Department staff, upon request. In the event that monitoring detects a violation of state water quality standards, WCIND shall:

1. Cease dredging immediately until the source of the violation is identified;

2. Take corrective measures to avoid future violations;

3. Only resume work once the receiving waters again meet water quality standards; and,

4. Report the violation(s) and corrective measures taken to the Department within 24 hours.

(e) The following conditions apply to in-water activities authorized under this general permit, in the trafficsheds and secondary channels identified as Ainger Creek, Balboa Creek, Canal Waterway, Desoto Canal, Dover Canal, Gottfried Creek-Englewood Secondary Channel, Myakka River Secondary Channel, Oyster Creek, Peace Island East, Punta Gorda Marina, San Marino Canal, San Salvador Canal, Santa Barbara Canal, Santa Clara Canal and Whidden Bay Secondary Channel:

1. Specific personnel shall be designated as manatee observers. The designated observer(s) shall be dedicated only for this task, must be on site during all in-water dredging activities and shall advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. The observer(s) shall wear polarized sunglasses during all dredging to aid in observation and shall work in shifts of no longer than 5 hours each. Observers shall maintain a log detailing manatee sightings, work stoppages and other protected species-related incidents. If approved by the Department after consultation with the FWC, the WCIND shall be allowed to implement alternative measures for observing for the presence of manatees when such measures provide reasonable assurance that manatees will not be adversely affected by the alternative methodology.

2. A report, summarizing all activities noted in the observer logs, the location and name of project and the dates and times of work shall be submitted within 30 days following project completion to the FWC's Imperiled Species Management Section at: 620 South Meridian Street, MS #6A, Tallahassee, Florida 32399-1600, or emailed to fcmpmail@myfwc.com.

3. No nighttime mechanical dredging, such as clamshell, shall occur. Movement of a work barge or other associated vessels shall not be performed, except at idle speed, after sunset when the possibility of spotting manatees is negligible.

(7) Within 90 days after completion of dredging under each notice, WCIND shall:

(a) Mark the dredged waterways in accordance with section 327.40, F.S., in a manner to facilitate safe navigation and protection of submerged natural resources.

(b) Submit a post-construction report, signed and sealed by a Registered Professional, detailing all work performed, including:

1. The depths and widths established by the dredging;

2. The total volume of material excavated from each channel and canal dredged; and,

3. A detailed description of all relocation of organisms performed under paragraph (6)(a), above.

(c) The Department shall grant additional time, as reasonably necessary, to satisfy conditions paragraphs (7)(a) and (b), above, upon demonstration of circumstances beyond the control of WCIND that prevented their timely completion.

(8) The No Internal Combustion Motors Zone (NICMZ) covering an area of approximately 89 acres of submerged lands within the Lemon Bay Aquatic Preserve, as described and depicted in the Map and Description of the Whidden Key No Internal Combustion Motor Zone, incorporated by reference herein (12/15) (http://www.flrules.org/Gateway/reference.asp?No=Ref-06201), is hereby established. A copy of that document may be obtained from the Department as described in subsection 62-330.010(5), F.A.C.

(a) WCIND shall install and maintain uniform waterway regulatory markers demarcating the boundaries of the NICMZ established by this general permit, in accordance with all required permits under section 327.41, F.S. WCIND shall provide documentation to the Department that the boundaries of the NICMZ have been so marked, prior to conducting any work under this general permit within Outstanding Florida Waters.

(b) Within the NICMZ, vessels equipped with internal combustion motors (e.g., gasoline or diesel motors) for propulsion must turn off the internal combustion motor and, if possible to do so, tilt or raise the internal combustion motor out of the water. The use of electric motors is not prohibited.

(c) Prior to installing the NICMZ markers under paragraph (8)(a), above, WCIND shall design and implement a program to monitor seagrasses within the NICMZ using scientifically accepted methods after consultation with FWC and Department staff of the local district office and Lemon Bay Aquatic Preserve. The monitoring shall be designed to establish the baseline coverage of seagrasses by species, the locations and coverage of prop scarring and document any change in coverage over time. At a minimum, the first monitoring shall occur within 90 days after the boundaries of the NICMZ have been marked and every two years thereafter for a total of ten years. The monitoring plan shall include metrics that can be used to quantitatively establish the relative success or failure of seagrass restoration and protection following establishment of the NICMZ.

(9) A Letter of Consent is granted for WCIND to enter upon and use state-owned submerged lands to complete the permitted activities, subject to the provisions of subsection 18-21.004(7), F.A.C. Dredged material with economic value, such as beach quality sand, severed from state-owned submerged lands shall be used for public purposes to the maximum practicable extent.

Rulemaking Authority 373.043, 373.4131, 403.805(1), 403.814(1) FS. Law Implemented 253.002, 253.77, 258.42, 373.4131, 373.414, 403.061(34) FS. History–New 12-28-15.

62-330.412 General Permit for Public Navigation Channel and Canal Infrastructure by the West Coast Inland Navigation District within Lee County.

(1) A general permit is granted to the West Coast Inland Navigation District ("WCIND") to dredge public navigation channels and canals within the trafficsheds and secondary channel systems listed in Table 1 "Trafficsheds, Secondary Channel Systems, Dredge Depth Limits, and Trafficshed Report Identification Numbers," effective 18 February 2010, incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-03177), and shown in Figures 1 through 48 of Antonini, Gustavo A., Robert A. Swett, and David Fann, 2008, Maps of Lee County Noticed General Permit Trafficshed Channels and Secondary Channels, SGEF-173, Florida Sea Grant College Program, Gainesville, Florida (30 October 2008), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-03148). Copies of Table 1 and SGEF-173 may be obtained from the Department as described in subsection 62-330.010(5), F.A.C. Additional information on the background, methodology, and data used in identifying the trafficsheds and secondary channel systems that are the subject of this general permit is described in the following reports:

(a) Antonini, Gustavo A, and Paul Box, 1996, A Regional Waterway Systems Management Strategy for Southwest Florida, TP-83, Florida Sea Grant College Program, Gainesville, Florida;

(b) Swett, Robert A., David A. Fann, Gustavo A. Antonini and Lana Carlin Alexander, 2000, Regional Waterway Management System for Lee County, Phase I, TD-3, Florida Sea Grant College Program, Gainesville, Florida;

(c) Swett, Robert A., David A. Fann, Gustavo A. Antonini and Lana Carlin Alexander, 2001, Regional Waterway Management System for Lee County, Phase 2, TD-4, Florida Sea Grant College Program, Gainesville, Florida;

(d) Fann, D.A., R.A. Swett, and G.A. Antonini, 2002. Regional Waterway Management System for Lee County, Phase 3. TD-5, University of Florida, Gainesville, FL: 21 Florida Sea Grant.

Copies of these documents may be obtained by contacting environmental resource permit program staff in the Department's South

District Office (Fort Myers) and from the Department's Internet site at http://www.dep.state.fl.us/legal/Rules/rulelistnum.htm. This general permit is not required for maintenance dredging that qualifies for an exemption under section 403.813(1)(f), F.S.

(2) This general permit is further limited as follows:

(a) For purposes of this general permit, the term "public navigation channels and canals" shall consist of the Intracoastal Waterway and those trafficsheds and secondary channel systems identified on the maps in SGEF-173, which have been determined by the WCIND Board to make a significant contribution to public boating traffic.

(b) The area to be dredged shall not contain any living communities of true stony coral (order Scleractinia), hydrocoral (order Milleporina), octocoral (subclass Octocorallia), or soft coral (Alcynoacea, Gorgonacea and Pennatulacea), sponge beds (Porifera), oyster bars (Crassostrea spp.), or macroalgae of the family Caulerpaceae. This shall not prevent dredging of incidental individual specimens of corals, sponges, or oysters. To the extent individual or clumped oysters, corals, or sponges are to be dredged, they shall be relocated to the maximum extent practicable in accordance with paragraph (3)(c), of this general permit. In addition, the dredging alignments shall be located so as to not adversely affect coral and sponge communities and oyster bars as a result of sloughing of channel side slopes. Seagrass within the proposed dredged area shall be relocated in accordance with paragraph (3)(c), of this general permit.

(c) To the maximum extent practicable, dredging alignments shall follow existing channels and previously dredged areas and avoid and minimize impacts to seagrass communities (Potamogetonaceae, Hydrocharitaceae and Cymodoceae sp.). Dredging alignments also shall be located to minimize the potential for erosion to adjacent seagrass communities as a result of sloughing of channel side slopes.

(d)1. The "No Internal Combustion Motor Zones" (NICMZs) shown and described in the attached Exhibit A, effective February 18, 2010, incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-03178), which reflect the boundaries approved in Resolution 07-09-49 of the Lee County Board of County Commissioners on September 25, 2007, are hereby established by this general permit. A copy of Exhibit A may be obtained from the Department as described in subsection 62-330.010(5), F.A.C. Within these NICMZs, the use of electric motors is permitted, but operators of all vessels equipped with internal combustion motors (e.g.: gasoline or diesel motors) for propulsion must turn off the internal combustion motor and, if possible to do so, tilt or raise the internal combustion motor out of the water.

2. Prior to any dredging authorized by this general permit within an Aquatic Preserve, WCIND shall demonstrate that the NICMZ(s) within that aquatic preserve have been established and marked in the field. Nothing in this rule shall be construed to relieve WCIND from obtaining sign permits required by the Florida Fish and Wildlife Conservation Commission (FWC). For this purpose, DEP authorizes WCIND to apply to FWC for all required sign permits to mark the boundaries of the NICMZs established by this general permit. WCIND shall be responsible for installing and maintaining all permitted signs.

3. WCIND will design and implement a program to monitor seagrasses within the NICMZs using various scientifically approved methods after consultation with DEP and FWC staff. The monitoring shall be designed to establish the baseline coverage of seagrasses by species, the number and coverage of prop scarring, and document any change in coverage over time. At a minimum, the first monitoring will occur within 90 days after the boundaries of the NICMZs have been marked with signage as provided in the preceding section of this general permit, and thereafter every two years for a total of ten years. The monitoring plan shall include metrics that can be used to quantitatively establish the relative success or failure of seagrass restoration and protection following establishment of the NICMZs.

(e) Dredging alignments shall not exceed the maximum depths shown in Table 1. All dredging alignments shall not exceed a maximum top width of 30 feet and a maximum bottom width of 20 feet. Overdredging to achieve the final authorized depth and width is not allowed. An as-built survey of the dredging alignment shall be submitted to the Department as provided in paragraph (3)(h), below.

(f) No more than 8,500 cubic yards of dredged material shall be cumulatively removed through authorizations by this general permit over a five-year period within each trafficshed or secondary channel system, beginning with the first project authorized under this general permit within the trafficshed or secondary channel system. Within 30 days following the completion of the as-built survey required in paragraphs (2)(e), above, and (3)(h), below, a report shall be submitted to the South District office of the Department that includes the volume of material excavated from each channel and canal within the trafficshed or secondary channel system, and the cumulative total volume of material excavated for the trafficshed or secondary channel system under this general permit within the previous five years. This report shall be included with any subsequent notices to dredge channels or canals within the same trafficshed or secondary channel system.

(g) The dredging activity is restricted to Class III Waters, or Class II Waters that are classified by the Department of Agriculture and Consumer Services under chapter 5L-1, F.A.C., as unclassified, prohibited, restricted, or conditionally approved for shellfish harvesting.

(h) This general permit shall not apply to dredging within the limits of areas subject to currently valid individual permits under part IV of chapter 373, F.S.

(3) All work under this general permit shall be conducted in conformance with the general conditions of rule 62-330.405, F.A.C., and the following specific conditions.

(a) Each dredging event for a trafficshed or secondary channel system shall require a separate notice to use this general permit. Multiple areas within a single trafficshed or secondary channel system may be included in one notice. Each notice shall be submitted with all of the following information.

1. Scaled plan and cross-sectional drawings that clearly identify the length, width, and depth (referenced to mean lower low water) of the area or areas to be dredged within each channel and canal; locations of any hydraulic pipelines between the dredge areas and the dredged material disposal sites; and identification of the channels, canals, and names of the trafficsheds or secondary channel system that are to be dredged from Table 1.

2. Identification of the source document described in subsection (1), and reference data that specifically describe the work proposed for dredging within the trafficshed or secondary channel system. All document titles, page numbers, figures, and other relevant information to the trafficshed or secondary channel system must be identified.

3. The location, dimensions, and estimated volumes of dredged material disposal sites, including the location of any water quality or habitat restoration as described in paragraph (3)(d), of this general permit and any relocation areas required under paragraph (2)(b), above. If dredged material fill will be transported over water by barge, the notice will include assurance that the barge will be designed and sized to prevent discharge of dredged material runoff, prop or hull dredging, and discharge during the loading and unloading of material. If stockpile areas are to be used for temporary disposal and transport, the type and volume capacity of such stockpile areas, including controls that will be used to prevent dredge material runoff also must be described. The notice must provide assurance any temporary stockpile areas will have no impacts to jurisdictional wetlands or surface waters.

4. The estimated volume of each proposed dredging area.

5. Identification of any special water classifications for the areas to be dredged, such as the water class (rule 62-302.400, F.A.C.); shellfish classification under chapter 5L-1, F.A.C.; aquatic preserve, state park, or state recreation area designation under chapter 258, F.S.; and Outstanding Florida Water or Outstanding National Resource Water designation under rule 62-302.700, F.A.C.

6. A resource inventory of the dredging alignments which has been prepared or updated between May through September within one year prior to the proposed dredging. The resource inventory must be conducted by an individual experienced and knowledgeable in benthic communities and seagrass identification. The resource inventory must identify the presence and location of seagrasses, oysters, coral communities, sponge beds, and macroalgae of the family Caulerpaceae. This resource inventory must also include all areas within any requested mixing zones associated with the dredging project (including outfall pipes from the dredge material disposal area), and all areas that will be occupied by dredging equipment (including cables, pipelines, dredges, barges, and stockpiling/disposal of dredged material). The resource inventory assessment within channels will be conducted as follows, although the WCIND may use equivalent assessment methods upon receiving prior written approval from the Department:

a. The assessment will be conducted along a minimum of two transects within the dredging alignment. The transects will be along a line parallel with and 5 feet within the sides of the dredging alignment,

b. The resource inventory assessment within any requested mixing zones shall be conducted along grid transects every 10 feet throughout the length and width of the requested mixing zone; and,

c. The resource inventory shall be qualitative in nature but shall include identification and location of corals, sponges, and oysters to be relocated pursuant to paragraph (2)(b), of this general permit, and include general identification and location of the extent of seagrass areas and a qualitative description of their relative extent of coverage, and density. The resource inventory shall be completed and submitted a minimum of 30 days prior to the pre-application meeting required by paragraph (3)(b), of this general permit.

7. Identification of the extent and location of all previous dredging within the past five years authorized under this general permit within the trafficshed or secondary channel system; the date of all such dredging events; the estimated cubic yards excavated from each distinct portion of the trafficshed or secondary channel system under this general permit; and the permit numbers assigned

to such prior use of this general permit for the trafficshed or secondary channel system.

8. The estimated date the dredging activities are planned to begin and the estimated length of time it will take to complete the project. If the project will be accomplished in phases, the estimated starting and ending date of each phase must also be submitted.

9. A plan for monitoring water quality minimally consisting of monitoring at the dredge site, at the location of any waters receiving outfall from dredged material disposal sites, and at background and down-gradient locations in the water body where dredging is occurring and surrounding the dredged material disposal sites. The monitoring shall be designed primarily to measure in-situ turbidity, but is subject to modification based on the pre-application meeting discussion with the Department to ensure the plan is capable of detecting any potential water quality violations from the project or activities. If the dredge area is in close proximity to a facility or location likely to cause a discharge of toxic materials, the water quality monitoring as well as best management practices proposed shall be designed to retain deleterious substances during dredging. Results of the monitoring and a copy of the logs shall be submitted in accordance with paragraph (3)(f), of this general permit.

10. A description of the resources to be relocated pursuant to paragraphs (2)(b) and (3)(c), of this general permit, the methods to be used for their relocation, and the locations to which they will be relocated.

(b) A minimum of 30 days prior to submittal of a notice to use this general permit, the WCIND and Lee County shall conduct at least one pre-application meeting with the Department's South District Environmental Resources Permitting staff to discuss project designs, implementation details, and any resource concerns, including approval of any resource relocation in accordance with paragraph (2)(b), of this general permit or water quality or habitat restoration sites in accordance with paragraph (3)(d), of this general permit. For a proposed project within an aquatic preserve, this meeting shall include the appropriate aquatic preserve manager or their designee. In the event the pre-application meeting adequately addresses all Department questions or concerns, the Department will inform the WCIND that the notice may be submitted immediately for review.

(c) To the extent seagrass, corals, sponges or clumped oysters are within the dredging footprint, they shall be relocated to the maximum extent practicable. Seagrass, oysters, corals, and sponges must be relocated only into areas previously approved in writing by the Department. Relocation shall be done in a manner that avoids adverse impacts to water quality and adjacent submerged resources. If seagrasses are relocated, the donor site within the dredge area and the location of the seagrass transplant shall be described in the application and in the pre-application meeting required under paragraph (3)(b), of this general permit. Any relocation performed under this paragraph shall be described in a detailed report to the Department's South District office within 60 days of project completion. The report shall describe the methods used, the donor site within the dredge area, and the recipient location of the transplant. The WCIND shall provide copies to the Department's South District office of any follow up monitoring or studies performed on the success of the transplants.

(d) All dredged material resulting from the activities authorized by this general permit shall be removed and deposited on a self-contained, upland dredged material disposal site. The only exceptions to the use of a self-contained, upland dredged material disposal site shall be: seagrass, oyster, coral, or sponge relocations as required by this general permit; or where dredged materials are to be used as part of a water quality or habitat restoration plan authorized by the Department or a water management district under part IV of chapter 373, F.S., in which case any discharge of dredged material shall be in compliance with all terms of that authorization. In all cases, the dredging operation, the discharge of dredged material, and the dredged material disposal site shall be designed, located, and operated such that there are no water quality violations in wetlands or other surface waters outside of a mixing zone established under paragraph (3)(e), of this general permit.

(e) In areas outside of aquatic preserves, violations of state water quality standards shall be prevented immediately outside of a mixing zone of no more than 150 meters in radius from the dredge site and from any discharge point associated with a dredge material disposal area. To the greatest extent practicable, the mixing zone shall be restricted to the limits of the dredging alignment. Within aquatic preserves, violations of water quality standards immediately outside the area of active work shall be prevented. This shall minimally consist of the use of erosion and sediment control devices, turbidity curtains or similar devices, and other best management practices, all of which shall be located immediately surrounding the area of active work and maintained in a functional condition. In addition, dredge pumping rates and volumes shall be managed to minimize discharges from dredged material disposal sites; and the management of dredged material disposal site dikes, berms, and water control structures so as to minimize erosion, breaches, and discharges. In all cases, mixing zones shall be designed to avoid living communities of stony corals [true stony corals (order Scleractinia) hydrocorals (order Milleporina)], and octocorals (subclass Octocorallia), sponge bed communities (Porifera), oyster bars (Crassostrea spp.), macroalgae of the family Caulerpaceae, and seagrass (Potamogetaceae, Hydrocharitaceae and Cymodoceae).

(f) At all times during active dredging, the collection, analysis, and monitoring of the water quality samples required under this general permit must be conducted and performed by individuals who have prior training and experience in collecting and analyzing water quality samples using the Standard Operating Procedures accessible at the Department's Internet site and in accordance with chapter 62-160, F.A.C. Such qualified individual(s) shall be on site at all times necessary to ensure full compliance with the requirements of this general permit. In the event the water quality monitoring required under this general permit detects violations of state water quality standards, dredging shall cease immediately until the source of the violation is identified, measures taken to avoid future violations, and the receiving waters again meet applicable water quality standards. Weekly reports describing the hours of dredging accomplished and the results of the required monitoring will be provided to the South District office of the Department. Any violations of water quality standards and/or other requirements of this general permit shall be immediately reported to the South District office of the Department.

(g) The permittee shall be responsible for ensuring that all contractors and other entities implementing this general permit comply with the following standard manatee and marine turtle conditions.

1. The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel shall be responsible for observing water-related activities for the presence of manatees.

2. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act of 1978. If the dredging activity results in any manatee being harmed, harassed, or killed as a result of construction activities, the Department will refer the matter to the Florida Fish and Wildlife Conservation Commission (FWC) for appropriate action.

3. Siltation barriers associated with any project or activity authorized by this general permit shall not block manatee entry to or exit from manatee feeding areas and the following manatee warm water refuge areas:

a. Entrance of the Chiquita Canal (which provides access to the Eight Lakes area) within the Cape Coral Southwest Trafficshed.

b. Defined manatee protection speed zone within the Franklin Locks East Trafficshed and all waters of the Caloosahatchee River within 1/4 mile east of the easternmost end of the Franklin Lock & Dam.

c. Matlacha channel (which provides access to the Matlacha Isles canal system) including the Matlacha Isles canal system in the vicinity of the Boat Lift within the Matlacha Isles/Cape Coral (northwest) Trafficshed.

d. Mouth and remainder of the Orange River within the Orange River Trafficshed.

e. All waters within the Mullock Creek Trafficshed.

4. Temporary signs concerning manatees shall be posted prior to and during dredging activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign that reads "Caution: Boaters" must be posted. A second sign measuring at least 8 1/2 inches by 11 inches explaining the requirements for "Idle Speed/No Wake" and the shut-down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at www.MyFWC.com/manatee. Questions concerning these signs can be sent to ImperiledSpecies@myfwc.com.

5. Specific personnel shall be designated as manatee observers. The designated observer(s) shall be dedicated only for this task, must be on site during all in-water dredging activities, and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. The observer(s) shall wear polarized sunglasses during all dredging to aid in observation, and shall work in shifts of no longer than 5 hours each. Observers shall maintain a log detailing manatee sightings, work stoppages, and other protected species-related incidents. If approved by the Department after consultation with the FWC, the WCIND shall be allowed to implement alternative measures for observing for the presence of manatees when such measures provide reasonable assurance that manatees will not be adversely affected by the alternative methodology.

6. A report, summarizing all activities noted in the observer logs, the location and name of project, and the dates and times of work shall be submitted within 30 days following project completion, to the FWC's Imperiled Species Management Section at: 620 South Meridian Street, MS #6A, Tallahassee, Florida 32399-1600, or emailed at fcmpmail@myfwc.com.

7. No nighttime mechanical dredging, such as clamshell, shall occur. Movement of a work barge or other associated vessels shall not be performed after sunset, when the possibility of spotting manatees is negligible.

8. All channels designated as Cape Coral Southwest, Franklin Locks East, Matlacha Isles/Cape Coral (northwest), Mullock Creek, and Orange River shall be prohibited from being dredged between November 15th and March 31st of any year due to the

high numbers of manatees present at these warm water refuges in the wintertime. When these areas are being dredged between April 1st and November 14th, the manatee protection measures outlined above for all other channel dredging shall be followed.

(h) An as-built survey shall be initiated within two weeks and shall be completed within 60 days after completion of dredging to document depths and widths established by the dredging. The Department shall grant additional time as reasonable to complete the survey upon submittal of written documentation of the existence of inclement weather or situations beyond the control of the permittee that prevented the timely completion of the survey, the submittal of a new timeline for completing the survey.

(i) Within 90 days of completion of each authorized dredge event under this general permit, the affected trafficshed or secondary channel system shall be marked along its entire length with aids to navigation. Markers shall be placed in a manner to facilitate safe navigation and protection of submerged natural resources. In channels dredged to less than 4 foot MLLW depth, signage that identifies areas of shallow water shall be installed, using language such as “Controlling Depth 3 feet, Local Knowledge Required,” “Use Caution,” or “Stay in Channel.” Nothing in this rule shall be construed to relieve the WCIND from obtaining permits for markers and signs required by the FWC.

(j) WCIND shall provide an as-built report and survey detailing all work performed under this authorization and its compliance with the conditions and criteria of this general permit.

(k) All reports and information required by this authorization shall be submitted to the South District DEP office.

(l) WCIND will facilitate an update of the *Lee County Boaters Guide* to reflect the NICMZs established by this general permit. The update will also include computer internet links to additional boater information that will enhance water quality and protection of resources within the aquatic preserves that are the subject of this general permit. WCIND will facilitate the distribution of the updated Boaters Guide to local marinas, commercial boat rental operations, and local residents.

(m) Works under this general permit shall not commence until the Department has provided written confirmation within 30 days that the notice required under paragraph (3)(a), meets all the applicable terms and conditions of this general permit.

(4) Consent is granted for the West Coast Inland Navigation District to enter upon and use state-owned submerged lands to the extent necessary to complete the permitted activities, to Lee County and the West Coast Inland Navigation District to establish, mark, and enforce the NICMZs depicted in Exhibit A.

(5) Dredged material removed from state-owned submerged lands under this general permit is exempt from the payment of severed dredged material fees in accordance with section 253.77, F.S. However, dredged material with economic value, such as beach quality sand, shall be used for public purposes to the maximum extent practicable.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1), 403.814(1) FS. Law Implemented 253.002, 253.77(1), 253.77(4), 258.42, 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(1), 373.414(1)(b), 373.414(9), 373.416, 373.426, 403.061(34), 403.813(3), 403.814(1) FS. History–New 2-18-10, Formerly 62-341.494, Formerly 62-330.441, Amended 10-1-13.

62-330.417 General Permit for Construction, Alteration, Operation, and Maintenance of Boat Ramp Facilities.

(1) A general permit is granted, except in waters that are accessible to manatees within Charlotte, Hillsborough, Levy, Manatee, and Pinellas Counties or the St. Johns River and its tributaries in Lake and Seminole Counties, for construction, alteration, maintenance, and operation of a single boat ramp for the following entities or facilities:

(a) An individual, detached single-family dwelling unit or two adjacent detached single-family dwelling units, provided the ramp is located on the shared property line.

(b) A multi-family dwelling unit, which, for the purpose of this rule, shall include attached multi-family dwelling units, regardless of the legal subdivision of the underlying property.

(c) A commercial entity, provided such ramp is open to the general public for the life of the ramp, with or without a fee and without any membership or qualifying requirements.

(d) A governmental entity, such as a federal, state, county, or municipal agency, or a water management or inland navigation district, provided the boat ramp is open to the general public for the life of the facility, with or without a fee. The following associated facilities are also authorized for governmental entities in accordance with the terms and conditions of this general permit, provided the ramp and associated facilities remain open to the general public for the life of the facility, with or without a fee: ingress and egress traffic lanes, boat trailer parking spaces, an access road, and associated accessory docks.

(2) The boat ramp and associated facilities must meet all of the following conditions:

(a) The work is not part of a larger plan of development that requires a permit under part IV of chapter 373, F.S.

(b) A minimum navigational access of two feet below mean low water in tidal waters or the expected average low depth in non-

tidal waters, as determined based on best available information for the water body at the project location, must already exist to the proposed ramp. Depth indicators shall be installed at the ramp to identify the controlling depths of the navigational access.

(c) There shall be no work in, on, or over submerged grassbeds or coral communities.

(d) Dredging shall be limited to no more than 100 cubic yards, and in no case shall be more than is necessary to construct the boat ramp surface or restore the ramp to its original configuration and dimension.

(e) The above-water portion of the boat ramp shall be paved or otherwise stabilized to prevent turbidity.

(f) Work under this general permit shall not commence until the Agency has provided written confirmation that the applicant qualifies to use the general permit.

(g) This general permit is limited to one use per parcel of property and cannot be combined with other general permits or exemptions.

(3) Construction of the boat ramp is limited as follows:

(a) The boat ramp for a single-family or multi-family dwelling unit, under paragraph (1)(a) or (b), above, is limited to a single lane and must not exceed a width of 20 feet, including the side slopes, with the boat ramp surface not to exceed a width of 12 feet.

(b) The boat ramp for a commercial or governmental entity under paragraph (1)(c) or (d), above, is limited to a maximum of two lanes and must not exceed a width of 60 feet, including the side slopes, with the ramp surface not to exceed a width of 36 feet.

(c) Construction or expansion of a multi-family, commercial, or governmental boat ramp under paragraph (1)(b), (c), or (d), above, in waters that are accessible to manatees must meet the following criteria:

1. The proposed boat ramp facility must be consistent with the state approved manatee protection plan in counties required to have a manatee protection plan adopted under section 379.2431(2), F.S., or in counties that have voluntarily completed a state approved manatee protection plan. Documentation of plan consistency must be submitted concurrently with the notice to use the general permit in the form of a letter of consistency concurrence from the Florida Fish and Wildlife Conservation Commission. A review by the Commission can be requested at ImperiledSpecies@myfwc.com.

2. The proposed boat ramp facility must have a kiosk or permanent information display board providing information on manatee protection and applicable manatee zones as adopted in chapter 68C-22, F.A.C., "The Florida Manatee Sanctuary Act" (June 13, 2012) (http://www.flrules.org/Gateway/reference.asp?No=Ref-03179), which is incorporated by reference herein and available as provided in subsection 62-330.010(5), F.A.C., for that county.

(d) A boat ramp for a multi-family residence or for commercial or governmental entities under paragraph (1)(b), (c), or (d), above, can have a maximum of two accessory docks, abutting either one or both sides of the boat ramp, provided that the cumulative square footage of accessory docks over wetlands or other surface waters does not exceed 500 square feet in Outstanding Florida Waters or 1,000 square feet outside Outstanding Florida Waters. In addition, the accessory docks shall not be used for overnight mooring.

(4) The total impervious surface in uplands that is subject to vehicular traffic associated with a boat ramp for a governmental entity under paragraph (1)(d), above, shall not exceed 1.2 acres. Before operating any portion of such a boat ramp facility that contains 4,000 square feet or more impervious surface subject to vehicular traffic, a stormwater management system meeting all of the following requirements must be constructed and fully operational.

(a) Each system must be designed by a registered professional in accordance with chapter 471, 472, 481, or 492, F.S., as applicable, and must be constructed, operated, and maintained to serve the total project area of the boat ramp facility.

(b) No system shall accept or treat runoff from offsite areas not associated with the total project area.

(c) The system must provide treatment for a minimum stormwater retention volume of one-half inch of runoff. Recovery of the specified retention volume must occur within 72 hours by percolation through the sides and bottom of the retention basin.

(d) Impervious traffic lanes and parking areas must be graded such that runoff is directed to the stormwater treatment system.

(e) The system must include a continuous vegetated buffer strip adjacent to the downstream side of impervious areas subject to stormwater treatment. The buffer strip must be at least 25 feet wide and stabilized by well-established natural vegetation.

(f) The permittee must maintain the treatment system and buffer strips at all times for the life of the system.

(g) Upon completing construction of the stormwater management system, the system must be operated and maintained by the permittee in accordance with the terms of this general permit for the life of the system. The permittee shall perform routine inspections of the buffer to check for development of concentrated flow through it, gully erosion, or loss of vegetation, and must repair the buffer as soon as practical to restore shallow overland flow conditions and prevent further concentration of flow and damage to the buffer.

(5) Commercial or governmental entities proposing to construct a boat ramp under paragraph (1)(c) or (d), above, shall record a fully executed binding agreement in the official records of the county in which the boat ramp is located. Commercial entities shall execute and record the "Agreement to Maintain Public Access," incorporated herein as Form 62-330.417(1), (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02508), ensuring the facility will remain open to the general public for the life of the facility. Governmental entities shall execute and record the "Agreement to Maintain Public Access and Operate Stormwater System," incorporated herein as Form 62-330.417(2), (October 1, 2013) (http://www.flrules.org/Gateway/reference.asp?No=Ref-02509), ensuring the facility will remain open to the general public for the life of the facility and to ensure that the stormwater management system associated with the boat ramp will be operated and maintained for the life of the system. Copies of incorporated materials may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), (5), 373.406(5), 373.413, 373.4131, 373.414(1), (9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Amended 12-9-09, Formerly 62-341.417, Amended 10-1-13, 6-1-18.

62-330.420 General Permit to Local Governments for Public Mooring Fields.

(1) A general permit is granted to any local government to construct, operate, and maintain a public mooring field for up to 100 vessels, including a dinghy dock and sewage pumpout dock directly supporting the mooring field.

(2) The Notice of Intent to use this general permit required under subsection 62-330.402(1), F.A.C., shall include the following additional information:

(a) Mooring Field Management Plan (Management Plan) that provides reasonable assurance that the mooring field and supporting land-based facility will comply with all of the requirements of this general permit. The Management Plan shall be binding on the permittee for the life of the mooring field. Any revisions or modifications to the Management Plan require written approval, by the Department, prior to becoming effective.

(b) All drawings and documents in support of the proposed mooring field and associated land-based support facility, including details on the anchoring systems proposed for mooring vessels in the mooring field, and any docks, pumpout facilities, kiosks, and in-water navigational signs and markers proposed.

(c) A scaled bathymetry plan showing water depths throughout the proposed mooring field, including any ingress and egress channels directly associated with the mooring field and water depths at any docks proposed at the land-based support facility.

(d) A benthic resource inventory of the proposed mooring field location as well as the areas for the proposed dinghy and pumpout docks.

(3) To qualify for this general permit, the local government must comply with the following specific conditions, in addition to the general conditions in rule 62-330.405, F.A.C.:

(a) Management Plan:

1. At least 30 days prior to submittal of a notice to use this general permit, the local government shall conduct at least one pre-application meeting with the Department to discuss the adequacy of the Management Plan, existing or proposed land-based support facility, project design, and implementation details.

2. Example Management Plans are included in the "References and Design Aids" for Volume I, available at http://www.dep.state.fl.us/water/rulesprog.htm#erp. Entities using this general permit are not required to follow the examples.

(b) Siting Criteria:

1. Navigational access must already exist between the mooring field and the nearest customarily used access channel or navigable waters for the sizes of vessels for which the mooring field is designed to serve, such that no new dredging is required to create access or adequate mooring depths.

2. The mooring field and mooring areas associated with the dinghy dock and pumpout vessel dock shall be sited in an area with adequate circulation and flushing based on the bathymetry plan required in paragraph (2)(c), above, and the proposed drafts and types of vessels to be moored.

3. The mooring field shall be associated with an existing or permitted land-based support facility that is operational prior to the mooring field being occupied. The land-based support facility shall provide amenities and conveniences for the number of occupants that are using the mooring field (e.g., parking, bathrooms, shower facilities, laundry facilities, etc.). These details shall be included in the Management Plan.

4. The mooring field, dinghy dock, and sewage pumpout dock shall not be located in the following areas.

a. Within any marked or customarily used navigational channel, or within setbacks established by the U.S. Army Corps of Engineers for federal channels.

b. Where they would adversely affect waters classified by the Department of Agriculture and Consumer Services as approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting as set forth in chapter 5L-1, F.A.C. This can be demonstrated by providing a letter of no objection from the Department of Agriculture and Consumer Services. However, no letter is required if a project will be located in Palm Beach, Broward, or Miami-Dade County.

c. Where they would adversely affect critical habitat designated by the U.S. Fish and Wildlife Service or U.S. National Marine Fisheries Service for any federally-listed threatened or endangered species under the Endangered Species Act of 1973.

d. In predominantly fresh waters as defined in chapter 62-302, F.A.C.

(c) Design criteria:

1. The mooring field shall accommodate no more than 100 vessels (excluding any dinghies that may be attached to parent vessels).

2. Vessel mooring systems and the installation plans must be designed by a Florida registered professional so that the mooring systems with vessels attached withstand, at a minimum, tropical storm force winds and so that the associated tethers, lines, and buoys do not scour or damage the bottom. The mooring system and associated tethers, lines, and buoys shall be maintained for the life of the facility.

3. The mooring field shall be permanently associated with a land-based support facility that provides the following:

a. Pumpout either fixed or portable, or a pumpout vessel under contract for service or owned by the land-based support facility capable of serving all vessels using the mooring field, and a plan for regular pumpouts of vessels when needed.

b. A landing platform or dinghy dock for mooring field users to access the land-based support facility, as well as a dock for a fixed sewage pumpout or mooring for the pumpout vessel if one is requested. Such docks are authorized to be constructed under this general permit, provided neither dock exceeds 500 square feet of structure over wetlands and other surface waters, and sufficient water depth exists at the dock for the sizes of vessels for which the dock is designed to serve.

4. The mooring field shall be marked in accordance with Florida Fish and Wildlife Conservation Commission requirements under chapter 327, F.S., including markings of the outside boundaries of the mooring field.

5. Dredging and filling of wetlands or other surface waters is authorized only for the installation of pilings; mooring buoys; vessel mooring systems; mooring field regulatory; boundary, and information markers; dinghy docks; and sewage pumpout docks.

6. If located in a county with a Manatee Protection Plan (MPP) approved by the Florida Fish and Wildlife Conservation Commission, the mooring field shall be designed and maintained in conformance with the MPP. Documentation of plan consistency must be submitted concurrently with the notice to use the general permit in the form of a letter of consistency from the Commission. A review by the Commission can be requested at ImperiledSpecies@myFWC.com.

(d) Operational Criteria:

1. The local government or its contracted entity shall operate and maintain the mooring field and land-based support facility in accordance with the terms of this general permit, the Management Plan, and sovereign submerged lands lease (if applicable) throughout the life of the mooring field.

2. Occupied vessels with Type III marine sanitation devices shall be required to have their holding tanks pumped out, at a minimum, on a 7-day interval while continuously moored in the mooring field. The Management Plan shall specify a pumpout plan, tracking and inspection times, which generally shall not be less than a minimum 7-day interval. The pumpout plan shall include a flag notification system for facilities that are using a pumpout vessel and a proposed inspection schedule for Type I or II systems.

3. The local government must provide, at the land-based support facility, for the regular collection of solid waste, sewage, and recyclable goods from vessels moored at the mooring field. All collected sewage waste must be discharged at a facility permitted by the Department or the Florida Department of Health.

4. The local government must provide information to users explaining ways to minimize discharges of grey water, including encouragement to use land-based support facilities. This information also shall be included in the Management Plan.

5. The following activities are prohibited in the mooring field and at the dinghy dock and sewage pumpout dock at the land-based support facility, unless specifically authorized in the Management Plan or a separate, valid authorization under part IV of chapter 373, F.S.:

a. Major boat repair and maintenance.

b. Fueling activities. However, this shall not prevent fueling at the land-based support facility.

c. Boat hull scraping or painting.

6. The local government shall identify in the Management Plan whether it will provide brochures, or install and maintain a kiosk or permanent information display board in a clearly visible location at the land-based support facility, providing information on:

a. Operational provisions and restrictions associated with use of the mooring field and land-based support facility,

b. Manatee protection and applicable manatee zones as adopted in chapter 68C-22, F.A.C., which is incorporated by reference in subparagraph 62-330.417(3)(c)2., F.A.C.,

c. Location and availability of sewage pumpout facilities and procedures,

d. Navigational ingress and egress to the mooring field and land-based support facility, including identification of channel markers, shoals, and other significant navigational issues, such as controlling water depths; or by providing charts for sale or a location where they may be purchased,

e. Seagrasses, corals, and other significant resources in the adjacent waters, such as their location, protection, and avoidance of impacts, and their importance to the water resources; and,

f. Prohibitions on discharging trash, sewage, and hazardous wastes into the water, and ways to minimize discharging grey water into the water.

(e) Sovereignty Submerged Lands Lease:

1. All public mooring fields and associated land-based support facilities located on sovereignty submerged lands require a lease from the Board of Trustees of the Internal Improvement Trust Fund in accordance with the application procedures and requirements of chapters 18-18, 18-20, and 18-21, F.A.C., as applicable.

2. The lease boundary shall include the over-water surface area of the mooring field, encompassing all of the swing areas and square footage between the swing areas including internal thoroughfares.

3. The lease boundary shall include the preempted area for the dinghy dock and the sewage pumpout dock that contains a temporary mooring area to access a fixed sewage pumpout and for the mooring of a sewage pumpout vessel, if these structures are proposed and located on sovereignty submerged lands and not part of an existing lease or other forms of authorization by the Board of Trustees of the Internal Improvement Fund.

4. The Management Plan shall be referenced in the lease, when located over sovereignty submerged lands.

Rulemaking Authority 373.043, 373.044, 373.118(4), 373.4131 FS. Law Implemented 373.117, 373.118, 373.413, 373.414, 373.416, 373.422 FS. History–New 11-19-15.

62-330.427 General Permit for Docks, Piers and Associated Structures.

(1) A general permit is granted to any person to construct, extend, or remove a dock or pier and associated structures as described below:

(a) A private, single-family pier or dock with up to two boat lifts that, together with all existing structures on the shoreline of the property, does not exceed a total area of 2,000 square feet over surface waters. Such a structure:

1. Shall not accommodate the mooring of more than two vessels, either in the water or on a boat lift. Solely for purposes of this general permit, up to two personal watercraft as defined in section 327.02(33), F.S., may be moored in lieu of either or both allowable vessels of another type. These limits shall not apply to the mooring, storage or other use of the dock or pier by:

a. Non-motor-powered vessels less than 16 feet in length that are stored on or under the dock or pier, or within an authorized mooring area; or

b. Personal watercraft, dinghies or similar small vessels that are stowed out of the water, upon a larger parent vessel that is moored at the dock in compliance with this general permit.

2. Shall be located such that all areas used for vessel mooring and navigational access already provide a minimum depth of two feet below the mean low water level for tidal waters, or two feet below the expected average low water depth for non-tidal waters as determined based on best available information for the water body at the project location; and

3. May include a roof over the vessel mooring areas, boat lifts, and terminal platform, or any portions thereof, subject to the applicable provisions of chapters 253 and 258, F.S., and the rules adopted thereunder. Portions of such roofs that overhang beyond the edge of decked portions of the pier or dock shall be included in the calculation of the total square footage of over-water structure allowed under paragraph (1)(a), above.

(b) A public fishing pier that does not exceed a total area of 2,000 square feet provided the structure is designed and built to

discourage boat mooring by elevating the fishing pier to a minimum height of five feet above mean high water or ordinary high water, surrounding the pier with handrails, and installing and maintaining signs that state “No Boat Mooring Allowed.”

(2) This general permit shall be subject to the following specific conditions:

(a) Construction or extension of the boat lift, boat mooring locations, or terminal platform, shall not occur over submerged grassbeds, coral communities or wetlands. However, the access walkway portion of the pier may traverse these resources provided it is elevated a minimum of five feet above mean high water or ordinary high water, contains handrails that are maintained in such a manner as to prevent use of the access walkways for boat mooring or access, and does not exceed a width of six feet, or a width of four feet in Aquatic Preserves;

(b) There shall be no structures enclosed by walls, screens, or doors on any side;

(c) The dock or pier will not facilitate vessel rentals, charters, or serve any other commercial purpose;

(d) There shall be no fish cleaning facilities, boat repair facilities or equipment, or fueling facilities on the structures authorized by this general permit. In addition, no overboard discharges of trash, human or animal waste, or fuel shall occur from any structures authorized by this general permit;

(e) This general permit shall not authorize the construction or extension of more than one dock or pier per parcel of land or individual lot. For the purposes of this general permit, multi-family living complexes shall be treated as one parcel of property regardless of the legal division of ownership or control of the associated property; and

(f) Notwithstanding any other provisions of this general permit, the design, construction and operation of the dock or pier and associated vessels shall not conflict with any manatee protection plan approved and adopted under section 379.2431(2)(t), F.S.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.427, Amended 10-1-13, 6-1-18.

62-330.428 General Permit for Floating Vessel Platforms and Floating Boat Lifts.

A general permit is granted to the owner of an individual, detached, private single-family residence to construct, alter, operate, maintain, and remove floating vessel platforms or floating boat lifts (“platforms or lifts”) at their residence, under the following conditions:

(1) Platforms and lifts are authorized only at a dock or along a seawall associated with an individual, detached, private single-family residence on the contiguous uplands. For purposes of this general permit, an individual, detached, single-family residence does not include duplexes, triplexes or quadruplexes.

(2) The dock or seawall must meet one of the following:

(a) It was built prior to July 1, 1975;

(b) It complies with a permit issued under chapter 403, F.S., or part IV of chapter 373, F.S., or

(c) It was built in accordance with an exemption under section 403.813(1), F.S.

(3) The platforms and lifts:

(a) Shall not be located within an aquatic preserve as designated and described in chapter 258, F.S., or within federally designated critical habitat for Johnson’s seagrass (*Halophila johnsonii*);

(b) Shall be limited in size as follows:

1. If built in artificial waters and residential canal systems, the platforms and lifts must not cumulatively exceed 1,000 square feet. “Cumulatively” means either alone or in combination with any other platforms or lifts along the person’s shoreline.

2. If built within Outstanding Florida Waters, the platforms or lifts must not cumulatively exceed 300 square feet along the person’s shoreline.

3. If built in waters other than those listed above, the platforms and lifts must not cumulatively exceed 675 square feet along the person’s shoreline.

(c) Shall not be located over submerged grassbeds, attached macroalgae, coral communities, or wetlands;

(d) Shall be used solely for the purpose of storing a vessel or vessels, such that the vessel or vessels are stored out of the water at all times when not in use;

(e) Shall not be added to structures or located in areas where boat mooring is specifically prohibited under a permit issued under either chapter 403, or part IV of chapter 373, F.S., or an authorization under chapter 253 or 258, F.S.; and,

(4) If located within submerged lands owned by the Board of Trustees of the Internal Improvement Trust Fund, the following

additional conditions must also be met to qualify for consent to use and occupy such lands under chapter 253, F.S.

(a) The platforms and lifts must be installed, operated and maintained in conformance with all the applicable terms and conditions of subsections 18-21.004(3) and (7), F.A.C., (March 12, 2012), and rule 18-21.0041, F.A.C. (March 23, 2012);

(b) The platforms and lifts must not extend more than 25 percent into the width of the waterway, as measured from approximate mean high water to approximate mean high water in tidal waters, or from approximate ordinary high water to approximate ordinary high water in non-tidal waters;

(c) Platforms and lifts located on any lands under the jurisdiction or management of the Department's Division of Recreation and Parks must have prior written approval by the Division of Recreation and Parks, and such approval must be submitted with the notice to use this general permit.

Rulemaking Authority 373.026(7), 373.043, 373.044, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1), 403.813(1), 403.814(1) FS. Law Implemented 253.04, 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.813(1), 403.814(1) FS. History–New 8-4-05, Formerly 62-341.428, Amended 10-1-13.

62-330.431 General Permit for Installation of Riprap.

(1) A general permit is granted to any person to install riprap:

(a) At the toe of an existing vertical seawall, provided the slope of the riprap is no steeper than two horizontal to one vertical and the horizontal distance from the toe of the seawall is no more than 10 feet;

(b) At an individual, private residential single-family property that is not part of a larger plan of common development, provided:

1. The slope of the riprap is no steeper than two horizontal to one vertical, and the toe of the riprap is no more than 10 feet waterward of the existing mean high water line or approximate ordinary high water line;

2. Riprap is not placed along a length of shoreline of more than 100 linear feet, and is not combined as part of any other use of this general permit on the same parcel of land; and

3. Erosion has occurred, or is likely to occur, along the shoreline.

(2) This general permit shall be subject to the following specific conditions:

(a) The riprap consists only of natural boulders or clean concrete rubble one to three feet in diameter in average dimension, and there are no reinforcing rods or other similar protrusions in the concrete rubble;

(b) There is no filling of submerged grassbeds or coral communities;

(c) The amount of wetland area filled shall not exceed 100 square feet; and,

(d) There is no backfilling to obtain useable upland, to straighten an otherwise sinuous shoreline, or to reclaim land lost by avulsion or erosion.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.431, Amended 10-1-13, 6-1-18.

62-330.437 General Permit for Installation of Fences.

A general permit is granted to install, maintain, or remove a fence in wetlands or other surface waters under all of the following conditions:

(1) The fence shall not be located on state-owned submerged lands or in Outstanding Florida Waters, Aquatic Preserves, Outstanding National Resource Waters, Class II waters, or waters approved, conditionally approved, restricted, or conditionally restricted by the Department of Agriculture and Consumer Services for shellfish harvesting.

(2) Fences installed within navigable waters other than isolated waters that are wholly owned by one private entity shall:

(a) Not adversely affect navigation, block any waterway or channel, or cause a navigational hazard;

(b) Be installed such that all fence posts located waterward of the mean or ordinary high water line rise at least two feet above the mean high water or the ordinary high water elevation and are marked and maintained with reflectors visible from all directions; and

(c) Extend no more than 25 feet waterward into the open water, beyond the shoreline, or riparian areas of emergent wetland vegetation, whichever is more waterward.

(3) The fence shall be constructed of horizontal metal wire attached to posts, which may include occasional perpendicular wires

to maintain spacing, but shall not include any chain-link or other mesh components.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.437, Amended 10-1-13, 6-1-18.

62-330.439 General Permit for Construction or Maintenance of Culverted Driveway or Roadway Crossings, and Bridges of Artificial Waterways.

(1) A general permit is granted to any person for the purpose of constructing or maintaining a culverted driveway or roadway crossing, or bridge of an artificial waterway, provided:

(a) This general permit shall apply only to wholly artificial, non-navigable drainage conveyances;

(b) A culvert or culverts shall be placed under the roadway or driveway;

(c) The size and number of the culvert(s) shall be adequate to pass normal high water stages of the artificial water body being crossed. In no instance shall the culvert(s) provide a smaller cross-sectional area or hydraulic capacity than any upstream culvert;

(d) The elevation of the culvert invert shall be at the existing bottom grade of the artificial waterway;

(e) The length of the driveway, roadway or bridge crossing the waterway shall not exceed 50 feet top of bank to top of bank;

(f) The top width of the driveway, roadway, or bridge shall not exceed 75 feet, the toe to toe width shall not exceed 100 feet, and the side slopes shall not be steeper than two horizontal to one vertical; and,

(g) The maintenance of the roadway, driveway or bridge shall continue to provide at least the same volume of discharge through the culvert(s).

(2) If dewatering or channel flow diversion is performed, temporary fill dikes and dewatering discharges shall be installed and constructed so that no upstream flooding or impoundment occurs. Any temporary works shall be completely removed and all areas upstream and downstream from the crossing shall be restored to grades, elevations, and conditions existing before construction.

(3) This general permit shall apply only to a maximum of two crossings on a given parcel of property, with a minimum distance of 500 feet between crossings.

(4) This general permit shall not apply if relocation of all or part of the artificial waterway is required.

(5) This general permit does not authorize any road construction or alteration connecting to a crossing.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 10-3-95, Formerly 62-341.439, Amended 10-1-13.

62-330.441 Noticed General Permit for Public Navigation Channel and Canal Infrastructure by the West Coast Inland Navigation District within Lee County.

(1) A general permit is hereby granted to the West Coast Inland Navigation District (“WCIND”) to dredge public navigation channels and canals within the trafficsheds and secondary channel systems listed in Table 1 and shown in Figures 1 through 48 of Antonini, Gustavo A., Robert A. Swett, and David Fann, 2008, Maps of Lee County Noticed General Permit Trafficshed Channels and Secondary Channels, SGEF-173, Florida Sea Grant College Program, Gainesville, Florida (30 October 2008), which is hereby incorporated by reference. Additional information on the background, methodology, and data used in identifying the trafficsheds and secondary channel systems that are the subject of this general permit is described in the following reports:

(a) Antonini, Gustavo A, and Paul Box, 1996, A Regional Waterway Systems Management Strategy for Southwest Florida, TP-83, Florida Sea Grant College Program, Gainesville, Florida;

(b) Swett, Robert A., David A. Fann, Gustavo A. Antonini and Lana Carlin Alexander, 2000, Regional Waterway Management System for Lee County, Phase I, TD-3, Florida Sea Grant College Program, Gainesville, Florida;

(c) Swett, Robert A., David A. Fann, Gustavo A. Antonini and Lana Carlin Alexander, 2001, Regional Waterway Management System for Lee County, Phase 2, TD-4, Florida Sea Grant College Program, Gainesville, Florida;

(d) Fann, D.A., R.A. Swett, and G.A. Antonini, 2002. Regional Waterway Management System for Lee County, Phase 3. TD-5, University of Florida, Gainesville, FL: 21 Florida Sea Grant.

Copies of the above documents may be obtained by contacting environmental resource permit program staff in the Department’s South District Office (Fort Myers) and from the Department's Internet site at http://www.dep.state.fl.us/legal/Rules/rulelistnum.htm. This general permit is not required for maintenance dredging that qualifies for an exemption under section 403.813(1)(f), F.S.

(2) This general permit is further limited as follows:

(a) For purposes of this general permit, the term “public navigation channels and canals” shall consist of the Intracoastal Waterway and those trafficsheds and secondary channel systems identified on the maps in SGEF-173, which have been determined by the WCIND Board to make a significant contribution to public boating traffic.

(b) The area to be dredged shall not contain any living communities of true stony coral (order Scleractinia), hydrocoral (order Milleporina), octocoral (subclass Octocorallia), or soft coral (Alcynoacea, Gorgonacea and Pennatulacea), sponge beds (Porifera), oyster bars (Crassostrea spp.), or macroalgae of the family Caulerpaceae. This shall not prevent dredging of incidental individual specimens of corals, sponges, or oysters. To the extent individual or clumped oysters, corals, or sponges are to be dredged, they shall be relocated to the maximum extent practicable in accordance with paragraph (3)(c), of this general permit. In addition, the dredging alignments shall be located so as to not adversely affect coral and sponge communities and oyster bars as a result of sloughing of channel side slopes. Seagrass within the proposed dredged area shall be relocated in accordance with paragraph (3)(c), of this general permit.

(c) To the maximum extent practicable, dredging alignments shall follow existing channels and previously dredged areas and avoid and minimize impacts to seagrass communities (Potamogetonaceae, Hydrocharitaceae and Cymodoceae sp.). Dredging alignments also shall be located to minimize the potential for erosion to adjacent seagrass communities as a result of sloughing of channel side slopes.

(d)1. The “No Internal Combustion Motor Zones” (NICMZs) shown and described in the attached Exhibit A, which reflect the boundaries approved in Resolution 07-09-49 of the Lee County Board of County Commissioners on September 25, 2007, are hereby established by this general permit. Within these NICMZs, the use of electric motors is permitted, but operators of all vessels equipped with internal combustion motors (e.g.: gasoline or diesel motors) for propulsion must turn off the internal combustion motor and, if possible to do so, tilt or raise the internal combustion motor out of the water.

2. Prior to any dredging authorized by this general permit within an Aquatic Preserve, WCIND shall demonstrate that the NICMZ(s) within that aquatic preserve have been established and marked in the field. Nothing in this rule shall be construed to relieve WCIND from obtaining sign permits required by the Florida Fish and Wildlife Conservation Commission (FWC). For this purpose, DEP authorizes WCIND to apply to FWC for all required sign permits to mark the boundaries of the NICMZs established by this general permit. WCIND shall be responsible for installing and maintaining all permitted signs.

3. WCIND will design and implement a program to monitor seagrasses within the NICMZs using various scientifically approved methods after consultation with DEP and FWC staff. The monitoring shall be designed to establish the baseline coverage of seagrasses by species, the number and coverage of prop scarring, and document any change in coverage over time. At a minimum, the first monitoring will occur within 90 days after the boundaries of the NICMZs have been marked with signage as provided in the preceding section of this general permit, and thereafter every two years for a total of ten years. The monitoring plan shall include metrics that can be used to quantitatively establish the relative success or failure of seagrass restoration and protection following establishment of the NICMZs.

(e) Dredging alignments shall not exceed the maximum depths shown in Table 1. All dredging alignments shall not exceed a maximum top width of 30 feet and a maximum bottom width of 20 feet. Overdredging to achieve the final authorized depth and width is not allowed. An as-built survey of the dredging alignment shall be submitted to the Department as provided in paragraph (3)(h), below.

(f) No more than 8,500 cubic yards of dredged material shall be cumulatively removed through authorizations by this general permit over a five-year period within each trafficshed or secondary channel system, beginning with the first project authorized under this general permit within the trafficshed or secondary channel system. Within 30 days following the completion of the as-built survey required in paragraphs (2)(e), above, and (3)(h), below, a report shall be submitted to the South District office of the Department that includes the volume of material excavated from each channel and canal within the trafficshed or secondary channel system, and the cumulative total volume of material excavated for the trafficshed or secondary channel system under this general permit within the previous five years. This report shall be included with any subsequent notices to dredge channels or canals within the same trafficshed or secondary channel system.

(g) The dredging activity is restricted to Class III Waters, or Class II Waters that are classified by the Department of Agriculture and Consumer Services under chapter 62R-7, F.A.C., as unclassified, prohibited, restricted, or conditionally approved for shellfish harvesting.

(h) This general permit shall not apply to dredging within the limits of areas subject to currently valid individual ERP dredging permits.

(3) All work under this general permit shall be conducted in conformance with the general conditions of rule 62-341.215, F.A.C., and the following specific conditions.

(a) Each dredging event for a trafficshed or secondary channel system shall require a separate notice to use this general permit. Multiple areas within a single trafficshed or secondary channel system may be included in one notice. Each notice shall be submitted with the following:

1. Scaled plan and cross-sectional drawings that clearly identify the length, width, and depth (referenced to mean lower low water) of the area or areas to be dredged within each channel and canal; locations of any hydraulic pipelines between the dredge areas and the dredged material disposal sites; and identification of the channels, canals, and names of the trafficsheds or secondary channel system that are to be dredged from Table 1.

2. Identification of the source document described in subsection 1 and reference data that specifically describe the work proposed for dredging within the trafficshed or secondary channel system. All document titles, page numbers, figures, and other relevant information to the trafficshed or secondary channel system must be identified.

3. The location, dimensions, and estimated volumes of dredged material disposal sites, including the location of any water quality or habitat restoration as described in paragraph (3)(d), of this general permit and any relocation areas required under paragraph (2)(b), of this general permit. If dredged material fill will be transported over water by barge, the notice will include assurance that the barge will be designed and sized to prevent discharge of dredged material runoff, prop or hull dredging, and discharge during the loading and unloading of material. If stockpile areas are to be used for temporary disposal and transport, the type and volume capacity of such stockpile areas, including controls that will be used to prevent dredge material runoff also must be described. The notice must provide assurance any temporary stockpile areas will have no impacts to jurisdictional wetlands or surface waters.

4. The estimated volume of each proposed dredging area.

5. Identification of any special water classifications for the areas to be dredged, such as the water class (rule 62-302.400, F.A.C.); shellfish classification under chapter 62R-7, F.A.C.; Aquatic Preserve, state park, or state recreation area designation under chapter 258, F.S.; and Outstanding Florida Water or Outstanding National Resource Water designation under rule 62-302.700, F.A.C.

6. A resource inventory of the dredging alignments which has been prepared or updated between May through September within one year prior to the proposed dredging. The resource inventory must be conducted by an individual experienced and knowledgeable in benthic communities and seagrass identification. The resource inventory must identify the presence and location of seagrasses, oysters, coral communities, sponge beds, and macroalgae of the family Caulerpaceae. This resource inventory must also include all areas within any requested mixing zones associated with the dredging project (including outfall pipes from the dredge material disposal area), and all areas that will be occupied by dredging equipment (including cables, pipelines, dredges, barges, and stockpiling/disposal of dredged material). The resource inventory assessment within channels will be conducted as follows, although the WCIND may use equivalent assessment methods upon receiving prior written approval from the Department:

a. The assessment will be conducted along a minimum of two transects within the dredging alignment. The transects will be along a line parallel with and 5 feet within the sides of the dredging alignment;

b. The resource inventory assessment within any requested mixing zones shall be conducted along grid transects every 10 feet throughout the length and width of the requested mixing zone; and,

c. The resource inventory shall be qualitative in nature but shall include identification and location of corals, sponges, and oysters to be relocated pursuant to paragraph (2)(b), of this general permit, and include general identification and location of the extent of seagrass areas and a qualitative description of their relative extent of coverage, and density. The resource inventory shall be completed and submitted a minimum of 30 days prior to the pre-application meeting required by paragraph (3)(b), of this general permit.

7. Identification of the extent and location of all previous dredging within the past five years authorized pursuant to this noticed general permit within the trafficshed or secondary channel system; the date of all such dredging events; the estimated cubic yards excavated from each distinct portion of the trafficshed or secondary channel system pursuant to this general permit; and the permit numbers assigned to such prior use of this general permit for the trafficshed or secondary channel system.

8. The estimated date the dredging activities are planned to begin and the estimated length of time it will take to complete the project. If the project will be accomplished in phases, the estimated starting and ending date of each phase must also be submitted.

9. A plan for monitoring water quality minimally consisting of monitoring at the dredge site, at the location of any waters receiving outfall from dredged material disposal sites, and at background and down-gradient locations in the water body where dredging is occurring and surrounding the dredged material disposal sites. The monitoring shall be designed primarily to measure in-situ turbidity, but is subject to modification based on the pre-application meeting discussion with the Department to ensure the plan is capable of detecting any potential water quality violations from the work. If the dredge area is in close proximity to a facility or location likely to cause a discharge of toxic materials, the water quality monitoring as well as best management practices proposed shall be designed to contain deleterious substances during dredging. Results of the monitoring and a copy of the logs shall be submitted in accordance with the provisions in paragraph (3)(f), of this general permit.

10. A description of the resources to be relocated pursuant to paragraphs (2)(b) and (3)(c), of this general permit, the methods to be used for their relocation, and the locations to which they will be relocated.

(b) A minimum of 30 days prior to submittal of a notice to use this general permit, the WCIND and Lee County shall conduct at least one pre-application meeting with the South District Department Environmental Resources Permitting staff to discuss project designs, implementation details, and any resource concerns, including approval of any resource relocation in accordance with paragraph (2)(b), of this general permit or water quality or habitat restoration sites in accordance with paragraph (3)(d), of this general permit. For a proposed project within an aquatic preserve, this meeting shall include the appropriate aquatic preserve manager or their designee. In the event the pre-application meeting adequately addresses all Department questions or concerns, the Department will inform the WCIND that the notice may be submitted immediately for review.

(c) To the extent seagrass, corals, sponges or clumped oysters are within the dredging footprint, they shall be relocated to the maximum extent practicable. Seagrass, oysters, corals, and sponges must be relocated only into areas previously approved in writing by the Department. Relocation shall be done in a manner that avoids adverse impacts to water quality and adjacent submerged resources. If seagrasses are relocated, the donor site within the dredge area and the recipient location of the seagrass transplant shall be described in the application and in the pre-application meeting required under paragraph (3)(b), of this general permit. Any relocation performed pursuant to this paragraph shall be described in a detailed report to the South District office of the Department within 60 days of project completion. The report shall describe the methods used, the donor site within the dredge area, and the recipient location of the transplant. The WCIND shall provide copies to the South District office of the Department of any follow up monitoring or studies performed on the success of the transplants.

(d) All dredged material resulting from the activities authorized by this general permit shall be removed and deposited on a self-contained, upland dredged material disposal site. The only exceptions to the use of a self-contained, upland dredged material disposal site shall be: seagrass, oyster, coral, or sponge relocations as required by this general permit; or where dredged materials are to be used as part of a water quality or habitat restoration plan authorized by the Department or a water management district under part IV of chapter 373, F.S., in which case any discharge of dredged material shall be in compliance with all terms of that authorization. In all cases, the dredging operation, the discharge of dredged material, and the dredged material disposal site shall be designed, located, and operated such that there are no water quality violations in wetlands or other surface waters outside of a mixing zone established under paragraph (3)(e), of this general permit.

(e) In areas outside of aquatic preserves, violations of state water quality standards shall be prevented immediately outside of a mixing zone of no more than 150 meters in radius from the dredge site and from any discharge point associated with a dredge material disposal area. To the greatest extent practicable, the mixing zone shall be restricted to the limits of the dredging alignment. Within aquatic preserves, violations of state water quality standards immediately outside the area of active work shall be prevented. This shall minimally consist of the use of erosion and sediment control devices, turbidity curtains or similar devices, and other best management practices, all of which shall be located immediately surrounding the area of active work and maintained in a functional condition. In addition, dredge pumping rates and volumes shall be managed to minimize discharges from dredged material disposal sites; and the management of dredged material disposal site dikes, berms, and water control structures so as to minimize erosion, breaches, and discharges. In all cases, mixing zones shall be designed to avoid living communities of stony corals [true stony corals (order Scleractinia) hydrocorals (order Milleporina)], and octocorals (subclass Octocorallia), sponge bed communities (Porifera), oyster bars (Crassostrea spp.), macroalgae of the family Caulerpaceae, and seagrass (Potamogetaceae, Hydrocharitaceae and Cymodoceae).

(f) At all times during active dredging, the collection, analysis, and monitoring of the water quality samples required under this general permit must be conducted and performed by individuals who have prior training and experience in collecting and analyzing water quality samples using the Standard Operating Procedures accessible at the Department’s Internet site and in accordance with

chapter 62-160, F.A.C. Such qualified individual(s) shall be on site at all times necessary to ensure full compliance with the requirements of this noticed general permit. In the event the water quality monitoring required under this general permit detects violations of state water quality standards, dredging shall cease immediately until the source of the violation is identified, measures taken to avoid future violations, and the receiving waters again meet applicable water quality standards. Weekly reports describing the hours of dredging accomplished and the results of the required monitoring will be provided to the South District office of the Department. Any violations of state water quality standards and/or other requirements of this noticed general permit shall be immediately reported to the South District office of the Department.

(g) The permittee shall be responsible for ensuring that all contractors and other entities implementing this general permit comply with the following standard manatee and marine turtle conditions:

1. The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel shall be responsible for observing water-related activities for the presence of manatees.

2. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act of 1978. If the dredging activity results in any manatee being harmed, harassed, or killed as a result of construction activities, the Department will refer the matter to the Florida Fish and Wildlife Conservation Commission (FWC) for appropriate action.

3. Siltation barriers shall be made of material in which manatees and turtles cannot become entangled, shall be properly secured, and shall be monitored regularly to avoid manatee entrapment. Barriers associated with any activities authorized by this general permit shall not block manatee entry to or exit from manatee feeding areas and the following manatee warm water refuge areas:

a. Entrance of the Chiquita Canal (which provides access to the Eight Lakes area) within the Cape Coral Southwest Trafficshed.

b. The defined manatee protection speed zone within the Franklin Locks East Trafficshed and all waters of the Caloosahatchee River within 1/4 mile east of the easternmost end of the Franklin Lock & Dam.

c. Matlacha channel (which provides access to the Matlacha Isles canal system) including the Matlacha Isles canal system in the vicinity of the Boat Lift within the Matlacha Isles/Cape Coral (northwest) Trafficshed.

d. Mouth and remainder of the Orange River within the Orange River Trafficshed.

e. All waters within the Mullock Creek Trafficshed.

4. All vessels associated with the project shall operate at “no wake idle” speeds at all times while in water where the draft of the vessel provides less than four-foot clearance from the bottom, and such vessels shall follow routes of deep water whenever possible.

5. If a manatee is sighted within 100 yards of the project area, precautions shall be implemented by the permittee and the contractor to ensure protection of manatees. These precautions shall include not operating any equipment closer than 50 feet to a manatee, and immediately shutting down equipment if a manatee comes within 50 feet of the equipment. Activities will not resume until the manatees have departed the project area of their own volition.

6. Any collision with or injury to a manatee or marine turtle shall be reported immediately to the FWC at 1(888)404-FWCC (1(888)404-3922)).

7. Temporary signs concerning manatees shall be posted prior to and during dredging activities. All signs are to be removed by the permittee upon completion of the project. A sign measuring at least three feet by four feet which reads “Caution: Manatee Area” shall be posted in a location prominently visible to water-related construction crews. A second sign shall be posted if vessels are associated with the construction, and shall be placed visible to the vessel operator. The second sign shall be at least 8 inches by 11 inches and read: Caution: Manatee Habitat. Idle speed is required if operating a vessel in the construction area. All equipment must be shutdown if a manatee comes within 50 feet of the operation. A collision with or injury to a manatee shall be reported immediately to the FWC at 1(888)404-FWCC (1(888)404-3922)). Specific information on obtaining these signs may be obtained by contacting the FWC.

8. Specific personnel shall be designated as manatee observers. The designated observer(s) shall be dedicated only for this task, must be on site during all in-water dredging activities, and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. The observer(s) shall wear polarized sunglasses during all dredging to aid in observation, and shall work in shifts of no longer than 5 hours each. Observers shall maintain a log detailing manatee sightings, work stoppages, and other protected species-related incidents. If approved by the Department after consultation with the FWC, the

WCIND shall be allowed to implement alternative measures for observing for the presence of manatees when such measures provide reasonable assurance that manatees will not be adversely affected by the alternative methodology.

9. A report, summarizing all activities noted in the observer logs, the location and name of project, and the dates and times of work shall be submitted within 30 days following project completion, to the FWC's Imperiled Species Management Section at: 620 South Meridian Street, 6A, Tallahassee, Florida 32399-1600, or emailed at fcmpmail@myfwc.com.

10. No nighttime mechanical dredging, such as clamshell, shall occur. Movement of a work barge or other associated vessels shall not be performed after sunset, when the possibility of spotting manatees is negligible.

11. All channels designated as Cape Coral Southwest, Franklin Locks East, Matlacha Isles/Cape Coral (northwest), Mullock Creek, and Orange River shall be prohibited from being dredged between November 15th and March 31st of any year due to the high numbers of manatees present at these warm water refuges in the wintertime. When these areas are being dredged between April 1st and November 14th, the manatee protection measures outlined above for all other channel dredging shall be followed.

(h) An as-built survey shall be initiated within two weeks and shall be completed within 60 days after completion of dredging to document depths and widths established by the dredging. The Department shall grant additional time as reasonable to complete the survey upon submittal of written documentation of the existence of inclement weather or situations beyond the control of the permittee that prevented the timely completion of the survey, the submittal of a new timeline for completing the survey.

(i) Within 90 days of completion of each authorized dredge event under this general permit, the affected trafficshed or secondary channel system shall be marked along its entire length with aids to navigation. Markers shall be placed in a manner to facilitate safe navigation and protection of submerged natural resources. In channels dredged to less than 4 foot MLLW depth, signage that identifies areas of shallow water shall be installed, using language such as "Controlling Depth 3 feet, Local Knowledge Required," "Use Caution," or "Stay in Channel." Nothing in this rule shall be construed to relieve the WCIND from obtaining permits for markers and signs required by the FWC.

(j) WCIND shall provide an as-built report and survey detailing all work performed under this authorization and its compliance with the conditions and criteria of this general permit.

(k) All reports and information required by this authorization shall be submitted to the South District DEP office.

(l) WCIND will facilitate an update of the *Lee County Boaters Guide* to reflect the NICMZs established by this general permit. The update will also include computer internet links to additional boater information that will enhance water quality and protection of resources within the aquatic preserves that are the subject of this general permit. WCIND will facilitate the distribution of the updated Boaters Guide to local marinas, commercial boat rental operations, and local residents.

(m) Works under this general permit shall not commence until the Department has provided written confirmation within 30 days that the notice required under paragraph (3)(a), meets all the applicable terms and conditions of this general permit.

(4) WCIND is advised that, pursuant to Section 556.105, F.S., excavating contractors are required to provide certain information concerning the excavation through the one-call notification system not less than two, nor more than five, business days before beginning any excavation.

(5) A Letter of Consent is granted in accordance with subparagraphs 18-21.005(1)(c)10., 15. and 16., F.A.C., by the Board of Trustees of the Internal Improvement Trust Fund (BOT), for the West Coast Inland Navigation District to enter upon and use state-owned submerged lands to the extent necessary to complete the permitted activities. A Letter of Consent also is granted in accordance with subparagraphs 18-21.005(1)(c)15. and 16., F.A.C., from the BOT to Lee County and the West Coast Inland Navigation District to establish, mark, and enforce the NICMZs depicted in Exhibit A.

(6) In accordance with section 253.77, F.S., dredged material removed from sovereign submerged lands under this general permit is exempt from the payment of severed dredged material fees. However, dredged material with economic value, such as beach quality sand, shall be used for public purposes to the maximum extent practicable.

Table 1. Trafficsheds, Secondary Channel Systems, Dredge Depth Limits, and Trafficshed Report Identification Numbers

Trafficshed or Secondary Channel System Name	NGP Dredge Depth (ft)	All Channels Length (ft)	Public Channel Length (ft)	Anticipated NGP Dredge Length (ft)	Public Channel Length in AP (ft)	Anticipated Dredge Length in AP (ft)	Anticipated Dredge Length Outside AP (ft)	Anticipated Dredge Length in AP Sea Grass (ft)	Anticipated Dredge Length in Any Sea Grass (ft)
Back Channel-South Estero Bay	3	18,252	18,252	178	18,252	178	0	0	
Big Carlos Pass & Vicinity	4.5	9,354	9,354	0	8,082	0	0	0	

Trafficshed or Secondary Channel System Name	NGP Dredge Depth (ft)	All Channels Length (ft)	Public Channel Length (ft)	Anticipated NGP Dredge Length (ft)	Public Channel Length in AP (ft)	Anticipated Dredge Length in AP (ft)	Anticipated Dredge Length Outside AP (ft)	Anticipated Dredge Length in AP Sea Grass (ft)	Anticipated Dredge Length in Any Sea Grass (ft)
Bokeelia (east)	4.5	33,027	8,499	535	6,227	450	86	0	0
Bokeelia (west)	3.5	48,391	13,807	1,982	13,807	1,982	0	68	68
Caloosa Isle Marina	5.0	28,326	8,343	2,539	0	0	2,539	0	
Cape Coral Southwest	6.0	359,431	10,603	1,521	0	0	1,521	0	
Central Estero Bay	2.5	18,437	18,437	385	18,437	385	0	0	
Chantry Canal	4.5	76,137	11,315	458	0	0	458	0	
Compass Rose	4.5	1,172	1,172	0	97	0	0	0	
Deep Lagoon	6.0	37,861	9,242	491	0	0	491	0	
Demere Key	3.5	21,647	19,721	1,052	18,927	896	156	735	735
East Fort Myers	7.0	26,534	2,588	1,622	0	0	1,622	0	
Estero Island-Bayside Channels	4.5	11,955	11,955	853	0	0	853	0	
Everest Canal	5.0	124,094	4,928	2,494	0	0	2,494	0	
Fish Tale Marina	4.0	7,391	1,849	0	305	0	0	0	
Fish Trap Bay 2	2.5	8,893	3,213	520	3,213	520	0	0	
Fort Myers Yacht Basin	7.0	7,941	7,941	4,987	0	0	4,987	0	
Franklin Locks East	5.0	38,843	2,478	1,405	0	0	1,405	0	
Getaway	5.0	2,604	2,604	1,066	0	0	1,066	0	191
Hancock Creek	5.0	57,956	26,613	2,778	0	0	2,778	0	
Hogue	4.0	3,115	3,115	345	3,115	345	0	0	
Hurricane Bay East	4.5	8,602	8,602	917	8,474	917	0	0	
Hurricane Bay West	5.0	8,750	8,750	1,369	0	0	1,369	0	
Imperial River-Lower	3.5	31,336	15,203	661	9,225	661	0	0	
Imperial River-Upper	2.5	37,630	9,913	713	0	0	713	0	
Imperial Shores	2.5	15,526	4,106	1,685	4,106	1,685	0	0	
Marsh Point	3.0	17,783	5,729	1,201	0	0	1,201	0	
Matanzas Harbor	5.5	5,103	5,103	66	0	0	66	0	
Matlacha (northwest)	4.5	26,245	1,457	654	1,457	654	0	0	
Matlacha (southwest 2)	3.5	10,670	2,719	180	2,719	180	0	0	
Matlacha Isles/Cape Coral (northwest)	4.0	265,603	14,057	1,729	8,399	1,550	257	0	
Mullock Creek	2.5	42,168	11,374	2,099	10,161	2,099	0	0	
Normandy Canal	5.0	33,982	11,878	4,068	0	0	4,068	0	
North Matlacha	4.5	62,864	62,864	84	62,864	84	0	0	
Orange River	6.5	46,750	3,595	100	0	0	100	0	
Pelican Landing	2.5	3,992	3,992	1,169	3,992	1,169	0	0	
Plato Canal	5.5	109,235	18,520	5,487	0	0	5,487	0	
Punta Rassa/Connie Mack Island	5.0	28,784	14,869	4,084	0	0	4,084	0	103
Redfish Point	6.0	33,806	13,023	4,436	0	0	4,436	0	
Rookery Trace	3.5	8,496	8,496	1,028	1,621	819	231	0	
Roosevelt Channel-Bayside	3.0	2,249	1,509	0	1,292	0	0	0	
Roosevelt Channel-North	5.0	27,369	17,918	694	17,918	694	0	0	
Saint James City (east)	5.0	23,006	16,137	3,266	0	0	3,266	0	
Saint James City (south 1)	5.0	52,518	18,385	6,531	5,459	502	6,030	252	252

Trafficshed or Secondary Channel System Name	NGP Dredge Depth (ft)	All Channels Length (ft)	Public Channel Length (ft)	Anticipated NGP Dredge Length (ft)	Public Channel Length in AP (ft)	Anticipated Dredge Length in AP (ft)	Anticipated Dredge Length Outside AP (ft)	Anticipated Dredge Length in AP Sea Grass (ft)	Anticipated Dredge Length in Any Sea Grass (ft)
Siesta Isles	5.0	17,962	1,088	713	0	0	713	0	
South Estero Bay	4.0	27,694	27,694	327	27,694	327	0	0	
South Matlacha	3.5	71,465	71,465	889	28,408	381	508	381	381
Sunset Bay	2.5	2,681	2,440	376	2,440	376	0	0	

The Central Estero Bay No Internal Combustion Motor Zone is described from a point of beginning at N26.3989° W81.8664° (generally east of the South Estero Bay Channel marker presently numbered G13) [POB] continuing generally south-southeast to the east of the marked navigation channel approximately 7215 feet to a point at N26.3803° W81.8589° (generally east of the South Estero Bay Channel marker presently numbered G29) [2]; thence continuing north of the marked navigation channel in a northeasterly direction approximately 4000 feet to a point at N26.3873° W81.8495° (generally west of the Southern Passage Channel marker presently numbered G19) [3]; thence generally north approximately 240 feet to N26.3879° W81.8495° [4]; thence generally northwest approximately 1300 feet to N26.3908° W81.8519° [5]; thence generally north-northwest approximately 2080 feet to N26.3962° W81.8540° [6]; thence generally northwest approximately 1950 feet to N26.4002° W81.8579° [7]; thence due west to the shoreline of Davis Key and following said shoreline to the western end at N26.3992° W81.8658° [8]; thence continuing generally south of west approximately 230 feet to the point of beginning.

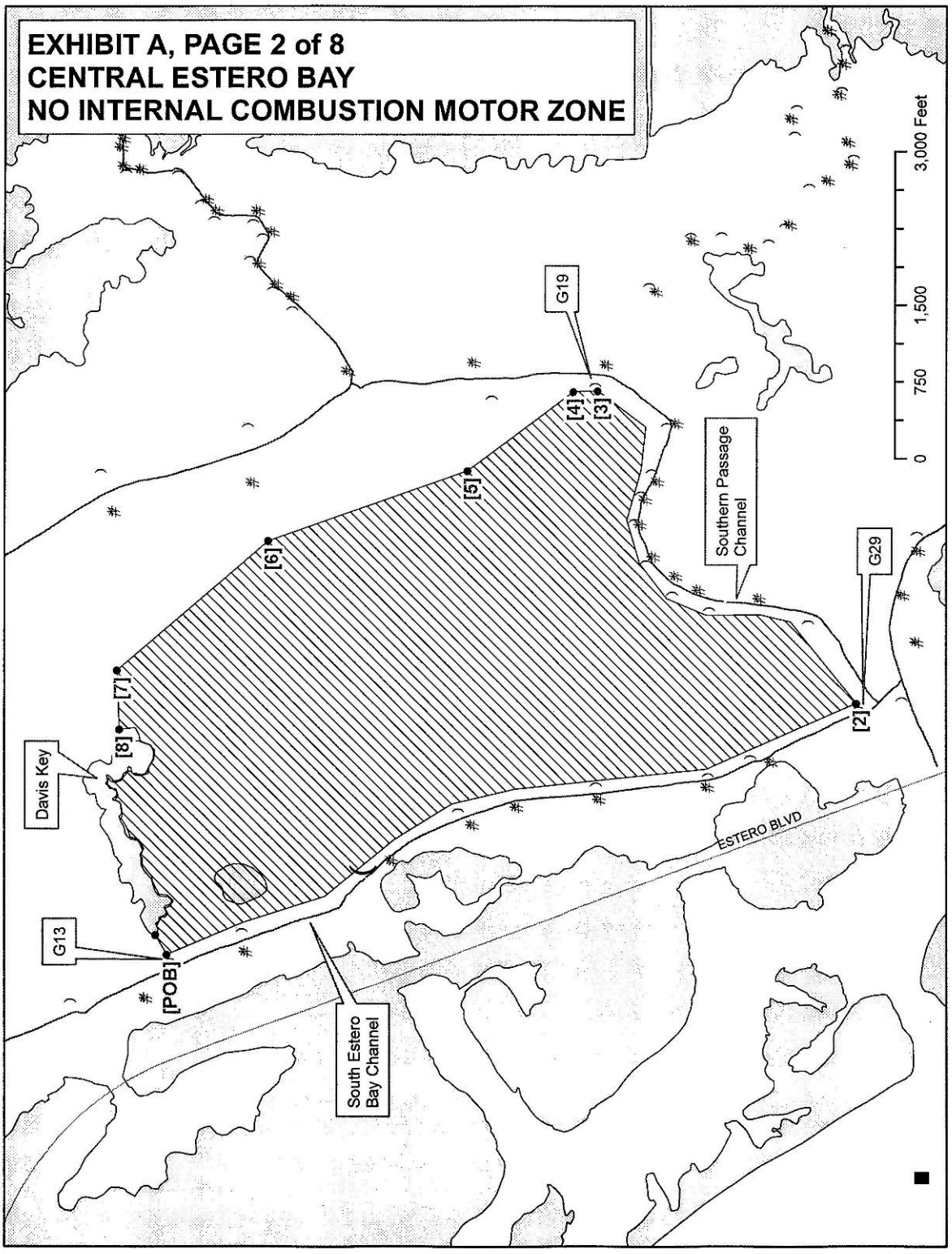


EXHIBIT A, PAGE 2 of 8
CENTRAL ESTERO BAY
NO INTERNAL COMBUSTION MOTOR ZONE
3,000 Feet
1,500
750
0
G19
[4]
[3]
[5]
[6]
[7]
[8]
Davis Key
G13
[POB]
South Estero Bay Channel
Southern Passage Channel
G29
[2]
ESTERO BLVD

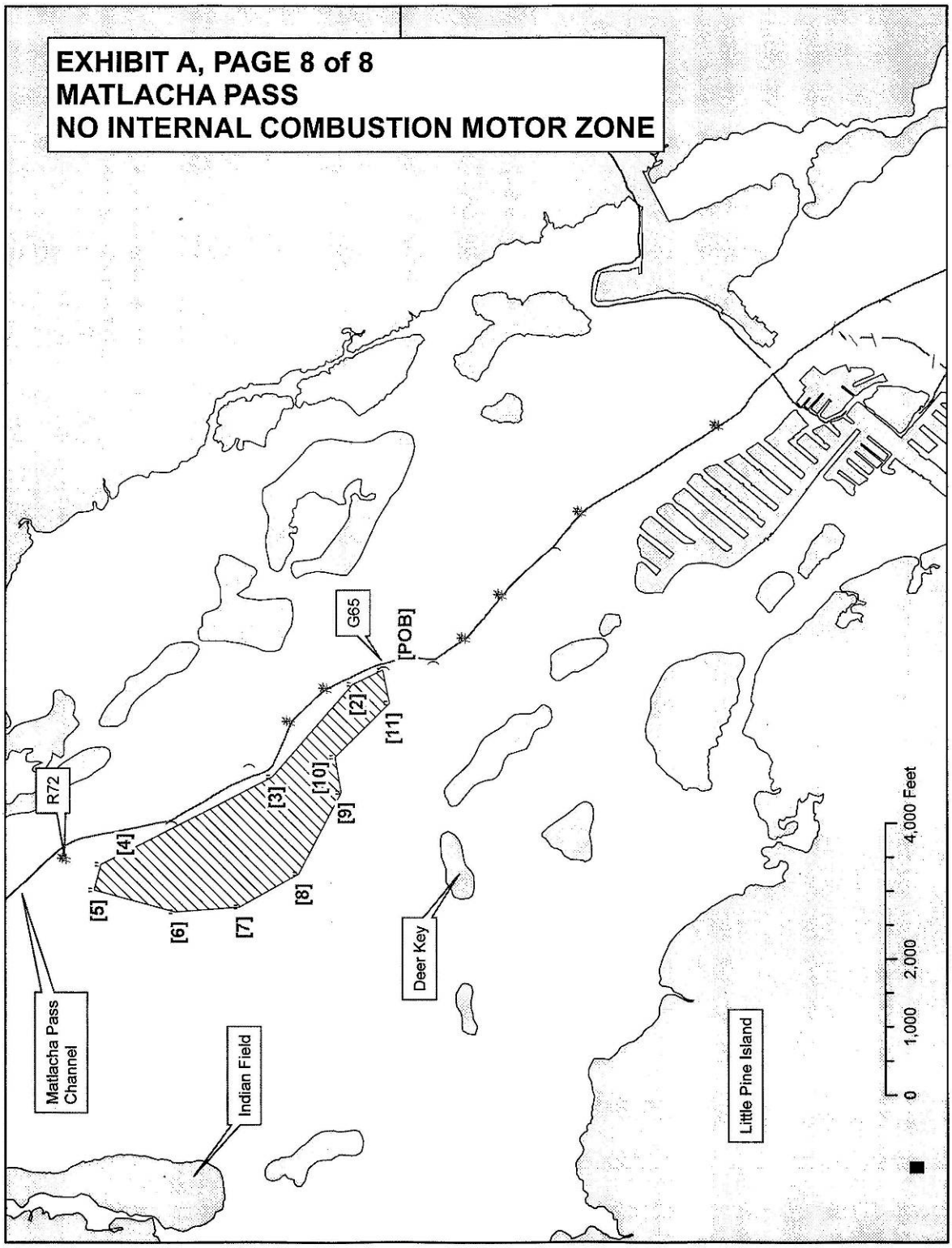
The Big Carlos No Internal Combustion Motor Zone is described from a point of beginning at Goombs Point N26.4092° W81.8655° [POB] continuing generally northwest along the mangrove shoreline to a point at N26.4122° W81.8688° [2]; thence continuing generally northwest approximately 120 feet to the shoreline of an unnamed mangrove island at N26.4124° W81.8690° [3]; thence continuing along the shoreline of said island to a point at N26.4158° W81.8721° [4]; thence continuing generally northwest approximately 266 feet to the shoreline of an unnamed mangrove island at N26.4162° W81.8727° [5]; thence continuing along the shoreline of said island to a point at N26.4179° W81.8757° [6]; thence continuing generally southwest approximately 834 feet to a point at N26.4160° W81.8773° [7]; thence continuing generally south approximately 2615 feet to a point at N26.4089° W81.8778° [8]; thence continuing generally east approximately 605 feet to a point at N26.4087° W81.8760° [9]; thence continuing generally south of east approximately 688 feet to a point at N26.4079° W81.8740° [10]; thence continuing generally southeast approximately 570 feet to a point at N26.4070° W81.8726° [11]; thence continuing generally south of east approximately 613 feet to a point at N26.4066° W81.8708° [12]; thence continuing generally east approximately 913 feet to a point at N26.4066° W81.8680° [13]; thence continuing generally north of east approximately 680 feet to a point at N26.4075° W81.8662° [14]; thence continuing generally northeast approximately 390 feet to a point at N26.4084° W81.8655° [15]; thence continuing generally north approximately 314 feet to the point of beginning.

EXHIBIT A, PAGE 4 of 8
BIG CARLOS
NO INTERNAL COMBUSTION MOTOR ZONE
Goombs Point
[POB]
[15]
[14]
[13]
[12]
[11]
[10]
[9]
[8]
[7]
[6]
[5]
[4]
[3]
[2]
South Estero Bay Channel
0 500 1,000 2,000 Feet
Mullock Creek Crossover Channel
ESTERO BLVD
Big Carlos Pass

The Jug Creek Shoals No Internal Combustion Motor Zone encompasses a portion of Jug Creek Shoals more specifically described from a point of beginning at N26.7128° W82.1802° (generally southwest of the Jug Creek Shoal Channel marker presently numbered G11) [POB]; thence continuing generally southwest approximately 602 feet to a point at N26.7113° W82.1811° [2]; thence continuing generally southwest approximately 1369 feet to a point at N26.7089° W82.1843° [3]; thence continuing generally southwest approximately 3862 feet to a point at N26.7014° W82.1926° [4]; thence continuing generally southwest approximately 908 feet to a point at N26.6994° W82.1943° [5]; thence continuing generally southwest approximately 1201 feet to a point at N26.6968° W82.1966° [6]; thence continuing generally west- southwest approximately 2144 feet to a point at N26.6952° W82.2029° [7]; thence continuing generally west-northwest approximately 918 feet to a point at N26.6959° W82.2056° [8]; thence continuing generally northwest approximately 571 feet to a point at N26.6971° W82.2067° [9]; thence continuing generally north-northeast approximately 1110 feet to a point at N26.7001° W82.2058° [10]; thence continuing generally northeast approximately 946 feet to a point at N26.7018° W82.2036° [11]; thence continuing generally northeast approximately 876 feet to a point at N26.7030° W82.2013° [12]; thence continuing generally northeast approximately 963 feet to a point at N26.7050° W82.1994° [13]; thence continuing generally northeast approximately 884 feet to a point at N26.7071° W82.1980° [14]; thence continuing generally northeast approximately 893 feet to a point at N26.7089° W82.1962° [15]; thence continuing generally northeast approximately 588 feet to a point at N26.7100° W82.1948° [16]; thence continuing generally northeast approximately 715 feet to a point at N26.7111° W82.1930° [17]; thence continuing generally northeast approximately 1017 feet to a point at N26.7127° W82.1905° [18]; thence continuing generally east approximately 375 feet to a point at N26.7129° W82.1893° [19]; thence continuing generally northeast approximately 553 feet to a point at N26.7136° W82.1879° [20]; thence continuing generally east-northeast approximately 1188 feet to a point at N26.7145° W82.1844° [21]; thence continuing generally east approximately 653 feet to a point at N26.7145° W82.1824° [22]; thence continuing generally east-southeast approximately 741 feet to a point at N26.7139° W82.1802° [23]; thence continuing generally south approximately 393 feet to the point of beginning.

EXHIBIT A, PAGE 6 of 8
JUG CREEK SHOALS
NO INTERNAL COMBUSTION MOTOR ZONE
STRINGFELLOW RD
MAIN ST
Matlacha Pass Channel
G11
[POB]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]
[11]
[12]
[13]
[14]
[15]
[16]
[17]
[19]
[20]
[22]
[23]
Jug Creek Shoal Channel
Jug Creek Channel
Bocilla Island
Patricio Island
0
1,500
3,000
6,000 Feet

The Matlacha Pass No Internal Combustion Motor Zone encompasses an area specifically described from a point of beginning at N26.6490° W82.0819° (generally west of the Matlacha Pass Channel marker presently numbered G65) [POB]; thence continuing generally north-northwest approximately 492 feet to a point at N26.6502° W82.0826° [2]; thence continuing generally northwest approximately 1809 feet to a point at N26.6535° W82.0868° [3]; thence continuing generally north-northwest approximately 2826 feet to a point at N26.6604° W82.0907° [4]; thence continuing generally north of west approximately 389 feet to a point at N26.6607° W82.0919° [5]; thence continuing generally south-southwest approximately 1223 feet to a point at N26.6574° W82.0928° [6]; thence continuing generally east of south approximately 958 feet to a point at N26.6548° W82.0926° [7]; thence continuing generally southeast approximately 1000 feet to a point at N26.6524° W82.0911° [8]; thence continuing generally east-southeast approximately 1350 feet to a point at N26.6507° W82.0875° [9]; thence continuing generally north of east approximately 532 feet to a point at N26.6509° W82.0859° [10]; thence continuing generally southeast approximately 1127 feet to a point at N26.6487° W82.0834° [11]; thence continuing generally north of east approximately 501 feet to the point of beginning.



Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.414(9), 373.418, 403.805(1), 403.814(1) FS. Law Implemented 253.002, 253.77(1), 253.77(4), 258.42, 373.118(1), 373.406(5), 373.413, 373.414(1), 373.414(1)(b), 373.414(9), 373.416, 373.426, 403.061(34), 403.813(3),

403.814(1) FS. History–New 2-18-10, Formerly 62-341.494, Transferred to 62-330.412.

62-330.443 General Permit to the Florida Department of Transportation, Counties, and Municipalities for Minor Bridge Alteration, Placement, Replacement, Removal, Maintenance, and Operation.

(1) A general permit is granted to the Florida Department of Transportation, counties, and municipalities to conduct the activities described below:

(a) For existing maintained roadways and causeways, the alteration, placement, replacement, removal, modification, or maintenance of bridges or bridge culverts and approaches where the combined total of dredging and filling, both temporary and permanent, in wetlands and other surface waters does not exceed 0.5 acre. The total work conducted under notices of intent to use this general permit shall result in the creation of no more than 0.5 acre of new overwater structure for any bridge crossing, including parallel spans, and no new structure area over waters within federally designated critical habitat of Johnson's seagrass (*Halophila johnsonii*).

(b) Channel clearing and shaping, not to exceed a combined total of 0.5 acre of dredging and filling in wetlands and other surface waters, to facilitate maximum hydraulic efficiency of the structures detailed in paragraph (a), above, where the spoil material is used on an upland portion of the project or is deposited on a self-contained, upland spoil site. Escape of spoil material or water from the spoil deposition area into wetlands or other surface waters is prohibited.

(2) This general permit shall be subject to the following specific conditions:

(a) No dredging of access or work channels is authorized by this general permit;

(b) Temporary fill roads shall not be constructed waterward of mean high water or ordinary high water;

(c) All fill placed in wetlands, other than fill on which a bridge or approach is constructed, shall be regraded to the original wetland elevations and revegetated with native wetland species endemic to adjoining, undisturbed wetlands, within seven days of completion of construction. Within "clear zones," revegetation shall be with native herbaceous species endemic to adjoining, undisturbed wetlands. During the five-year period following the initial planting or restoration of the site, these areas shall be maintained to ensure planted or naturally recruited native wetland species are surviving and growing, and that the areal coverage of exotic and invasive species constitutes less than 10% areal coverage;

(d) Hydraulic openings of bridges shall be sufficient to prevent downstream scour, increased downstream water velocities, and increased flood elevations on the property of others;

(e) Minimum horizontal and vertical navigational clearances on bridges over navigable waters of the United States shall be established in accordance with procedures outlined in Chapter 2 of the U.S. Coast Guard Bridge Administration Manual, COMDTINST M16590.5C, (March 26, 2004), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-03150), a copy of which may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C, and in no circumstance shall placement or replacement of a bridge result in a reduction of horizontal and vertical navigational clearances;

(f) Replacement or modification of a bridge that includes changes in the configuration of the bridge and fill areas due to changes in materials, construction techniques, or meeting current construction codes or safety standards are authorized under this permit. Any connecting road expansion or alteration associated with such replacement or modification must be authorized by a separate general or individual permit under chapter 62-330, F.A.C., as applicable, before the start of construction; and

(g) This general permit does not authorize the construction of additional travel lanes for motorized vehicles, except that any single-lane bridge may be widened to two travel lanes, provided the bridge widening does not exceed that reasonably necessary to match the existing travel lane alignment of a two-lane road. This permit does not authorize new corridors or roadway connections where there is no existing structure over wetlands or waterways.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.419, 403.814(1) FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.443, Amended 10-1-13, 6-1-18.

62-330.447 General Permit to the Florida Department of Transportation, Counties, and Municipalities for Minor Activities within Existing Rights-of-Way or Easements.

(1) A general permit is granted to the Florida Department of Transportation, counties, and municipalities to conduct the activities described below.

(a) The extension of existing culverts and crossing approaches that are authorized under a separate permit or exemption under part IV of chapter 373, F.S., as applicable, to accommodate widening of the roadway where excavation or deposition of material shall not exceed 1,000 cubic yards in wetlands and other surface waters and the area from which material is excavated or to which material is deposited shall not exceed a total of 0.25 acre at any one culverted crossing. The 1,000 cubic yardage limitation shall be separately applied to excavation and deposition of material.

(b) Relocation, recontouring, widening, or reconstruction of existing highway drainage ditches through uplands provided the floor elevation of the ditch is not deepened below the original design elevation and provided that the work does not cause a change in the hydrology of any wetlands which are connected to or which are adjacent to the ditch.

(c) Culvert placement, replacement, and maintenance associated with existing roadways, provided that construction does not cause scour in the downstream waters or increase the velocity of the water downstream, does not reduce existing flood conveyance of the stream for the 100-year flood flow and does not reduce existing flood storage within the 10-year flood plain. The material excavated or deposited as fill shall not exceed 1,000 cubic yards in wetlands and other surface waters. The cross sectional area of the culvert shall not be reduced, unless the reduced cross section provides an equal or greater discharge capability. In the case of a culvert replacement as a wildlife crossing, the cross sectional area shall not be reduced.

(d) Construction of temporary bypass lanes and stream channel diversions necessary to complete projects detailed in paragraph (c), above, provided the area used for the temporary bypass lanes and temporary diversion is restored to its previous contours and elevations.

(e) Channel clearing and shaping, not to exceed a combined total of 0.5 acre of dredging and filling in wetlands and other surface waters, to facilitate maximum hydraulic efficiency of structures authorized by paragraph (c), above, where the spoil material is used on an upland portion of the project or is deposited on a self-contained, upland spoil site. Escape of spoil material and return water from the spoil deposition area into wetlands or other surface waters is prohibited.

(f) Ditch or canal bank and bottom stabilization necessary to repair erosion damage to restore previously existing ditch configurations. Authorized repair methods are placement of riprap, sand cement toe walls, clean fill material, poured concrete, geotechnical textiles and other similar stabilization materials. The placement of riprap or other lining materials shall be limited to a length of 500 feet along the axis of the ditch or canal. This general permit shall not be applicable within one-quarter mile along the length of an area, within the same ditch, which has been stabilized under this general permit within a three-year period.

(g) Roadway safety activities, such as installation of shoulders, sidewalks, guard rails, signs, poles, and mast arms within an existing right-of-way that incur no more dredging or filling than 500 square feet per activity, provided the total impact to wetlands or other surface waters does not involve more than 0.5 acre.

(2) This general permit shall be subject to the following specific conditions:

(a) The permittee shall limit stream channel relocation to streams which have an average discharge of 10 cubic feet per second or less. The length of relocated channels or those significantly altered shall be limited to 200 feet per stream. A stream channel shall be altered only when such a measure will reduce the long term adverse water quality impacts and will maintain or restore the stream's natural hydraulic capability; and

(b) This general permit shall not apply to ditch construction in Class I or Class II surface waters, Outstanding National Resource Waters or waters designated as Outstanding Florida Waters.

(c) Activities under this general permit must not diminish existing stormwater treatment, attenuation, or conveyance capacity.

(d) This general permit does not authorize the construction of additional traffic lanes. Activities that require additional traffic lanes must first obtain an individual environmental resource permit under this chapter, as applicable, before the start of construction.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.419, 403.814(1) FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.447, Amended 10-1-13, 6-1-18.

62-330.448 General Permit to Counties and Municipalities to Pave Existing County or Municipally Owned and Maintained Roads, including the Repair and Replacement of Bridges that are Part of the Roadway.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.414(9), 373.4145, 373.418, 403.805(1), 403.813(1)(t) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.414(9), 373.4145, 373.416, 373.418, 373.419, 403.813(1)(t) FS. History–New 2-22-07, Amended 10-1-07, Formerly 62-341.448, Repealed 10-1-13.

62-330.449 General Permit for Construction, Operation, Maintenance, Alteration, Abandonment or Removal of Airport Airside Stormwater Management Systems.

(1) A general permit is granted to the owner of a public or private airport or military airbase for the construction, alteration, abandonment, removal, operation, and maintenance of stormwater management systems that serve permanently-paved airside activities, which, for the purposes of this rule, are defined as those components of an airport, airbase, or runway used for aircraft taxiing, landing, takeoff, loading, unloading, service materials storage and service equipment parking.

(2) The stormwater management systems shall be:

(a) Designed such that the stormwater nutrient loading does not exceed the stormwater nutrient loading from natural vegetative communities. The calculation of such loadings shall be done using the methodology and data set forth in the *Statewide Airport Stormwater Best Management Practices Manual*, ("Airside BMP Manual") Florida Department of Transportation-Aviation Office (April 27, 2013), incorporated by reference herein (pages 1-63: http://www.flrules.org/Gateway/reference.asp?No=Ref-03183, pages 64-Appendix L: http://www.flrules.org/Gateway/reference.asp?No=Ref-03184). A copy may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.

(b) Constructed, altered, operated, and maintained such that the runoff from airside activities drains directly to pervious areas that employ one or more of the following applicable structural Best Management Practices (BMPs):

1. Overland flow, as described in Section 605.a. of the Airside BMP Manual.

2. Dry retention basin, as described in Section 605.b. of the Airside BMP Manual.

3. Swales, as described in Section 605.c. of the Airside BMP Manual.

(c) This general permit is only authorized for use where post development site conditions comply with the criteria set forth above.

(3) The projects in subsection (2), above, must also be constructed, operated, and maintained to comply with the following design criteria and performance standards:

(a) There shall be no dredging or filling in wetlands or other surface waters other than those within existing stormwater management systems.

(b) Discharges cannot adversely affect the conveyance capacity of receiving waters, and cannot increase flooding of off-site property or to property not owned by the permittee, based on the design storm specified for the site locale.

(4) Stormwater management systems serving airside areas that consist of underdrains, wet detention systems, other retention methods, and/or alternative treatment systems do not qualify for authorization under this general permit.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.118(6), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), (6), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 10-1-13, Amended 6-1-18.

62-330.450 General Permit for Construction, Alteration, and Operation of Urban Infill and Redevelopment Activities in Conformance with the Conceptual Approval Permit in Rule 62-330.055, F.A.C.

A general permit is issued that authorizes construction, alteration, operation, and maintenance of urban infill and redevelopment projects contemplated by a conceptual approval permit issued under rule 62-330.055, F.A.C., provided all the following conditions are met:

(1) The activities must be within an urban infill and redevelopment area or a community redevelopment area created under chapter 163, F.S., where a conceptual approval permit has been issued under rule 62-330.055, F.A.C.

(2) The notice of intent to use this general permit must include one set of construction plans and calculations prepared by a registered professional that:

(a) Depict all stormwater management features, all existing and proposed impervious areas, all existing and proposed pervious areas, and the land uses within the site of the proposed activities.

(b) Demonstrate a reduction of loading of pollutants, as identified in the conceptual approval permit, under the existing and proposed conditions at the site of the proposed activities.

(c) Constitute a design consistent with the terms and conditions of the conceptual approval permit, including an identification of the owner and operator of the stormwater management systems, and a demonstration of acceptance of such responsibility by that owner or operator.

(d) Identify the specific location within the urban infill and redevelopment or community redevelopment area where activities are proposed, including any areas within or connected to the development area that have been or will be set-aside for preservation, or

where construction otherwise is not to occur.

(3) The Agency shall have 30 days upon receipt of the notice to respond as to whether the plans and calculations are in substantial compliance with the conceptual approval permit. If they are, construction of that portion of the site addressed by those plans may commence. If the Agency determines that the plans and calculations are not in substantial compliance with the conceptual approval permit, the Agency shall, within 30 days of receipt of the notice, inform the applicant of the inconsistencies, the measures needed to address those inconsistencies, and that verification of qualification to use the general permit is denied without prejudice. The applicant may resubmit a notice to use this general permit once those inconsistencies have been addressed. Construction of the projects that are the subject of the original notice shall not commence until the permittee has resubmitted a revised notice and obtained verification that the activities qualify for the general permit.

(4) Construction must be performed in compliance with the terms and conditions of the conceptual approval permit.

(5) As part of reviewing the qualification to use this general permit, the Agency will verify the number of debits that must be made to the ledger of target pollutant loads (mass per acre) if the activities included in the notice are constructed, and will debit that amount from the master ledger approved in the conceptual approval permit.

(6) Within 30 days of completion of construction, the registered professional shall submit certification that construction was completed in substantial conformance with the plans and calculations that were submitted in the verified qualification to use this general permit.

(7) This general permit authorizes construction of the above authorized projects within a duration of five years from verification of qualification; operation and maintenance of the authorized system shall be the responsibility of the owner and operator for the life of the project or activity.

(8) Unless the conditions of subsection 62-330.055(6), F.A.C. have been met, this general permit cannot be used to construct roads, parking areas, buildings, and other structures on areas where work in wetlands and other surface waters requires an individual permit under this chapter, or on lands served by a stormwater management system authorized by the individual permit.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.118(6), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), (6), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 10-1-13, Amended 6-1-18.

62-330.451 General Permit to Counties, Municipalities, and other Agencies to Conduct Stormwater Retrofit Activities.

(1) A general permit is granted to counties, municipalities, state agencies and water management districts to construct, operate, and maintain stormwater retrofit activities as authorized below for improving existing surface water and stormwater systems. This general permit may be used in conjunction with exempt activities.

(2) Types of stormwater retrofit activities authorized under this general permit are:

(a) Construction or alteration that will add additional treatment or attenuation capacity and capability to an existing stormwater management system;

(b) The modification, reconstruction, or relocation of an existing stormwater management system or stormwater discharge facility;

(c) Stabilization of eroding banks, and installation of structures such as gabions to limit bank erosion; or

(d) Excavation or dredging to remove sediments or other pollutants that have accumulated in existing surface waters as a result of stormwater runoff and stormwater discharges, provided the material removed is not deposited in existing wetlands or other surface waters.

(3) Stormwater retrofit activities shall not:

(a) Be proposed or implemented for the purpose of providing the water quality treatment or flood control needed to serve new development or redevelopment; or

(b) Include a dam that has more than 50 acre-feet of storage capacity if the dam is more than five feet high, nor a dam having a height of ten or more feet, regardless of storage capacity. Height is measured from the top of the dam to the natural bed of the stream or watercourse at the downward toe of the dam, or from the lowest elevation of the outside limit of the dam to the maximum elevation of the dam.

(4) There is no limit to the acreage of stormwater retrofit activities in artificial waters. Work in wetlands and non-artificial surface waters shall be limited to no more than 0.5 acre.

(5) A stormwater quality retrofit activity must result in at least one of the following:

(a) Addition of treatment capacity to an existing stormwater management system such that it reduces stormwater pollutant

loadings to receiving waters;

(b) Addition of treatment or attenuation capability to an existing developed area when either the existing stormwater management system or the developed area has substandard stormwater treatment or attenuation capabilities, compared to what would be required for a new system requiring a permit under part IV of chapter 373, F.S.; or

(c) Removal of pollutants generated by, or resulting from, previous stormwater discharges.

(6) A water quantity retrofit project proposed to reduce existing flooding problems must be designed in such a way that the project does not:

(a) Result in a net reduction in water quality treatment provided by the existing stormwater management system; nor

(b) Increase discharges of untreated stormwater entering receiving waters.

(7) The project must be designed, constructed, and implemented as a complete, stand-alone project within the construction phase duration of a general permit, and such that it will not at any time during its construction or operation:

(a) Cause or contribute to any water quality violations;

(b) Contribute to any existing violation if it discharges pollutants into waters where existing ambient water quality does not meet water quality standards for those pollutants. In such a case, the project must include measures that will cause a net improvement in the receiving waters for those pollutants in accordance with section 373.414(1)(b)3., F.S.;

(c) Adversely affect the value of functions provided to fish and wildlife by wetlands or other surface waters;

(d) Adversely affect the hydroperiod of wetlands on adjacent lands or the hydroperiod of other wetlands upstream, downstream, or adjoining to the work area under subsection (4), above;

(e) Cause or contribute to increased flooding of adjacent lands or cause new adverse water quantity impacts to receiving waters;

(f) Add or increase any chemical treatment;

(g) Be operated by pumps or other mechanical or adjustable features; nor

(h) Adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to section 373.042, F.S.

(8) The entity conducting this general permit must conduct at least one pre-notice meeting with Agency staff having responsibility for the review of the proposed activities. The notice required in rule 62-330.402, F.A.C., shall include materials reflecting the recommendations of the Agency discussed during that meeting, and demonstrating compliance with the above, including a certification by a registered professional that the proposed activity will meet the criteria specified above. Such certification shall include appropriate design analyses, pollutant loading analyses, modeling and other engineering calculations, drawings, specifications and other information to support, describe, verify, and document the registered professional's certification.

(9) Nothing in this general permit will preclude a county or municipality from obtaining and implementing a Basin Management Action Plan with water quality credits for activities performed under this authorization.

(10) Within 30 days after completion of construction, a registered professional shall submit certification that construction was completed in substantial conformance with the plans and calculations that were submitted in the notice to use this general permit.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.118(6), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), (6), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 10-1-13, Amended 6-1-18.

62-330.453 General Permit for Installation, Maintenance, Repair, and Removal of Utility Lines.

(1) A general permit is granted for the installation, maintenance, repair, and removal of underground utility lines, cable, conduit, or pipeline transmitting electricity, communication signals, potable water, raw water, reclaimed water, domestic wastewater, propane gas or natural gas.

(2) For the purposes of this general permit:

(a) "Directional drilling" means the linear or curvilinear excavation of a tunnel or conduit, in any direction, through the use of drilling equipment that can change direction during excavation; this also includes borehole reaming and pulling following primary drilling.

(b) "Jack-and-bore" means the linear, primarily lateral excavation of a tunnel, typically between excavated subgrade pits, through use of drilling equipment and encasement which is advanced under mechanical force, and includes similar methods commonly termed as "microtunneling."

(c) "Frac-out" means any release of drilling fluid or slurry which results in above-grade discharge of drilling fluid or slurry or significant loss of such fluid or slurry into the surrounding parent material.

(3) This general permit is limited as follows:

(a) No work occurs within Outstanding Florida Waters, Aquatic Preserves, or Class I waters.

(b) The installation of conduit or pipeline to drain wetlands or other surface waters is not authorized.

(c) Prior to work, existing pipelines shall be evacuated of substances which, if released, could result in a violation of state water quality standards.

(d) The maximum width of the disturbed corridor in wetlands shall not exceed 30 feet.

(e) The total area of forested wetland disturbance shall not exceed 0.5 acre per ten miles of cable, conduit, or pipeline.

(f) Minor above-grade improvements may be constructed in uplands under this general permit, but shall be limited to vents, valves, meter assemblies, relays, junction boxes, pads or similar structures that are directly connected to the utility line, do not create discharges, and which cumulatively comprise no more than 100 square feet of impervious surfaces per mile of utility line.

(g) Installation, maintenance, repair, and removal activities performed via trenching or methods other than directional drilling or jack-and-bore, are subject to the following special conditions:

1. The maximum width of the excavated trench shall not exceed eight feet, with temporary spoil storage banks not to exceed ten feet in width;

2. For a trench with a top width greater than three feet in herbaceous wetlands, the upper layer of the soil horizon shall initially be scraped and segregated into a spoil bank that is separated from the spoil bank resulting from the excavation of the trench for the utility line. The upper layer of the soil horizon shall be replaced as the last step of restored grades to facilitate natural revegetation;

3. Trenching in surface waters shall be limited to wetlands, artificial waters, and residential canal systems; and

4. Temporary spoil banks shall contain breaches that prevent impoundment or restriction of surface water flows;

(h) Installation, maintenance, repair, and removal conducted using directional drilling or jack-and-bore methods are subject to the following special conditions:

1. The maximum outside diameter of the cable, conduit or pipeline, including encasement, shall not exceed 30 inches.

2. A minimum depth of cover, equal to the greater of either five feet, or five times the maximum encased diameter of the utility line to be installed, shall be maintained between the top of the utility line and casing and the soil surface or submerged bottom of any wetland or waterbody being crossed.

3. All work areas associated with directional drilling or jack-and-bore activities, including entrance and exit pits, drill rigs, tanks, pumps, drilling fluid mixing and settling pits, dewatering systems and staging areas for pipe, cables, and drill string, shall be located within uplands.

4. The use of drilling fluids shall not cause or contribute to a violation of state ground water quality criteria or standards, as defined in chapter 62-520, F.A.C.

5. The permittee shall, at least 48 hours prior to commencement of any directional drilling or jack-and-bore activities, submit to the agency the name, as registered with the Florida Department of State, and all-hours telephone contact information of all contractors responsible for drilling and for containment and cleanup in the event of a drilling fluid frac-out or spill.

6. The contractor shall, at all times during directional drilling activities, maintain appropriate equipment and materials in a readily-accessible location and condition, to effectively contain and clean up a drilling fluid frac-out or spill.

7. The permittee or the permittee's contractor shall, at all times during directional drilling activities, ensure that appropriately-trained personnel monitor downhole equipment position, drilling fluid circulation and pressures, and actively monitor the entire utility line route for surface frac-out of drilling fluids.

8. Drilling activities shall be discontinued and the drilling fluid or slurry shall be contained using appropriate methods as soon as possible, in the event of a drilling fluid frac-out or spill. Removal of drilling fluid or slurry from wetlands and other surface waters shall be initiated and completed in the most expeditious manner practicable. Removed drilling fluid shall be contained or disposed of in an appropriate upland location. Any frac-out or spill of drilling fluid into wetlands or other surface waters shall be reported to Agency staff within 24 hours following detection of the spill or frac-out.

(i) Utilities must be located a minimum of 14 feet below the authorized depth of a federal navigation channel.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.453, Amended 10-1-13, 6-1-18.

62-330.455 General Permit for the Construction of Aerial Pipeline, Cable, and Conduit Crossings of Certain Waters.

(1) A general permit is granted to construct an aerial or piling-supported pipeline, cable, or conduit crossing of a waterbody having a width of no greater than 25 feet, provided:

(a) The crossing is not located in, on, or over Class I waters, Class II waters, or waters approved, conditionally approved, restricted, or conditionally restricted by the Department of Agriculture and Consumer Services for shellfish harvesting if the pipeline or conduit conveys petroleum, domestic wastewater, phosphate matrix slurry, phosphatic clay or sand tailings, recirculated water from beneficiation processes, or other substances which, if leaked, could contaminate drinking water supplies or result in closure of shellfish harvesting waters;

(b) No pipeline, cable, or conduit shall be lower than existing crossings of the waterbody;

(c) Work to install the aerial crossing shall be restricted to a width of no more than thirty feet on each side of the crossing alignment. In cases where multiple pipes, cables or conduits are to be installed along the same alignment the thirty-foot width shall commence from the outermost pipes, cables or conduits. For the purposes of this general permit, no more than three pipes shall be placed along a given alignment, and in no case shall the total disturbance area exceed 75 feet in width; and,

(d) The Agency shall be notified within 24 hours of any leak or failure of any of the pipes associated with the aerial crossing.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.455, Amended 10-1-13.

62-330.457 General Permit for Subaqueous Utility Crossings of Artificial Waterways.

(1) A general permit is granted to any person constructing, repairing or replacing a subaqueous utility crossing of artificial waters and residential canal systems, provided:

(a) The crossing is not located in Class I waters, Class II waters or waters approved, conditionally approved, restricted, or conditionally restricted by the Department of Agriculture and Consumer Services for shellfish harvesting if the utility line conveys petroleum, domestic wastewater, phosphate matrix slurry, phosphatic clay or sand tailings, recirculated water from beneficiation processes, or other substances which, if leaked, could contaminate drinking water supplies or result in closure of shellfish harvesting waters;

(b) The crossing shall be limited to non-navigable watercourses or to those waterways in which navigation can be maintained at all times without the necessity of constructing temporary berms, dikes, or dams, or removing or relocating turbidity control devices to allow boat passage. Customary navigation through the waterway shall be maintained at all times during installation;

(c) No dredging or filling shall be conducted in wetlands or other surface waters, located landward of the top of the banks of the waterway. Dredging and back filling of littoral zones and wetland vegetation growing on the side slopes of the artificial waterway is authorized as necessary to install the subaqueous utility line crossing;

(d) The maximum length of the utility crossing shall not exceed 150 feet from top of bank to top of bank. Excavated trench dimensions shall be limited to a depth of not more than ten feet below existing bottom contours and a trench top width of not more than ten feet;

(e) The maximum width of the area disturbed by equipment during construction shall be no more than 30 feet wide;

(f) Temporary or permanent spoil disposal sites shall be located exclusively on uplands and shall be sited, designed, and managed to have the capacity to retain all dredged material; and

(g) All previously excavated contours are restored with onsite native backfill, coarse sand, or clean, non-toxic rock bedding or cap material, as appropriate, within 72 hours following installation of the utility line.

(2) Installation, maintenance, repair, and removal conducted using directional drilling or jack-and-bore methods under this general permit are subject to the following special conditions:

(a) The maximum outside diameter of the cable, conduit, or pipeline, including encasement, shall not exceed 30 inches.

(b) A minimum depth of cover, equal to the greater of either five feet, or five times the maximum encased diameter of the utility line to be installed, shall be maintained between the top of the utility line and casing and the soil surface or submerged bottom of any wetland or waterbody being crossed.

(c) All work areas associated with directional drilling or jack-and-bore activities, including entrance and exit pits, drill rigs, tanks, pumps, drilling fluid mixing and settling pits, dewatering systems and staging areas for pipe, cables, and drill string, shall be located within uplands.

(d) The use of drilling fluids shall not cause or contribute to a violation of state ground water quality criteria or standards, as defined in chapter 62-520, F.A.C.

(e) At least 48 hours prior to commencement of any directional drilling or jack-and-bore activities, the permittee shall submit to the agency the name, as registered with the Florida Department of State, and all-hours telephone contact information of all contractors responsible for drilling and for containment and cleanup in the event of a drilling fluid frac-out or spill.

(f) The permittee or the contractor shall, at all times during directional drilling activities, maintain appropriate equipment and materials in a readily-accessible location and condition, to effectively contain and clean up a drilling fluid frac-out or spill.

(g) The permittee or the permittee's contractor shall, at all times during directional drilling activities, ensure that appropriately-trained personnel monitor downhole equipment position, drilling fluid circulation and pressures, and actively monitor the entire utility line route for surface frac-out of drilling fluids.

(h) In the event of a drilling fluid frac-out or spill, drilling activities shall be discontinued and the drilling fluid or slurry shall be contained using appropriate methods as soon as possible. Removal of drilling fluid or slurry from wetlands and other surface waters shall be initiated and completed in the most expeditious manner practicable. Removed drilling fluid shall be contained or disposed of in an appropriate upland location. Any frac-out or spill of drilling fluid into wetlands or other surface waters shall be reported to Agency staff within 24 hours following detection of the spill or frac-out.

(3) Utilities must be located a minimum of 14 feet below the authorized depth of a federal navigation channel.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 10-3-95, Formerly 62-341.457, Amended 10-1-13, 6-1-18.

62-330.458 General Permit for the Construction and Maintenance of Electric Power Lines by Electric Utilities.

(1) A general permit is provided in Section 403.814(6), F.S., for the construction of power lines and electrical support structures by electric utilities. Terms used in this general permit shall have the meanings specified below:

(a) "Access areas" shall mean areas which are cleared to allow equipment to reach existing electrical structures or the proposed location of electrical structures;

(b) "Existing facilities" shall mean existing power lines, substations or power plants;

(c) "Impact site" shall mean that portion of a wetland area within the right-of-way either surrounded by uplands within the right-of-way or lying between upland segments of the right-of-way within which clearing of vegetation to the ground is proposed to occur;

(d) "Power line" shall mean the conductors, supporting structures, and related hardware installed or maintained by electric utilities as defined in section 366.02(2), F.S.;

(e) "Project" shall mean the proposed or existing power line for which use of the general permit is proposed;

(f) "Selective clearing" shall mean the cutting or control of vegetation by hand, herbicide, or mechanized equipment that minimizes soil compaction, to a height no lower than the water level at the time of cutting or ground level in areas without standing water. This would include removal of the cut trees from the wetland in cases where leaving the trees would preclude revegetation or impound water flow. This shall not mean the non-selective aerial or broadcast application of herbicides;

(g) "Siting board" means the Governor and Cabinet as provided in section 403.503(8), F.S.;

(h) "Work areas" shall mean areas surrounding the electrical support structures, towers, poles, and guy wires which must be cleared to enable equipment to install and maintain the power line.

(2) Activities conducted under this general permit shall comply with section 403.814(6), F.S., and the following additional conditions.

(a) The shoreline of forested wetlands is interpreted to be the mean or ordinary high water line.

(b) Any mechanized equipment that is used to cut or remove vegetation shall be of a type and be operated so as to minimize soil compaction. Except for Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina* spp.), and punk tree (*Melaleuca quinquinerva*), clearing in the remainder of the project right-of-way within wetlands shall be limited to selective clearing of vegetation which has an expected mature height of 14 feet or more. During construction and while conducting normal maintenance activities, the permittee shall eradicate all Brazilian pepper, Australian pine, and *Melaleuca* from the wetland portion of the right-of-way. During the initial clearing event, and during subsequent maintenance cycles, EPA approved herbicides may be used on the following:

1. Vegetation growing within the area that was formerly cleared to the ground,

2. Vegetation with an expected mature height of over 14 feet growing within the remainder of the right-of-way; and,

3. Exotic vegetation within the right-of-way.

(c) Areas dominated (90 percent or greater aerial coverage) by exotic species shall not be included in the acreage calculation of

clearing to ground of forested wetlands. The ten mile sections shall be measured from the beginning of the project to the terminus of the project, or vice versa, and the sections shall not end in a wetland. In cases where the section does end in a wetland, the closest landward edge of the wetland shall be the section terminus.

(d) Diversion and impoundment of surface waters shall be limited to incidental diversion during construction, and diversion which occurs around support structures, towers, guy wires, and poles.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.814(1), 403.814(6), 403.814(7) FS. History–New 10-3-95, Formerly 62-341.620, Amended 10-1-13.

62-330.459 General Permit for Relocation of Aerial Electric and Communication Lines Associated with Road Improvement Projects.

(1) A general permit is provided for use by electric and communication utilities to relocate aerial transmission and distribution lines, including utility poles and associated bases and anchoring devices within or adjacent to the rights of way of existing roadways.

(2) This general permit applies only to relocation projects necessitated by widening or improvement of existing roads. Documentation of the road widening or improvement that necessitates the relocation shall be submitted at the time the notice to use this general permit is submitted to the Agency.

(3) For the purpose of this general permit, the following definitions shall apply:

(a) “Anchoring device” shall mean steel guy wires fastened to the ground without the need for separate dredging;

(b) “Base” shall mean a man-made, concrete or steel foundation not exceeding four feet in radius, used to support a utility pole; and,

(c) “Utility pole” shall mean a single pole that supports aerial transmission and distribution lines.

(4) This general permit is subject to the following special conditions:

(a) The relocation of the poles shall be either within the existing or proposed road right-of-way or within ten feet adjacent to the existing or proposed road right-of-way;

(b) There shall be no above grade access roads, and no permanent placement of fill in wetlands or other surface waters for access roads or other purposes, other than the utility poles, associated bases, and anchoring devices;

(c) Work shall not impact any living stony coral, soft coral, macro-marine algae community, or submerged grassbeds;

(d) The clearing of wetland vegetation shall be limited to 0.5 acre per 10 miles of transmission or distribution line, unless the clearing of vegetation is addressed in a previously issued permit under part IV, chapter 373, F.S., which authorized the road widening or improvement.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.4137, 373.414(9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.621, Amended 10-1-13.

62-330.463 General Permit for Breaching Mosquito Control Impoundments and for the Construction and Operation of Culverts and Associated Water Control Structures in Mosquito Control Impoundments by Governmental Mosquito Control Agencies.

(1) A general permit is granted to any governmental mosquito control agency to construct and operate culverts and associated water control structures for the control of water levels in mosquito control impoundments, and to breach mosquito control impoundments, provided:

(a) The work is done only to provide improved transport of tidal water and organisms between the impounded wetland and adjacent surface waters or between cells within existing mosquito control impoundments for the purpose of improving water quality and the quality of fish and wildlife values;

(b) The work is not required as mitigation under part IV of chapter 373, F.S.;

(c) Breaches, culverts and associated water control structures shall be installed in locations that restore historic flow patterns, such as at or adjacent to historic locations of tidal creeks, and shall be located and operated such that state water quality standards shall not be violated in the receiving waters outside the impoundment;

(d) Culverts and associated water control structures shall either be left open year-round or shall be only seasonally closed as necessary to control mosquito breeding and to minimize the application of pesticides;

(e) Culverts and water control structures shall not be constructed in the locations of existing breaches of the impoundment dike;

(f) Culverts and water control structures shall be made of a corrosion resistant material;

(g) The diameter and invert elevation of culverts and water control structures shall be sufficient to maintain flow and prevent scouring under expected hydrologic conditions;

(h) Spoil material excavated during construction of the breaches shall be handled and deposited so as to prevent violations of state water quality standards for turbidity, and shall be contained in a self-contained upland disposal site; and,

(i) Wetlands disturbed by construction shall be stabilized with indigenous wetland vegetation or clean riprap, and the uplands disturbed by construction shall be stabilized with vegetation, riprap, or other means.

(2) The Agency shall send a copy of the notice to use this general permit to the Chairman of the Subcommittee on Managed Marshes which is established under section 388.46, F.S.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.463, Amended 10-1-13.

62-330.467 General Permit for Breaching Mosquito Control Impoundments by Governmental Mosquito Control Agencies.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.414(9), 373.416, 373.418 FS. History–New 10-3-95, Formerly 62-341.467, Repealed 10-1-13.

62-330.474 General Permit for Certain Minor Activities.

(1) A general permit is granted to construct, alter, maintain, operate, abandon, and remove the following:

(a) Piling supported structures, other than docks and piers, without walls, screens, or doors, provided that the structure is not used for mooring, and the cumulative square footage of existing and proposed structures over wetlands or other surface waters does not exceed 500 square feet in Outstanding Florida Waters or 1,000 square feet outside of Outstanding Florida Waters;

(b) Up to 100 square feet of dredging or filling in wetlands or other surface waters; or

(c) Maintenance dredging of up to 50 cubic yards of material from wetlands or other surface waters, provided that the dredged material is placed in uplands.

(2) Persons proposing to use this general permit must provide, as part of the notice required in rule 62-330.402, F.A.C., reasonable assurance that the proposed activity:

(a) Does not cause a violation of state water quality standards;

(b) Does not impede the conveyance of a stream, river, or other watercourse in a manner that would increase off-site flooding;

(c) Does not adversely impact aquatic or wetland dependent listed species;

(d) Does not cause the drainage of wetlands; and

(e) Is not located in, on, or over a community of corals, seagrasses, or attached marine macroalgae.

(3) The Agency will provide written notification to the person proposing to use this general permit whether the proposed activity qualifies for this general permit within 30 days of submittal of the written notice. The proposed activity shall not be commenced until the Agency has provided written notice that the applicant qualifies for the general permit.

(4) A determination that an activity qualifies for a general permit for a minor activity applies only to the site specific activity, location, method of construction, or operation of the authorized project, and the other design and operation features of the authorized activity.

(5) This general permit shall not be applicable on any parcel of property which has been the subject of the successive filing of notices under a general permit within a three-year period where the combination of activities to be conducted exceed the thresholds in this rule.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426 FS. History–New 6-1-18.

62-330.475 General Permit for Single-family Residential Activities in Isolated Wetlands.

(1) A general permit is granted to construct, alter, maintain, operate, abandon, and remove a single family residence and associated residential improvements (such as a driveway, garage, and an onsite sewage disposal system), provided:

(a) The land on which the work is to occur is not part of a larger plan of common development;

(b) The notice required in rule 62-330.402, F.A.C., includes documentation that the tract of land was not divided into two or more parcels after July 1, 1994;

(c) Work occurs only in uplands or in isolated wetlands that are not within an Area of Critical State Concern or within the Wekiva River Basin Riparian Habitat Protection Zone as described in subparagraph 40C-41.063(3)(e)1., F.A.C.;

(d) Wetland impacts shall be eliminated except where unrestricted uplands are insufficient to support the residence and associated residential improvements. "Unrestricted uplands" are uplands that are not restricted by easement, deed restriction, local government regulation, setback, or similar restriction which would prevent construction there. Uplands are not considered restricted until all available variance or waiver procedures have been exhausted;

(e) Wherever possible, structures in isolated wetlands should be built on pilings to minimize fill in wetlands; and

(f) No more than 4,000 square feet of isolated wetlands are dredged or filled and no more than 6,000 square feet of isolated wetlands are cleared (this includes the area dredged or filled for the residence and associated residential improvements).

(2) Persons proposing to use this general permit must provide, as part of the notice required in rule 62-330.402, F.A.C., reasonable assurance that the proposed activity:

(a) Does not cause a violation of state water quality standards;

(b) Does not impede the conveyance of a stream, river, or other watercourse in a manner that would increase off-site flooding;

(c) Does not adversely impact aquatic or wetland dependent listed species;

(d) Does not cause the drainage of wetlands.

(3) The Agency will provide written notification to the person proposing to use this general permit whether the proposed activity qualifies for this general permit within 30 days of submittal of the written notice. The proposed activity shall not be commenced until the Agency has provided written notice that the applicant qualifies for the general permit.

(4) This general permit shall not be applicable on any parcel of property which has been the subject of the successive filing of notices under a general permit within a three-year period where the combination of activities to be conducted exceed the thresholds in this rule.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426 FS. History–New 10-3-95, Formerly 62-341.475, Amended 10-1-13, 6-1-18.

62-330.476 General Permit for Private Single-Family Residences within Jupiter Farms, Palm Beach County.

(1) A general permit is granted for the construction, alteration, maintenance, operation, abandonment, and removal of single-family residences and associated on-site residential improvements within the wetlands and other surface waters in Jupiter Farms, Palm Beach County, as identified below. This includes the construction, alteration, maintenance, operation, abandonment, and removal of culverts or bridges over non-navigable drainage or irrigation ditches to provide access to the residence.

(2) This general permit is limited as follows:

(a) The single-family residence is to be located within:

1. Township 40S, Range 41E – Section 33 or 34;

2. Township 41S, Range 41E – Section 1, 2, 3, 4 (east half), 9 (east half), 10, 11, 12, 13, 14, 15, or 16, or

3. Township 41S, Range 42E – Section 7 or 18.

(b) Only one, single-family residence is authorized per parcel or lot. However, this shall not preclude additional living areas, such as "mother-in-law" and guest quarters that are part of the primary residence or other structures authorized under subsection 62-330.476(4), F.A.C.;

(c) The activities are not part of a larger plan of common development proposed by the applicant;

(d) The total area of dredging, filling, construction, land clearing, and other disturbance in wetlands and other surface waters within a parcel or lot shall not exceed 0.75 acre;

(e) The permittee offsets the functions provided by wetlands and other surface waters that will be lost as a result of the above activities through mitigation, as provided in subsection (3), below; and,

(f) The activities undertaken under this general permit:

1. Are associated with a private single-family residence to be used by the current owner; and,

2. Are not intended for, or being proposed by, a corporation, partnership, or other business entity, and otherwise will not be used

for commercial or industrial purposes. However, this does not preclude an owner from conducting commercial activities on the property that are ancillary to a private single-family residence, such as sale of home-made crafts or home-grown produce; and shall not prohibit a trustee, beneficiary, or current resident from qualifying as an applicant when title to such single-family residence and associated on-site residential improvements is held in trust.

(3) To implement mitigation that will offset impacts from the construction of residences within the above-described sections, persons wishing to use this general permit shall pay Palm Beach County, as described below, an amount calculated as "X" times $4,000, where "X" equals the number of acres of wetlands or other surface waters that will be subject to construction, alteration, maintenance, or operation activities authorized herein, rounded to the nearest 0.01 acre (up to 0.75 acre).

(a) Initially these monies shall be applied to the Palm Beach County Department of Environmental Resources Management South Loxahatchee Slough Wetland Restoration Fund to implement the restoration, enhancement and long-term management of 237 acres of impacted wetlands within a 780-acre undeveloped parcel known as the South Loxahatchee Slough Restoration Project (SLSRP), in accordance with the "Memorandum of Understanding between the Florida Department of Environmental Protection, the U.S. Army Corps of Engineers, Jacksonville District, and Palm Beach County Board of County Commissioners through its Department of Environmental Resources Management Regarding Mitigation for Jupiter Farms and Palm Beach Country Estates," dated August 26, 2002, (http://www.flrules.org/Gateway/reference.asp?No=Ref-03149), which is incorporated by reference herein; a copy of this MOU may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. These wetlands are located south of PGA Boulevard, north of the Bee Line Highway, and west of the eastern leg of the C-18 Canal. This site is acknowledged to have the capability of providing 151.9 acre-credits of mitigation for wetland impacts within the above-described sections of Jupiter Farms.

(b) The Department recognizes that all of the wetland impacts within Jupiter Farms cannot be offset within the SLSRP, and that additional mitigation sites will have to be identified, funded, and implemented in the future. Therefore, the SLSRP shall be available under this general permit to offset impacts within the above-described sections of Jupiter Farms until the available credits within that site are exhausted, at which time the money will be directed to other suitable mitigation sites which shall be approved by the Department and identified through amendments to this rule.

(4) For the purposes of this general permit, "associated onsite residential improvements" include projects that are directly associated with a private single-family residence on the property, such as: a driveway, garage, onsite sewage treatment and disposal systems, wells, utility services (water, electricity, telephone, cable, and gas), recreation structures, sheds, barns, stables and animal pens, walkways, boardwalks, lawns, fences, pools, ponds, and gardens. To be authorized under this general permit, such associated on-site residential improvements must be constructed concurrently with construction of an individual single-family residence, or after such residence has been lawfully constructed, and must conform to all the conditions and criteria of this general permit. For purposes of this general permit, associated on-site residential improvements shall not include docks, piers, boat ramps, or other structures designed to provide boating access in, on, or over surface waters, and also shall not include improvements used in whole or part for commercial agriculture or aquaculture operations.

(5) In addition to the general conditions of rule 62-330.405, F.A.C., and the other limiting conditions of this general permit, the following specific conditions shall also apply:

(a) Onsite sewage treatment and disposal systems shall be constructed in uplands unless there is an insufficient unrestricted area of uplands within the contiguous ownership of the applicant on which such treatment and disposal systems can be located. For the purposes of this section, "unrestricted area of uplands" means an area of uplands that is not restricted by easement, deed restriction, local government regulation, or similar restriction that would prevent the on-site sewage treatment and disposal system from being located in those uplands.

(b) Material and debris resulting from any clearing and grading of the property authorized under this general permit shall not be deposited in wetlands or other surface waters outside of the footprint of the residence and associated onsite residential improvements authorized under this general permit.

(c) Culverts or bridges installed in drainage or irrigation ditches to provide access shall be located and sized so as to maintain existing capacity for water flow and volumes.

(d) Any areas excavated under this general permit shall not result in new connections to canals, ditches, swales, or other existing drainage systems within Jupiter Farms.

(6) Persons wishing to conduct activities under this general permit must file a notice with the local office of the Department, which shall include:

(a) A description of the proposed activity on the parcel or lot, including scaled or fully dimensioned plan and cross section views of the proposed dredging, filling, and construction;

(b) A statement that the residence and associated onsite residential improvements comply with the requirements of paragraph (2)(f), of this general permit;

(c) A statement that the parcel or lot is not part of a larger parcel or lot that was subdivided into two or more parcels or lots after 2-19-03;

(d) A statement that the activities are not part of a plan of common development proposed by the applicant;

(e) A location map showing the relationship of the parcel or lot to existing roads and other land features that can allow a person unfamiliar with the area to locate the site. The map shall include property descriptions from the county tax assessor's office;

(f) The area (in square feet) of wetlands or other surface waters proposed to be subject to dredging, filling, and construction;

(g) A description of the efforts made to locate the on-site sewage treatment and disposal systems in the uplands, including a map depicting the location and extent of the proposed onsite sewage treatment and disposal systems in relation to existing wetlands and other surface waters on the property; and,

(h) Proof of the payment as required in subsection 62-330.476(3), F.A.C., in the form of a receipt from Palm Beach County.

(7) This general permit shall not be applicable on any parcel or lot that has been the subject of a prior filing of a notice under this section when the combination of activities to be conducted pursuant to the prior and pending notices exceeds the thresholds of this general permit. However, use of this general permit does not preclude the use of other permits or exemptions that may be applicable on the parcel or lot, except that the general permit under rule 62-330.475, F.A.C., shall not be used with this general permit.

Rulemaking Authority 373.026, 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 2-19-03, Amended 11-3-04, Formerly 62-341.476, Amended 10-1-13.

62-330.477 General Permit for Single Family Residential Lots within the Indian Trail Water Control District.

(1) A general permit is hereby granted for individual single family residential lots within the M-1 and M-2 basins of the Indian Trail Water Control District in Palm Beach County, as described in subsection (3).

(2) This general permit authorizes dredging and filling within wetlands or other surface waters on individual, single family residential lots, for the construction, alteration, maintenance, operation, abandonment, and removal of single family residences, structures associated with the residence, and other works located within the wetlands or other surface waters within the lot, provided:

(a) The individual, single family residential lot is 5 acres or less in size;

(b) The residence is not part of a larger common plan of development proposed by the applicant;

(c) The permittee offsets the adverse individual and cumulative impacts from the authorized activities, by donating $250.00 per lot to the Palm Beach County Pollution Recovery Trust Fund, established pursuant to Palm Beach County Resolution R89-576, which monies shall be applied to the purchase, restoration, or management of a minimum of 200 acres of land, including wetlands and other surface waters within Unit 11 of the Indian Trail Water Control District as described in subsection (4). The permittee must submit proof of this donation, in the form of a receipt from Palm Beach County, with the application to use this general permit;

(d) Associated structures and works authorized by this general permit shall be limited to driveways, culverts, storage sheds, garages, septic tanks and drainfields, pools, fences, gardens, and wells; and,

(e) Dredging is limited to the minimum amount necessary to obtain fill material for the residence and associated structures authorized by this general permit. Such dredged areas shall not connect to canals, ditches, swales, or other existing drainage systems within the Indian Trail Water Control District.

(3) The lands within Indian Trail Water Control District to which this general permit applies are:

(a) M-1 basin of the Indian Trail Water Control District consisting of:

1. Township 42 South Range 40 East – the south one-half (S 1/2) of Sections 13, 14 and 15; the north 135 feet of the south one-half (S 1/2) of Sections 16, 17, and 18 and all of Sections 23, 24, 25, 26, 35 and 36,

2. Township 42 South, Range 41 East – the west one-half (W 1/2) of Section 17; all of Sections 18 and 19; all of Section 20 less the northwest one-quarter (NW 1/4) of the northeast one-quarter (NE 1/4) thereof; all of Sections 21, 22, 27, 28, 29, 30 and 31; the west one-half (W 1/2) and the west one-third (W 1/3) of the east one-half (E 1/2) of Section 32, and all of Sections 33, 34 and 35,

3. Township 43 South, Range 41 East – all of Sections 2, 3, 4, 9, 10 and 11; and,

(b) M-2 basin of the Indian Trail Water Control District, consisting of Township 43 South, Range 40 East – all of Sections 10 and 11; the west three-quarters (W 3/4) of Section 13; all of Sections 14 and 15, and the west three-quarters (W 3/4) of Sections 24 and 25.

(4) Unit 11 of the Indian Trail Water Control District, consisting of Township 41 South, Range 41 East, all of Sections 30 and 31, and the west 1/2 of Sections 29 and 32.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418 FS. History–New 4-3-96, Formerly 62-341.630, Amended 10-1-13.

62-330.483 General Permit to the Department and Water Management Districts to Conduct Minor Activities.

A general permit is granted to the Department and Water Management Districts to conduct the activities described below:

(1) The repair, replacement or alteration of any existing bridge, levee, dam, pump station, lock, culvert, spillway, weir, or any other water control structure with structures of the same design or of a comparable design, provided that the maximum discharge rate capacity and control elevation do not exceed that of the structure to be replaced. Minor deviations in the structure's design are authorized, including those due to changes in materials, construction techniques, or current construction codes or safety standards. Associated construction activities authorized by this permit include temporary fill plugs or cofferdams; upland bypass channels; channel shaping needed to accommodate the repair, replacement or alteration of the structure; and channel and bank stabilization, including riprap within 200 feet of the structure. Replacement may occur at the same site, or adjacent to the original structure. The area of wetlands or other surface waters from which material is to be dredged or filled shall not exceed a total of 0.5 acre for any one structure.

(2) Canal bank and bottom stabilization necessary to repair erosion damage and restore previously existing canal configurations. Authorized repair methods include placement of riprap, sand cement toe walls, clean fill material, poured concrete, geotechnical textiles or other similar stabilization materials. The distance to be restored or repaired shall not exceed 2,000 feet at any one location along canal banks and 500 feet along canal bottoms.

(3) Aerial pipeline crossings (including support piles) of man-made canals consistent with the provisions of rule 62-330.455, F.A.C., except that the width of the crossing may be up to 200 feet.

(4) When the activity under this general permit is to be conducted by the Department, the Department shall provide the notice and any processing fee required to the appropriate District.

(5) When the activity under this general permit is to be conducted by a water management district, the District shall provide the notice and any required fee to the appropriate Department office.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.483, Amended 10-1-13.

62-330.485 General Permit to the Department and Water Management Districts for Environmental Restoration or Enhancement.

(1) A general permit is granted to the Department and Districts for the construction, alteration, operation, maintenance, removal and abandonment of projects to implement Department or District environmental restoration or enhancement projects.

(2) The environmental restoration or enhancement project must comply with any one of the following procedures:

(a) The project is part of a Surface Water Improvement and Management Plan developed pursuant to section 373.453, F.S.; or

(b) The project is approved by the District Governing Board or the Secretary of the Department after conducting at least one public meeting; or

(c) The project is wholly or partially funded through the Land Acquisition Trust Fund pursuant to Article X, Section 28 of the Florida Constitution, or through any successor trust fund.

(3) When the activity is to be conducted by the Department, the Department shall provide the notice and any processing fee required by rule 62-330.071, F.A.C., to the appropriate District.

(4) When the activity is to be conducted by a District, the District shall provide the notice and any required fee to the appropriate Department office.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented

373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.485, Amended 10-1-13, 6-1-18.

62-330.487 General Permit to the Department and Water Management Districts to Change Operating Schedules for Water Control Structures.

(1) A general permit is granted to the Department and Districts to change the operating schedules for existing water control structures that are owned or operated by the Department or District when such changes are for environmental restoration or enhancement.

(2) The Department or the District Governing Board, as applicable, shall hold at least one public meeting concerning the proposed operating schedule prior to its approval.

(3) When the activity under this general permit is to be conducted by the Department, the Department shall provide the notice to the appropriate District.

(4) When the activity under this general permit is to be conducted by a District, the District shall provide the notice to the appropriate Department office.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Amended 10-1-07, Formerly 62-341.487, Amended 10-1-13.

62-330.488 General Permit to Governmental Entities for Certain Public Use Facilities at Public Natural Areas.

(1) A general permit is granted to governmental entities to construct, operate, and maintain public use facilities on public natural areas. For purposes of this rule, “public natural areas” are predominantly undeveloped lands owned by the governmental entity and that are dedicated and managed for the preservation, restoration and maintenance of those lands. The public use facilities authorized by this permit are a parking lot or parking area and an at-grade access road, not to exceed a total size of 2 acres of impervious surface located entirely in uplands; at-grade access trails located entirely in uplands; restroom buildings and open-air shelters located entirely in uplands; pile-supported boardwalks having a maximum width of 6 feet; and pile-supported observation platforms, any of which shall not exceed 120 square feet in size.

(2) The facilities and work must comply with the following:

(a) No fill shall be placed in, on, or over wetlands or other surface waters, except pilings for pile-supported boardwalks and observation platforms. All structures located in, on, or over wetlands and other surface waters shall be sited and constructed to minimize wetland impacts and the removal of trees having a diameter at breast height of 4 inches or greater. To minimize shading of wetland vegetation, all pile-supported boardwalks and observation platforms located in, on, or over wetlands and other surface waters shall be elevated at least two feet above mean high water for tidal waters, at least two feet above seasonal high water for non-tidal waters, or four feet above ground surface, whichever is greater. The total area pile-supported structures over wetlands and other surface waters shall not exceed 10,000 square feet.

(b) All stormwater flow from the impervious surfaces shall sheet flow into uplands. Impervious surfaces shall be no more than one percent of the total acreage of the public natural area, not to exceed a total size of 2 acres of impervious surface. If pervious or semi-impervious surfaces or materials are used, the maximum area of roads, parking lots, parking areas and trails shall not exceed 2 acres, regardless of the total acreage of the public natural area. Water quality treatment shall be provided for the first inch of runoff from the impervious and semi-impervious surfaces.

(c) Impervious surfaces subject to vehicular traffic shall be constructed a minimum of 75 feet from any wetland or other surface water. Buildings and shelters shall be constructed a minimum of 25 feet away from any wetland or other surface water.

(d) Piling supported structures may not be located over coral, seagrasses or other submerged aquatic vegetation.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 403.814(1) FS. History–New 10-1-13.

62-330.490 General Permit for the Reclamation of Eligible Phosphate Lands Mined Before July 1, 1975.

(1) A general permit is granted to all owners of lands mined or disturbed by the severance of phosphate before July 1, 1975, whose reclamation program application has been approved by the Department under chapter 378, part I, F.S., providing the reclamation program:

(a) Is wholly or partially funded by the Department through the Non-mandatory Land Reclamation Trust Fund pursuant to chapter 378, part I, F.S.; and,

(b) Has an approved detailed non-mandatory land reclamation design plan that meets the standards and criteria in chapter 62C-17, F.A.C.

(2) All work shall be in accordance with the approved non-mandatory land reclamation program and all provisions of chapter 62C-17, F.A.C.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.416, 373.418, 378.034, 378.035, 403.814(1) FS. History–New 10-1-13.

62-330.491 Noticed General Permit for Raising the Height of Existing Earthen Embankments for Impoundments at Facilities for Mining Sand and Limestone.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.406(5), 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118, 373.406(5), 373.413, 373.414(9), 373.416, 373.418, 373.426 FS. History–New 9-4-05, Formerly 62-341.491, Repealed 10-1-13.

62-330.492 General Permit for Prospecting for Limestone, Sand, and Peat.

A general permit is granted for prospecting for limestone, sand, and peat provided that all of the following conditions are met:

(1) Prospecting is conducted by coring, augering, impact boring or other techniques designed to remove samples from an excavated opening less than one foot in diameter.

(2) No prospecting is conducted below the ordinary or mean high water line of natural water bodies such as natural lakes, ponds, streams, rivers, estuaries or lagoons.

(3) Prospecting in wetlands must meet the following conditions:

(a) No activities shall be conducted in Outstanding Florida Waters, Aquatic Preserves, Class I waters, Class II waters, waters which are classified by the Florida Department of Agriculture and Consumer Services as approved, restricted, conditionally approved or conditionally restricted for shellfish harvesting in rule 5L-1.003, F.A.C., or wetlands used by endangered or threatened species. For purposes of this permit, a wetland is used by endangered or threatened species if reasonable scientific judgment indicates that the wetland provides habitat in which endangered or threatened species engage in activities such as resting, feeding, breeding, nesting or denning.

(b) No above-grade roads shall be constructed. Vehicles used for prospecting in wetlands shall be of a type generating minimum ground pressure to minimize rutting and other environmental impacts. Disturbed areas along each prospecting line shall be restored to original contours upon completion of prospecting activities along that specific alignment.

(c) Disturbances within wetlands shall be no wider than 15 feet along any portion of the prospect line, except at the immediate site of the drill hole. At the immediate site of the drill hole the disturbance shall not exceed 25 feet. No debris or spoil shall be placed outside these limits.

(d) Prospecting lines shall be aligned to minimize wetland impacts and avoid the clearing of wetland trees having 4 inches or greater diameter at breast height to the greatest extent practicable.

(e) All drill tailings shall be returned to the drill hole and the excess removed so that no spoil material is left above grade in a wetland.

(f) If the removal or cutting of vegetation is required, there shall be a minimum interval of 300 feet between individual parallel prospecting lines. The removal of vegetation shall not include grubbing, or the pulling or pushing up of root systems.

(g) Any wetland disturbed by prospecting activities shall be restored by replanting native indigenous vegetation of the same species as were displaced. Exotic species such as Schinus terebinthifolius, Melaleuca quinquenervia, and Casuarina spp., and nuisance species Typha spp., and Ludwigia peruviana shall be controlled at densities not exceeding the densities of these species in undisturbed portions of the wetland.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118, 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 9-4-05, Formerly 62-341.492, Amended 10-1-13.

62-330.493 General Permit to Perform Prospecting Activities for Phosphate Minerals.

(1) A general permit is provided for any person engaged in or proposing to engage in the mining of phosphatic ore to perform prospecting activities for phosphate minerals within wetlands and other surface waters except in Outstanding Florida Waters, Aquatic Preserves, Outstanding National Resource Waters, Class I waters, Class II waters, or waters approved, conditionally approved, restricted, or conditionally restricted by the Department of Agriculture and Consumer Services for shellfish harvesting, provided:

(a) "Prospecting activities" shall be defined as those normal and reasonably necessary to retrieve core samples of subsurface geologic sediments for the specific purpose of locating, mapping and determining the quantities and quality of any phosphorus bearing strata or deposits;

(b) Disturbance along any portion of the prospect line within herbaceous wetlands shall be no wider than 25 feet, no wider than 15 feet within forested wetlands, except at the immediate site of the drill hole, where disturbance shall not exceed 25 feet in width and no activities regulated by the Department associated with prospecting shall occur outside the 15-foot and 25-foot limits, respectively;

(c) An individual prospecting line shall not extend into wetlands or other surface waters more than one-third (1/3) of the width of the landward extent of the wetland or other surface waters involved, unless prospecting is conducted by hand carried drilling devices, in which case full penetration of the wetland or other surface waters shall be allowed, except as restricted by paragraph (1)(e), below. When hand carried drilling devices are used all drilling tailings shall be returned to the drill hole and no spoil shall be left on the surface;

(d) No prospecting activities shall occur in open waters (areas of water bodies not supporting emergent vegetation), such as lakes, ponds, streams, and rivers;

(e) A minimum interval of 300 feet shall exist between individual parallel prospecting lines and minimal distance of 300 feet shall be maintained between the alignment of the prospecting line or lines and opposing sides of wetlands and other surface waters. When hand carried drilling devices are to be used for total penetration of the wetland or other surface waters, the minimal interval of 300 feet between prospecting lines shall apply;

(f) No debris or spoil shall be mechanically placed outside of the 15-foot or 25-foot width allowed, respectively, above; and,

(g) The disturbed area along each prospecting line within herbaceous wetlands shall be replanted with native wetland species that are indigenous to adjoining wetlands unless evidence exists that natural revegetation has covered 33 percent of the disturbed ground area within one growing season. If herbaceous plants are planted, they shall be planted at a density to achieve 33 percent cover by herbaceous wetland species within one growing season. The disturbed area along each prospecting line within forested wetlands shall be replanted with indigenous native wetland tree species at a rate to achieve survival and growth of 400 trees per acre, and the permittee shall institute maintenance activities to ensure the survival of the planted indigenous native wetland trees. The disturbed area along each prospecting line within forested wetlands also shall be replanted with indigenous native wetland herbaceous species in the same manner as for the herbaceous wetlands described above. The restored sites shall be maintained free of any new growth of *Schinus terebinthifolius* (Brazilian pepper), *Melaleuca quinquenervia* (punk tree), and *Casuarina* spp. (Australian pine), and managed so that *Typha* spp. (cattails) does not attain vegetative dominance.

(2) A person wishing to use this general permit shall submit to the Department an annual schedule of proposed prospecting activities within the prospect areas including location maps, aerial photographs showing the proposed prospecting lines, and approximate commencement and completion dates for the activities planned for each prospect area. The annual schedule, or modifications to the annual schedule, must be submitted at least 30 days prior to the commencement of the proposed activity. Where practicable, the annual schedule should be filed with the Department no later than June 1 for the fiscal year July 1 through June 30.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.610, Amended 10-1-13, 6-1-18.

62-330.494 General Permit for Temporary Dragline Crossings of Waterways for Mining Activities.

(1) A general permit is provided for any person engaged in or proposing to engage in the mining of a phosphatic ore for the construction of temporary dragline crossings within certain wetlands and other surface waters, except in Outstanding Florida Waters, Aquatic Preserves, Outstanding National Resource Waters, Class I waters, Class II waters, or waters approved, conditionally approved, restricted, or conditionally restricted by the Department for shellfish harvesting, provided:

(a) The crossing is of a ditch or artificially channelized portion of any wetland or other surface water or at a documented

location of a previously existing dragline crossing within the preceding five years, of any wetland or other surface water, and is not a navigable surface waterbody. The term navigable, for the purpose of this permit, means the surface waterbody is capable of use by small craft;

(b) Only clean sand fill or temporary mats shall be used to construct the crossing;

(c) When demucking or removal of topsoil is necessary for the construction of the crossing, the muck and topsoil shall be retained at a nearby upland location and returned to the crossing site for the restoration activities;

(d) Culverts are installed to maintain the natural and seasonal volume and flow of water;

(e) The top width of the fill shall not exceed 150 feet and the toe to toe width of the fill shall not exceed 200 feet and the side slopes shall be no steeper than three horizontal to one vertical, and the lateral limits of disturbance of the wetlands shall be no more than 20 feet on each side of the fill;

(f) The crossing shall not remain in place for more than one year, unless the crossing is for a one-way access in which case it shall not remain in place for more than six months; and,

(g) The area must be restored to original topographic contours within 60 days of the abandonment of the dragline crossing, which shall be after the dragline has crossed the wetland or other surface water.

(2) This general permit shall be subject to the following specific conditions:

(a) Upon restoration of original topographic contours at a temporary dragline crossing site, the permittee shall at the end of the first growing season provide the opportunity for inspection of the site by staff of the Department office that received notice of the general permit. If satisfactory revegetation of the site has not occurred, the permittee shall initiate, conduct and maintain revegetation and maintenance of the wetland until satisfactory revegetation has been achieved. Revegetation of the site shall be with native wetland species in similar composition to those species which were present at the site or in the contiguous wetland prior to the temporary dragline crossing. For the purpose of this general permit, “satisfactory revegetation” means that the herbaceous wetlands that are disturbed under this general permit shall have achieved not less than 33 percent cover of planted or naturally reestablished herbaceous wetland species within one growing season following disturbance of the site, and the forested wetlands that are disturbed under this general permit shall be achieving a survival and growth of not less than 400 wetland trees per acre within one growing season following disturbance of the site, and a maintenance plan has been developed and is being implemented to ensure the survival of the planted or naturally reestablishing wetland species. The restored sites shall be maintained free of any new growth of *Schinus terebinthifolius* (Brazilian pepper), *Melaleuca quinquenervia* (punk tree), and *Casuarina* spp. (Australian pine). The restored site shall also be managed in a manner which precludes *Typha* spp. (cattails) from manifesting vegetative dominance; and,

(b) A person wishing to use this general permit shall submit to the Department office to which the original notice was given, an annual schedule of proposed temporary dragline crossing areas including location maps, aerial photographs with proposed temporary dragline crossings, typical drawings, and approximate commencement and completion dates for the activities planned. Additionally, the plans shall include proposed restoration procedures for each temporary dragline crossing. The annual schedule, or modifications to the annual schedule, must be submitted, together with the required documentation, at least thirty days prior to the commencement of the proposed activity. Where practicable, the annual schedule and documentation should be filed with the Department no later than June 1 for the fiscal year July 1 through June 30.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.611, Amended 10-1-13.

62-330.495 General Permit for Low Water Crossings for Mining Activities.

(1) A general permit is provided for any person engaged in or proposing to engage in the mining of a mineralized non-metallic ore to move equipment and vehicles, excluding dredges, through and across wetlands or other surface waters during periods of low water, except in Outstanding Florida Waters, Aquatic Preserves, Outstanding National Resource Waters, Class I waters, Class II waters, or waters approved, conditionally approved, restricted, or conditionally restricted by the Department of Agriculture and Consumer Services for shellfish harvesting, provided:

(a) The only dredging or filling performed shall be that caused by the movement of the vehicle or equipment through the water;

(b) The maximum water depth along the crossing shall not exceed two feet during the time the crossing is used;

(c) Vegetative debris shall not be deposited within wetlands and other surface waters;

(d) The lateral width of disturbance shall in no case exceed that necessary to move the vehicles and equipment through and

across wetlands or other surface waters and shall in no case be greater than 50 feet; and,

(e) The distance between crossings of an individual wetland or other surface waters shall be at least 5,000 feet, except at sites where a documented four-wheel vehicular access exists, in which case crossings may be at a spacing of 2,500 feet.

(2) This general permit shall be subject to the specific conditions as follows:

(a) The person wishing to use this general permit shall locate crossings at sites that will cause the least environmental impact. The permittee shall coordinate with the appropriate Department office;

(b) Upon restoration of an individual low water crossing site, the permittee shall at the end of the first growing season provide the opportunity for inspection of the site by the appropriate Department office staff. If satisfactory revegetation for the site has not occurred, the permittee shall initiate, conduct and maintain revegetation of the wetland. For the purpose of this general permit, "satisfactory revegetation" means that the herbaceous wetlands that are disturbed under this general permit shall have achieved not less than 33 percent cover of planted or naturally reestablished herbaceous wetland species within one growing season following disturbance of the site, and the forested wetlands that are disturbed under this general permit shall be achieving a survival and growth of not less than 400 wetland trees per acre within one growing season following disturbance of the site, and a maintenance plan has been developed and is being implemented to ensure the survival of the planted or naturally reestablishing wetland species. The restored sites shall be maintained free of any new growth of *Schinus terebinthifolius* (Brazilian pepper), *Melaleuca quinquenervia* (punk tree), and *Casuarina* spp. (Australian pine). The restored site shall also be managed in a manner which precludes *Typha* spp. (cattails) from manifesting vegetative dominance. Revegetation of the site shall be with native wetland species in similar composition to those species which were present at the site or in the contiguous wetland prior to the low water crossing; and,

(c) A person wishing to use this general permit shall submit to the appropriate Department office, an annual schedule of proposed low water crossing sites including location maps, aerial photographs with proposed low water crossing sites, typical drawings, and approximate commencement and completion dates for the activities planned. Additionally, the plans shall include proposed restoration procedures for each low water crossing. The annual schedule, or modifications to the annual schedule, must be submitted, together with the required documentation, at least 30 days prior to the commencement of the proposed activity. The annual schedule and documentation shall be filed with the Department no later than June 1 for the fiscal year July 1 through June 30.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.612, Amended 10-1-13.

62-330.496 General Permit for Dry Borrow Pits of Less than Five Acres.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426 FS. History–New 10-1-13, Repealed 6-1-18.

62-330.500 General Permit for Construction, Operation, Maintenance, Alteration, Abandonment or Removal of Minor Silvicultural Surface Water Management Systems.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118, 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.426 FS. History–New 9-4-05, Formerly 62-341.500, Repealed 10-1-13.

62-330.501 General Permit for Temporary Agricultural Activities within the South Florida Water Management District.

(1) A general permit is granted to any property owner for temporary agricultural activities within the South Florida Water Management District, provided all the following criteria are met.

(a) Agricultural activities shall be horticultural and limited to seasonal crops. Seasonal crops are harvested in one growing season, which shall not exceed one year.

(b) This permit is valid only for activities in existing improved or semi-improved pastures or fields that have been cultivated within the last five years. For purposes of this section, improved or semi-improved pastures are lands that have been cleared of native plants by mechanical means.

(c) For purposes of this section, the project area and scope is defined as both farmed and detention areas. In order to qualify for a permit under this section, the project area shall not exceed 320 contiguous acres.

(d) The project outfall structure must be located more than 1 mile from Outstanding Florida Waters.

(e) No works or farming activities shall occur within 50 feet of a wetland as defined in section 373.019(27), F.S. If wetlands are located within the project area, a minimum 50-foot undisturbed buffer must be maintained around the wetland.

(f) Pump rates shall not exceed a volume of 2 inches per day at a rate of 37.7 gallons per minute per acre of farmed area. Pump on/off elevations shall be within 2.5 feet of natural ground within the farmed area. All surface water discharges shall be into detention areas.

(g) Water levels in the detention areas shall not exceed a depth of 1.5 feet above natural ground within the detention area.

(h) Water quality and attenuation requirements shall be met by establishing detention areas at a minimum of fifteen percent of the farmed area.

(i) If wetlands are located within a detention area, then the control elevation of the detention area shall be set at the wetland edge elevation. If no wetlands are located within a detention area, then the control elevation shall be set at natural ground elevation.

(j) Control structures shall be sized according to the following list depending on the project size.

Project Size	Control Structure
0-25 acres	6" riser and 12" pipe equivalent
26-65 acres	12" riser and 12" pipe equivalent
66-105 acres	18" riser and 18" pipe equivalent
106-145 acres	24" riser and 24" pipe equivalent
146-185 acres	30" riser and 30" pipe equivalent
186-225 acres	36" riser and 36" pipe equivalent
226-265 acres	42" riser and 42" pipe equivalent
266-305 acres	48" riser and 48" pipe equivalent
306-320 acres	54" riser and 54" pipe equivalent

(k) The minimum setback between the project edge and the property boundary line shall be 50 feet for all projects.

(l) Discharges shall be to the existing pre-project surface water conveyance pathway. Existing sheetflow, if any, shall be maintained through the use of a spreader swale.

(m) Detention area dikes shall be constructed with a top elevation of 3.5 feet above the control elevation with a minimum 5 foot top width and side slopes of two horizontal to one vertical.

(n) Internal farm ditches shall be no deeper than 3 feet below natural ground elevation (excluding sump areas for pump placement which shall not be deeper than 6 feet below natural ground elevation).

(o) External perimeter berms of the farmed areas shall not exceed 2 feet in height.

(p) Farming areas must be laid out in a manner that will not block or impede off-site flows.

(q) Access to the fields shall be accomplished by existing roads. Roads into or on the project are not part of this authorization.

(2) The entity must submit a best management plan that addresses sediment control, soil erosion, nutrients, pesticides, herbicides, suspended solids at points of discharge and other agricultural practices appropriate to crop and site conditions. At a minimum the best management plan must include the following best management practices.

(a) Application equipment shall be properly calibrated and in good repair.

(b) Pesticides and fertilizers shall be stored in a secure, contained location, protected from rainfall. Fertilizers and pesticides shall not be stored together.

(c) All mixing and loading operations shall be conducted away from wells, ditches and wetlands.

(d) Pesticide containers shall be rinsed as soon as they are empty. Containers shall be disposed of in accordance with directions on the label.

(e) Equipment shall be used that directs chemicals only to a designated target area. Overspray or application into ditches and wetland buffer areas shall be avoided.

(f) Spills shall be cleaned up as soon as possible.

(g) Equipment shall be cleaned and rinsed away from ditches and wetland buffers.

(h) A soil or leaf analysis shall be used to determine fertilizer application requirements.

(i) Apply seed and mulch or use other methods to stabilize the disturbed areas outside of the planted area within 14 days from

the completion of planting.

(j) Install silt fences around wetland buffer areas prior to construction.

(k) Install silt fences, hay bales or equivalent downstream of outfall structure during construction.

(3) The duration of this permit shall not exceed three years. No more than two years of the permit duration shall be dedicated to the planting and harvesting of crops. The remainder of the duration of the permit must be dedicated to fallow time. At the end of the growing season specified in the permit, all works shall be removed from the site and the site returned to the condition that existed prior to permit issuance. The site shall remain fallow the following year. Within 30 days of the permit expiration, the permittee shall provide written notification to the South Florida Water Management District that the project has been restored to conditions that existed prior to permit issuance.

Rulemaking Authority 373.044, 373.113, 373.118, 373.4131 FS. Law Implemented 120.60, 373.118, 373.119, 373.413, 373.4131, 373.416, 373.418, 373.423 FS. History–New 10-1-13.

62-330.505 General Permit to the U.S. Forest Service for Minor Works within National Forests.

(1) A general permit is granted to the U.S. Forest Service to conduct the works described below:

(a) Bathing beach restoration at developed recreation sites where maintenance dredging is less than 100 cubic yards per year and less than 100 cubic yards per single occurrence; and,

(b) Dock construction, replacement and maintenance for docks of up to 1,000 square feet of surface area over wetlands and other surface waters in Outstanding Florida Waters and Outstanding National Resource Waters, subject to restrictions listed in sections 403.813(1)(b) and (d), F.S.

(2) The U.S. Forest Service or its contractors shall use turbidity control measures while dredging or filling within wetlands and other surface water to prevent violations of state water quality standards.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.495, Amended 10-1-13.

62-330.550 General Permit for Construction, Operation and Maintenance of Nonproduction-related Agricultural Facilities.

(1) A general permit is granted for the construction, operation, maintenance, alteration, or abandonment of minor systems serving any of the following, provided the activities comply with all of the conditions set forth below.

(a) Seasonal or year-round stands and markets selling exclusively or primarily produce and other farm or nursery products grown onsite.

(b) Farm worker housing and ancillary facilities.

(c) Truck loading and staging areas for transporting farm or nursery products grown onsite.

(d) Nonresidential farm buildings and structures used solely for agricultural purposes and located on a farm or on land that is an integral part of an ongoing farm operation.

(e) Roadway and vehicle parking facilities integral to an activity authorized under this general permit.

(2) This general permit is subject to the following limitations:

(a) Total cumulative building, driveway, parking lot, and other impervious and semi-impervious surfaces will not exceed 20 percent of the total land area, up to four acres. This limitation excludes impervious and semi-impervious areas directly related to agricultural production.

(b) No activities will occur in, on or over wetlands or other surface waters.

(c) The activities will not use new surface water drainage facilities larger than one 24-inch diameter pipe or its hydraulic equivalent.

(d) The activities will not use new drainage pumps or other operable structures for stormwater management.

(e) Finished building floors for residential structures will be above the 100-year flood elevation.

(f) All discharge and project runoff locations, excluding runoff from access driveways, will maintain a minimum 75-foot vegetated buffer. This vegetated buffer must include a 25-foot perpetually undisturbed buffer, upland of any wetlands, other surface waters, and drainage ditches.

(g) Impervious and semi-impervious surfaces, excluding access driveways, will maintain a 25-foot vegetated buffer from property boundaries.

(h) Permitted activities are not conducted within the geographic limits of an existing permit issued under part IV of chapter 373, F.S.

(3) This general permit is not available if the proposed activities, considered separately or in combination with other activities conducted under this permit, exceed or will exceed any of the limitations in subsection (2), above.

(4) The activities undertaken using this permit shall be taken into account in determining the post-development conditions for any subsequent exemption or permitting decision that includes the same project area.

Rulemaking Authority 373.044, 373.113, 373.118, 373.4131 FS. Law Implemented 373.413, 373.4131, 373.414, 373.416, 373.419 FS. History–New 10-1-13, Amended 6-1-18.

62-330.600 General Permit for the Construction of Artificial Reefs.

(1) A general permit is provided for the construction of an artificial reef by any person, provided:

(a) The material to be used shall be clean concrete or rock, clean steel boat hulls, other clean, heavy gauge steel products with a thickness of 1/4 inch or greater, and prefabricated structures that are a mixture of clean concrete and heavy gauge steel;

(b) The material shall be free of soils, oils and greases, debris, litter, putrescible substances or other pollutants;

(c) The material shall be firmly anchored to the bottom and shall not be indiscriminately dumped; and,

(d) The material shall be placed so that the top of the reef does not exceed 1/2 the distance from the bottom to the surface of the water unless a greater distance from the surface is required for safe navigation. At no time shall the distance between the top of the reef and the surface of the water be less than 6 feet.

(2) This general permit shall be subject to the following specific conditions:

(a) The permittee shall conduct a survey of the bottom of the waterbody on which the reef is to be built and shall submit the survey to the Agency with the notice required in rule 62-330.402, F.A.C., demonstrating that the bottom does not have submerged grassbed communities, shellfish or other hardbottom communities, or corals;

(b) There shall be no reefs constructed in bays, lagoons, or estuaries that are less than 12 feet deep;

(c) There shall be no “white goods” (inoperative and discarded refrigerators, freezers, ranges, water heaters, washers, and other similar domestic and commercial appliances), asphalt material, tires, other polluting materials used in construction of the reef;

(d) The site shall be marked with perimeter buoys during construction to ensure that no material is deposited outside of the site;

(e) The size of the boundaries within which the artificial reef is to be deposited shall not exceed 1/4 nautical mile on any side;

(f) The artificial reef site shall not be established within any shipping lanes; and,

(g) The permittee shall notify the National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, Maryland, and the Florida Fish and Wildlife Conservation Commission (FWC), Division of Marine Fisheries Management, via email at artificialreefdeployments@myfwc.com of the precise location of the reef within 30 days of placement of the reef material.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.600, Amended 10-1-13.

62-330.602 General Permit for Installation and Maintenance of Intake and Discharge Pipes Associated with Marine Bivalve Facilities.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History–New 10-3-95, Formerly 62-341.602, Amended 10-1-13, Repealed 11-26-15.

62-330.630 General Permit to U.S. Army Corps of Engineers for Environmental Restoration or Enhancement Activities.

(1) A general permit is granted to the U.S. Army Corps of Engineers for the construction, alteration, operation, and maintenance of systems to implement environmental restoration or enhancement projects. In order to qualify for this general permit, the decision documents for the environmental restoration or enhancement activity must have been coordinated through the process described in Section III of the *Interagency Coordination Agreement for Civil Works Projects, Florida Department of Environmental Protection, United States Army Corps of Engineers Jacksonville District, United States Army Corps of Engineers Mobile District* (February 28, 2006), incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-03128). Copies of incorporated

material may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. In addition**,** the environmental restoration or enhancement activity must be funded or conducted by the U.S. Army Corps of Engineers, and be authorized under the following documents, which are incorporated by reference herein:

(a) Section 204 of the Water Resources Development Act (WRDA) of 1992, as amended through January 24, 2002 (Beneficial Uses of Dredged Material), and any subsequent amendment by a WRDA through June 1, 2018, (https://www.flrules.org/Gateway/reference.asp?No=Ref-03224);

(b) Section 206 of the Water Resources Development Act of 1996, as amended through January 24, 2002 (Aquatic Ecosystem Restoration), as amended by a WRDA through June 1, 2018 (https://www.flrules.org/Gateway/reference.asp?No=Ref-03225);

(c) Section 1135 of the Water Resources Development Act of 1986, as amended through January 24, 2002 (Project Modifications for Improvement of the Environment), as amended by a WRDA through June 1, 2018, (https://www.flrules.org/Gateway/reference.asp?No=Ref-03226).

(d) Section 101(8) of WRDA 1992 (Kissimmee River Restoration), as amended by a WRDA through June 1, 2018, (http://www.flrules.org/Gateway/reference.asp?No=Ref-03130); or

(e) The Army Corps Federal portion of any project approved as part of the "Estuaries and Clean Waters Act of 2000" (Title I, PL 106-457) (ERA), Sections 102(3), 104(a), and 110(b) and amended by Section 5017 of WRDA 2007, and any subsequent amendment by a WRDA through June 1, 2018, (https://www.flrules.org/Gateway/reference.asp?No=Ref-02600).

(2) The following shall not be eligible for this general permit; copies of the materials incorporated by reference below may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C.:

(a) Activities on the sandy beaches of Florida fronting the Atlantic Ocean, the Gulf of Mexico or the Straits of Florida that extend seaward of the mean high water line, including beach restoration, nourishment, disposal of dredged material, beach or inlet structures, or excavation;

(b) Activities proposed to implement mitigation for another activity that requires a permit under part IV of chapter 373, F.S., a water quality certification, or coastal zone consistency concurrence;

(c) Activities that involve replacing a natural biological community type with a different type of biological community, such as filling bay bottom to create a marsh, except:

1. To restore or enhance a community that was previously damaged or destroyed by human activities, such as filling a dredged channel to the elevations and community types that existed before dredging; or

2. To restore or enhance a community type that was previously existing, but has been lost through avulsion when it is determined to be in the public interest; or

3. To reduce or eliminate populations of exotic and nuisance species with the goal of enabling replacement by natural, endemic communities;

(d) Activities that adversely affect animal species that are listed as endangered, threatened or of special concern and endangered or threatened plant species when such plants are located in a wetland or other surface water;

(e) Activities that would adversely affect historic properties listed in or eligible for listing in the National Register of Historic Places under the provisions of section 267.061, F.S.;

(f) Activities requiring a permit under section 373.1502, F.S., or authorized under Section 528 of the Water Resources Development Act of 1996, Public Law 104-303 (Critical Restoration Projects), October 12, 1996, which is incorporated by reference herein (https://www.flrules.org/Gateway/reference.asp?No=Ref-02602);

(g) Activities authorized under Section 101(8) of the Water Resources Development Act of 1992, Public Law 102-580, (October 31, 1992), which is incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-03127); or

(h) Activities conducted in association with Everglades or Lake Okeechobee restoration.

(3) Prior to submittal of the notice to the agency to use this general permit as required and described in paragraph (5)(a), below, the environmental restoration or enhancement activity must be included in a Feasibility Report, Reevaluation Report, Letter Report or other equivalent federal environmental decision document that has been reviewed by the state of Florida. Documentation that the state has found the environmental restoration or enhancement activity to be consistent with the Florida Coastal Management Program must be submitted with the notice to use this general permit. It is not necessary that the report types cited above be considered final or approved by the Corps.

(4) Activities under this general permit are subject to the following additional provisions and limitations. The activities:

(a) Shall not be available for use as future mitigation credit for a separate activity that requires a permit under part IV of chapter

373, F.S., a water quality certification, or a coastal zone consistency concurrence;

(b) Must be conducted in a manner that will not adversely affect the value of functions provided to fish and wildlife by wetlands or other surface waters;

(c) Must not cause adverse flooding to onsite or off-site property, adverse impacts to existing surface water storage or conveyance capabilities, adverse secondary impacts to the water resources, adverse impacts to the maintenance of surface or ground water levels or surface water flows established pursuant to section 373.042, F.S., adverse impacts to a Works of the District established pursuant to section 373.086, F.S., or adverse effects to properties outside the area to be enhanced or restored;

(d) Must be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed, and must comply with any applicable special basin and geographic area criteria established in chapter 40C-41 or 40E-41, F.A.C., both of which are incorporated by reference in paragraph 62-330.301(1)(k), F.A.C.; and

(e) Must not be for the primary purpose of providing or enhancing recreation or other public uses of the lands that are enhanced or restored under this general permit, although such areas are not prohibited from being made available for compatible public recreation activities. However, the construction, alteration, operation, removal, maintenance, or abandonment of public recreational facilities, such as parking lots, roads, trails, boardwalks, docks, piers, observation decks, kiosks, and visitor's centers, or any project serving those facilities, are not authorized under this general permit, and must be authorized in accordance with part IV of chapter 373, and chapters 253 and 258, F.S., prior to their construction and use.

(5)(a) The notice required in rule 62-330.402, F.A.C., shall be supplemented with:

1. A copy of the Coastal Zone Consistency Concurrence documentation referenced in subsection (3), above;

2. Documentation of the approved federal authorization under which funding is expected;

3. Copies of the environmental documents that have been developed as part of the early coordination process described in Section III of the *Interagency Coordination Agreement for Civil Works Projects, Florida Department of Environmental Protection, United States Army Corps of Engineers Jacksonville District, United States Army Corps of Engineers Mobile District,* dated February 28, 2006, incorporated by reference in subsection (1), above; and

4. Should the Corps' contractors propose to use flocculating agents such as polymers or alum to consolidate sediments or to otherwise prevent potential water quality violations associated with the project design, the Corps shall coordinate with the Agency in advance of submittal of the notice to use this general permit, and shall submit with the notice reasonable assurance that use of such flocculating agents is not likely to cause chronic or acute toxicity in violation of chapter 62-302, F.A.C., as tested using, at a minimum, elutriate analysis on the specific sediments dredged from or deposited at the project site that require treatment.

5. Should the Corps' contractors identify that a mixing zone for turbidity is required to prevent potential water quality violations associated with the project, the Corps shall coordinate with the Agency in advance of submittal of the notice to use this general permit to discuss the methods proposed that will provide reasonable assurance that there will be no violation of the turbidity standards in chapter 62-302, F.A.C., and, as applicable in rule 62-4.242, F.A.C., outside of the limits established in subsection 62-4.244(5), F.A.C. When the Agency determines that such mixing zone will not cause adverse impacts to the water resources, the Corps will include in the notice to use this general permit a specific request for such a mixing zone and the methods that will be used to comply with its limitations. Projects that require a mixing zone in excess of that allowed under subsection 62-4.244(5), F.A.C., shall not qualify for this general permit.

(b) The Department will provide written notification to the U.S. Army Corps of Engineers whether the proposed activity qualifies for this general permit within 30 days of submittal of the written notice, or 30 days after submittal of any errors or omissions needed to correct the notice, as provided in rule 62-330.402, F.A.C. The proposed activity shall not commence until the Department has provided affirmative, written confirmation that the proposed activity qualifies for this general permit.

Rulemaking Authority 373.026, 373.043, 373.044, 373.118, 373.406, 373.4131, 373.414(9) FS. Law Implemented 373.026, 373.043, 373.046, 373.118, 373.403, 373.413, 373.4131, 373.414(9), 373.416, 373.418, 373.419, 373.422, 373.423, 373.426, 403.814(1) FS. History–New 12-5-06, Formerly 62-341.486, Amended 10-1-13, 6-1-18.

62-330.631 General Permit to Governmental Entities for Limited Environmental Restoration or Enhancement Activities.

(1) A general permit is granted to governmental entities to construct, operate, alter, or maintain projects for environmental restoration or enhancement, subject to the limitations and conditions of this section. For purposes of this rule, "environmental restoration and enhancement" means activities conducted to improve the habitat value of wetlands or surface waters for fish and wildlife by eliminating harmful drainage, improving water quality, preventing erosion, stabilizing eroding shorelines, planting

wetland vegetation, removing spoil, removing exotic and nuisance vegetation, providing structural habitat, and restoring dredged holes to elevations before they were dredged. The following activities are authorized:

(a) Restoration of an eroding shoreline or the enhancement of a disturbed or altered shoreline by planting appropriate native vegetation in accordance with the following:

1. Preparing grades and contours for planting with no net addition or removal of material.

2. Plantings shall consist of native wetland plant species obtained from commercially-grown stock that is native to the geographic area of the project.

3. All invasive and exotic plant species that occur along the shoreline within the project area are removed in conjunction with the planting.

4. If temporary wave attenuation is needed to protect and ensure survivability of the plantings, turbidity curtains shall be installed and maintained immediately waterward of, and parallel to, the planting area, but must be removed within three months after completion of planting.

5. If permanent wave attenuation is required to maintain shoreline vegetation, an oyster reef or riprap breakwater is authorized to be constructed within tidal waters concurrent with the planting, provided that:

a. The breakwater shall not impede navigation or create a navigational hazard. The outer edge of the breakwater shall be located no more than 15 feet waterward of the mean high water line and have a top height of one foot or less above the mean high water elevation.

b. The breakwater shall be composed of riprap or natural oyster shell cultch such as clean oyster shell and fossilized oyster shell, or combination thereof. Oyster shell shall be packaged within biodegradable bags (e.g., coir fiber) or mesh bags, or securely attached to matting prior to placement in the water to prevent movement of shell out of the project area.

c. The breakwater shall be placed in units so that there is at least one opening measuring at least five feet in width located every 75 linear feet along the breakwater, with a minimum of one opening to allow the flow of water, and the passage of fish and aquatic wildlife.

d. If the breakwater and plantings are located in front of an existing seawall or bulkhead, placement of clean fill for the sole purpose of planting wetland vegetation is authorized, provided that stabilizing riprap or an oyster reef breakwater supports the fill at no more than a two horizontal to one vertical slope and the total area of fill is less than one acre.

(b) Placement of riprap or clean oyster shell, underlain with geotextile filter fabric, within 10 feet waterward of the mean or ordinary high water line of an eroding shoreline. Oyster shell shall be packaged within mesh bags, or securely attached to matting prior to placement in the water to prevent movement of shell out of the project area. Where the shoreline is undercut, sandbags or geotubes filled with sand or hardened concrete placed over geotextile fabric are authorized to prepare the slope for placement of the riprap or oyster shell.

(c) Backfilling, plugging, or installation of weirs within existing drainage ditches or swales, without piping, for the purpose of restoring the hydroperiod of wetlands or other surface waters, and/or the groundwater in uplands, within publicly-owned lands, provided the ditches to be filled are not connected to upstream offsite ditches or canals. Any proposed backfilling, plugging or weir installation shall be supported by a determination, signed and sealed by a registered professional, that such activities will not cause adverse flooding to off-site property.

(d) Scrape down of spoil islands to an intertidal elevation or a lower elevation at which light penetration is expected to allow for seagrass or other native submerged aquatic vegetation recruitment, provided the total area does not exceed 10 acres.

(e) Backfilling of existing dredge holes that are at least five feet deeper than surrounding natural grades to an elevation which is expected to allow for seagrass recruitment, with no displacement of highly organic sediments, provided the total area does not exceed 10 acres.

(f) Placement of rock riprap or clean concrete in existing dredge holes that are at least five feet deeper than surrounding natural grades to enhance habitat values, provided that placed rock or concrete does not extend to within one foot of surrounding natural grades, and the total area does not exceed five acres.

(g) Removal of exotic and nuisance species to allow for the activities listed in paragraphs (1)(a) through (d), above.

(h) Restoration of prop scars and blow holes through previously vegetated grassbeds, including use of sand-filled bags to restore historical natural grades and replanting of seagrass collected from upland nursery sources or donor sites previously permitted under part IV of chapter 373, F.S., for this purpose. Bird stakes may be temporarily placed within the restoration area to promote seagrass growth in settings where, based on best available scientific information, the Agency determines that phosphorus is a limiting nutrient

for seagrass growth. Bird stakes, if used, shall be installed no closer than six feet apart and shall be removed within 18 months of initial placement.

(2) To qualify for this general permit, the activity must comply with all the following:

(a) The project shall not be considered as mitigation for any other activity.

(b) The project shall not be located within an Aquatic Preserve.

(c) The project shall not include placement of fill, riprap, or any type of breakwater over or within three feet of an area of greater than one percent coverage by emergent or submerged natural resources, or placement of fill material within smalltooth sawfish critical habitat, as designated by the U.S. National Marine Fisheries Service. For purposes of this general permit, the term "emergent or submerged natural resources" includes freshwater and marine herbaceous and forested wetland vegetation, seagrass, coral, sponge, oyster beds, and other submerged aquatic vegetation.

(d) The governmental entity shall submit scaled and dimensioned project plans, signed and sealed by a registered professional, showing the entire project area and all proposed activities within the project area. In addition, project plan-view drawings shall be submitted showing the locations of all existing emergent and submerged natural resource communities, however, these community-depiction drawings are not required to be signed and sealed by a registered professional.

(e) Emergent or submerged natural resources, and other fresh water or marine ecological communities shall not be adversely affected and the ecology of such communities shall directly benefit from the authorized activity, as affirmatively agreed to by the Agency after review of the submitted notice and project plans. To facilitate this review, a pre-application meeting with the Agency must be held in advance of submitting notice to use this general permit.

(3) This general permit shall be subject to the following specific conditions.

(a) All disturbed areas, including intertidal slopes, shall be stabilized and re-vegetated with appropriate non-invasive, annual ground cover vegetation within 72 hours after completion of construction. Subsequently, the areas shall be planted and maintained as necessary to ensure that there is at least 33 percent cover of planted or naturally re-established native wetland or upland plant species within 18 months of completion of authorized work. The areas shall also be maintained free of exotic invasive species.

(b) Riprap material shall be clean limestone, granite, other native rock, or clean rebar-free concrete rubble measuring one foot to three feet in diameter.

(c) Except as otherwise allowed under this general permit, fill material used to backfill dredge holes or planting areas shall comply with the standard of not more than 10 percent of the material passing through a number 200 standard sieve and containing no more than 10 percent organic content, and be free of contaminants that cause violations of state water quality standards.

(d) Turbidity shall be monitored at least twice daily during construction. Monitoring records shall be maintained and available for inspection by the Agency for the period of in-water construction and an additional 90 days beyond in-water construction.

Rulemaking Authority 373.044, 373.113, 373.118, 373.171, 373.4131 FS. Law Implemented 253.034(1), 373.118, 373.406(5), 373.4131, 373.414(9), 403.814(1) FS. History–New 10-1-13, Amended 6-1-18.

62-330.632 General Permit for the Restoration, Establishment and Enhancement of Low Profile Oyster Habitat.

(1) A general permit is hereby provided for the construction, restoration, and enhancement of low profile oyster habitat (LPOH) within estuaries, lagoons, or other tidal waters, subject to the following:

(a) The total footprint of the LPOH is one quarter acre in size or less;

(b) The work shall be conducted or directly supervised by persons having expertise designing and implementing oyster habitat restoration activities;

(c) The LPOH shall not be inconsistent with any management plan approved by a federal, state, regional and/or local agency that addresses oyster habitat, wetland vegetation, submerged resources, water quality, navigation, or fishing and recreational values of the waterbody, including any Aquatic Preserve management plan adopted under chapter 18-20, F.A.C.;

(d) The LPOH shall not be considered as mitigation to offset impacts for any other project;

(e) The LPOH shall not serve or include any aquaculture activity regulated under chapter 597, F.S.; and

(f) The LPOH shall not adversely affect existing natural resources or resource activities within or adjacent to the footprint of the proposed LPOH footprint.

(2) The notice required in rule 62-330.402, F.A.C., shall include documentation, statements, or demonstrations that the above limitations will be met, together with the following:

(a) An explanation of the overall ecological benefit to be achieved by the LPOH;

(b) Documentation that the person using this general permit has authorization from the owner(s) of the submerged lands, if other than the State of Florida, to conduct the proposed activities;

(c) An environmental resource survey of the bottom of the waterbody throughout the LPOH area, including an additional 50 foot-wide perimeter surrounding the LPOH area demonstrating that:

1. The LPOH area, including the 50 foot-wide perimeter area, does not have any submerged aquatic vegetation or hardbottom resources present;

2. The LPOH will not affect an archaeological, cultural, or historical resource area regulated under chapter 267, F.S.;

3. The LPOH will not have any work conducted within 100 meters of actively nesting wading bird colonies or within 180 meters of actively nesting tern or skimmer colonies;

4. The LPOH will not be constructed within:

a. 100 feet from the outside edge of any designated channel marked in accordance with section 327.40 F.S. or federally maintained channel without written approval from the entity responsible for channel maintenance;

b. Any channel traditionally used for navigation;

c. 100 feet of any dock or overwater structure without notice to the current property owner;

d. Any other designated management zone that requires approval to conduct activities unless written approval is received from the managing agency; or

e. Any previously permitted mitigation areas.

(d) Agreement that the activity will comply with the additional conditions of subsection (3), below.

(3) All work under this general permit shall be conducted in conformance with the following specific conditions:

(a) LPOH materials shall consist of only the following:

1. Clean, sediment free culture materials (cultch) that does not contain deleterious substances that have the potential to leach into surface waters. Cultch shall consist of:

a. Recycled shell that has been quarantined for a minimum of three months;

b. Fossil shell;

c. Limerock consisting of a minimum of 20 percent calcium carbonate by volume, with 90 percent of the limerock being no more than six inches in diameter; or

d. Concrete material in which at least 90 percent of the concrete material is no more than six inches in diameter. Concrete shall not be used for a LPOH located in an Aquatic Preserve.

2. Cultch that was intentionally placed in marine or estuarine waters for a period of time to collect oyster larvae, or seedstock (juvenile shellfish species) that has been cultured and placed in marine or estuarine waters for growout; or

3. Cultch or seedstock that has been generated as a result of shellfish aquaculture activities in accordance with section 597.010, F.S.

(b) LPOH materials shall be firmly fixed on the substrate, bagged, or otherwise contained in such a way as to prevent movement away from the LPOH footprint.

(c) LPOH materials shall not be indiscriminately dumped, placed on substrate with more than five live oysters per square meter, or placed outside of the footprint limits.

(d) The LPOH may consist of placement of LPOH materials in locations where no oyster reef currently exists, restoration of an existing degraded oyster reef to its known historical height, or restoration of an existing degraded oyster reef to the average elevation of existing natural oyster reefs in the immediate vicinity of the LPOH area. Final elevation shall not exceed 18 inches above the existing bottom elevation in locations where no oyster reef currently exists. In no circumstance shall LPOH material be placed at a height above the mean high water elevation.

(e) The LPOH shall not cause harmful erosion or shoaling to adjacent submerged areas and shorelines.

(f) The LPOH shall not cause adverse impacts to the fishing and recreational use of the waterbody, aquatic and wetland dependent species, or submerged resources.

(4) A minimum of 60 days prior to submittal of a notice required in subsection (2), above, the person proposing to use this general permit shall conduct at least one pre-notice meeting with the appropriate Agency staff to discuss the project. If the LPOH is proposed within an Aquatic Preserve, the manager of that preserve or their designee shall be invited to the pre-notice meeting.

(5) The activities authorized in this general permit shall not commence until the Agency has provided written verification of qualification in accordance with section 5.3.2 of Applicant’s Handbook, Volume I.

Rulemaking Authority 373.044, 373.113, 373.118, 373.171, 373.4131 FS. Law Implemented 253.034(1), 373.118, 373.406(5), 373.4131, 373.414(9), 403.814(1) FS. History–New 10-1-13, Amended 6-1-18.

62-330.635 General Permit for Soil Remediation.

(1) A general permit is granted to conduct soil removal activities, including installation of wells and work in wetlands and other surface waters necessary to perform soil remediation as part of a Remedial Action Plan approved by the Department. This includes construction, alteration, operation, and removal of a temporary access road for access to conduct this work, subject to the following conditions.

(a) Removal of contaminated soil is limited to no more than a total of five acres of wetlands.

(b) Temporary fill and materials for equipment access shall be removed immediately following completion of the remediation work.

(c) Any wetland area affected by the work shall be restored to pre-construction wetland elevations within 30 days following completion of the work, using sediments consisting of the same soil textural material as the original pre-construction soil material that is also free of vegetated debris, rebar and any other solid waste materials.

(d) Any muck removed from wetlands for construction of temporary fill roads shall be stockpiled in uplands and used in restoring the affected area to wetland conditions and preconstruction wetland elevations, unless this material is required to be removed as part of the remediation plan.

(e) Within seven days of completion of restoration of pre-construction wetland elevations, all wetland areas shall be re-vegetated with native wetland species endemic to adjoining, undisturbed wetlands or the underlying wetland community type historically occurring at the site. The restored wetland areas shall be maintained and planted as necessary to ensure that at least 33 percent cover of planted or naturally reestablished native wetland plant species is appropriate for the wetland community type within 18 months of completion of authorized work. Exotic invasive species, including but not limited to: *Schinus terebinthifolius*, *Melaleuca quinquenervia*, *Casuarina* spp., *Lygodium* spp., and nuisance species *Typha* spp., and *Ludwigia peruviana* shall be controlled at densities not exceeding the densities of these species in undisturbed portions of the wetland.

(f) In addition to compliance with the notice provisions of rule 62-330.402, F.A.C., within 60 days following completion of construction, the permittee will notify the Agency by letter of the date construction activities were completed.

(g) All contaminated soils removed from the site shall be disposed of in an appropriate disposal facility, in accordance with the Remedial Action Plan approved by the Department.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.418, 376.3071, 403.814(1) FS. History–New 10-1-13, Amended 6-1-18.

62-330.901 Noticed General Permit Forms.

Rulemaking Authority 373.026(7), 373.043, 373.118, 373.406(5), 373.414(9), 373.4145, 373.418 FS. Law Implemented 373.118, 373.406(5), 373.413, 373.414(9), 373.4145, 373.416, 373.418, 373.426 FS. History–New 9-4-05, Amended 10-1-07, Formerly 62-341.900, Repealed 10-1-13.

CHAPTER 40C-1
(Selected Rules as of 6/1/18)

40C-1.1001 Applicability of the Uniform Rules of Procedure.
Except as otherwise provided, the Uniform Rules of Procedure, Chapters 28-101 through 28-110, F.A.C., shall apply to the District.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 120.54(5) FS. History–New 8-4-98.

40C-1.1005 Time for Consideration of Emergency Petition for Variances.
When a petition for an emergency variance or waiver under Section 120.542(3), F.S., and Rule 28-104.005, F.A.C., requires action by the Governing Board, the Board shall grant or deny a petition for emergency variance or waiver within 30 days of its receipt or at the next regularly scheduled meeting for which notice may be properly given.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 120.542 FS. History–New 8-4-98.

40C-1.1007 Point of Entry Into Proceedings.
(1) For all District permitting decisions, the District shall publish, or inform a permit applicant that the applicant has the right or obligation to publish, written notice of a District decision in the Florida Administrative Register or a newspaper of general circulation as set forth in Chapter 50, F.S., in the county or counties affected by such decision or where the activity is proposed. In the case of a permitting decision where the District does not publish notice, the applicant may publish the notice on its own initiative.

(2)(a) "Receipt of written notice of a District decision" as set forth in Rule 28-106.111, F.A.C., means receipt of either written notice that the District intends to take or has taken final agency action, or publication of notice that the District intends to take or has taken final agency action. If the District's Governing Board takes action which substantially differs from a written notice of the District's decision describing intended action, persons who may be substantially affected shall have an additional 21 days, or for consolidated notice of intent under Section 373.427, F.S., an additional 14 days, from the date of receipt of notice of said action to request an administrative hearing, but this request for administrative hearing shall only address the substantial deviation.

(b) Receipt of written notice of a District decision shall be deemed to be either the fifth day after the date on which the written notice is deposited in the United States mail if actual notice is mailed to the petitioner, or the date that notice is published if actual notice is not mailed to the petitioner.

(3) When publication is made of the written notice of a District decision on a permitting matter, the notice, shall be prepared by the District and shall contain at a minimum:

(a) Name of applicant and a brief description of the proposed activity and its location;

(b) Location of the application and its availability;

(c) Statement of the District's intended action;

(d) Scheduled date of Board action, if applicable;

(e) Notification of administrative hearing opportunity; and

(f) Notification of whether mediation under Section 120.573, F.S., is available as an alternative remedy.

(4) When the District requires a permit applicant to publish written notice of a District decision, or the permit applicant elects to do so, the applicant shall provide an affidavit of publication to the District within 7 days of publication.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 120.569, 373.413 FS. History–New 8-4-98.

40C-1.1008 Timeframe for Providing Requested Information.

(1) The applicant shall have 90 days from receipt of a request for additional information regarding a permit or license application, a petition for a formal determination of the landward extent of wetlands and other surface waters, or a petition for a variance or waiver undergoing review by the District to submit that information to the District. If an applicant or petitioner requires more than 90 days in which to complete an application or petition, the applicant or petitioner may notify the District in writing of the circumstances and for good cause shown, the application or petition shall be held in active status for additional periods commensurate with the good cause shown. As used herein, good cause means a demonstration that the applicant or petitioner is diligently acquiring the requested information, and that the additional time period requested is both reasonable and necessary to supply the information. The Executive Director, the Director of the Division of Regulatory Services, the Chief of the Bureau of Environmental Resource Regulation, the Chief of the Bureau of Water Use Regulation, and any Regulatory Coordinator are authorized to make a determination that such good cause has been provided. Any application or petition which has not been completed by the applicant or petitioner within the given time period following a request for additional information by the District shall be administrately denied. The requested information or written request showing good cause for additional time may be submitted to the District at any time prior to the denial of the application or petition. Denial of an application or petition due to failure to submit requested additional information shall be an administrative denial without prejudice to the applicant's or petitioner's right to file a new application or petition. The applicant or petitioner may request a Section 120.569, F.S., hearing pursuant to Chapter 28-106, F.A.C. and Rule 40C-1.1007, F.A.C., to dispute the necessity of the information required.

(2) If requested information is not submitted to the District within the time limits set forth in subsection (1) above, the District shall provide notice to the applicant or petitioner that the District intends to administratively deny the application or petition and that the applicant or petitioner may request referral of the application or petition to the Governing Board for final action. If an applicant or petitioner requests a referral within 21 days of receipt of written notice of a District decision, the application or petition shall be referred to the Governing Board for final action. Applications and petitions not referred to the Governing Board will be denied by staff issuance of a Final Order administratively denying the permit application or petition.

Rulemaking Authority 120.54(5), 120.542, 373.044, 373.113, 373.421(2) FS. Law Implemented 120.54(5), 120.542, 120.60, 373.083(5), 373.118, 373.414(17), 373.421(2) FS. History–New 8-4-98, Amended 1-11-99, 4-10-02, 6-1-18.

40C-1.1009 Emergency Authorization for Activities Regulated Under Part IV of Chapter 373, F.S.

(1) Permission to begin construction, alteration, operation, maintenance, abandonment, or removal of any system requiring a permit under Chapter 40C-44 or 62-330, F.A.C., prior to the issuance of a permit may be applied for, in writing, when emergency conditions can be alleviated by such construction, alteration, operation, maintenance, abandonment, or removal of the system. Emergency conditions are defined as conditions which pose a present or imminent danger and require immediate action to protect: public health, safety or welfare; the health of animals, fish or aquatic life; a public water supply; or recreational, commercial, industrial, agricultural or other reasonable uses. Unless otherwise provided in the emergency authorization, the issuance of an emergency authorization shall not obviate the need for a permit. If a permit is not obtained within a period of one year following execution of the emergency authorization, then such system shall be returned to the condition that existed prior to execution of the emergency authorization. The one year time limit shall be tolled during any challenge or appeal of the permit which delays the issuance of the permit or stays the effect of the permit.

(2) The Governing Board authorizes the Executive Director to issue emergency authorizations. An emergency authorization issued by the Executive Director shall be presented to the Board for concurrence at its next meeting. The failure to receive the Board's concurrence shall invalidate the emergency authorization.

Rulemaking Authority 120.54(5), 373.044, 373.113, 373.418 FS. Law Implemented 120.54(5), 373.119, 373.413, 373.4131, 373.416, 373.418, 373.426, 373.439 FS. History–New 12-7-83, Formerly 40C-4.451, 40C-4.0451, Amended 8-4-98, 10-11-01, 10-1-13.

40C-1.135 Delegations of Authority.

(1) The District is delegated authority by the Department to assume certain responsibilities of Chapters 373 and 403, F.S. This delegation is pursuant to authority contained in Sections 373.016, 373.103 and 403.805(1), F.S., and is described in Rule 62-113.200, F.A.C.

(2) The Board of Trustees of the Internal Improvement Trust Fund, pursuant to Rule 18-21.0051, F.A.C., has delegated to the Governing Board the authority to review and take final agency action on certain applications to use sovereign submerged lands. Rule 18-21.0051, F.A.C., also provides that the Governing Board may further delegate review and decision making authority to District staff. Therefore, the Governing Board delegates this authority to the Executive Director, Director of the Division of Regulatory Services, Chief of the Bureau of Environmental Resource Regulation, and each Regulatory Coordinator, when an application to use sovereign submerged lands involves an activity which is reviewed pursuant to the general permit procedures of Chapter 62-330, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.016, 373.103, 373.113, 373.118, 373.4131 FS. History–New 8-1-89, Amended 1-4-96, 11-11-03, 10-1-13, 6-1-18.

40C-1.602 Licenses or Permits Required.

Unless expressly exempted by law or District rule, permits or licenses must be obtained from the District prior to commencement of the following activities:

(1) A consumptive use permit, pursuant to Chapter 40C-2, F.A.C., must be obtained prior to certain diversions or withdrawals of water as specified in Chapter 40C-2, F.A.C.

(2) A well construction permit, pursuant to Chapter 40C-3, F.A.C., must be obtained prior to construction, repair or abandonment of certain water wells as specified in Chapter 40C-3, F.A.C.

(3) A water well contractor's license, pursuant to Chapters 40C-3 and 62-531, F.A.C., in effect on July 1, 1989, must be obtained by contractors engaged in the business of construction, repair, or abandonment of water wells.

(4) An environmental resource individual or general permit, pursuant to Chapter 62-330, F.A.C., must be obtained prior to construction, alteration, operation, maintenance, removal, modification, or abandonment of certain stormwater management systems, dams, impoundments, reservoirs, appurtenant works or works, including dredging or filling, as specified in Chapter 62-330, F.A.C.

(5) An environmental resource conceptual approval permit, pursuant to Chapter 62-330, F.A.C., may be obtained for proposed surface water management systems as specified in Chapter 62-330, F.A.C.

(6) A permit, pursuant to Chapter 40C-5, F.A.C., prior to construction of any well involving artificial recharge or intentional introduction of water containing sewage wastes into any underground formation.

(7) An environmental resource permit for the operation and maintenance of certain existing agricultural surface water management systems and for the construction of certain new agricultural surface water management systems pursuant to Chapters 62-330 and 40C-44, F.A.C., must be obtained from the District in order to discharge wastewater into waters of the state from such a system.

(8) A mitigation bank permit, pursuant to Chaper 62-342, F.A.C., must be obtained in order to establish a mitigation bank. An application for a mitigation bank permit shall also constitute an application for any permit required under Chapter 62-330, F.A.C., to construct, alter, operate, maintain, abandon, or remove any stormwater management system or works proposed as part of the bank.

(9) A mitigation bank conceptual approval permit, pursuant to Chapter 62-342, F.A.C., may be obtained in order to estimate the legal and financial requirements for establishment of a mitigation bank, the information needed for the mitigation bank application, and the potential mitigation credits for the bank. A mitigation bank conceptual approval permit does not authorize construction or establishment of a bank.

Rulemaking Authority 120.53(1), 373.044, 373.113 FS. Law Implemented 373.085, 373.103, 373.106, 373.118, 373.171, 373.219, 373.308, 373.323, 373.413, 373.4131, 373.416, 373.426, 403.812 FS. History–New 1-22-76, Amended 1-15-80, Formerly 16I-1.04, 40C-1.04, 40C-1.041, Amended 8-1-89, 8-11-91, 9-25-91, 10-3-95, 11-11-03, 10-1-13.

40C-1.603 Permit Fees.

A fee is required and shall be paid to the District when certain applications or petitions are filed pursuant to District rules or permit programs delegated to the District. Effective October 1, 1990, governmental entities shall be required to submit the fees established except as provided in subsections (17), (18) or (19). This fee recovers some of the District's costs of processing applications.

The fee schedule is:

(1) Chapter 40C-2, F.A.C., consumptive use permits:

(a) Applications for consumptive use permits.

1. Consumptive use permits greater than 500,000 gallons of water per day	$1,000
2. Consumptive use permits equal to or less than 500,000 gallons of water per day	$ 400
3. Consumptive use permits less than 100,000 gallons of water per day	$ 100
4. Consumptive use permits where the use does not exceed the thresholds in subsection 40C-2.041(1), F.A.C.	$ 50

(b) Modifications of consumptive use permits.

1. Consumptive use permits where the total allocation requested (existing plus any proposed increase) is greater than 500,000 gallons of water per day	$ 200
2. Consumptive use permits where the total allocation requested (existing plus any proposed increase) is equal to or less than 500,000 gallons of water per day	$ 100
3. Consumptive use permits where the total allocation requested (existing plus any proposed increase) is less than 100,000 gallons of water per day	$ 50
4. Consumptive use permit where the use does not exceed the thresholds in subsection 40C-2.041(1), F.A.C.	$ 25

5. No fee will be charged for early renewal of an existing permit for implementation of a project that provides a water quantity benefit to a water resource.

6. No fee will be charged for modification of an existing permit applied for by letter pursuant to Rule 40C-2.331, F.A.C., regardless of withdrawal amount.

(2) Chapter 40C-3, F.A.C., well construction, repair or abandonment permit.

(a) Public water supply well	$ 250
(b) All other wells	$ 120
(c) Abandonment of a well	$ 0
(d) Variances	$ 100

(3) Chapter 62-330, F.A.C., individual or conceptual environmental resource permits (excluding mitigation bank permits):

(a) New applications (excluding projects described in paragraphs (3)(b) and (3)(c) below) – based on the categories below:

1. Project with no works in, on, or over wetlands and other surface waters, no boat slips, and:	
a. Total project area of less than 10 acres	$ 490
b. Total project area of more than 10 acres but less than 40 acres	$1,190
2. Total project area of less than 10 acres, less than 1 acre of works in, on, or over wetlands and other surface waters, and less than 10 new boat slips	$1,190
3. Project exceeds any of the thresholds in subparagraph (3)(a)2. above, but involves a total project area of less than 40 acres, less than 3 acres of works in, on, or over wetlands and other surface waters, and less than 30 new boat slips	$2,110
4. Project exceeds any of the thresholds in subparagraph (3)(a)3. above, but involves a total project area of less than 100 acres, less than 10 acres of works in, on, or over wetlands and other surface waters, and less than 50 new boat slips	$5,610
5. Project exceeds any of the thresholds in subparagraph (3)(a)4. above, but involves a total project area of less than 640 acres, and less than 50 acres of works in, on, or over wetlands and other surface waters	$5,610
6. Project exceeds any of the thresholds in subparagraph (3)(a)5. above	$9,120

7. When a project requires a Chapter 40C-44, F.A.C., environmental resource agricultural system permit with no works in, on, or over wetlands and other surface waters, the fee will be the same as the fee under subsection (10) below based on the acreage.

(b) New applications for environmental restoration or enhancement activities (not associated with a mitigation bank and not implemented as mitigation). For purposes of this fee category, "environmental restoration or enhancement" means actions designed and implemented solely to convert degraded or altered uplands, wetlands, or other surface waters back to communities typical of those historically present, or to improve the ecological value of wetlands or other surface waters in comparison to their existing condition. $ 250

(c) New applications solely for stormwater retrofit projects $ 250

(d) Major modifications of Chapter 62-330, F.A.C., individual or conceptual environmental resource permits (excluding mitigation bank permits):

1. Major modifications that are consistent with an existing conceptual approval permit	50% of the fee for a new permit under (3)(a) above for the activity proposed in the modification
2. Major modifications to a permit that increase the total project area	Same as fee for a new permit under (3)(a) above for the activity proposed in the modification
3. Other major modifications	50% of the fee for a new permit under (3)(a) above for the activity proposed in the modification

(e) Minor modifications of Chapter 62-330, F.A.C., individual or conceptual environmental resource permits (excluding mitigation bank permits):

1. Transfers or statutory extensions of permits and correction of minor errors that do not require technical review	$0
2. Other extensions	$200 or 25% of the fee for a new permit under (3)(a) above (whichever is less)
3. All other minor modifications	25% of the fee for a new permit under (3)(a) above for the activity proposed in the modification

(4) Mitigation Bank permits and conceptual approvals $11,960

(a) Major modifications of mitigation bank permits and conceptual approvals involving changes to one or more of the following components: service area; credit assessment; success or release criteria; hydrologic structures or alterations; constructions or mitigation design that does not increase the project area; elimination of lands; or monitoring or management plans $1,410

(b) Other major modifications that do not qualify for a modification under paragraph (4)(a), above, or paragraph (4)(e), below $4,230

(c) Minor modifications of mitigation bank permits and conceptual approvals:

1. Transfers or statutory extensions of permits; correction of minor errors that do not require technical review; mitigation bank credit withdrawals and releases $ 0

2. All other minor modifications authorized by subsection 62-330.315(2), F.A.C.	$ 270
(5) Chapter 62-330, F.A.C., general environmental resource permits set forth in Rules 62-330.407 through 62-330.635, F.A.C.	$ 250
(6) Variances or waivers associated with any environmental resource permit application:	
(a) Under Section 120.542, F.S.	$ 0
(b) All other variances or waivers	$ 550 or cost of application, whichever is less
(7) Formal Determinations:	
(a) For property less than 10 acres	$ 860
(b) For property that is at least 10 acres but less than 40 acres	$1,180
(c) For property that is at least 40 acres but less than 100 acres	$2,370
(d) For property that is greater than 100 acres, plus $310 for each additional 100 acres or portion thereof	$2,370
(e) For properties with an existing formal determination that qualify for reissuance in accordance with subsection 373.421(2), F.S.	$ 350
(f) For properties that had a formal determination, when submitted within 2 years after expiration of the formal determination, provided petitioner certifies there are no unpermitted alterations in physical conditions and no change in delineation methodology since issuance of prior formal determination, as confirmed by the District	50% of the fee under (7)(a)-(d) above

(8) Management and storage of surface waters permits under Chapters 40C-4 and 40C-40, F.A.C., as such rules existed prior to the adoption of rules adopted pursuant to Section 373.414(9), F.S., that are submitted pursuant to the grandfathering provisions of Sections 373.414(12) through (16), F.S.

(a) Individual and conceptual permits	$3,530
(b) General permits	$ 980

(c) Permit applications and formal determinations which require wetland delineations pursuant to Section 373.421(7), F.S., will be charged a supplemental application fee of seven hundred dollars ($700), in addition to the application fees above.

(9) Chapter 40C-5, F.A.C., artificial recharge injection well permits	$5,000

(10) Chapter 40C-44, F.A.C., environmental resource agricultural system permits that only require a permit under paragraph 62-330.020(2)(i), F.A.C., and section 1.2.3 of the document entitled “Environmental Resource Permit Applicant’s Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District,” which is incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C.:

(a) Individual Permits for agricultural operations less than 40 acres	$ 420
(b) Individual Permits for agricultural operations greater than 40 acres	$1,050

(11) Modifications of Permits. Unless the fee for modification of a permit is specifically provided above, the fee required with an application for modification shall be that which is established for the applicable type of permit. However, when an applicant for a permit under Chapter 62-330, F.A.C., resubmits within 365 days after withdrawing an application for an activity on part of the same project area for which it already paid the application fee, no fee shall be charged except for any additional fee required due to a change in the project. Additionally, the fee for letter modification of a permit issued pursuant to Chapter 40C-4, 40C-40, or 40C-42, F.A.C., before October 1, 2013 shall continue to be the following applicable fee, unless the permittee elects review in accordance with the rules adopted pursuant to Section 373.4131, F.S.:

(a) Chapter 40C-4, F.A.C., permits	$ 270
(b) Chapter 40C-40, F.A.C., permits	$ 160
(c) Chapter 40C-42, F.A.C., permits	$ 110

(12) Permit applications under Chapter 62-4, 62-312, 40C-4, 40C-40, 40C-42, or 40C-44, F.A.C., submitted and made complete prior to the effective date of the rules adopted pursuant to Section 373.4131, F.S., shall be required to submit the permit application fees in existence prior to October 1, 2013, unless the applicant elects review in accordance with the rules adopted pursuant to Section 373.4131, F.S.

(13) Application fees for authorizations on sovereign submerged lands under Chapters 253 and 258, F.S., are provided in Chapter 18-21, F.A.C.

(14) Informal Wetland Boundary determinations under Part IV of Chapter 373, F.S., for property less than or equal to 1 acre $ 100

(15) Verification that an activity is exempt from regulation:

(a) Under Rules 62-330.050 and 62-330.051, F.A.C. $ 100

(b) Under Rule 62-330.0511, F.A.C. $ 0

(16) The District shall use the Consumer Price Index, for All Urban Consumers (CPI-U), all items, complied by the United States Department of Labor for revising fees under Part IV of Chapter 373, F.S., pursuant to Section 373.109, F.S., and subparagraph 62-113.200(12)(a)8. and paragraph 62-4.050(4)(z), F.A.C.

(17) Pursuant to Section 218.075, F.S., the District shall, for each fiscal year beginning October 1st and ending September 30th, reduce all permit application fees to $100, or, if a permit application fee is less than $100, by 50 percent, for any county, municipality, or third party under contract with a county or municipality, to apply for a permit on the county or municipality's behalf, which qualifies under this subsection. A county, municipality, or third party as described above, may apply to reduce the permit application fees by submitting form 40C-1.603(13) entitled "Request to the St. Johns River Water Management District to Reduce Permit Application Fees," effective 11-11-03, which is hereby incorporated by reference and which can be obtained from St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529, for each fiscal year certifying:

(a) That the county had a population of 50,000 or less on April 1, 1994, and that the county's population has not yet exceeded 75,000, that the municipality has a population of 25,000 or less, or that the county or municipality is not included within a metropolitan statistical area; and

(b) All projects for which the fee reduction or waiver is sought will serve a public purpose; and

(c) The permit application fee cost is a fiscal hardship due to one of the following:

1. Per capita taxable value is less than the statewide average for the current fiscal year.

2. Percentage of assessed property value that is exempt from ad valorem taxation is higher than the statewide average for the current fiscal year.

3. Any condition specified in Section 218.503, F.S., that determines a state of financial emergency.

4. Ad valorem operating millage rate for the current fiscal year is greater than eight mills.

5. A financial condition that is documented in annual financial statements at the end of the current fiscal year and indicates an inability to pay the permit processing fee during that fiscal year.

(18) No fee shall be charged for applications for Chapter 62-330, F.A.C., permits by the following branches of the U.S. Department of Defense: U.S. Army, Navy, Air Force, Coast Guard, and National Guard.

(19) No fee shall be charged for applications for Chapters 40C-2, 40C-3, or 62-330, F.A.C., permits by the Florida Department of Environmental Protection or another water management district.

Rulemaking Authority 373.044, 373.109, 373.113, 373.421(2) FS. Law Implemented 218.075, 373.109, 373.4131, 373.421(2) FS. History–New 10-1-87, Amended 6-1-88, 10-17-88, Formerly 40C-1.202, Amended 8-1-89, 10-19-89, 8-19-90, 7-21-91, 7-23-91, 8-11-91, 9-25-91, 11-12-91, 10-20-92, 11-30-92, 1-6-93, 12-6-93, 1-23-94, 4-12-95, 1-4-96, 4-25-96, 10-2-96, 10-11-01, 4-10-02, 11-11-03, 2-1-05, 2-16-10, 10-1-13, 8-14-14, 11-1-15, 2-1-18, 6-1-18.

40C-1.607 Issuance of a License or Permit.

Where a license or permit requires Governing Board action, issuance of a license or permit is deemed to occur upon the approval by the Board.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.413, 373.4136, 373.416, 373.426 FS. History–New 8-1-89, Amended 8-4-98.

40C-1.608 Denial of a License or Permit.

(1) The District shall set forth in writing the reasons for denial of the license or permit application. For applications

for environmental resource permits, the District will also explain, in general terms, what changes in the permit application, if any, would address such reasons for denial. Such changes shall not be limited to those modifications as described in subsection 10.2.1 of the Applicant's Handbook Volume I (General and Environmental) which is incorporated by reference in subparagraph 40C-41.063(6)(d)4., F.A.C.

(2) When the license or permit is considered by the Board the applicant and other interested persons may appear before the Board to present informal argument for or against the intended District action. Such appearance before the Board shall not provide a basis for appealing the decision of the Board pursuant to Chapter 120, F.S.

(3) The Board may approve, reject or modify the intended District action. The Board's action shall constitute final agency action, except for those instances when a valid petition for an administrative hearing has been timely filed. In such instances, the Board shall defer final consideration of the matter pending completion of the administrative hearing and the submittal of a recommended order, if required, and exceptions thereto.

(4) Applicants and other interested persons should be prepared to explain their positions regarding the license or permit application when it is considered by the Board for final action. If the Board's final action differs substantially from the intended District action, the District shall mail a notice of final action to all persons who received a notice of intended District action. Substantially affected persons who did not request a Section 120.57, F.S., hearing based on the notice of proposed District action shall have the right to request such a hearing within 14 days of receipt of the notice of final action, otherwise such right is deemed waived. Such request for hearing shall be in accordance with subsection (4) above, and may only address those aspects of the final action which substantially deviate from the intended action.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.219, 373.308, 373.413, 373.4131, 373.4136, 373.416, 373.426 FS. History–New 8-1-89, Amended 10-3-95, 8-4-98, 10-1-13.

40C-1.612 Transfer of Ownership or Permit.

(1) Transfer of Ownership or Control. Within 30 days of any transfer of ownership or control of the real property at which any permitted facility, system or activity solely authorized under paragraph 62-330.020(2)(i), F.A.C., and section 1.2.3 of the document entitled "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," which is incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C., for a permit under Chapter 40C-44, F.A.C. (hereafter referred to as a "40C-44 system or activity"), or consumptive use is located or authorized, or transfer of ownership or control of any such facility, system, activity, or well with a permitted consumptive use, the permittee must notify the District in writing of the transfer, giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer.

(2) Transfer of Permit.

(a) Transfer without Conversion to Operation Phase. To transfer a permit that does not involve a conversion of a construction permit for a 40C-44 system or activity to its operation phase, the permittee must provide the information required in subsection (1) above, together with a written statement from the proposed transferee that it will be bound by all terms and conditions of the permit. Additionally, where applicable, the proposed transferee must demonstrate that it is capable of constructing, operating, and maintaining the permitted facility, 40C-44 system or activity, consumptive use, or well. Once the required information has been provided, the District shall transfer the permit to the proposed transferee in accordance with paragraph (5)(a) below. A permit issued pursuant to Chapter 62-330 or 62-342, F.A.C., other than a permit for a 40C-44 system or activity, shall not be subject to this rule.

(b) Transfer with Conversion to Operation Phase. To transfer a construction permit for a 40C-44 system or activity to its operation phase, a written statement from the proposed transferee is not required when the permit transfer would be to the operation and maintenance entity approved by the permit. Otherwise, all remaining requirements in paragraph (2)(a) above apply to a request under paragraph (2)(b). Once the required information has been provided, the District shall convert the permit to its operation phase and transfer the permit to the proposed transferee in accordance with paragraph (5)(b) below.

(c) Transfer of an Operating Permit for Entire 40C-44 System or Activity. Except as otherwise provided in Sections 373.426 and 373.429, F.S., when a permittee notifies the District in writing within 30 days of a change in ownership or control of an entire 40C-44 system or activity covered by a 40C-44 operating permit, the District shall transfer that operating permit to the new owner or person in control. If the permittee fails to notify the District in writing within 30

days of the change in ownership or control or if a transfer of ownership or control does not include the entire permitted 40C-44 system or activity, then the transfer shall be governed by paragraphs (2)(a) and (5)(a).

(3) The permittee is encouraged to request a permit transfer prior to the sale or legal transfer of the real property at which a permitted facility, 40C-44 system or activity, or consumptive use is located or authorized. However, the permit transfer shall not be effective prior to the sale or legal transfer.

(4) Until the permit transfer has occurred, the permittee and any other person constructing, operating, or maintaining the permitted facility or system shall be liable for compliance with the terms of the permit. The permittee transferring the permit shall remain liable for corrective actions that may be required as a result of any violations occurring prior to the transfer of the permit.

(5) Timeframes for Transfers.

(a) Transfer without Conversion to Operation Phase. Except for those transfers associated with the conversion of a construction permit for a 40C-44 system or activity to its operation phase (which are addressed in paragraph (5)(b) below), the District shall transfer a permit within 5 days of receiving a complete request for transfer pursuant to subsection (1) and paragraph (2)(a) above. However, the District may toll the time for the transfer by notifying the permittee, within 30 days of receipt of the request, that additional information is required to adequately review the transfer request pursuant to subsection (1) and paragraph (2)(a) above, or that deficiencies in the permitted facility, 40C-44 system or activity, consumptive use, or well must be corrected prior to transfer. Within 30 days of receipt of the additional information that meets the requirements of subsection (1) and paragraph (2)(a) above and of verification of the corrected deficiencies, the District shall transfer the permit. If the District therafter fails to transfer the permit within 30 days, the transfer shall be deemed approved. If the permittee fails to provide the requested information within 90 days of receipt of the request for additional information, then the request for transfer shall be subject to administrative denial without prejudice and the provisions of Rule 40C-1.1008, F.A.C., shall apply.

(b) Transfer with Conversion to Operation Phase. Within 60 days of receiving a complete request to convert a construction permit for a 40C-44 system or activity to its operation phase and to transfer the permit to the operation and maintenance entity, pursuant to paragraph (2)(b) above, the District shall convert the permit from its construction phase to its operation phase and transfer the permit to its operation and maintenance entity. However, the District may toll the time by notifying the permittee, within 30 days of receipt of the request, that additional information is required to adequately review the request, pursuant to subsection (1) and paragraph (2)(b) above, or that deficiencies in the permitted system or activity must be corrected prior to conversion and transfer. Within 30 days of receipt of the additional information that meets the requirements of subsection (1) and paragraph (2)(b) above and of verification of the corrected deficiencies, the District shall convert the construction permit to its operation phase and transfer the permit to the operation and maintenance entity. If the District thereafter fails to convert or transfer the permit within 30 days, the conversion and transfer shall be deemed approved. If the permittee fails to provide the requested information within 90 days of receipt of the request for additional information, then the request for transfer shall be subject to administrative denial without prejudice and the provisions of Rule 40C-1.1008, F.A.C., shall apply.

(c) Transfer of an Operating Permit for Entire 40C-44 System or Activity. Except as otherwise provided in Sections 373.426 and 373.429, F.S., the District shall transfer a 40C-44 operating permit for an entire 40C-44 system or activity to the new owner or person in control within 60 days of receiving written notice in accordance with paragraph (2)(c) above.

(6) For any system or activity authorized by a permit issued pursuant to Chapters 40C-4, 40C-40, or 40C-42, F.A.C., before (10-1-13), the provisions in subsections (1) through (5) above shall apply except that any references to 40C-44 systems or activities will be replaced with the rule chapter that authorized the permit (Chapters 40C-4, 40C-40, or 40C-42, F.A.C.).

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.083, 373.171, 373.309, 373.4131, 373.416, 373.426, 373.429, 373.436 FS. History–New 8-1-89, Amended 10-19-89, 7-20-95, 11-6-95, 10-1-13, 6-1-18.

CHAPTER 40C-4
ENVIRONMENTAL RESOURCE PERMITS: SURFACE WATER MANAGEMENT SYSTEMS

40C-4.031 Implementation.

(1) The effective dates for the permitting program as established in this chapter pursuant to Part IV of Chapter 373, F.S., are:

(a) January 31, 1977 in that area transferred to the District from the Central and Southern Florida Flood Control District, now the South Florida Water Management District, pursuant to Section 373.069(3), F.S. (Supp. 1976), within the Greater St. Johns River Basin, known as the Upper St. Johns River Basin (see Figure 4-1).

(b) January 31, 1977 in that area transferred to the District from the Southwest Florida Water Management District pursuant to Section 373.069(3), F.S., (Supp. 1976), within the Oklawaha River Basin (see Figure 4-1).

(c) December 7, 1983 in the remaining area of the District not described in paragraph (a) or (b) above and as described in Section 373.069(2)(c), F.S. (see Figure 4-1).

(d) August 11, 1991, for agricultural stormwater management systems.

(2)(a) The program initiated on January 31, 1977, with its limited areas of implementation, is superseded throughout the entire District by the rules that became effective on December 7, 1983.

(b) Each permit issued under the provisions of the program initiated on January 31, 1977 remains valid after December 7, 1983, subject to all limiting conditions attached thereto.

(c) Any permit application received prior to November 15, 1983 will be processed and evaluated under the provisions of the permitting program initiated on January 31, 1977. Any permit application received on or after November 15, 1983 will be processed and evaluated under the provisions of the rules that become effective on December 7, 1983.

Rulemaking Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.413, 373.416, 373.426 FS. History–New 1-31-77, Formerly 16I-4.03, 40C-4.03, Amended 2-3-81, 12-7-83, Formerly 40C-4.031, 40C-4.0031, Amended 8-11-91, 10-3-95, 11-11-03.

40C-4.091 Publications Incorporated by Reference.

(1) The Governing Board hereby adopts by reference:

(a)1. Part I “Introduction, Organization, Definitions and Applicability,” Part II “General Criteria,” Part III “Stormwater Quantity/Flood Control,” Part IV “Stormwater Quality,” and Part V “Best Management Practices,” which are all available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06351];

2. Part VI “Basin Criteria,” available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06352];

3. Appendix A “Drainage Basins for Cumulative Impacts Evaluation and Regional Watersheds for Mitigation Banking,” available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-03008];

4. Appendix B “Legal Description Upper St. Johns River Hydrologic Basin,” “Legal Description Ocklawaha River Hydrologic Basin,” “Legal Description Wekiva River Hydrologic Basin,” “Legal Description Wekiva Recharge Protection Basin,” “Legal Description Econlockhatchee River Hydrologic Basin,” “Legal Description Sensitive Karst Areas Basin, Alachua County,” “Legal Description Tomoka River Hydrologic Basin,” “Legal Description Spruce Creek Hydrologic Basin,” “Legal Description Sensitive Karst Areas Basin, Marion County,” and “Legal Description Lake Apopka Hydrologic Basin,” available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06353];

5. Appendix C (“Methodology and Design Example for the Modified Rational Hydrograph Method”) available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-03009]; and,

6. Appendix D, available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-03010], of the document entitled “Environmental Resource Permit Applicant’s Handbook, Volume II: For Use Within the Geographic Limits of the St.

Johns River Water Management District," effective (6-1-18).

(b) Operating Agreement Concerning Regulation Under Part IV, Chapter 373, F.S., Between St. Johns River Water Management District and Department of Environmental Protection dated July 1, 2007.

(c) Water quality standards of chapter 62-4, F.A.C., (October 1, 2013), available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06354], chapter 62-302, F.A.C., (June 7, 2015), available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06355], chapter 62-520, F.A.C., (July 12, 2009), available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-03005], and chapter 62-550, F.A.C., (July 7, 2015), available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06356].

(d) The following Natural Resources Conservation Service Soil Survey publications: Soil Survey of Flagler County Area, Florida (1997); Soil Survey of Lake County Area, Florida (1975); Soil Survey of Orange County Area, Florida (1989); Soil Survey of Seminole County Area, Florida (1990); and Soil Survey of Volusia County Area, Florida (1980), which are hereby incorporated by reference, effective 12-3-06.

(e) Technical Publication SJ No. 85-5: A Guide to SCS Runoff Procedures (1985) available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-03007].

(2) The documents may be obtained by contacting:

Director, Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, Florida 32177-2529

St. Johns River Water Management District
7775 Baymeadows Way, Suite 102
Jacksonville, Florida 32256

St. Johns River Water Management District
601 South Lake Destiny Road, Suite 200
Maitland, Florida 32751-7262

St. Johns River Water Management District
525 Community College Pkwy., S.E.
Palm Bay, Florida 32909

Rulemaking Authority 369.318, 373.044, 373.046(4), 373.113, 373.117, 373.4131, 373.4136, 373.414, 373.415, 373.416, 373.418, 373.461 FS. Law Implemented 120.60, 369.316, 369.318, 373.016(2), 373.042, 373.0421, 373.046, 373.085, 373.086, 373.103, 373.117, 373.129, 373.413, 373.4131, 373.4135, 373.4136, 373.414, 373.415, 373.416, 373.418,373.419, 373.423, 373.426, 373.461(3), 403.0877, FS. History–New 12-7-83, Amended 10-14-84, Formerly 40C-4.091, Amended 5-17-87, Formerly 40C-4.0091, Amended 8-20-87, 10-1-87, 10-11-87, 11-26-87, 8-30-88, 1-1-89, 8-1-89, 10-19-89, 4-3-91, 9-25-91, 11-12-91, 3-1-92, 7-14-92, 9-8-92, 9-16-92, 11-12-92, 11-30-92, 1-6-93, 1-23-94, 2-27-94, 11-22-94, 10-3-95, 8-20-96, 11-25-98, 12-3-98, 1-7-99, 1-11-99, 8-21-00, 7-8-01, 10-11-01, 4-10-02, 9-26-02, 3-7-03, 11-11-03, 2-1-05, 12-3-06, 7-1-07, 5-13-08, 11-5-08, 10-29-09, 2-16-10, 12-27-10, 10-1-13, 6-1-18.

5-13-08, 11-5-08, 10-29-09, 2-16-10, 12-27-10, 10-1-13.

CHAPTER 40C-8
MINIMUM FLOWS AND LEVELS

40C-8.011 Policy and Purpose.

(1) This chapter establishes minimum flows and levels for surface watercourses and minimum levels for groundwater at specific locations within the St. Johns River Water Management District.

(2) Where appropriate, minimum flows and levels any reflect seasonal and long term variations and may include a schedule of variations and other measures appropriate for the protection of nonconsumptive uses of a water resource.

(3) In establishing minimum flows and levels the Governing Board shall use the best information and methods available to establish limits which prevent significant harm to the water resources or ecology. The Governing Board will also consider, and at its discretion provide for the protection of nonconsumptive uses, including navigation, recreation, fish and wildlife habitat, and other natural resources.

(4) Where a minimum flow has been established for a specific watercourse or a minimum level has been established for a specific surface water body, the flow or level is expressed as a fluctuation regime which will include a series of minimum flows or levels reflecting a temporal hydrologic regime that will prevent significant harm to water resources or ecology.

(5) Minimum flows and levels prescribed in this chapter are used as a basis for inposing limitations on withdrawals of groundwater and surface water for reviewing proposed surface water management and storage systems and stormwater management systems, and for imposing water shortage restrictions. The limitations and review criteria are prescribed in other rule chapters of the District.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.042, 373.415 FS. History–New 9-16-92, Amended 8-17-94.

40C-8.021 Definitions.

Unless the context indicates otherwise, the following terms shall have the following meanings.

(1) “Black Water Creek” means that watercourse designated Black Water Creek within the Wekiva River Hydrologic Basin as defined by Rule 40C-41.023, F.A.C.

(2) “Determined minimum surface water flow” means a flow, expressed in cubic feet per second combined with a temporal element. The temporal element may be specifically expressed as a duration and return interval or may be generally expressed as a hydroperiod category.

(3) “Determined minimum surface water level” means an elevation in feet NGVD combined with a temporal element. The temporal element, for purposes of this chapter may be specifically expressed as a duration and return interval or may be generally expressed as a hydroperiod category.

(4) “Intermittently exposed” means a hydroperiod category where surface water is present throughout the year except in years of extreme drought. In most lakes this category does not typically support emergent vegetation and would be characterized as open water or floating-leaved deep marsh. Water levels causing inundation are expected to occur more than ninety percent of the time over a long term period of record.

(5) “Intermittently flooded” means a hydroperiod category where the substrate is usually exposed, but surface water is present with variable frequency and duration. Water levels causing inundation are expected to occur on average approximately once every ten years or more. Years may intervene between periods of inundation. On recharge lakes (sandhill type lakes), the dominant vegetation growing at this elevation can change as soil moisture conditions change, from a dominance of upland species to wetland species or the reverse. Duration of inundation is on the order of several months. Water levels are expected to inundate less than two per cent of the time over a long term period of record.

(6) “Long term” or “long term period of record” means at least a 30 year continuous period.

(7) “Minimum frequent high” means a chronically high surface water level or flow with an associated frequency and duration that allows for inundation of the floodplain at a depth and duration sufficient to maintain wetland functions.

(8) “Minimum infrequent high” means an acutely high surface water level or flow with an associated frequency and duration

that is expected to be reached or exceeded during or immediately after periods of high rainfall so as to allow for inundation of a floodplain at a depth and duration sufficient to maintain biota and the exchange of nutrients and detrital material.

(9) “Minimum average” means the surface water level or flow necessary over a long period to maintain the integrity of hydric soils and wetland plant communities.

(10) “Minimum frequent low” means a chronically low surface water level or flow that generally occurs only during periods of reduced rainfall. This level is intended to prevent deleterious effects to the composition and structure of floodplain soils, the species composition and structure of floodplain and instream biotic communities, and the linkage of aquatic and floodplain food webs.

(11) “Minimum infrequent low” means an acutely low surface water level or flow with an associated frequency and duration which may occur during periods of extreme drought below which there will be a significant negative impact on the biota of the surface water which includes associated wetlands.

(12) “NAVD” means North American Vertical Datum of 1988.

(13) “NGVD” means National Geodetic Vertical Datum of 1929.

(14) “Permanently flooded” means a hydroperiod category where water covers the land surface throughout the year in all years. Vegetation, if present, is composed of aquatic macrophytes.

(15) “Phased Restriction” means the level or flow (based on the past 30 consecutive day average level or flow) at which a water use shortage phase (Phase I-IV as defined by Rule 40C-21.251, F.A.C.), is declared and its associated restrictions imposed.

(16) “Seasonally flooded” means a hydroperiod category where surface water is typically present for extended periods (30 days or more) during the growing season, resulting in a predominance of submerged or submerged and transitional wetland species. During extended periods of normal or above normal rainfall, lake levels causing inundation are expected to occur several weeks to several months every one to two years.

(17) “Semi-permanently flooded” means a hydroperiod category where surface water inundation persists in most years. When surface water is absent the water table is usually near the land surface. In many lakes with emergent marshes this water level is near the lower elevation that supports emergent marsh or floating vegetation and peat substrates, or other highly organic hydric substrates. This characterization may not be true for herbaceous wetlands around sandhill type lakes, which often have emergent vegetation that follows declining water levels to below the lower elevation of peat substrate. Water levels causing inundation are expected to occur approximately eighty percent of the time over a long term period of record. Exposure of these ground elevations is expected to re-occur, on average, about every five to ten years for extended periods (several or more months) during moderate droughts.

(18) “Temporarily Flooded” means a hydroperiod category where surface water is present or the substrate is flooded for brief periods (up to several weeks) approximately every five years. Plants of upland and wetland species are characteristic. The composition of the vegetation at this water level is dependant upon whether the flooding predominantly occurs in the growing season, whether seepage from higher elevations is pronounced, and the nature of the soil. Lake water levels are expected to equal or exceed this elevation five per cent of the time or less over a long term period of record.

(19) “Typically saturated” means a hydroperiod category where for extended periods of the year the water level should saturate or inundate. This results in saturated substrates for periods of one-half year or more during non-flooding periods of typical years. Water levels causing inundation are expected to occur fifty to sixty per cent of the time over a long term period of record. This water level is expected to have a recurrence interval, on the average, of one or two years over a long term period of record. Obligate wetland plant species are expected to be predominate near this water level.

(20) “Wekiva River” means that watercourse designated Wekiva River within the Wekiva River Hydrologic Basin as defined by Rule 40C-41.023, F.A.C.

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.042, 373.103, 373.415 FS. History–New 9-16-92, Amended 8-17-94, 6-8-95, 3-19-02, 6-25-14.

40C-8.031 Minimum Surface Water Levels and Flows and Groundwater Levels.

(1) The following minimum groundwater levels and minimum mean annual spring flows are established:

Spring Name	County	Head (ft NGVD)	Discharge (cfs)
Messant Spring	Lake	32	12
Miami Springs	Seminole	27	4

Palm Springs	Seminole	27	7
Rock Springs	Orange	31	53
Sanlando Springs	Seminole	28	15
Seminole Springs	Lake	34	34
Starbuck Springs	Seminole	31	13
Wekiwa Springs	Orange	24	62

(2) The following minimum surface water levels and flows are established:

System Name	County	Minimum Level	Level (ft NGVD)	Flow (cfs)	Hydroperiod Category	Duration (days)	Return Interval (years)
Black Water Creek at The SR 44 Bridge	Lake	Infrequent High	27.0	340	–	7	5
		Frequent High	25.8	145	–	30	2
		Average	24.3	33	–	180	1.7
		Frequent Low	22.8	2.5	–	90	15
		Phase 1 Restriction	22.7	2.0	–	–	–
		Phase 2 Restriction	22.5	1.0	–	–	–
		Phase 3 Restriction	22.4	0.6	–	–	–
		Phase 4 Restriction	22.3	0.3	–	–	–
		Infrequent Low	21.9	0.0	–	7	100
St. Johns River 1.5 miles downstream of Lake Washington weir	Brevard	Frequent High	15.3	1450	Seasonally Flooded	–	–
		Average	12.7	240	Typically Saturated	–	–
		Frequent Low	11.3	28	Semipermanently Flooded	–	–
St. Johns River at SR 44 near DeLand	Volusia	Frequent High	1.9	4600	–	30	3
		Average	0.8	2050	–	180	1.5
		Frequent Low	0.3	1100	–	120	5
Taylor Creek 1.7 miles downstream of structure S-164		Frequent High	–	95	Seasonally Flooded	–	–
		Average	–	17	Typically Saturated	–	–
		Frequent Low	–	0.5	Semipermanently Flooded	–	–
St. Johns River at SR 50 near Christmas	Orange and Brevard	Frequent High	8.1	1950	–	30	2
		Average	5.9	580	–	180	1.5
		Frequent Low	4.2	140	–	120	5
		Infrequent Low	2.7	43	–	60	50
Wekiva River at the SR 46 Bridge	Seminole and Lake	Infrequent High	9.0	880	–	7	5
		Frequent High	8.0	410	–	30	2
		Average	7.6	240	–	180	1.7
		Frequent Low	7.2	200	–	90	3
		Phase 1 Restriction	7.0	190	–	–	–
		Phase 2 Restriction	6.9	180	–	–	–
		Phase 3 Restriction	6.7	160	–	–	–
		Phase 4 Restriction	6.5	150	–	–	–
		Infrequent Low	6.1	120	–	7	100

(3) The following minimum surface water flows are established for Blue Spring in Volusia County:

Time Period	Minimum Long Term Mean Flow
December 3, 2006 through March 31, 2009	133 cfs
April 1, 2009 through March 31, 2014	137 cfs
April 1, 2014 through March 31, 2019	142 cfs
April 1, 2019 through March 31, 2024	148 cfs
After March 31, 2024	157 cfs

(4) The following minimum surface water levels are established:

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(a) Apshawa North	Lake	Frequent High	85.0	83.9	Seasonally Flooded	–	–
		Average	83.3	82.2	Typically Saturated	–	–
		Frequent Low	81.3	80.2	Semipermanently Flooded	–	–
(b) Apshawa South	Lake	Frequent High	86.0	85.7	Seasonally Flooded	–	–
		Average	84.7	83.6	Typically Saturated	–	–
		Frequent Low	83.2	82.1	Semipermanently Flooded	–	–
(c) Argenta	Putnam	Frequent High	50.1	49.0	Seasonally Flooded	–	–
		Average	47.7	46.7	Typically Saturated	–	–
		Frequent Low	46.3	45.3	Semipermanently Flooded	–	–
(d) Ashby	Volusia	Frequent High	12.3	11.3	–	60	2
		Frequent Low	11.1	10.2	–	120	5
(e) Banana	Putnam	Frequent High	37.7	36.8	–	30	3
		Average	36.7	35.8	–	180	1.7
		Frequent Low	33.7	32.8	–	120	5
(f) Bell	Putnam	Frequent High	42.5	44.5	Temporarily Flooded	–	–
		Average	40.5	36.4	Typically Saturated	–	–
		Frequent Low	38.7	37.9	Semipermanently Flooded	–	–
(g) Big	Volusia	Frequent High	26.1	25.1	Seasonally Flooded	–	–
		Average	25.0	24.1	Typically Saturated	–	–
		Frequent Low	23.7	22.7	Semipermanently Flooded	–	–
(h) Bird Pond	Putnam	Frequent High	41.8	40.8	Seasonally Flooded	–	–
		Average	39.5	38.5	Typically Saturated	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
		Frequent High	38.1	37.1	Semipermanently Flooded	–	–
		Low					
(i) Blue Pond	Clay	Frequent High	174.1	173.1	Temporarily Flooded	–	–
		Average	173.3	172.3	Typically Saturated	–	–
		Frequent Low	171.7	170.7	Semipermanently Flooded	–	–
(j) Boggy Marsh	Lake	Frequent High	117.3	116.4	Seasonally Flooded	–	–
		Average	115.9	115.0	Typically Saturated	–	–
		Frequent Low	114.5	113.6	Semipermanently Flooded	–	–
(k) Bowers	Marion	Frequent High	57.1	56.1	Temporarily Flooded	–	–
		Average	54.0	53.1	Typically Saturated	–	–
		Frequent Low	52.7	51.7	Semipermanently Flooded	–	–
(l) Brantley	Seminole	Frequent High	46.3	45.3	Seasonally Flooded	–	–
		Average	45.6	44.6	Typically Saturated	–	–
		Frequent Low	44.1	43.1	Semipermanently Flooded	–	–
(m) Brooklyn	Clay	Frequent High	114.6	113.5	Temporarily Flooded	–	–
		Average	108.0	106.9	Typically Saturated	–	–
		Frequent Low	101.0	99.9	Semipermanently Flooded	–	–
(n) Broward	Putnam	Frequent High	40.0	39.1	Temporarily Flooded	–	–
		Average	38.2	35.8	Typically Saturated	–	–
		Frequent Low	36.5	35.6	Semipermanently Flooded	–	–
(o) Burkett	Orange	Frequent High	53.5	52.5	Seasonally Flooded	–	–
		Average	52.6	51.6	Typically Saturated	–	–
		Frequent Low	51.2	50.2	Semipermanently Flooded	–	–
(p) Charles	Marion	Frequent High	40.2	39.3	Seasonally Flooded	–	–
		Average	39.3	38.4	Typically Saturated	–	–
		Frequent Low	37.9	36.9	Semipermanently Flooded	–	–
(q) Cherry	Lake	Frequent High	96.0	94.9	Seasonally Flooded	–	–
		Average	94.9	93.8	Typically Saturated	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
		Frequent Low	93.4	92.4	Semipermanently Flooded	–	–
(r) Clear	Putnam	Frequent High	37.4	36.4	Temporarily Flooded	–	–
		Average	36.4	35.4	Typically Saturated	–	–
		Frequent Low	34.9	34.0	Semipermanently Flooded	–	–
(s) Colby	Volusia	Frequent High	27.6	26.6	–	30	3
		Frequent Low	22.9	21.8	–	120	3
(t) Como	Putnam	Frequent High	37.7	36.8	–	30	3
		Average	36.7	35.8	–	180	1.7
		Frequent Low	33.7	32.8	–	120	5
(u) Como, Little Lake	Putnam	Frequent High	37.7	36.8	–	30	3
		Average	34.6	33.7	–	180	1.7
		Frequent Low	32.6	31.7	–	120	5
(v) Coon Pond	Volusia	Frequent High	35.7	34.8	Seasonally Flooded	–	–
		Average	34.6	33.6	Typically Saturated	–	–
		Frequent Low	33.1	32.2	Semipermanently Flooded	–	–
(w) Cowpen	Putnam	Infrequent High	92.0	90.8		30	25
		Average	85.2	84.0		180	1.7
		Frequent Low	83.5	82.3		120	2.7
(x) Cow Pond	Volusia	Frequent High	40.5	39.5	Seasonally Flooded	–	–
		Average	39.8	38.8	Typically Saturated	–	–
		Frequent Low	37.6	36.6	Semipermanently Flooded	–	–
(y) Crystal/Baker	Putnam	Frequent High	35.5	34.6	Seasonally Flooded	–	–
		Average	33.9	33.0	Typically Saturated	–	–
		Frequent Low	33.0	32.1	Semipermanently Flooded	–	–
(z) Daugharty	Volusia	Frequent High	44.8	43.8	Temporarily Flooded	–	–
		Average	42.6	41.6	Typically Saturated	–	–
		Frequent Low	41.2	40.1	Semipermanently Flooded	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(aa) Davis	Volusia	Frequent High	36.2	35.2	Seasonally Flooded	–	–
		Average	35.4	34.4	Typically Saturated	–	–
		Frequent Low	34.0	33.0	Semipermanently Flooded	–	–
(bb) Deep	Putnam	Frequent High	35.0	34.1	Seasonally Flooded	–	–
		Average	33.1	32.2	Typically Saturated	–	–
		Frequent Low	32.2	31.3	Semipermanently Flooded	–	–
(cc) Dias	Volusia	Frequent High	34.6	33.5	Seasonally Flooded	–	–
		Average	33.5	33.0	Typically Saturated	–	–
		Frequent Low	32.2	31.6	Semipermanently Flooded	–	–
(dd) Disston	Flagler	Frequent High	13.8	12.8	Seasonally Flooded	–	–
		Average	13.2	12.3	Typically Saturated	–	–
		Frequent Low	12.5	11.5	Semipermanently Flooded	–	–
(ee) Dorr	Lake	Frequent High	43.5	42.5	Seasonally Flooded	–	–
		Average	43.1	42.1	Typically Saturated	–	–
		Frequent Low	42.1	41.0	Semipermanently Flooded	–	–
(ff) Dream Pond	Putnam	Frequent High	49.0	48.0	Seasonally Flooded	–	–
		Average	47.5	46.5	Typically Saturated	–	–
		Frequent Low	46.0	45.1	Semipermanently Flooded	–	–
(gg) Drudy	Volusia	Frequent High	42.1	41.0	Seasonally Flooded	–	–
		Average	40.6	39.5	Typically Saturated	–	–
		Frequent Low	39.1	38.1	Semipermanently Flooded	–	–
(hh) Echo	Putnam	Frequent High	38.8	37.9	Seasonally Flooded	–	–
		Average	36.7	35.7	Typically Saturated	–	–
		Frequent Low	35.2	34.3	Semipermanently Flooded	–	–
(ii) Emma	Lake	Frequent High	94.1	93.0	Seasonally Flooded	–	–
		Average	92.5	91.4	Typically Saturated	–	–
		Frequent Low	91.1	90.0	Semipermanently Flooded	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(jj) Emporia	Volusia	Frequent High	38.9	37.8	Seasonally Flooded	–	–
		Average	35.8	34.7	Typically Saturated	–	–
		Frequent Low	34.3	31.6	Semipermanently Flooded	–	–
(kk) Estella	Putnam	Frequent High	38.6	37.7	Seasonally Flooded	–	–
		Average	37.2	36.3	Typically Saturated	–	–
		Frequent Low	36.5	35.5	Semipermanently Flooded	–	–
(ll) Fox	Brevard	Frequent High	16.7	15.4	Temporarily Flooded	–	–
		Average	15.3	14.0	Typically Saturated	–	–
		Frequent Low	13.8	12.6	Semipermanently Flooded	–	–
(mm) Geneva	Clay	Frequent High	103.0	101.9	Seasonally Flooded	–	–
		Average	101.0	99.9	Typically Saturated	–	–
		Frequent Low	98.5	97.4	Semipermanently Flooded	–	–
(nn) Georges Lake	Putnam	Frequent High	98.4	97.4	Seasonally Flooded	–	–
		Average	97.8	96.9	Typically Saturated	–	–
		Frequent Low	97.0	96.1	Semipermanently Flooded	–	–
(oo) Gertie	Volusia	Frequent High	27.5	26.5	Temporarily Flooded	–	–
		Average	25.6	24.6	Typically Saturated	–	–
		Frequent Low	23.3	22.4	Semipermanently Flooded	–	–
(pp) Gore	Flagler	Frequent High	21.1	20.0	–	30	3
		Average	20.6	19.6	–	180	1.5
		Frequent Low	19.2	18.2	–	120	5
(qq) Grandin	Putnam	Frequent High	81.5	80.7	–	30	2
		Frequent Low	78.6	77.8	–	120	5
(rr) Halfmoon	Marion	Frequent High	49.7	48.6	Seasonally Flooded	–	–
		Average	47.9	46.7	Typically Saturated	–	–
		Frequent Low	46.5	45.3	Semipermanently Flooded	–	–
(ss) Helen	Volusia	Frequent High	46.1	45.0	Temporarily Flooded	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
		Average	44.2	43.2	Typically Saturated	–	–
		Frequent Low	43.6	42.6	Semipermanently Flooded	–	–
(tt) Hires	Volusia	Frequent High	41.0	40.0	Seasonally Flooded	–	–
		Average	39.5	38.5	Typically Saturated	–	–
		Frequent Low	38.0	37.0	Semipermanently Flooded	–	–
(uu) Hokey	Volusia	Frequent High	35.4	34.4	Seasonally Flooded	–	–
		Average	33.7	32.7	Typically Saturated	–	–
		Frequent Low	32.3	31.3	Semipermanently Flooded	–	–
(vv) Hopkins Prairie	Marion	Frequent High	25.8	24.5	Seasonally Flooded	–	–
		Average	23.4	22.1	Typically Saturated	–	–
		Frequent Low	22.0	20.7	Semipermanently Flooded	–	–
(ww) Howell	Putnam	Frequent High	34.5	33.5	Seasonally Flooded	–	–
		Average	33.6	32.7	Typically Saturated	–	–
		Frequent Low	31.8	30.9	Semipermanently Flooded	–	–
(xx) Howell	Seminole	Frequent High	53.7	52.7	Seasonally Flooded		
		Average	52.9	51.9	Typically Saturated		
		Frequent Low	51.5	50.5	Semipermanently Flooded		
(yy) Indian	Volusia	Frequent High	36.2	35.2		30	3
		Average	35.0	34.0		180	1.7
		Frequent Low	32.8	31.8		120	5
(zz) Irma	Orange	Frequent High	55.1	54.1	Seasonally Flooded	–	–
		Average	54.8	53.8	Typically Saturated	–	–
		Frequent Low	53.4	52.4	Semipermanently Flooded	–	–
(aaa) Kerr	Marion	Infrequent High	25.6	24.6		30	25
		Frequent High	23.3	22.3		14	2
		Average	21.7	20.7		180	1.7
		Frequent Low	20.4	19.4		120	5

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(bbb) Lizzie	Putnam	Frequent High	43.9	43.0	Seasonally Flooded	–	–
		Average	42.7	41.8	Typically Saturated	–	–
		Frequent Low	41.7	40.8	Semipermanently Flooded	–	–
(ccc) Louisa	Lake	Frequent High	96.5	95.6	Seasonally Flooded	–	–
		Average	95.4	94.5	Typically Saturated	–	–
		Frequent Low	94.0	93.0	Semipermanently Flooded	–	–
(ddd) Lower Lake Louise	Volusia	Frequent High	31.8	30.8	Seasonally Flooded	–	–
		Average	31.2	30.1	Typically Saturated	–	–
		Frequent Low	29.7	28.7	Semipermanently Flooded	–	–
(eee) Lucy	Lake	Frequent High	94.1	93.0	Seasonally Flooded	–	–
		Average	92.5	91.4	Typically Saturated	–	–
		Frequent Low	91.1	90.0	Semipermanently Flooded	–	–
(fff) Magnolia	Clay	Frequent High	124.7	123.6	Seasonally Flooded	–	–
		Average	124.2	123.1	Typically Saturated	–	–
		Frequent Low	121.4	120.3	Semipermanently Flooded	–	–
(ggg) Mall, Little Lake	Putnam	Frequent High	38.7	37.7	Seasonally Flooded	–	–
		Average	36.8	35.8	Typically Saturated	–	–
		Frequent Low	35.2	34.2	Semipermanently Flooded	–	–
(hhh) Margaret	Putnam	Frequent High	35.2	34.2	Seasonally Flooded	–	–
		Average	34.5	33.5	Typically Saturated	–	–
		Frequent Low	32.5	31.5	Semipermanently Flooded	–	–
(iii) Martha	Orange	Frequent High	53.5	52.5	Seasonally Flooded	–	–
		Average	52.6	51.6	Typically Saturated	–	–
		Frequent Low	51.2	50.2	Semipermanently Flooded	–	–
(jjj) Marvin	Putnam	Frequent High	38.6	37.6	Seasonally Flooded	–	–
		Average	37.3	36.4	Typically Saturated	–	–
		Frequent Low	36.3	35.3	Semipermanently Flooded	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(kkk) McGrady	Putnam	Frequent High	41.5	40.6	Seasonally Flooded	–	–
		Average	39.9	38.9	Typically Saturated	–	–
		Frequent Low	37.8	36.8	Semipermanently Flooded	–	–
(lll) McKasel	Putnam	Frequent High	36.7	35.7	Seasonally Flooded	–	–
		Average	35.5	34.6	Typically Saturated	–	–
		Frequent Low	34.1	33.1	Semipermanently Flooded	–	–
(mmm) Melrose	Putnam	Frequent High	104.7	103.6		30	3
		Average	104.2	103.1		180	1.7
		Frequent Low	103.7	102.6		120	10
(nnn) Mills	Seminole	Frequent High	42.5	41.1	Seasonally Flooded	–	–
		Average	41.4	40.3	Typically Saturated	–	–
		Frequent Low	39.9	38.9	Semipermanently Flooded	–	–
(ooo) Minneola	Lake	Frequent High	96.0	95.1	Seasonally Flooded	–	–
		Average	95.3	94.4	Typically Saturated	–	–
		Frequent Low	93.9	93.0	Semipermanently Flooded	–	–
(ppp) Monroe	Seminole and Volusia	Frequent High	2.8	1.9	–	30	2
		Average	1.2	0.3	–	180	1.5
		Frequent Low	0.5	-0.4	–	120	5
(qqq) Nettles/English	Putnam	Frequent High	44.3	43.3	Seasonally Flooded	–	–
		Average	42.7	41.9	Typically Saturated	–	–
		Frequent Low	41.7	40.7	Semipermanently Flooded	–	–
(rrr) Nicotoon	Marion	Frequent High	54.7	53.7	Seasonally Flooded	–	–
		Average	53.3	52.3	Typically Saturated	–	–
		Frequent Low	51.9	50.9	Semipermanently Flooded	–	–
(sss) Norris	Lake	Frequent High	29.7	28.7		30	1.7
		Frequent Low	27.7	26.7		120	7.6
						–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(ttt) North Como Park	Putnam	Frequent High	41.3	40.4	Seasonally Flooded	–	–
		Average	39.7	38.8	Typically Saturated	–	–
		Frequent Low	38.5	37.6	Semipermanently Flooded	–	–
(uuu) North Talmadge	Volusia	Frequent High	55.6	54.5	Seasonally Flooded	–	–
		Average	54.4	53.3	Typically Saturated	–	–
		Frequent Low	52.9	51.9	Semipermanently Flooded	–	–
(vvv) Omega	Putnam	Frequent High	57.4	56.3	Temporarily Flooded	–	–
		Average	56.1	55.0	Typically Saturated	–	–
		Frequent Low	54.0	52.9	Semipermanently Flooded	–	–
(www) Orio	Putnam	Frequent High	37.1	35.5	Seasonally Flooded	–	–
		Average	35.6	34.6	Typically Saturated	–	–
		Frequent Low	34.7	33.7	Semipermanently Flooded	–	–
(xxx) Pam	Putnam	Frequent High	39.3	38.2	Seasonally Flooded	–	–
		Average	37.5	36.4	Typically Saturated	–	–
		Frequent Low	36.1	35.0	Semipermanently Flooded	–	–
(yyy) Pearl	Orange	Frequent High	53.5	52.5	Seasonally Flooded	–	–
		Average	52.6	51.6	Typically Saturated	–	–
		Frequent Low	51.2	50.2	Semipermanently Flooded	–	–
(zzz) Pierson	Volusia	Frequent High	34.4	33.3	Seasonally Flooded	–	–
		Average	33.8	32.8	Typically Saturated	–	–
		Frequent Low	32.4	31.3	Semipermanently Flooded	–	–
(aaaa) Pine Island	Lake	Frequent High	107.7	106.6	Seasonally Flooded	–	–
		Average	106.8	105.7	Typically Saturated	–	–
		Frequent Low	105.4	104.3	Semipermanently Flooded	–	–
(bbbb) Prevatt	Orange	Frequent High	56.0	54.9	Seasonally Flooded	–	–
		Average	53.0	52.0	Typically Saturated	–	–
		Frequent Low	50.9	49.9	Semipermanently Flooded	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(cccc) Prior	Putnam	Frequent High	42.3	41.3	Seasonally Flooded	–	–
		Average	40.0	39.0	Typically Saturated	–	–
		Frequent Low	39.0	38.0	Semipermanently Flooded	–	–
(dddd) Purdom	Volusia	Frequent High	36.3	35.3		30	2
		Average	35.4	34.3		180	1.7
		Frequent Low	34.4	33.3		120	5
(eeee) Sand	Putnam	Frequent High	40.9	39.4	Seasonally Flooded	–	–
		Average	39.0	38.0	Typically Saturated	–	–
		Frequent Low	36.6	35.7	Semipermanently Flooded	–	–
(ffff) Sand Hill	Clay	Frequent High	132.0	130.9	Seasonally Flooded	–	–
		Average	131.6	130.6	Typically Saturated	–	–
		Frequent Low	129.5	128.4	Semipermanently Flooded	–	–
(gggg) Savannah	Volusia	Frequent High	31.1	30.2	Seasonally Flooded	–	–
		Average	29.5	28.4	Typically Saturated	–	–
		Frequent Low	28.0	27.0	Semipermanently Flooded	–	–
(hhhh) Scoggin	Volusia	Frequent High	35.0	34.0	Seasonally Flooded	–	–
		Average	34.1	33.1	Typically Saturated	–	–
		Frequent Low	32.7	31.7	Semipermanently Flooded	–	–
(iiii) Shaw	Volusia	Frequent High	36.7	35.7	–	30	3
		Average	35.4	34.4	–	180	1.7
		Frequent Low	33.7	32.7	–	120	3
(jjjj) Silver	Putnam	Frequent High	36.8	35.8	Seasonally Flooded	–	–
		Average	35.1	34.1	Typically Saturated	–	–
		Frequent Low	33.7	32.7	Semipermanently Flooded	–	–
(kkkk) Smith	Marion	Frequent High	54.6	53.6	Temporarily Flooded	–	–
		Average	51.4	50.4	Typically Saturated	–	–
		Frequent Low	50.0	49.0	Semipermanently Flooded	–	–

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
(llll) South	Brevard	Frequent High	16.7	15.5	Temporarily Flooded	–	–
		Average	15.3	14.0	Typically Saturated	–	–
		Frequent Low	13.8	12.6	Semipermanently Flooded	–	–
(mmmm) South Como Park	Putnam	Frequent High	38.1	37.2	Seasonally Flooded	–	–
		Average	36.7	35.8	Typically Saturated	–	–
		Frequent Low	35.3	34.4	Semipermanently Flooded	–	–
(nnnn) Star	Putnam	Frequent High	77.5	76.5	Seasonally Flooded	–	–
		Average	75.4	74.4	Typically Saturated	–	–
		Frequent Low	74.0	73.0	Semipermanently Flooded	–	–
(oooo) Stella	Putnam	Frequent High	39.4	38.4	Seasonally Flooded	–	–
		Average	38.6	37.6	Typically Saturated	–	–
		Frequent Low	37.2	36.1	Semipermanently Flooded	–	–
(pppp) Sunset	Lake	Frequent High	85.9	84.9	Temporarily Flooded	–	–
		Average	83.5	82.4	Typically Saturated	–	–
		Frequent Low	81.0	79.9	Semipermanently Flooded	–	–
(qqqq) Swan	Putnam	Frequent High	93.0	91.9	Temporarily Flooded	–	–
		Average	90.3	89.2	Typically Saturated	–	–
(rrrr) Sylvan	Seminole	Frequent High	40.4	39.5	Seasonally Flooded	–	–
		Average	38.9	38.0	Typically Saturated	–	–
		Frequent Low	37.5	36.5	Semipermanently Flooded	–	–
(ssss) Tarhoe	Putnam	Frequent High	36.6	35.7		30	3
		Average	35.1	34.2		180	1.7
		Frequent Low	33.0	32.0		120	5
(tttt) Three Island Lakes	Volusia	Frequent High	23.7	22.7	–	30	5
		Frequent Low	19.4	18.4	–	120	10
(uuuu) Trone	Putnam	Frequent High	37.1	36.2	–	30	3
		Average	35.4	34.5	–	180	1.7

System Name	County	Minimum Level	Level (ft NGVD)	Level (ft NAVD)	Hydroperiod Category	Duration (days)	Return Interval (years)
		Frequent Low	32.8	31.9	–	120	5
(vvvv) Trout	Volusia	Frequent High	23.3	22.3	Seasonally Flooded	–	–
		Average	20.9	20.0	Typically Saturated	–	–
		Frequent Low	17.7	16.8	Semipermanently Flooded	–	–
(wwww) Tuscawilla	Alachua	Frequent High	77.6	76.4	Seasonally Flooded	–	–
		Average	74.6	73.4	Typically Saturated	–	–
		Frequent Low	73.2	72.0	Semipermanently Flooded	–	–
(xxxx) Upper Lake Louise	Volusia	Frequent High	35.3	34.4	Seasonally Flooded	–	–
		Average	34.6	33.6	Typically Saturated	–	–
		Frequent Low	33.2	32.2	Semipermanently Flooded	–	–
(yyyy) Washington	Brevard	Frequent High	15.6	14.2	Seasonally Flooded	–	–
		Average	14.2	12.8	Typically Saturated	–	–
		Frequent Low	12.8	11.4	Semipermanently Flooded	–	–
(zzzz) Wauberg	Alachua	Frequent High	67.4	66.4	Seasonally Flooded	–	–
		Average	67.1	66.1	Typically Saturated	–	–
		Frequent Low	65.6	64.7	Semipermanently Flooded	–	–
(aaaaa) Weir	Marion	Frequent High	57.2	56.2	Seasonally Flooded	–	–
		Average	56.4	55.4	Typically Saturated	–	–
		Frequent Low	54.9	53.9	Semipermanently Flooded	–	–
(bbbbb) Winnemisett	Volusia	Frequent High	59.5	58.5	Seasonally Flooded	–	–
		Average	57.8	56.8	Typically Saturated	–	–
		Frequent Low	56.0	55.0	Semipermanently Flooded	–	–
(ccccc) Winona	Volusia	Frequent High	36.1	35.1	Seasonally Flooded	–	–
		Average	33.5	32.5	Typically Saturated	–	–
		Frequent Low	32.0	31.0	Semipermanently Flooded	–	–

(5)(a) The minimum flow for Alexander Springs in Lake County is 95.7 cubic feet per second (CFS).

(b) The minimum flow for Alexander Springs is a mean annual flow based on the adjusted flow times-series data (1983 – 2014) at USGS gage 00291896. This adjusted flow-time series data from 1983 to 2014, effective 6-29-17, is incorporated by reference and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-08325, and upon request from the St. Johns River Water

Management District, 4049 Reid Street, Palatka, FL 32177-2529.

(6) The following minimum levels are established for Blue Cypress Water Management Area (BCWMA):

(a) The minimum average level, calculated as the long term mean of BCWMA water levels, is 24.0 feet NGVD (22.5 feet NAVD). Water levels shall be at or above this level at least 75% of time over the long term.

(b) The minimum frequent low is 23.0 feet NGVD (21.5 feet NAVD). The daily BCWMA water level shall not fall to this level or below more often than once every 2.5 years over the long term.

(c) The minimum infrequent low is 22.5 feet NGVD (21.0 feet NAVD). The BCWMA water level shall not fall to this level or below for 60 continuous days more frequently than once every 10 years over the long term.

(7)(a) The minimum spring flow for De Leon Springs in Volusia County is 25.6 Cubic feet per second (CFS).

(b) The minimum spring flow for De Leon Springs is a mean annual flow based on the baseline flow-time series data from 1965 to 2015 under the 2010-pumping condition (Baseline Flow), which data is incorporated by reference and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-07783, and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, FL 32177-2529. The minimum spring flow for De Leon Springs is equal to the Baseline Flow as defined above.

(8)(a) The minimum flow for Gemini Springs in Volusia County is 9.3 cubic feet per second (CFS).

(b) The minimum spring flow for Gemini Springs is a mean annual flow based on the adjusted flow times-series data (1995 – 2015) at USGS gage 00410494. This adjusted flow-time series data from 1995 to 2015, effective 6-29-17, is incorporated by reference and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-08326, and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, FL 32177-2529.

(9)(a) The minimum flow for Silver Glen Springs in Marion/Lake Counties is 99.6 cubic feet per second (CFS).

(b) The minimum flow for Silver Glen Springs is a mean annual flow based on the adjusted flow times-series data (1984 – 2015) at USGS gage 02236160. This adjusted flow-time series data from 1984 to 2015, effective 6-29-17, is incorporated by reference and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-08327, and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, FL 32177-2529.

(10) The following minimum surface water flows and levels are established for Silver Springs in Marion County, as measured at the USGS 02239501 gaging station:

Minimum Flows	Flow (cfs)	Level (NAVD)	Duration (days)	Return Interval (years)
Frequent high	828	40.0	30	5
Average	638	38.2	180	1.7
Frequent low	572	37.0	120	3

The minimum surface water flows were developed to ensure that the associated surface water levels will be met. The two factors to be weighed in the status assessment of this MFL are (1) whether the surface water levels have been met; and, (2) the extent to which the surface water flow has been reduced due to groundwater withdrawals.

(11) Ground or surface water withdrawals or surface water works must not cause the infrequent high or frequent high surface water flows and levels to occur less frequently or for at lesser duration than stated. Ground or surface water withdrawals or surface water works must not cause the minimum average, frequent low, or infrequent low surface water levels and flows to occur more frequently or for longer durations than stated.

(12) Determining Ongoing Status – The purpose of this subsection is to provide the approach to determine whether the flow(s) and/or level(s) of a specific MFL water body is/are below or projected to fall below the rule-specified MFL criteria (along with the associated evaluations necessary to make such a determination). This status assessment is independent from and not a determination of consumptive use permit compliance or environmental resource permit compliance. Permit compliance is a regulatory function that is not considered to be within the scope of this subsection.

(a) A screening level analysis, which incorporates change in rainfall trend and uncertainty in MFLs, will be performed approximately every five years to monitor the status of an adopted MFL, as well as when permit applications are considered that may impact an MFL. If the screening level analysis shows that the MFL is being met based on the rainfall-adjusted flows or levels, then no further actions are required beyond continued monitoring. If the analysis shows that the MFL is not being met, or is trending toward not being met based on the rainfall-adjusted flows and levels, the District will conduct a cause and effect analysis to

independently evaluate the potential impacts of various stressors on the MFL water body being assessed. Factors other than consumptive uses of water (e.g., long-term drought) can cause the flow or level of a surface watercourse, aquifer, surface water, or spring to drop below an adopted minimum flow or level. Factors to be considered in the determination of causation include, but are not limited to:

1. Rainfall or other climatic variables,
2. Consumptive use,
3. Land use changes or development,
4. Surface water drainage,
5. Geology/hydromorphology (e.g., sinkhole formation),
6. Water levels/flows in other appropriate water resources (e.g., nearby wells, lakes, streams, wetlands); and,
7. Ecological assessment information.

(b) The types of tools used in the causation analysis include, but are not limited to:

1. Double-mass analyses,
2. Rainfall/flow statistical analysis or flow regression,
3. Stage/duration/frequency analysis,
4. Modeling (regional, groundwater, ecological or water budget models); and,
5. Ecological tools.

Based on the causation analysis, the District will assess existing MFL criteria and any associated recovery and prevention strategies to determine the effectiveness of the strategies in recovering from or preventing significant harm to the water body.

(c) This subsection shall not apply within the Central Florida Water Initiative Area, as defined in paragraph 373.0465(2)(a), F.S. (2016).

Rulemaking Authority 373.044, 373.113 FS. Law Implemented 373.042, 373.0421, 373.103, 373.415 FS. History–New 9-16-92, Amended 8-17-94, 6-8-95, 1-17-96, 8-20-96, 10-20-96, 11-4-98, 6-27-00, 2-13-01, 3-19-02, 5-12-03, 11-10-03, 1-12-04, 2-1-06, 12-3-06, 5-10-07, 5-24-07, 1-11-10, 8-22-13, 4-3-14, 11-25-14, 12-31-14, 1-31-16 (4)(aaa), 1-31-16 (4)(ssss), 2-1-17 (4)(w), 2-1-17 (6), (8), 6-27-17 (7), 6-29-17 (5), (8), (9).

CHAPTER 40C-41
SURFACE WATER MANAGEMENT BASIN CRITERIA

40C-41.023 Basin Boundaries.

(1) The Upper St. Johns River Hydrologic Basin is that area generally depicted in Figure 41-1 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," (6-1-18), Appendix B which is hereby incorporated by reference available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06353] and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, FL 32177-2529.

(2) The Oklawaha River Hydrologic Basin is that area generally depicted in Figure 41-1 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

(3) The Wekiva River Hydrologic Basin is that area generally depicted in Figures 41-1 and 41-6 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

(4) The Wekiva Recharge Protection Basin is that area generally depicted in Figure 41-6 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

(5) The Econlockhatchee River Hydrologic Basin is that area generally depicted in Figure 41-1 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

(6) The Tomoka River and Spruce Creek Hydrologic Basins are the areas generally depicted in Figure 41-1 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

(7) The Sensitive Karst Areas Basin is that area generally depicted in Figures 41-2, 41-3, and 41-4 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

(8) The Lake Apopka Hydrologic Basin is that area generally depicted in Figure 41-5 and defined in "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," Appendix B.

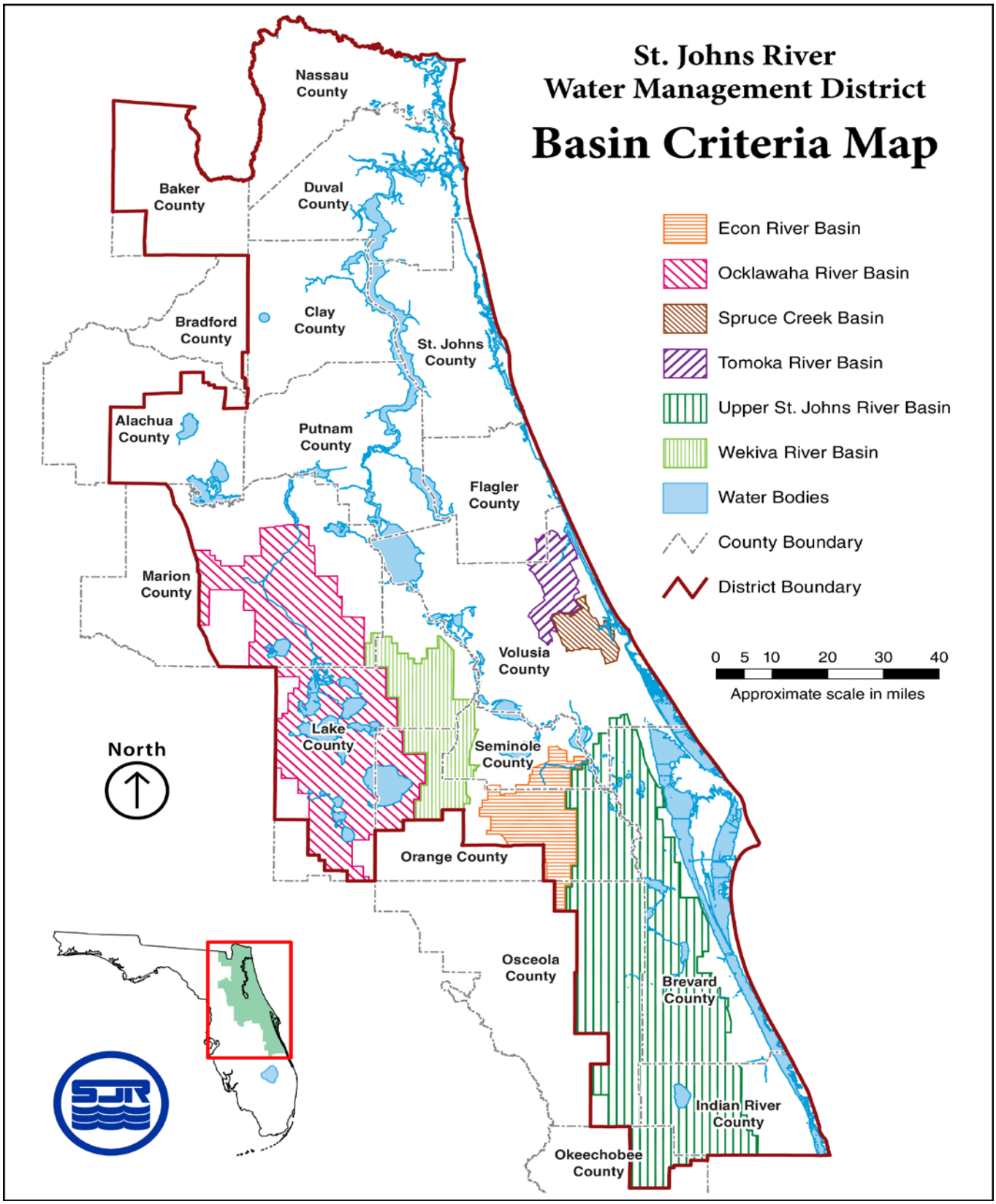


Figure 41-1 Basin Criteria Map

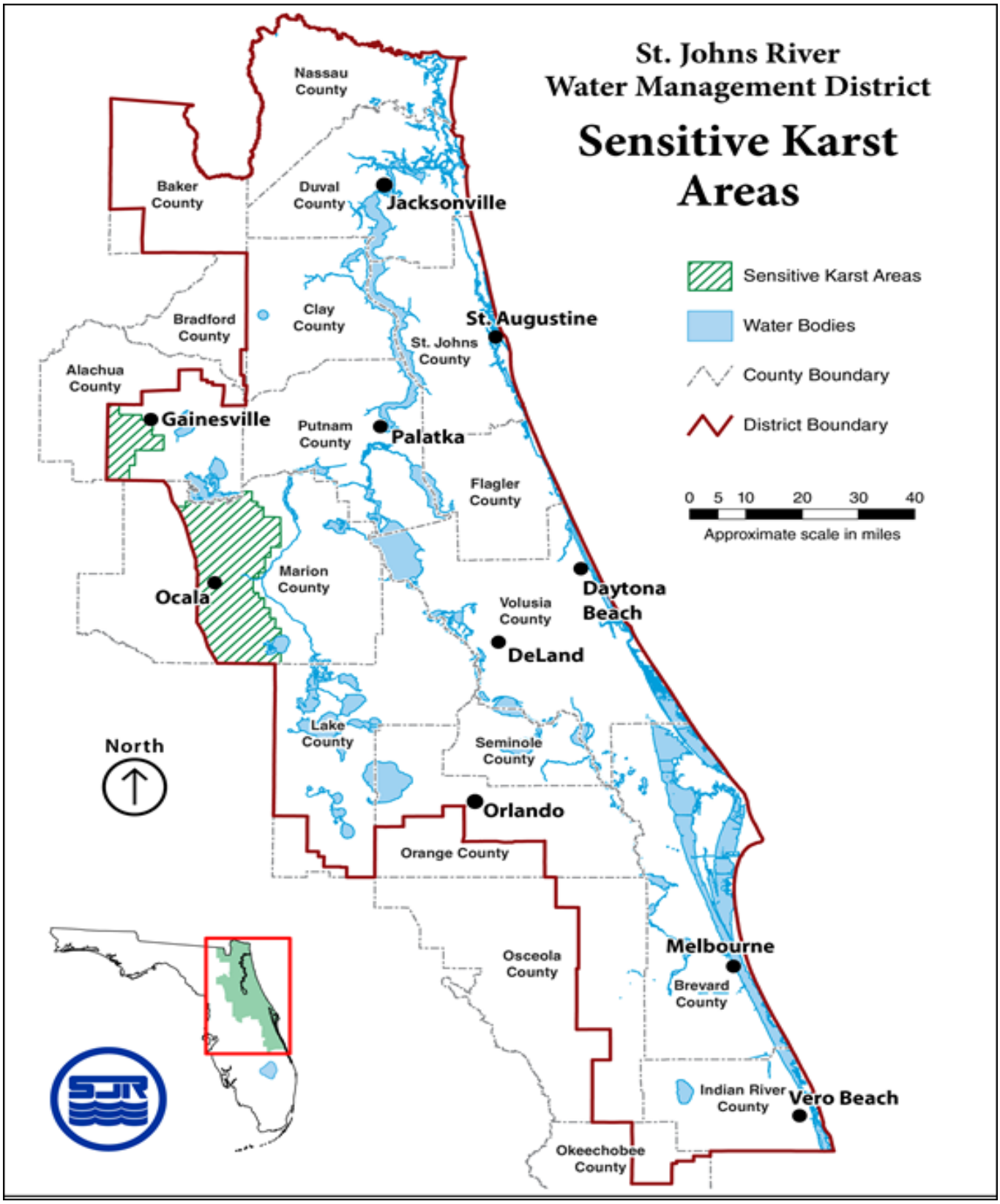


Figure 41-2 Sensitive Karst Areas in the St. Johns River Water Management District

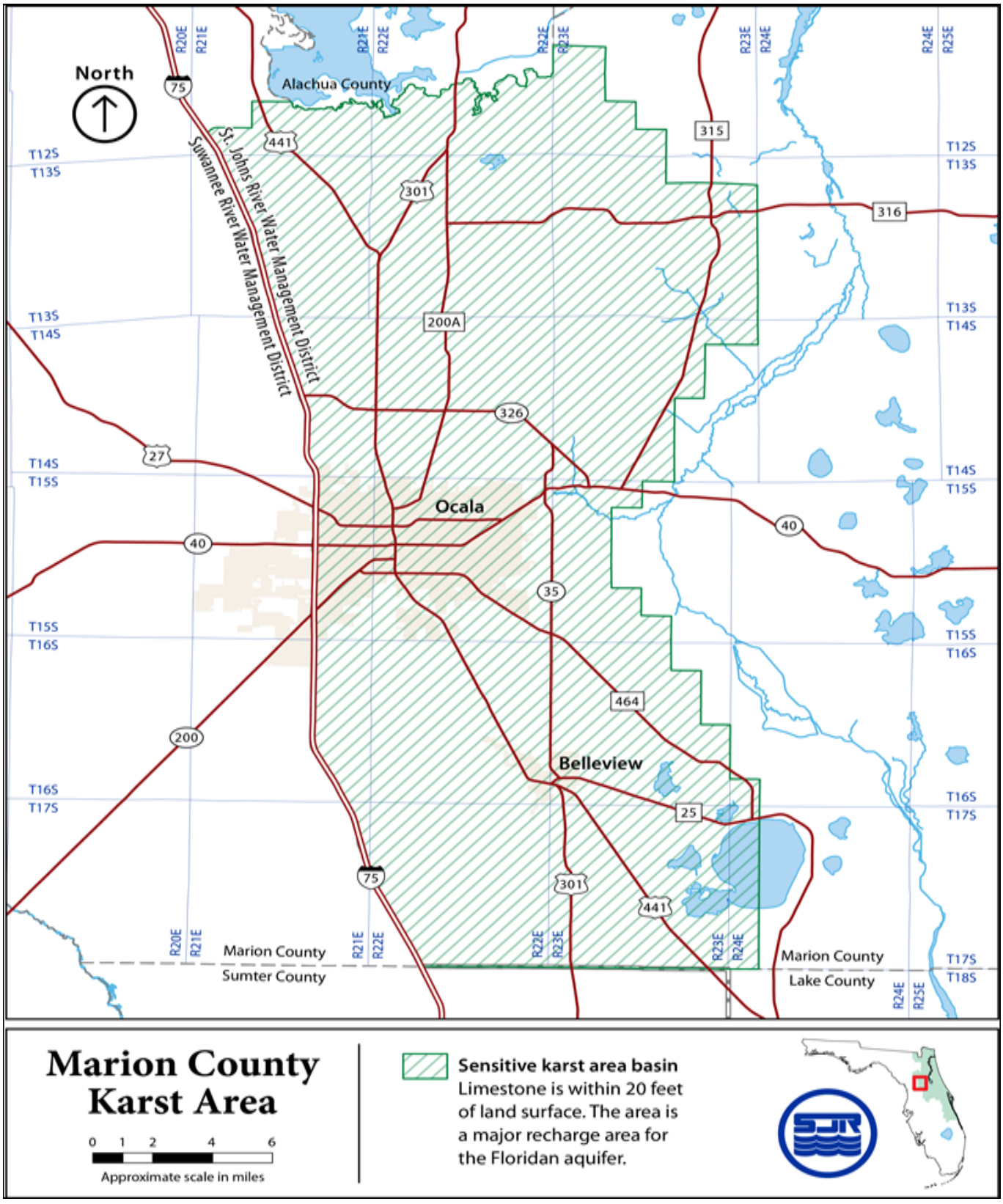


Figure 41-3 Alachua County Karst Area

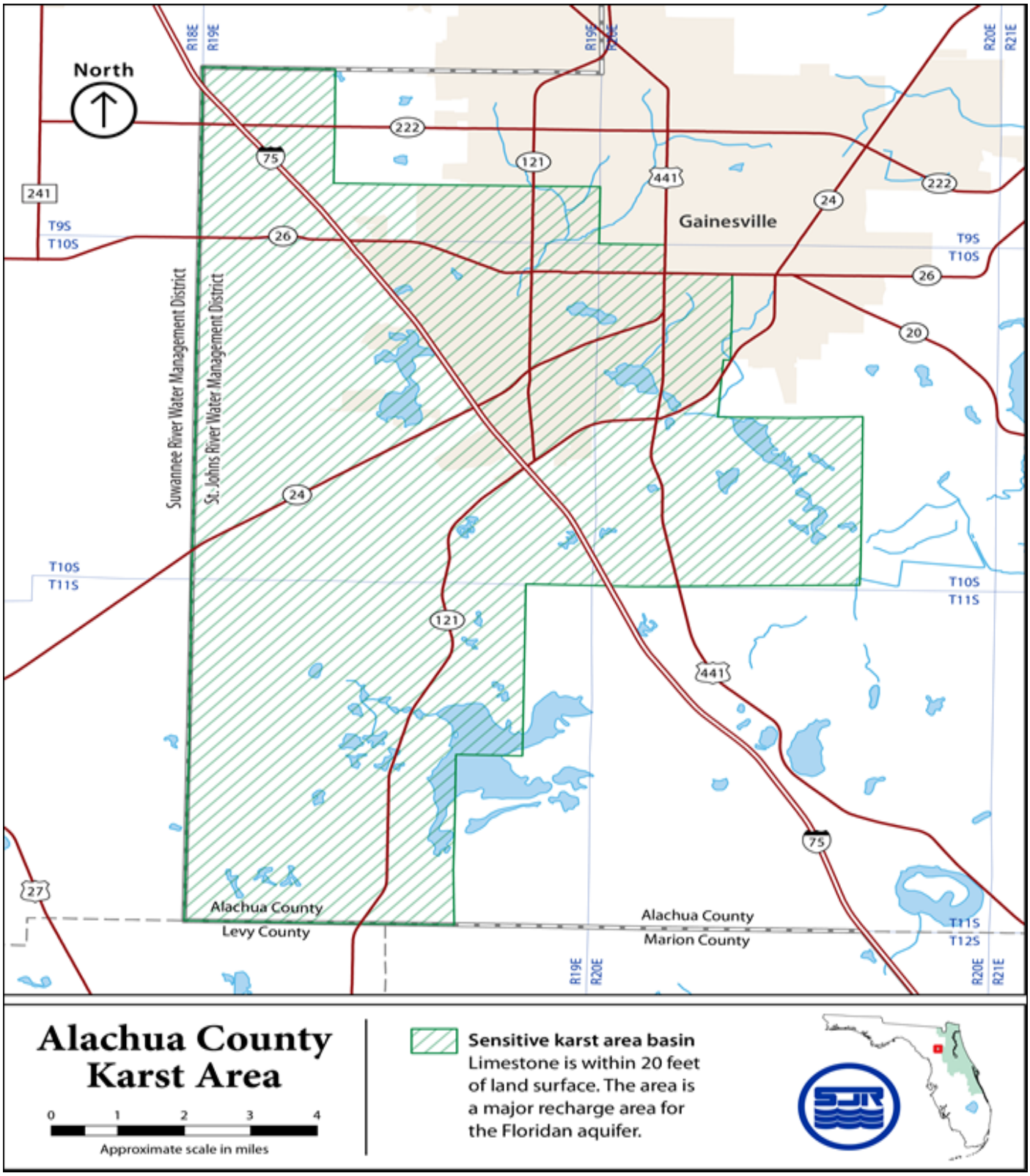


Figure 41-4 Marion County Karst Area

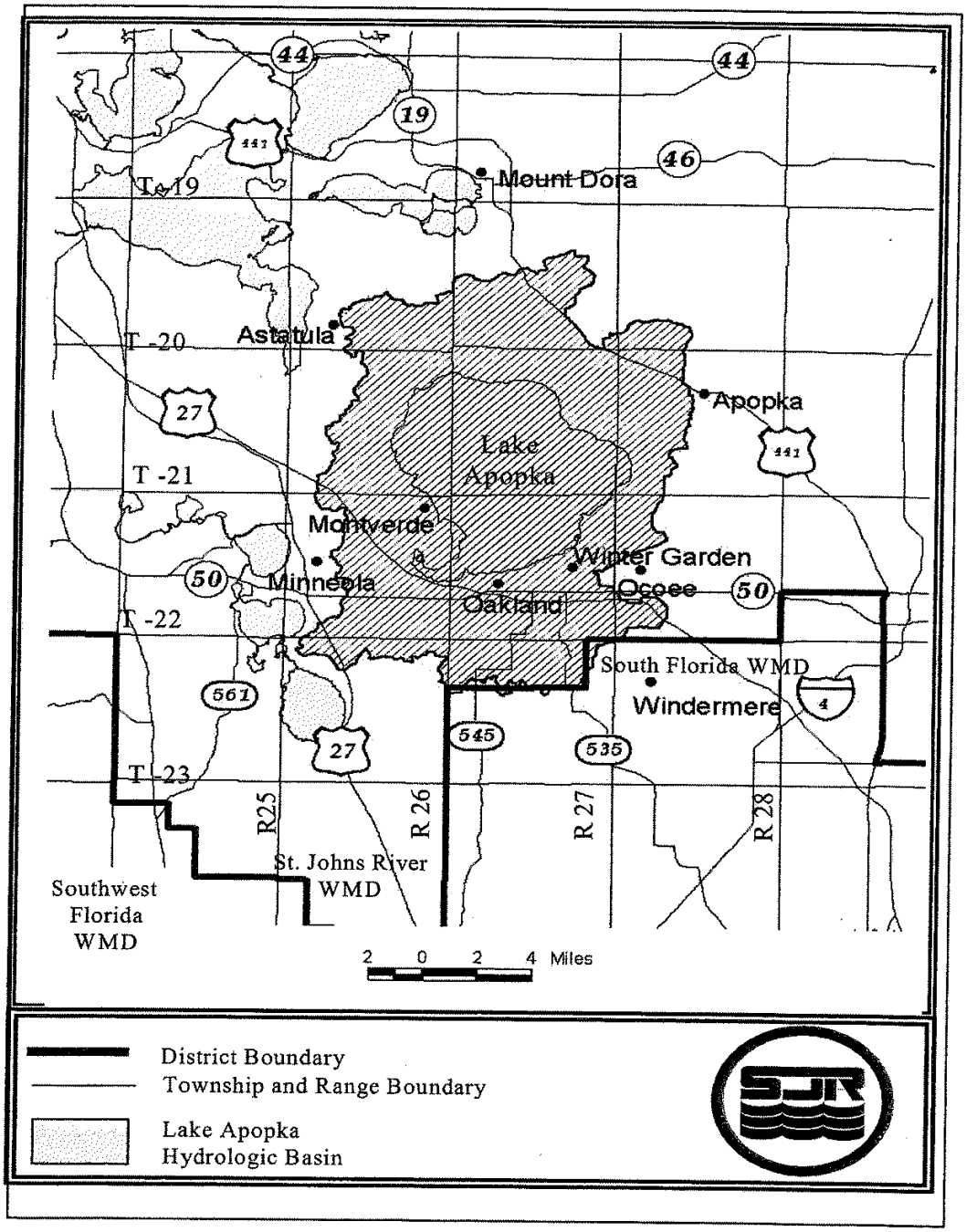
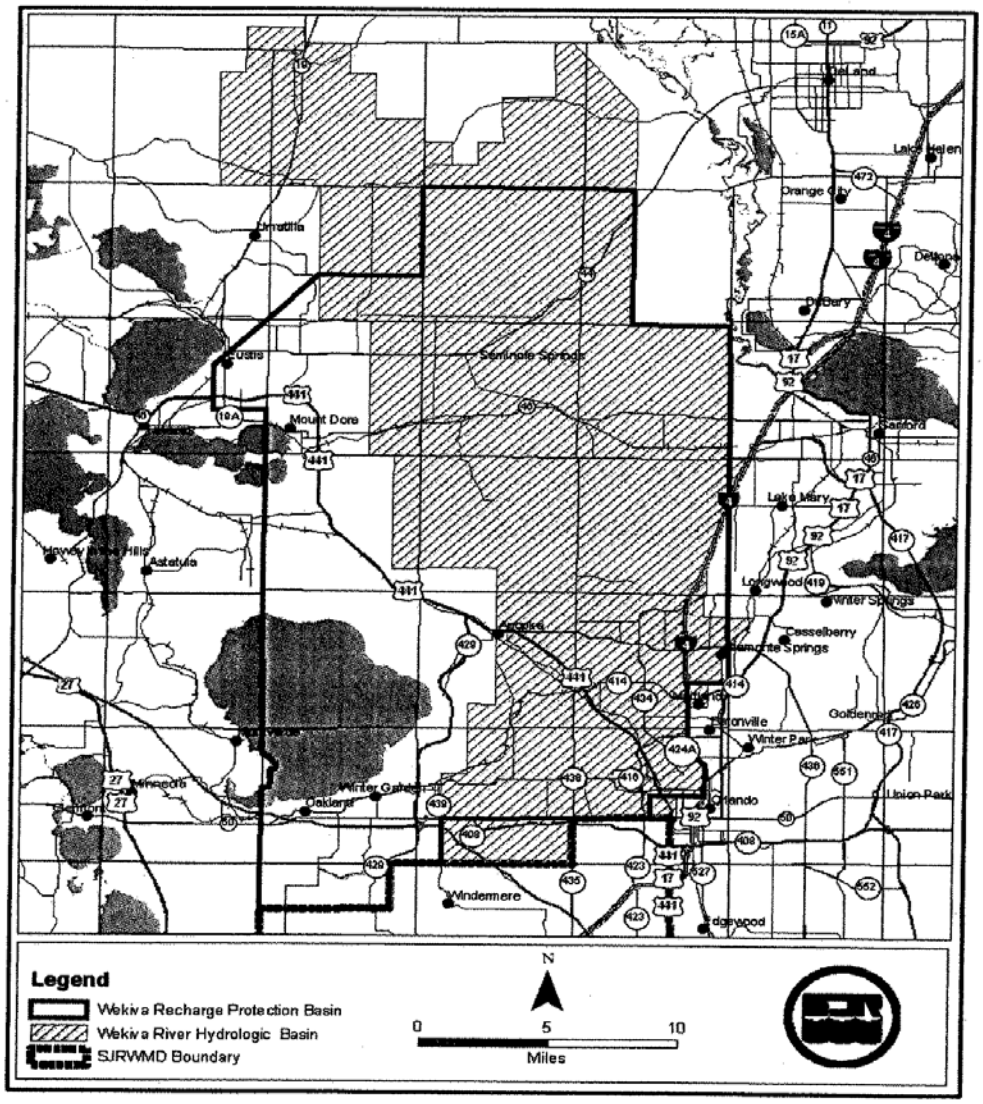


Figure 41-5 Lake Apopka Drainage Basin

Figure 41-6 Wekiva River Hydrologic Basin and Wekiva Recharge Protection Basin



Rulemaking Authority 369.318, 373.044, 373.113, 373.4131, 373.414, 373.415, 373.418 FS. Law Implemented 369.318, 373.413, 373.4131, 373.414, 373.415, 373.416, 373.418, 373.426, 373.461 FS. History–New 12-7-83, Amended 5-17-87, 4-3-91, 9-25-91, 11-25-98, 3-7-03, 12-3-06, 10-1-13, 6-1-18.

40C-41.043 Application of Chapter.

(1) All projects located within the Upper St. Johns River Hydrologic Basin, the Oklawaha River Hydrologic Basin, the Wekiva River Hydrologic Basin, the Wekiva Recharge Protection Basin, the Econlockhatchee River Hydrologic Basin, the Tomoka River Hydrologic Basin, the Spruce Creek Hydrologic Basin, the Sensitive Karst Areas Basin, or the Lake Apopka Hydrologic Basin, requiring permits pursuant to paragraphs 62-330.020(2)(a), (b), (c), (d), (e), (f), (g), (h) or (j) or section 1.2.2, "Environmental Resource Permit Applicant's Handbook Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C., shall be constructed, operated, maintained, altered, abandoned and removed in accordance with the standards and criteria specified in rule 40C-41.063, and rules 62-330.301 and 62-330.302, F.A.C., unless specifically exempted in rule 40C-41.051, F.A.C., or otherwise provided in subsection 40C-41.043(3) or 40C-41.043(4), F.A.C. The most restrictive criteria will be applicable unless the applicant provides reasonable assurance that the purposes and intent of this chapter and chapter 62-330, F.A.C., will be fulfilled using alternate criteria.

(2) Stormwater management systems requiring permits pursuant to rule 62-330.020, F.A.C., that will be located within the Lake Apopka Hydrologic Basin or will discharge water to Lake Apopka or its tributaries, shall be constructed, operated, maintained, altered, abandoned and removed in accordance with the standards and criteria specified in rules 62-330.301 and 62-330.302, F.A.C. and subsection 40C-41.063(8), F.A.C.

(3) Agricultural surface water management systems requiring permits pursuant to Rule 40C-44.041, F.A.C., that will be located within the Lake Apopka Hydrologic Basin or will discharge water to Lake Apopka or its tributaries, shall be constructed, operated, maintained, altered, abandoned and removed in accordance with the standards and criteria specified in Rule 40C-44.301, F.A.C., and subsection 40C-41.063(8), F.A.C.

(4) Agricultural surface water management systems requiring permits pursuant to Rule 40C-44.041, F.A.C., that will be located within the Wekiva Recharge Protection Basin, shall be constructed, operated, maintained, altered, abandoned and removed in accordance with the standards and criteria specified in rule 40C-44.301, F.A.C. and paragraph 40C-41.063(3)(a), F.A.C.

(5) The Governing Board hereby incorporates by reference Part VI (sections 13.0-13.8.3), "Basin Criteria" of the document entitled "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District," (6-1-18), available at [https://www.flrules.org/Gateway/reference.asp?No=Ref-06352], and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka Florida 32177-2529.

Rulemaking Authority 369.318, 373.044, 373.113, 373.4131, 373.414, 373.415, 373.418 FS. Law Implemented 369.318, 373.413, 373.4131, 373.414, 373.415, 373.416, 373.418, 373.426, 373.461 FS. History–New 12-7-83, Amended 5-17-87, 8-30-88, 4-3-91, 9-25-91, 10-3-95, 11-25-98, 3-7-03, 12-3-06, 10-1-13, 6-1-18.

40C-41.063 Conditions for Issuance of Permits.

(1) Within the Upper St. Johns River Hydrologic Basin the following criteria are established:

(a) Storm Frequency – For purposes of design and evaluation of system performance, both the 10-year and the 25-year design storm frequencies must be met.

(b) Runoff Volume – For design purposes, those systems utilizing pumped discharge, the total post-development discharge runoff volumes shall not exceed pre-development discharge runoff volumes for the four-day period beginning the third day of the four-day design storm event.

(c) Interbasin Diversion –

1. A system may not result in an increase in the amount of water being diverted from the Upper St. Johns River Hydrologic Basin into coastal receiving waters.

2. It is an objective of the District to, where practical, curtail diversions of water from the Upper St. Johns River

Hydrologic Basin into coastal receiving waters.

(2) Within the Oklawaha River Hydrologic Basin the following criteria are established:

(a) Storm Frequency – For purposes of design and evaluation of system performance, both the 10-year and the 25-year design storm frequencies must be met.

(b) Runoff Volume – For design purposes, those systems utilizing pumped discharges, the total post-development discharge runoff volumes shall not exceed pre-development discharge runoff volumes for the four-day period beginning the third day of the four-day design storm event.

(3) Within the Wekiva River Hydrologic Basin or the Wekiva Recharge Protection Basin, the following standards and criteria are established:

(a) Recharge Standard – Applicants required to obtain a permit pursuant to chapter 62-330 or 40C-44, F.A.C., for a surface water management system located within the Wekiva Recharge Protection Basin shall demonstrate that the system provides for retention storage of three inches of runoff from all impervious areas proposed to be constructed on soils defined as Type "A" Soils as defined by the Natural Resources Conservation Service (NRCS) Soil Survey in the following NRCS publications: Soil Survey of Lake County Area, Florida (1975); Soil Survey of Orange County Area, Florida (1989) and Soil Survey of Seminole County Area, Florida (1990), which are incorporated by reference in paragraph 40C-4.091(3)(a), F.A.C. For purposes of this rule, areas with Type "A" Soils shall be considered "Most Effective Recharge Areas." Section 13.8.1 "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District", as incorporated by reference in subsection 40C-41.043(5), F.A.C., contains a list of Type "A" soils. The system shall be capable of infiltrating this storage volume through natural percolation into the surrounding soils within 72-hours. Off-site areas or regional systems may be utilized to satisfy this requirement. As an alternative, applicants may demonstrate that the post-development recharge capacity is equal to or greater than the pre-development recharge capacity. Pre-development recharge shall be based upon the land uses in place as of 12-3-06. Applicants may utilize existing permitted municipal master stormwater systems, in lieu of onsite retention, to demonstrate that post-development recharge is equal to or greater than pre-development recharge. Also, applicants may submit additional geotechnical information to establish whether or not a site contains Type "A" soils.

(b) Storage Standard – Within the Wekiva River Hydrologic Basin, a system may not cause a net reduction in flood storage within the 100-year floodplain of a stream or other water course which has a drainage area of more than one square mile and which has a direct hydrologic connection to Little Wekiva River, Wekiva River, or Black Water Creek.

(c) Standards for Erosion and Sediment Control and Water Quality – Within the Wekiva River Hydrologic Basin, a Water Quality Protection Zone shall extend one half mile from the Wekiva River, Little Wekiva River north of State Road 436, Black Water Creek, Rock Springs Run, Seminole Creek, and Sulphur Run, and shall also extend one quarter mile from any wetland abutting an Outstanding Florida Water.

1. An erosion and sediment control plan must be submitted as part of the permit application for a surface water management system which:

a. Serves a project which is located wholly or partially within this zone; or

b. Serves a project with a total land area equal to or exceeding 120-acres.

2. The applicant proposing such a system must give reasonable assurance in the erosion and sediment control plan that during construction or alteration of the system (including revegetation and stabilization), erosion will be minimized and sediment will be retained on-site. The plan must be in conformance with the erosion and sediment control principles set forth in Section 13.8.2, "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District", as incorporated by reference in subsection 40C-41.043(5), F.A.C., and must contain the information set forth in Section 13.8.3, "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District", as incorporated by reference in subsection 40C-41.043(5), F.A.C.

3. For a project which will be located wholly or partially within 100-feet of an Outstanding Florida Water or within 100 feet of any wetland abutting such a water, an applicant must provide reasonable assurance that the construction or alteration of the system will not cause sedimentation within these wetlands or waters and that filtration of runoff will occur prior to discharge into these wetlands and waters. It is presumed that this standard will be met if, in addition to

implementation of the plan required in subparagraph 1., any one of the following criteria is met:

a. A minimum 100-foot width of undisturbed vegetation must be retained landward of the Outstanding Florida Water or the abutting wetland, whichever is more landward. During construction or alteration, runoff (including turbid discharges from dewatering activities) must be allowed to sheetflow across this undisturbed vegetation as the natural topography allows. Concentrated or channelized runoff from construction or alteration areas must be dispersed before flowing across this undisturbed vegetation. Construction or alteration of limited scope necessary for outfall structures may occur within this area of undisturbed vegetation.

b. Construction of the following perimeter controls at all outfall points to the Outstanding Florida Water or its abutting wetlands must be completed prior to the start of any construction or alteration of the remainder of the system:

(I) Stormwater discharge facility meeting the requirements of "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in paragraph 40C-4.091(1)(a), and subsection 40C-42.091(1), F.A.C.

(II) Sedimentation trap or basin located immediately upstream of the stormwater discharge facility referred to above; and,

(III) Spreader swale to reduce the velocity of discharge from the stormwater facility to non-erosive rates before discharge to wetlands abutting the Outstanding Florida Water.

These perimeter controls must be maintained routinely and operated throughout construction or alteration of the entire system. A minimum 25-foot width of undisturbed vegetation must be retained landward of the Outstanding Florida Water or the abutting wetland, whichever is more landward. Construction or alteration of limited scope necessary for outfall structures may occur within this area of undisturbed vegetation.

c. During construction or alteration, no direct discharge to the Outstanding Florida Water or its abutting wetland may occur during the 10-year 24-hour storm event or due to discharge from dewatering activities. Any on-site storage required to satisfy this criteria must be available (recovered) within 14 days following the rainfall event. A minimum 25-foot width of undisturbed vegetation must be retained landward of the Outstanding Florida Water or the abutting wetland, whichever is more landward. Construction or alteration of limited scope necessary for outfall structures may occur within this area of undisturbed vegetation.

In determining whether construction or alteration is of "limited scope necessary", pursuant to any of the three presumptive criteria above, the District shall require that the area of disturbance be minimized and that the length of time between initial disturbance and stabilization of the area also be minimized.

(d) Standard for Limiting Drawdown – Within the Wekiva River Hydrologic Basin, a Water Quantity Protection Zone shall extend 300 feet landward of the landward extent of Black Water Swamp and the wetlands abutting the Wekiva River, Little Wekiva River, Rock Springs Run, Black Water Creek, Sulphur Run, Seminole Creek, Lake Norris, and Lake Dorr. As part of providing reasonable assurance that the standard set forth in paragraph 62-330.301(1)(d), F.A.C., is met, where any part of a system located within this zone will cause a drawdown, the applicant must provide reasonable assurance that construction, alteration, operation, or maintenance of the system will not cause ground water table drawdowns which would adversely affect the functions provided by the referenced wetlands.

The applicant shall provide an analysis which includes a determination of the magnitude and areal extent of any drawdowns, based on site-specific hydrogeologic data collected by the applicant, as well as a description of the referenced wetlands, the functions provided by these wetlands, and the predicted impacts to these functions.

It is presumed that the part of this standard regarding drawdown effects will be met if the following criteria is met:

A ground water table drawdown must not occur within the Water Quantity Protection Zone.

(e) Standard for Riparian Wildlife Habitat Within the Wekiva River Hydrologic Basin.

1. The applicant must provide reasonable assurance that the construction or alteration of a system will not adversely affect the abundance, food sources, or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species provided by the following designated Riparian Habitat Protection Zone:

a. The wetlands abutting the Wekiva River, Little Wekiva River downstream of Maitland Boulevard, Rock Springs Run, Black Water Creek, Sulphur Run, or Seminole Creek;

b. The uplands which are within 50-feet landward of the landward extent of the wetlands above.

c. The uplands which are within 550-feet landward of the stream's edge as defined, for the purpose of this

subsection, as the waterward extent of the forested wetlands abutting the Wekiva River, Little Wekiva River downstream of the northernmost crossing of the Little Wekiva River with S.R. 434, Rock Springs Run, Black Water Creek, Sulphur Run or Seminole Creek. In the absence of forested wetlands abutting these streams, the stream's edge shall be defined, for the purpose of this subsection, as the mean annual surface water elevation of the stream; however, if hydrologic records are unavailable, the landward extent of the herbaceous emergent wetland vegetation growing in these streams shall be considered to be the stream's edge.

2. Any of the following activities within the Riparian Habitat Protection Zone is presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and any land clearing which results in the creation of any system. (Activities not listed above do not receive a presumption of no adverse effect.)

3. The presumption in subparagraph 2. shall not apply to any activity which promotes a more endemic state, where the land in the zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with the endemic land cover.

(4) Local Government Notification for Wekiva River Protection Area – The District shall not issue a conceptual approval or individual, permit for a proposed surface water management system located wholly or partially within the Wekiva River Protection Area, as defined in section 369.303(9), F.S., until the appropriate local government has provided written notification that the proposed activity is consistent with the local comprehensive plan and is in compliance with any land development regulation in effect in the area where the development will take place. The applicant proposing such a system must submit to the District form no. 40C-41.063(4), entitled "Local Government Notification" (10-1-13), after it has been completed and executed by the local government. This form is hereby incorporated by reference and is available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-02657] and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529. Permit applications for systems within the Wekiva River Protection Area shall be processed by the District staff pursuant to the time frames established in section 120.60, F.S., and any District rule regarding permit processing, except that any agency action to approve or approve with conditions shall not occur until the Local Government Notification has been received by the District.

(5) Within the Econlockhatchee River Hydrologic Basin the following standards and criteria are established:

(a) Design Storm Criteria. A system must meet the peak discharge requirement for the following 24-hour duration design storm events:

1. Mean annual storm (2.3 year return period).

2. 25-year return period. System outlet control structures can be designed to meet the control peak discharge rates for both design storms by use of a two-stage weir, v-notch weir, multiple orifices, or other similar structures.

(b) Floodplain Storage Criteria. A system may not cause a net reduction in flood storage within the 100-year floodplain of the Econlockhatchee River or any of its tributaries, at a location with an upstream drainage area of 1 square mile or greater, except for structures elevated on pilings or traversing works that comply with the conveyance requirements in subsection 3.3.2, "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District", as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C.

(c) Riparian Wildlife Habitat Standard.

1. The applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a system within the following designated Riparian Habitat Protection Zone will not adversely affect the abundance, diversity, food sources or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species:

a. The wetlands contiguous with the Econlockhatchee River and the following tributaries: Little Econlockhatchee River north of University Boulevard, Mills Creek, Silcox Branch (branch of Mills Creek), Mills Branch (branch of Mills Creek), Long Branch, Hart Branch, Cowpen Branch, Green Branch, Turkey Creek, Little Creek, and Fourmile Creek;

b. The uplands which are within 50-feet landward of the landward extent of the wetlands above; and

c. The uplands which are within 550-feet landward of the stream's edge as defined, for the purpose of this

subsection, as the waterward extent of the forested wetlands abutting the Econlockhatchee River and the above named tributaries. In the absence of forested wetlands abutting these streams, the stream's edge shall be defined, for the purpose of this subsection, as the mean annual surface water elevation of the stream; however, if hydrologic records are unavailable, the landward extent of the herbaceous emergent wetland vegetation growing in these streams shall be considered to be the stream's edge.

d. The following portions of streams typically lack a defined water's edge, and subparagraph c. shall not apply:

(I) Mills Creek upstream of the intersection of the creek with the Fort Christmas Road in Section 2, Township 22 South, Range 32 East;

(II) Long Branch upstream of the intersections of the creek with SR 520;

(III) Hart Branch upstream of the intersection of the creek and the Old Railroad Grade in Section 18, Township 23 South, Range 32 East;

(IV) Cowpen Branch upstream of the southernmost bifurcation of the creek in Section 20, Township 23 South, Range 32 East;

(V) Green Branch upstream of the intersection of the creek with the north-south section line between Section 29 and 30, Township 23 South, Range 32 East;

(VI) Turkey Creek including Turkey Creek Bay upstream of the intersection of the creek with the Weewahootee Road in Section 5, Township 24 South, Range 32 East;

(VII) Little Creek upstream of the intersection of the creek with the north-south section line between Sections 22 and 23, Township 24 South, Range 32 East;

(VIII) Fourmile Creek including Bee Tree Swamp upstream of a point along the creek exactly halfway between section lines at the south end of Section 21 and the north end of Section 33 within Section 28, Township 24 South, Range 32 East; and,

(IX) All of the Econlockhatchee River Swamp (a portion of the Econlockhatchee River).

2. Any of the following activities within the Riparian Habitat Protection Zone are presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and any land clearing which results in the creation of any system. (activities not listed above do not receive a presumption of no adverse effect.)

3. The presumption in subparagraph 2. shall not apply to any activity which promotes a more endemic state, where the land in the zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with the endemic land cover.

4. Applicants seeking to develop within the Riparian Habitat Protection Zone shall be given the opportunity to demonstrate that the particular development for which permitting is being sought will not have an adverse effect on the functions provided by the zone to aquatic or wetland dependent species. The functions provided by the zone are dependent on many factors. When assessing the value of the zone to aquatic and wetland dependent species, factors which the District will consider include: vegetative land cover, hydrologic regime, topography, soils, and land uses, existing within and adjacent to the zone; and range, habitat, and food source needs of aquatic and wetland dependent species, as well as sightings, tracks, or other such empirical evidence of use.

5. The standard of subparagraph 40C-41.063(5)(c)1., F.A.C., may be met by demonstrating that the overall merits of the proposed plan of development, including the preservation, creation or enhancement of viable wildlife habitat, provide a degree of resource protection to these types of fish and wildlife which offsets adverse effects that the system may have on the abundance, diversity, food sources, or habitat of aquatic or wetland dependent species provided by the zone. Mitigation plans will be considered on a case-by-case basis upon detailed site specific analyses. The goal of this analysis shall be the determination of the value of the proposed mitigation plan to aquatic and wetland dependent species with particular attention to threatened or endangered species. Mitigation plans should include: the information set forth in subsection 10.3.3, "Environmental Resource Permit Applicant's Handbook, Volume I (General and Environmental)", implemented pursuant to paragraph 373.4131(2)(a), F.S. (2012), for the uplands and wetlands within the zone and within other areas to be preserved, created or enhanced as mitigation for impacts within the zone; as well as other pertinent information, including land use, and the proximity of the site to publicly owned land dedicated to conservation.

Implementation of this paragraph contemplates that the proximity of development to the river and tributaries named herein and activities permitted in the zone may vary from place to place in support of a functional resource protection plan. Furthermore, some reasonable use of the land within the protection zone can be allowed under paragraph 40C-41.063(5)(c), F.A.C.

6. Roads or other traversing works which cross the zone have the potential to fragment the zone and adversely affect the habitat value of the zone to aquatic and wetland dependent species. To minimize adverse effects to the zone, applicants for permits to construct traversing works in the zone must first demonstrate the need for the traversing works to provide for regional transportation, regional utility services, or reasonable property access, in addition to meeting the requirement of subparagraph 40C-41.063(5)(c)1., F.A.C., above. Traversing works must also be designed to meet all requirements of the district rules related to water quality and quantity. Permittees responsible for traversing works shall be required to be responsible for maintaining the traversing works clean and free from trash and debris to the greatest extent practical.

(6) Within the Tomoka River Hydrologic Basin or the Spruce Creek Hydrologic Basin the following standards and criteria are established:

(a) Recharge Standard. For projects or portions of projects within the Most Effective Recharge Area, three inches of runoff from the directly connected impervious areas in the Most Effective Recharge Areas, as defined in subsection 13.5.1, "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District", as incorporated by reference in subsection 40C-41.043(5), F.A.C., must be retained within the Most Effective Recharge Area. As an alternative, applicants may demonstrate that the post-development recharge capacity is equal to or greater than the pre-development recharge capacity.

(b) Floodplain Storage Criteria. A system may not cause a net reduction in flood storage within the 100-year floodplain of the Tomoka River, Spruce Creek, or any of their tributaries except for structures elevated on pilings or traversing works that comply with conveyance requirements in subsection 3.3.2, "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C.

(c) Stormwater Management Standard. Construction of new stormwater management systems must be in accordance with the design and performance standards of "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C. However, systems which serve drainage areas in excess of 10-acres cannot use detention with filtration treatment as the sole stormwater treatment methodology. Additionally, when retention systems are not feasible due to limited percolation capacity, wet detention treatment or other treatment demonstrated to be equivalent to retention or wet detention, in accordance with "Environmental Resource Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C., must be used.

(d) Riparian Wildlife Habitat Standard.

1. The applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a system within the following designated Riparian Habitat Protection Zone will not adversely affect the abundance, diversity, food sources or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species:

a. The wetlands and uplands which are within 50-feet landward of the landward extent of the wetlands which abut Spruce Creek north of Pioneer Trail to the FEC railroad, and the Tomoka River north of I-4 to US 1 and the following tributaries:

(I) Spruce Creek east of the western section line of Section 35, Township 16 South, Range 32 East, Volusia County, Florida;

(II) Spruce Creek east of the power line easement in Section 27, Township 16 South, Range 32 East, Volusia County, Florida;

(III) Spruce Creek west of SR 415 and south of the northern section line of Section 23, Township 16 South, Range 32 East, Volusia County, Florida;

(IV) The Little Tomoka River north of SR 40 and south of the western section line of Section 22, Range 31 East,

Township 14 South, Flagler County;

(V) Priest Branch east of the power line easement in Section 6, Township 15 South, Range 32 East, Volusia County, Florida; and,

b. The uplands which are within 550-feet landward of the stream's edge of the following portions of the streams. The stream's edge is defined, for the purpose of this subsection, as the waterward extent of the wetlands abutting the stream:

(I) Spruce Creek north of the southern section line of Section 25, Range 32 East, Township 16 South, Volusia County, Florida;

(II) Tomoka River north of the confluence of the Tomoka River and Priest Branch; and,

c. The uplands which are within 320-feet landward of the stream's edge of the following portions of the streams. The stream's edge is defined, for the purpose of this subsection, as the waterward extent of the wetlands abutting the stream:

Spruce Creek east of I-95 and west of the FEC railroad; and,

d. The uplands that are within 275-feet landward of the edge of the following streams:

(I) Spruce Creek south of the southern section line of Section 25, Range 32 East, Township 16 South, Volusia County, Florida

(II) Spruce Creek east of the western section line of Section 35, Township 16 South, Range 32 East, Volusia County, Florida;

(III) Spruce Creek east of the power line easement in Section 27, Township 16 South, Range 32 East, Volusia County, Florida;

(IV) Spruce Creek west of SR 415 and south of the northern section line of Section 23, Township 16 South, Range 32 East, Volusia County, Florida;

(V) The Tomoka River south of the confluence of the Tomoka River and Priest Branch in Section 36, Range 31 East, Township 14 South, Volusia County, Florida;

(VI) The Little Tomoka River north of SR 40 and south of the western section line of Section 22, Range 31 East, Township 14 South, Flagler County, Florida; and,

(VII) Priest Branch east of the power line easement in Section 6, Township 15 South, Range 32 East, Volusia County, Florida.

2. Any of the following activities within the Riparian Habitat Protection Zone are presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the Zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and any land clearing which results in the creation of any system. (Activities not listed above do not receive a presumption of no adverse effect.)

3. The presumption in subparagraph 2. shall not apply to any activity which promotes a more endemic state, where the land in the Zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with the endemic land cover.

4. The standard of subparagraph 1. may be met by demonstrating that the overall merits of the proposed plan of development, including mitigation as described in section 10.0, "Environmental Resource Permit Applicant's Handbook, Volume I (General and Environmental)", implemented pursuant to Section 373.4131(2)(a), F.S. (2012), provide a degree of resource protection to these types of fish and wildlife which offsets adverse effects of the proposed system on the uplands and wetlands within the Zone. Some reasonable use of the land within the Protection Zone can be allowed under this section.

5. Roads or other traversing works which cross the Zone have the potential to fragment the Zone and adversely affect the habitat value of the Zone to aquatic and wetland dependent species. To minimize adverse effects to the Zone, applicants for permits to construct traversing works in the Zone must first demonstrate the need for the traversing works to provide for regional transportation, regional utility services, or reasonable property access, in addition to meeting the requirement of subparagraph 1., above. Traversing works must also be designed to meet all requirements of the district rules related to water quality and quantity.

(7) Within the Sensitive Karst Areas Basin, stormwater management systems shall be designed to assure adequate

treatment (pursuant to Sections 13.6 through 13.6.3, “Environmental Resource Permit Applicant’s Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District” as incorporated by reference in subsection 40C-41.043(5), F.A.C.) of the stormwater before it enters the Floridan Aquifer, and to preclude the formation of solution pipe sinkholes in the stormwater system. Many different stormwater management system designs will achieve these goals, therefore the District does not require any specific system design. However, to assure protection of the Floridan Aquifer, the District does require certain design features. The individual site characteristics may affect what design features will be required. However, for all projects in sensitive karst areas, the following minimum design features are required:

(a) A minimum of three feet of unconsolidated soil material between the surface of the limestone bedrock and the bottom and sides of the stormwater basin. Excavation and backfill of suitable material may be made to meet this criteria;

(b) Stormwater basin depth should be as shallow as possible with a horizontal bottom (no deep spots);

(c) Maximum stormwater basin depth of 10-feet; and,

(d) Fully vegetated basin side slopes and bottoms. The District recommends that Saint Augustine or Bermuda grass be used for this purpose.

(e) The above requirements represent the minimum requirements for stormwater management system design in sensitive karst areas. However, depending on the potential for contamination to the Floridan Aquifer, more stringent requirements may apply for certain projects (e.g., industrial and some commercial sites). Examples for more stringent design features include:

1. More than three feet of material between the limestone bedrock surface and the bottom and sides of the stormwater basin;
2. Basin liners – clay or geotextile;
3. Sediment sumps at stormwater inlets;
4. Off-line treatment;
5. Special stormwater system design;
6. Ground water monitoring, and
7. Paint/solvent and water separators.

(8) Any surface water management system that requires a permit pursuant to Chapters 62-330 or 40C-44, F.A.C., and that will be located within the Lake Apopka Hydrologic Basin or will discharge water to Lake Apopka or its tributaries, must comply with the requirements of Section 13.7, “Environmental Resource Permit Applicant’s Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District” as incorporated by reference in subsection 40C-41.043(5), F.A.C.

Rulemaking Authority 369.318, 373.044, 373.113, 373.4131, 373.414, 373.415, 373.418 FS. Law Implemented 369.318, 373.413, 373.4131, 373.414, 373.415, 373.416, 373.418, 373.426, 373.461 FS. History–New 12-7-83, Amended 5-17-87, 8-30-88, 4-3-91, 9-25-91, 7-14-92, 10-3-95, 11-25-98, 10-11-01, 3-7-03, 2-10-05, 12-3-06, 10-1-13, 6-1-18.

CHAPTER 40C-44
ENVIRONMENTAL RESOURCE PERMITS:
REGULATION OF AGRICULTURAL SURFACE WATER MANAGEMENT SYSTEMS

40C-44.011 Scope.

(1) An individual environmental resource permit under this chapter will be required for the maintenance and operation of certain existing agricultural surface water management systems as defined herein, and the construction of certain new agricultural surface water management systems.

(2) Agricultural operations which are required to obtain an environmental resource permit pursuant to Chapter 62-330, F.A.C., shall satisfy the requirements of the District in terms of the quality of water discharged from the system, by implementing the performance standards and water quality practices described in this chapter.

Rulemaking Authority 373.044, 373.113, 373.171, 373.4131, 373.418 FS. Law Implemented 373.413, 373.4131, 373.416 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 10-1-13.

40C-44.021 Definitions.

(1) “Agriculture,” for the purposes of this chapter, means the commercial production of crops, animals or animal products, or farm commodities including but not limited to vegetables, citrus and other fruits, grain, forage, sod, livestock, poultry, and foliage plants. Agriculture also includes horticulture and floriculture.

(2) “Agricultural Operation” means a contiguous farm, grove, ranch, nursery or similar entity owned or controlled by one or more persons, engaged in, or proposing to engage in, the practice of agriculture.

(3) “Associated Wastewater” means the flow of water which directly results from agricultural activities such as irrigation, soil flooding for pest control or soil preservation, freeze protection or pre-storm event drainage and is mixed or conveyed with stormwater in the surface water management system.

(4) “Conservation Plan” means a document, which describes a system of management practices to control and reduce soil erosion and sediment loss, and improve the quality of discharged water for a specific parcel of property, and which has been either:

(a) Prepared by the U.S. Department of Agriculture Soil Conservation Service (SCS) in conjunction with a local Soil and Water Conservation District Board, organized pursuant to chapter 582, F.S., which includes and applies the appropriate management practices consistent with the SCS Field Office Technical Guide – Section IV and the Best Management Practices Selector, incorporated by reference in Rule 40C-44.091, F.A.C., and which includes the following elements when appropriate for the proposed land use:

1. Reduction of the volume of water discharged off-site;

2. Water Table Control in Open Channels;

3. Irrigation Land Leveling;

4. Irrigation Water Management;

5. Nutrient Management Plan;

6. Pesticide Management Plan;

7. Harvesting the runoff from the agricultural site, using reservoir or canal storage already existing, proposed as part of the plan or otherwise required by permit, for uses such as freeze protection, soil flooding for pest control or soil preservation, or irrigation needs; and

8. Control of soil erosion.

(b) Prepared by a private consultant, who has professional expertise in the fields of hydrology, water pollution control, irrigation design and soil conservation, according to standards, specifications and guidelines developed by SCS. The plan must include and apply the appropriate management practices consistent with the SCS Field Office Technical Guide – Section IV and the Best Management Practices Selector, incorporated by reference in rule 40C-44.091, F.A.C., and include the following elements when appropriate for the proposed land use:

1. Reduction of the volume of water discharged off-site;

2. Water Table Control in Open Channels;

3. Irrigation Land Leveling;

4. Irrigation Water Management;

5. Nutrient Management Plan;

6. Pesticide Management Plan;

7. Appropriate harvesting of the annual stormwater runoff from the agricultural site for uses such as freeze protection, soil flooding for pest control or soil preservation, or irrigation needs;

8. Control of soil erosion; and

9. Reduction of suspended solids loading at points of discharge off-site.

(5) “Engineer” means a Professional Engineer registered in Florida, or other person exempted pursuant to the provisions of chapter 471, F.S., who is competent in the fields of hydrology and water pollution control.

(6) “Existing agricultural surface water management system” means a system which was constructed or implemented on or before the effective date of this chapter.

(7) “Hayland” means a tract of land used for forage production, which has been planted with desirable forage plant species.

(8) “Improved Pasture” means a tract of land used for livestock grazing, which has been planted with desirable forage plant species.

(9) “Littoral zone” means, in reference to stormwater management systems, that portion of a wet detention pond which is designed to contain rooted aquatic plants.

(10) “NAVD” means North American vertical datum.

(11) “Permanent Pool” means that portion of a wet detention pond, which normally holds water, between the pond bottom and control elevation, excluding any water volume claimed as treatment volume.

(12) “Stormwater” means the water which results from a rainfall event.

(13) “Surface Water Management System” or “System” means a stormwater management system, dam, impoundment, reservoir, appurtenant work, or works, or any combinations thereof. The terms “surface water management” or “system” include dredged or filled areas.

(14) “Treatment” means any method, technique, process or management practice which changes the physical, chemical, or biological character of water and thereby reduces its potential for polluting waters of the state.

(15) “Wet detention” for the purposes of this chapter, means the collection and temporary storage of water in a normally wet impoundment in such a manner as to provide for treatment through physical, chemical, and biological processes with subsequent gradual release of the water.

Rulemaking Authority 373.044, 373.113, 373.171, 373.418 FS. Law Implemented 373.413, 373.416 FS. History–New 8-11-91, Amended 10-20-92, 7-4-93, 10-3-95, 10-1-13, 6-1-18.

40C-44.031 Implementation.

(1) This chapter shall become effective on 8-11-91.

(2) Permits and consent orders which authorize operation of agricultural operations, issued by the Department of Environmental Regulation, or pending on June 1, 1991, pursuant to the provisions of former chapter 17-6, F.A.C., renumbered as chapters 62-660 and 62-670, F.A.C., shall remain valid after 8-11-91, subject to all limiting conditions contained therein, until final District action on a timely filed permit application made pursuant to this chapter. Ninety days prior to the expiration date of the permit or consent order, an application for the modification of a permit issued pursuant to chapter 40C-4, F.A.C., and prior to June 1, 1988, or for a general or individual permit, as appropriate, pursuant to this chapter, must be submitted to the District.

(3) Permits and consent orders which authorize operation of agricultural operations, issued by the District or executed by all parties to the consent order by 8-11-91, pursuant to the provisions of former chapter 17-6, F.A.C., renumbered as chapters 62-660 and 62-670, F.A.C., and pursuant to subparagraph 62-101.040(12)(a)3., F.A.C., and the Operating Agreement Concerning Stormwater Discharge Regulation and Dredge and Fill Regulation between the St. Johns River Water Management District and Department of Environmental Regulation dated January 4, 1988, shall remain valid after 8-11-91, subject to all limiting conditions therein, until final District action on a timely filed permit application made pursuant to this chapter. Ninety days prior to the expiration date of the permit or consent order, an application for the modification of a permit issued pursuant to chapter 40C-4, F.A.C., and prior to June 1, 1988, for a general or individual permit, as appropriate, pursuant to this chapter must be submitted to the District.

(4) Any permit application received prior to 8-11-91, will be processed and evaluated pursuant to the provisions of the chapters and Operating Agreement referenced in subsection (2) above.

Rulemaking Authority 373.044, 373.113, 373.171, 373.429 FS. Law Implemented 373.416 FS. History–New 8-11-91, Amended 10-20-92, 11-11-03.

40C-44.041 Permits Required.

(1) Unless expressly exempt by section 373.406, F.S. or rule 62-330.051 or 40C-44.051, F.A.C., a permit is required under this chapter for the maintenance and operation of existing agricultural surface water management systems which serve an agricultural operation as described in paragraph (a) or (b), below.

(a) An individual environmental resource permit is required for the maintenance and operation of existing agricultural surface water management systems which incorporate pumped discharges from stationary or portable facilities as part of the surface water management system and which have pumps with a capacity, either individually or cumulatively, of 10,000 gallons per minute (GPM) or greater. The pump operator or person in control of the pump is required to obtain the maintenance and operation permit.

(b) Case by case designation. Notwithstanding any other provision of this section, the District shall require that an agricultural operation, including pumped or gravity-drained systems, obtain an individual environmental resource permit for an agricultural system pursuant to this chapter or modification of a permit issued pursuant to chapter 62-330, F.A.C., if it causes or contributes to a violation of state water quality standards within waters of the state. In determining whether an individual permit is required under these circumstances, the District will consider the following information:

1. Water quality monitoring data collected by the District or other agency;

2. The size of the agricultural operation and the amount of stormwater and associated wastewater reaching waters of the state, relative to the size and nature of the immediate drainage basin;

3. The means of conveyance of stormwater and associated wastewater to waters of the state;

4. Characteristics of the site including the slope, vegetation, rainfall, and other factors relating to the likelihood or frequency of discharge of stormwater and associated wastewater to waters of the state;

5. The status, results and recommendations of available basin-specific studies, including those conducted as part of a Surface Water Improvement and Management Plan or pursuant to chapter 62-40, F.A.C.;

6. The existence of mixing zones, variances or site-specific alternative criteria granted by the Department of Environmental Protection pursuant to chapters 62-4 and 62-302, F.A.C.; and

(2) Unless expressly exempt by section 373.406, F.S. or rule 62-330.051 or 40C-44.051, F.A.C., or authorized under section 403.814(12), F.S., an environmental resource permit must be obtained for the construction, maintenance and operation of new agricultural surface water management systems, or alteration of existing systems, which:

(a) Drain an agricultural area greater than 2 acres;

(b) Are below thresholds described in paragraphs 62-330.020(2)(a) and (e), F.A.C.;

(c) Serve a project with a total land area less than 40 acres; and

(d) Do not provide for the placement of 12 or more acres of impervious surface that constitutes 40 or more percent of the total land area.

Rulemaking Authority 373.044, 373.113, 373.171, 373.406, 373.416, 373.418 FS. Law Implemented 373.409, 373.413, 373.416, 373.418 FS. History–New 8-11-91, Amended 10-20-92, 7-4-93, 10-3-95, 10-1-13.

40C-44.051 Exemptions.

The following types of agricultural surface water management systems are exempt from the permit requirements of this chapter:

(1) Concentrated Animal Feeding Operations with a valid permit issued by the Department of Environmental Protection pursuant to chapter 62-670, F.A.C., provided that:

(a) For dairy farms, the permitted design incorporates a high intensity use area, from which the stormwater runoff is centrally collected for storage and disposal by land application, or is treated prior to discharge.

(b) For egg production facilities, the permitted design prevents the discharge of process wastewater and stormwater runoff to surface waters, except in the event of a storm greater than a 25-year, 24-hour event.

(c) For any concentrated animal feeding operation which does not incorporate a high intensity use area, the permitted design includes provisions to treat stormwater and associated wastewater from adjacent animal loafing and feeding areas; manure pits; animal watering systems; washing, cleaning or flushing pens; or other pollutant sources, so that discharges through the surface water management system from the operation will not cause or contribute to a violation of water quality standards in waters of the state.

(2) Animal Feeding Operations, which do not discharge except in the event of a storm greater than a 25-year, 24-hour event and therefore are not Concentrated Animal Feeding Operations pursuant to chapter 62-670, F.A.C.

(3) Privately owned or operated agricultural surface water management systems lying within the boundaries of an active water control district which has been formed and operated in accordance with chapter 298, F.S., or a special district or improvement district created under Florida law which has the power to construct, operate and maintain agricultural surface water management systems, and which district has obtained or elected to obtain a permit pursuant to the requirements of chapter 40C-44, F.A.C., or has obtained a permit or consent order as stated in rule 40C-44.031, F.A.C. No exemption is implied or expressed here for any permits required by any other rule within title 40C, F.A.C., or the water control district or special district.

(4) Agricultural surface water management systems which are required to obtain a permit pursuant to subsection 40C-44.041(2), F.A.C., to implement one or more of the following practices under the District's Best Management Practices Cost-Sharing Program: SJ1 (Backflow Prevention), SJ5 (Pump Platform Fuel and Oil Containment) or SJ6 (Pesticide Mixing and Storage Area Containment).

(5) Minor alterations, as defined in subsection 40C-44.071(3), F.A.C., of new or existing agricultural surface water management systems permitted under this chapter or chapter 62-330, F.A.C.

(6) Agricultural surface water management systems which are required to obtain a permit pursuant to subsection 40C-44.041(2), F.A.C., provided they have a valid permit issued pursuant to chapter 40C-2, F.A.C., which requires that they obtain a Conservation Plan, as defined in subsection 40C-44.021(4), F.A.C., implement the Conservation Plan within 180 days of permit issuance, and maintain the Conservation Plan.

Rulemaking Authority 373.044, 373.113, 373.171, 373.406, 373.418 FS. Law Implemented 373.413, 373.406, 373.416 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 10-1-13.

40C-44.055 Standard General Environmental Resource Permits for Agricultural Systems.

Rulemaking Authority 373.044, 373.113, 373.118, 373.171, 373.406, 373.416, 373.418 FS. Law Implemented 373.406, 373.416 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, Repealed 10-1-13.

***Editorial Note**: Repealed pursuant to paragraph 373.4131(2)(c), F.S.*

40C-44.061 Individual Environmental Resource Agricultural System Permits.

(1) Agricultural surface water management systems which are required to obtain a permit pursuant to rule 40C-44.041, F.A.C., shall obtain an individual environmental resource permit in accordance with this rule.

(2) The following types of agricultural surface water management systems will qualify for an individual environmental resource

permit for an agricultural system, provided they comply with the criteria specified in rule 40C-44.301, F.A.C.:

(a) Agricultural surface water management systems which are required to obtain a permit pursuant to subsection 40C-44.041(1), F.A.C., provided that they have obtained a Conservation Plan, pursuant to subsection 40C-44.021(4), F.A.C., implement the Conservation Plan within 180 days of permit issuance, and maintain the Conservation Plan.

(b) Agricultural surface water management systems which are required to obtain a permit pursuant to subsection 40C-44.041(1), F.A.C., and which have been authorized pursuant to subsection 40C-44.031(2) or (3), F.A.C., provided they:

1. Continue to maintain and operate the surface water management system, and associated treatment system, as previously permitted or authorized by consent order, and

2. Demonstrate compliance with the performance standards described in rule 40C-44.065, F.A.C., based upon data collected in compliance with monitoring conditions. If the District staff determines that the compliance monitoring data does not demonstrate compliance with the performance standards, staff will notify the applicant, in writing, of the specific pollutant or pollutants for which treatment will be required.

(c) Minor alterations, as defined in subsection 40C-44.071(3), F.A.C., provided the applicant provides reasonable assurance, through plans, test results or other information, that the alteration complies with subsection 40C-44.071(2), F.A.C.

(d) Surface water management systems which drain an agricultural operation of less than 120 acres, which do not contain a concentrated animal feeding operation, which implement a Conservation Plan, pursuant to subsection 40C-44.021(4), F.A.C., within 180 days of permit issuance and which maintain the Conservation Plan, provided the permittee satisfies the following conditions:

1. The permittee must maintain hour meters, in operating order, on each drainage pump. If the hour meters are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Reports of pump operating hours for each pump must be submitted to the District quarterly, using form 40C-44.061(2)(d)1. (Form EN-14M) which is hereby incorporated by reference as of (10-1-13), available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-02659] and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529.

2. The permittee must maintain a surveyed staff gauge, referenced to NGVD or NAVD, in each detention pond. If the staff gauges are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Water levels must be recorded a minimum of 3 nonconsecutive days per week, or as an alternative, once a week and daily during pump operation. Reports of water levels for each pond must be submitted quarterly to the District using form 40C-44.061(2)(d)2. (Form EN-52) which is hereby incorporated by reference as of (10-1-13), available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-02661] and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529.

3. The permittee must monitor the water quality on a quarterly basis at each discharge point from pumps or pond outfalls to waters of the state. If no discharge has occurred during a particular quarter, no sampling is required. Water samples must be analyzed for the parameters listed in Table 1 which is hereby incorporated by reference as of (10-1-13), available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-02998] and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529. Samples must be analyzed by a laboratory certified by the Florida Department of Health.

4. If, after five years of water quality monitoring, the permittee demonstrates that the data collected represents steady state conditions and is adequate to project future compliance with state water quality standards, the District shall amend the monitoring conditions by reducing the frequency of monitoring or the number of parameters monitored, or eliminating such requirements.

5. If, after five years of water quality monitoring, the District notifies the permittee in writing that discharges from the surface water management system have not complied with the performance standards described in subsections 40C-44.065(1) and (2), F.A.C., then the permittee must apply for an individual permit in accordance with subsection 40C-44.061(3), F.A.C.

(e) Surface water management systems which drain an agricultural operation which do not contain a concentrated animal feeding operation, provided they have obtained a Conservation Plan, pursuant to subsection 40C-44.021(4), F.A.C., implement the Conservation Plan within 180 days of permit issuance, and maintain the Conservation Plan, and which have not been issued a permit or consent order which authorized operation as described in subsection 40C-44.031(2) or (3), F.A.C., provided the permittee satisfies the monitoring conditions described below:

1. The permittee must maintain hour meters, in operating order, on each drainage pump. If the hour meters are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Reports of pump operating hours for each pump must be submitted to the District quarterly, using Form EN-14M, as incorporated by reference in subparagraph 40C-

44.061(2)(d)1., F.A.C.

2. The permittee must maintain a surveyed staff gauge, referenced to NGVD or NAVD, in each detention pond. If the staff gauges are not installed at the time of permit issuance, they must be installed within 60 days of the issuance of the permit. Water levels must be recorded a minimum of 3 nonconsecutive days per week, or as an alternative, once a week and daily during pump operation. Reports of water levels for each pond must be submitted quarterly to the District using Form EN-52 as incorporated by reference in subparagraph 40C-44.061(2)(d)2., F.A.C.

3. The permittee must monitor the water quality on a quarterly basis at each discharge point from pumps or pond outfalls to waters of the state following implementation of the Conservation Plan or within 180 days of permit issuance, whichever occurs sooner. If no discharge has occurred during a particular quarter, no sampling is required. Water samples must be analyzed for the parameters listed in Table 1 as incorporated by reference in subparagraph 40C-44.061(2)(d)3., F.A.C. Samples must be analyzed by a laboratory certified by the Florida Department of Health.

4. If, after five years of water quality monitoring, the permittee demonstrates that the data collected represents steady state conditions and is adequate to project future compliance with state water quality standards, the District shall amend the monitoring conditions by reducing the frequency of monitoring or the number of parameters monitored, or eliminating such requirements.

5. If, after one year of water quality monitoring, the District notifies the permittee in writing that discharges from the surface water management system have not complied with the performance standards described in subsections 40C-44.065(1) and (2), F.A.C., then the permittee must apply for an individual permit in accordance with subsection 40C-44.061(3), F.A.C.

(3) An individual environmental resource permit for an agricultural system may be issued to the applicant, upon such conditions as the District may direct, only if the applicant affirmatively provides the District with reasonable assurance based on plans, test results or other information, that the construction, expansion, alteration, modification, operation or activity of the surface water management system will comply with the performance standards described in rule 40C-44.065, F.A.C., and the criteria specified in Rule 40C-44.301, F.A.C.

(a) For existing systems, incorporation of the appropriate water quality practices, as described in rule 40C-44.066, F.A.C., shall be presumed to provide reasonable assurance of compliance with the performance standards as described in rule 40C-44.065, F.A.C., provided that provisions have been made for maintenance and operation of the proposed surface water management system and water quality practices pursuant to rule 40C-44.069, F.A.C.

(b) For new systems, incorporation of the appropriate water quality practices, as described in rule 40C-44.066, F.A.C., and installation of a surface water management system designed to provide a level of treatment and pollutant reduction so that pollutant loads discharged to surface waters of the state on an average annual basis, from a particular agricultural operation are 80% less than those from a similar operation which did not incorporate a treatment system or water quality practices, shall be presumed to provide reasonable assurance of compliance with the performance standards as described in rule 40C-44.065, F.A.C., provided that provisions have been made for maintenance and operation of the proposed surface water management system and water quality practices pursuant to rule 40C-44.069, F.A.C.

(c) New and existing systems which discharge to Class I, Class II, or Outstanding Florida Waters shall be required to provide an additional level of treatment to provide reasonable assurance pursuant to subsection (3), above.

Rulemaking Authority 373.044, 373.113, 373.171, 373.406, 373.416, 373.418 FS. Law Implemented 373.413, 373.4131, 373.416 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 10-1-13.

40C-44.065 Performance Standards.

(1) Discharges from the agricultural surface water management system shall not cause or contribute to a violation of water quality standards in waters of the state, as set forth in chapters 62-3, 62-302, 62-520, 62-522, 62-550 and 62-4, F.A.C., including any antidegradation provisions of paragraphs 62-4.242(1)(a) and (b), subsections 62-4.242(2) and (3), and rule 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in subsections 62-4.242(2) and (3), F.A.C.

(2) Agricultural surface water management systems requiring a permit, which will be located in the Lake Apopka Hydrologic Basin or will discharge water to Lake Apopka or its tributaries, must comply with the requirements of subsection 40C-41.063(8), F.A.C.

(3) Agricultural surface water management systems requiring a permit that will be located in the Wekiva Recharge Protection Basin must comply with the requirements of paragraph 40C-41.063(3)(a), F.A.C., and Sections 13.3 through 13.3.5, “Environmental Resource

Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District", as incorporated by reference in subsection 40C-41.043(5), F.A.C.

Rulemaking Authority 369.318, 373.044, 373.113, 373.171, 373.415, 373.416, 373.418, 373.461 FS. Law Implemented 369.318, 373.016, 373.413, 373.4131, 373.416, 373.418, 373.426, 373.461 FS. History–New 8-11-91, Amended 10-20-92, 7-4-93, 10-3-95, 3-7-03, 12-3-06, 10-1-13, 6-1-18.

40C-44.066 Water Quality Practices.

The practices listed below are set forth in this rule for the purpose of evaluating compliance with this chapter. It is presumed the water quality practices implemented in accordance with this section will provide reasonable assurance that the system will comply with the performance standards described in rule 40C-44.065, F.A.C. The water quality practices or other alternatives shall be implemented to the extent necessary to comply with the performance standards described in rule 40C-44.065, F.A.C. In some cases, the implementation of these practices may not result in compliance with the performance standards for issuance of an individual environmental resource permit for an agricultural system. In those cases, the applicant shall provide for implementation of such additional water quality practices and/or treatment methodologies as necessary to provide reasonable assurance that the discharge will comply with the performance standards described in rule 40C-44.065, F.A.C.

(1) Reduce the volume of stormwater and associated wastewater discharged to waters of the state by:

(a) Implementing management practices designed to reduce the volume of water discharged off-site, including Water Table Control in Open Channels, Irrigation Land Leveling and Irrigation Water Management, and

(b) Maximizing onsite recycling to satisfy irrigation, freeze protection and pest control needs. The applicant may demonstrate maximum stormwater harvesting by using all the practically available water from reservoir storage prior to using groundwater.

(2) Implement and maintain a Conservation Plan, which includes a Nutrient Management Plan and Pesticide Management Plan.

(3) Provide treatment of the pollutants generated by the agricultural operation. The treatment method required depends on the intensity of land use and associated pollutants.

(a) Wet detention ponds, designed and operated in accordance with paragraph (b) or (c) below, are presumed to satisfy the requirements of paragraphs (1)(b) and (3), for those portions of an agricultural operation described below:

1. Citrus, row crop, sod, hayland or improved pasture which discharge to Class I, Class II, or Outstanding Florida Waters, or

2. Citrus, row crop, sod, hayland or improved pasture on predominantly organic soils.

(b) Detention ponds which are part of an existing surface water management system, and which comply with following design and performance criteria are presumed to provide treatment.

1. Wet detention treatment volume is equal to the first inch of runoff.

2. The permanent pool volume provides an average residence time of 21 days during the wet season (June through October). This volume may be determined by estimating 13.82% of the wet season average runoff. The permanent pool volume should be recycled, pursuant to paragraph 40C-44.066(1)(b), F.A.C.

3. No more than half the treatment volume is drawn down in the first 60 hours following a storm event, and the entire treatment volume is drawn down within 168 hours.

4. Pond depths below the water control elevation shall not exceed an average of 5 feet or a maximum of 10 feet, unless the applicant affirmatively demonstrates that the deeper depths will not cause anaerobic conditions in the water column.

5. For ponds where interior borrow canals are likely to result in short-circuiting of flows between the inlet and outlet, the effective flow path shall be increased by adding diversion structures such as canal plugs or baffles.

(c) Detention ponds proposed as part of a new surface water management system which are designed, constructed and operated in accordance with the following design and performance criteria are presumed to provide treatment.

1. Wet detention treatment volume is equal to the first inch of runoff.

2. The permanent pool volume provides an average residence time of 21 days during the wet season (June through October). This volume may be determined by estimating 13.82% of the wet season average runoff. The permanent pool volume should be recycled, pursuant to paragraph 40C-44.066(1)(b), F.A.C.

3. No more than half the treatment volume is discharged in the first 60 hours following a storm event, but at least half of the treatment volume is discharged within 72 hours following a storm event.

4. Pond depths below the water control elevation shall not exceed an average of 4 feet or a maximum of 10 feet, unless the applicant affirmatively demonstrates that the deeper depths will not cause anaerobic conditions in the water column.

5. The treatment volume should not cause the pond level to rise more than 18 inches above the control elevation unless it is

demonstrated that the littoral zone vegetation can survive at greater depths and that the pond area ratio (drainage area/pond area) is still sufficient to provide adequate treatment.

6. The pond design shall incorporate a littoral zone or an alternate method to promote sedimentation. Littoral zones shall be gently sloped (6:1 or flatter) to a point 2-3 feet below the bleed-down or control elevation and extend to the top of the treatment volume. The littoral zone and vegetation should be concentrated at the inflow (adjacent to the sump, if required) and at the outfall.

7. The alignment and location of inlets and outlets shall be designed to maximize flow paths in the pond. The pond shall have a length to width ratio of a minimum of 2:1. If short flow paths are unavoidable, the effective flow path should be increased by adding diversion barriers such as islands, peninsulas or baffles to the pond. Inlet structures should be designed to dissipate the energy of water entering the pond. Pumped inflows must provide a sump to promote sedimentation and reduce water velocities.

8. Pond design must include permanent access for maintenance.

9. The bleed-down orifice invert elevation shall be at or above the estimated wet season water table elevation. If the orifice is proposed to be set below the wet season water table elevation, groundwater inflow must be considered in orifice drawdown calculations, calculation of average residence time, and estimated normal water level. For ponds with pumped inflows, the applicant must demonstrate that the water table of wetlands within the drainage area will not be significantly lowered.

(d) Other water quality practices in lieu of wet detention, such as overland flow, vegetative filters and detention in isolated wetlands, are presumed to satisfy the requirements in subsection (3), for low intensity agricultural operations such as rough or semi-improved pasture, when the practice(s) is designed, operated and maintained using accepted engineering principles.

(e) Agricultural surface water management systems may incorporate overland flow, vegetative filters and detention in isolated wetlands as water quality practices. Existing canals and conveyance systems may be incorporated into a wet detention treatment system, when appropriate. The applicant must provide reasonable assurance, through plans, test results or other information, that the practice will provide an adequate level of treatment to meet the performance standards above.

(4) Applicants who propose to satisfy the performance standards in rule 40C-44.065, F.A.C., by employing a treatment methodology or device other than those described in subsections 40C-44.066(1) through 40C-44.066(3), F.A.C., may seek approval for an equivalent alternative through the District's permit process. The applicant must provide reasonable assurance, through plans, test results or other information, that the alternative will provide an adequate level of treatment to meet the performance standards above.

Rulemaking Authority 373.044, 373.113, 373.171, 373.4131, 373.416, 373.418 FS. Law Implemented 373.016, 373.4131, 373.416 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 10-1-13, 6-1-18.

40C-44.069 Maintenance and Operation Requirements.

(1) The permittee is required to provide for periodic inspections of the surface water management system to insure that the system is functioning as designed and permitted.

(2) The following operational maintenance activities shall be performed on all permitted systems on a regular basis or as needed:

(a) Removal of trash and debris from the surface water management system;

(b) Inspection of culverts, culvert risers, pipes and screwgates for damage, blockage, excessive leakage or deterioration;

(c) Inspection of pipes for evidence of lateral seepage;

(d) Inspection of flapgates for excessive backflow or deterioration;

(e) Removal of sediments when the storage volume or conveyance capacity of the surface water management system is below design levels;

(f) Stabilization and restoration of eroded areas;

(g) Inspection of pump stations for structural integrity and leakage of fuel or oil to the ground or surface water; and

(h) Inspection of monitoring equipment, including pump hour meters and staff gauges, for damage and operational status.

(3) The permittee shall maintain and operate the Conservation Practices contained in the Conservation Plan.

(4) In addition to the practices listed in subsection (2), above, specific operational maintenance activities are required depending on the type of permitted system as follows:

(a) Overland flow systems shall include provisions for:

1. Mowing and removal of clippings; and

2. Maintenance of spreader swales and overland flow areas to prevent channelization.

(b) Spray irrigation systems for reuse/disposal shall include provisions for:

1. Inspection of the dispersal system, including the sprayheads or perforated pipe for damage or clogging; and

2. Maintenance of the sprayfield to prevent channelization.

(c) Treatment systems which incorporate isolated wetlands shall include provisions for:

1. Stabilization and restoration of channelized areas; and

2. Removal of sediments which interfere with the function of the wetland or treatment system.

(d) Systems in Class I waters shall include provisions for inspection and maintenance of valves for wells which discharge from an aquifer which contains greater than 250 mg/l of chloride.

(5) If the system is not functioning as designed and permitted, operational maintenance must be performed immediately to restore the system. If the operational maintenance measures are insufficient to enable the system to meet the performance standards of this chapter, the permittee must either replace the system or construct an alternative design. A permittee must apply for and obtain a modification prior to constructing such alternative design.

Rulemaking Authority 373.044, 373.113, 373.171, 373.416, 373.418 FS. Law Implemented 373.416, 373.418 FS. History–New 10-20-92.

40C-44.071 Relationship to Other Permitting Requirements.

(1) In order to comply with the performance standards in this rule or implement water quality practices outlined in rule 40C-44.066, F.A.C., some existing agricultural surface water management systems may require minor alterations.

(2) Alterations of existing agricultural surface water management systems, which would otherwise require permits pursuant to paragraph 62-330.020(2)(a), F.A.C., will be considered minor alterations and will qualify for an individual environmental resource permit, pursuant to this chapter, provided they do not increase the peak discharge rate and total discharge volume, when applicable ("Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District", Section 3.2), or alter off-site storage and conveyance capabilities of the water resource ("Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District" Section 3.3), or adversely affect wetland functions, ("Environmental Resource Permit Applicant's Handbook, Volume I (General and Environmental)" Section 10.2.2) or increase the off-site pollutant loading ("Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District" Section 4.0), all as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C., or implemented pursuant to paragraph 373.4131(2)(a), F.S. (2012), as applicable.

(3) The following activities, for the purposes of this rule, are presumed to be minor alterations:

(a) Regrading or reconfiguring of ditches and other conveyance systems necessary to implement a management practice recommended by a Conservation Plan, pursuant to subsection 40C-44.021(4), F.A.C. or listed in rule 40C-44.066, F.A.C.,

(b) Installation of new internal ditches or other conveyance systems necessary to implement a management practice recommended by a Conservation Plan, pursuant to subsection 40C-44.021(4), F.A.C. or listed in rule 40C-44.066, F.A.C.,

(c) Installation of internal water control structures necessary to implement a management practice recommended by a Conservation Plan, pursuant to subsection 40C-44.021(4), F.A.C. or listed in rule 40C-44.066, F.A.C.,

(d) Modification or expansion of existing detention ponds within previously diked areas, provided that public safety concerns related to levee failure are addressed, no floodplain encroachment occurs, and impacts to wetlands do not require a permit pursuant to paragraph 62-330.020(2)(a), F.A.C.,

(e) Construction of new detention ponds within previously diked areas, provided that public safety concerns related to levee failure are addressed, no floodplain encroachment occurs, and impacts to wetlands do not require a permit pursuant to paragraph 62-330.020(2)(a), F.A.C.

(4) Whenever the alteration, modification or construction of a new or existing agricultural surface water management system requires that an environmental resource permit be secured pursuant to paragraph 62-330.020(2)(a), (b), (c), (d), (e), (f), (g), (h) or (j) or section 1.2.2 "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in paragraph 40C-4.091(1)(a), F.A.C., the performance standards and water quality practices established in this chapter shall be reviewed as part of those permit applications. A separate permit application under this chapter shall not be required. However, the applicant must provide the required technical information as part of those applications to demonstrate compliance with this chapter.

(5) If the District determines that site-specific alternative criteria, as described in rule 62-302.800, F.A.C., may be appropriate

for a water body, based on the results of a basin-specific study or Surface Water Improvement and Management Plan, the District will submit this documentation to the Department of Environmental Protection.

Rulemaking Authority 373.044, 373.113, 373.171, 373.4131, 373.416, 373.418 FS. Law Implemented 373.4131, 373.416, 373.418 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 11-11-03, 10-1-13, 6-1-18.

40C-44.081 Permit Processing Fee.

Rulemaking Authority 373.044, 373.113, 373.171, 373.416, 373.418 FS. Law Implemented 373.416 FS. History–New 8-11-91, Amended 10-20-92, Repealed by Section 5, Chapter 2012-31, Laws of Florida, 5-27-12.

40C-44.091 Publications Incorporated by Reference.

(1) The Governing Board hereby adopts by reference Part VII (sections 14.0-19.2.6), available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-06357] and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529 of the document entitled "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District," effective (June 1, 2018).

(a) The purpose of the document is to provide information regarding the environmental resource permit program for agricultural systems.

(b) The document may be obtained by contacting:

Director, Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, Florida 32177-2529.

(2) The Governing Board hereby adopts by reference the SCS Field Office Technical Guide – Section IV.

(a) The purpose of the document is to provide information regarding SCS standards, specifications and guidelines.

(b) The document may be obtained by contacting:

Director, Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, Florida 32177-2529.

(3) The Governing Board hereby adopts by reference the Institute of Food and Agricultural Sciences, "Best Management Practices Selector."

(a) The purpose of this document is to provide information regarding selecting agricultural water quality practices.

(b) The document may be obtained by contacting:

Director, Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, Florida 32177-2529.

Rulemaking Authority 369.318, 373.044, 373.113, 373.118, 373.171, 373.406, 373.4131, 373.416, 373.418 FS. Law Implemented 369.318, 373.406, 373.413, 373.4131, 373.416, 373.418, 373.426, 373.461, 373.603, 373.609, 373.613 FS. History–New 10-20-92, Amended 7-4-93, 10-3-95, 1-11-99, 4-10-02, 3-7-03, 12-3-06, 12-27-10, 10-1-13, 6-1-18.

40C-44.101 Content of the Application.

(1) All applications for environmental resource permits for agricultural systems shall be processed in accordance with the procedures of Chapters 120 and 373, F.S., and subsection 15.4.1 of the "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within the Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in subsection 40C-44.091(1), F.A.C.

(2) Applicants for an individual environmental resource permit for an agricultural system under this chapter shall complete District form 40C-44.101(2), (Supplemental Information for Agricultural Systems) incorporated herein by reference, as of (10-1-13),

available at [http://www.flrules.org/Gateway/reference.asp?No=Ref-02658], and upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529, and Section A of form 62-330.060(1), Joint Application for Individual and Conceptual Environmental Resource Permit/Authorization to Use State-Owned Submerged Lands/Federal Dredge and Fill Permit" (6-1-18), available upon request from the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529, and implemented pursuant to paragraph 373.4131(2)(a), F.S. (2012).

Rulemaking Authority 369.318, 373.044, 373.113, 373.171, 373.416, 373.418 FS. Law Implemented 369.318, 373.4131, 373.416, 373.461 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 12-3-06, 10-1-13, 6-1-18.

40C-44.301 Conditions for Issuance of Permits.

(1)(a) To obtain an individual environmental resource permit for operation, maintenance, removal or abandonment of an agricultural system each applicant must give reasonable assurance that such activity will not:

1. Endanger life, health, or property;
2. Be inconsistent with the maintenance of minimum flows and levels established pursuant to chapter 40C-8, F.A.C.
3. Cause significant adverse effects to the availability of water for reasonable beneficial purposes;
4. Be incapable of being effectively operated;
5. Cause significant adverse effects to the operation of a Work of the District established pursuant to section 373.086, F.S.;
6. Cause significant adverse effects to existing agricultural, commercial, industrial, or residential developments;
7. Cause significant adverse impacts to the quality of receiving waters;
8. Cause significant adverse effects to natural resources, fish and wildlife;
9. Increase the potential for damages to off-site property or the public caused by:

a. Floodplain development, encroachment or other alteration;
b. Retardance, acceleration, displacement or diversion of surface water;
c. Reduction of natural water storage areas;
d. Facility failure;

10. Increase the potential for flood damages to residences, public buildings, or proposed and existing streets and roadways; and
11. Otherwise be inconsistent with the overall objectives of the District as set forth in Section 18.0 of the "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District" as incorporated by reference in subsection 40C-44.091(1), F.A.C.

(b) Because a system may result in both beneficial and harmful effects in terms of various individual objectives, in determining whether the applicant has provided evidence of reasonable assurance of compliance with paragraph (1)(a), above, the District shall consider a balancing of specific effects to show the system is not inconsistent with the overall objectives of the District.

(2)(a) To obtain an individual environmental resource permit for construction, alteration, operation, or maintenance of an agricultural system, each applicant must give reasonable assurance that such activity is not harmful to the water resources by meeting the following standards:

1. Significant adverse water quantity impacts will not be caused to receiving waters and adjacent lands;
2. Surface and ground water levels and surface water flow will not be significantly adversely affected;
3. Existing surface water storage and conveyance capabilities will not be significantly adversely affected;
4. The system must be capable of being effectively operated;
5. The activity must not result in significant adverse impacts to the operation of Works of the District established pursuant to section 373.086, F.S.; and
6. Hydrologically-related environmental functions will not be significantly adversely affected;

(b) If the applicant has provided reasonable assurance that the design criteria specified in the "Environmental Resource Permit Applicant's Handbook, Volume II: For Use Within The Geographic Limits of the St. Johns River Water Management District," Part VII, Subpart B "Criteria for Evaluation" adopted by reference in subsection 40C-44.091(1), F.A.C., have been met, then it is presumed that the standards contained in paragraph (2)(a), above, have been satisfied.

(3) Existing systems which are required to obtain a permit pursuant to this chapter are presumed to satisfy the conditions for issuance in subsections (1) and (2) above provided the information requested on the appropriate application form, pursuant to rule 40C-44.101(2), F.A.C., is submitted and the applicant demonstrates compliance with the performance standards of rule 40C-44.065, F.A.C. If available information indicates that the operation and maintenance of the system is inconsistent with the conditions for

issuance in subsections (1) and (2), above, the District shall require additional information which demonstrates that the existing system is in compliance with the performance standards of rule 40C-44.065, F.A.C.

Rulemaking Authority 373.016, 373.044, 373.113, 373.171, 373.406, 373.416, 373.418 FS. Law Implemented 373.016, 373.409, 373.4131, 373.416, 373.418 FS. History–New 8-11-91, Amended 10-20-92, 7-4-93, 10-3-95, 10-1-13, 6-1-18.

40C-44.321 Duration of Permit.

Unless revoked or modified, the duration of a permit is permanent.

Rulemaking Authority 373.113, 373.406, 373.416, 373.418 FS. Law Implemented 373.416 FS. History–New 8-11-91, Amended 10-20-92.

40C-44.341 Revocation or Modification of Permits.

Rulemaking Authority 373.044, 373.113, 373.171, 373.406, 373.416, 373.418 FS. Law Implemented 373.429 FS. History–New 8-11-91, Amended 10-20-92, 7-4-93, 12-27-10, Repealed 11-3-15.

40C-44.900 Forms and Instructions.

Rulemaking Authority 120.53(1), 369.318, 373.044, 373.113, 373.406, 373.416, 373.418 FS. Law Implemented 120.52(16), 120.53(1), 369.318, 373.103, 373.413, 373.416, 373.461 FS. History–New 8-11-91, Amended 10-20-92, 10-3-95, 12-3-06, Repealed 6-1-18.

CHAPTER 62-342
MITIGATION BANKS

62-342.100 Intent.

(1) The Department recognizes that, in certain instances, adverse impacts of activities regulated under part IV of chapter 373, F.S., can be offset through the utilization of mitigation credits from a permitted Mitigation Bank. This rule provides criteria for this mitigation alternative to complement existing mitigation criteria and requirements. This chapter is supplemental to and does not supersede any other criteria and requirements in rules promulgated under part IV of chapter 373, F.S.

(2) The responsibilities for implementing this chapter are described in Operating and Delegation Agreements between the Department of Environmental Protection ("Department") and the water management districts ("Districts"). The Agreements are incorporated by reference in subsection 62-113.100(3), F.A.C. The term "Agency" applies to the Department or a District, as applicable, throughout this chapter.

(3) The Agency intends that Mitigation Banks be used to minimize mitigation uncertainty associated with traditional mitigation practices and provide greater assurance of mitigation success. It is anticipated that the consolidation of multiple mitigation projects into larger contiguous areas will provide greater assurance that the mitigation will yield long-term, sustainable, regional ecological benefits. Mitigation Banks shall be consistent with Agency endorsed watershed management objectives and emphasize restoration and enhancement of degraded ecosystems and the preservation of uplands and wetlands as intact ecosystems rather than alteration of landscapes to create wetlands. This is best accomplished through restoration of ecological communities that were historically present. The establishment and use of Mitigation Banks in or adjacent to areas of national, state, or regional ecological significance is encouraged, provided the area in which the Mitigation Bank is proposed to be located is determined appropriate for a Mitigation Bank and the Mitigation Bank meets all applicable permitting criteria.

(4) Nothing in this chapter shall affect the mitigation requirements set forth in any Mitigation Bank agreement or any permit issued under chapter 84-79, Laws of Florida, or part IV of chapter 373, F.S., prior to February 2, 1994. If a permittee wishes to substantially modify a Mitigation Bank previously established by agreement or permit, the permittee must comply with this chapter. Additionally, some Mitigation Banks may be subject to the version of this section existing prior to July 1, 1996, under sections 373.4136(9) and (10), F.S., and will not be affected by amendments adopted after that date. This chapter does not prohibit an applicant from proposing project-specific, pre-construction on-site or off-site mitigation, without establishing a Mitigation Bank.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.100, Amended 5-21-01, 2-19-15.

62-342.200 Definitions.

Terms used in this chapter shall have the meanings specified below.

(1) "Banker" means an entity that creates, operates, manages, or maintains a Mitigation Bank pursuant to a Mitigation Bank Permit.

(2) "Department" means the Department of Environmental Protection.

(3) “District” means a water management district as established in chapter 373, F.S.

(4) “Ecological Value” means the value of functions performed by uplands, wetlands and other surface waters to the abundance, diversity, and habitats of fish, wildlife, and listed species. These functions include, but are not limited to: providing cover and refuge; breeding, nesting, denning, and nursery areas; corridors for wildlife movement; food chain support; and natural water storage, natural flow attenuation, and water quality improvement, which enhance fish, wildlife and listed species utilization.

(5) “Mitigation Credit” means a standard unit of measure which represents the increase in ecological value resulting from restoration, enhancement, preservation, or creation activities.

(6) “Mitigation Service Area” means the geographic area within which Mitigation Credits from a Mitigation Bank may be used to offset adverse impacts of activities regulated under part IV of chapter 373, F.S.

(7) “Mitigation Bank Permit” means a permit issued to a banker to construct, operate, manage and maintain a Mitigation Bank.

(8) “Mitigation Bank” means a project permitted under section 373.4136, F.S., undertaken to provide for the withdrawal of mitigation credits to offset adverse impacts authorized by a permit under part IV of chapter 373, F.S.

(9) “Regional Watershed” means a watershed as delineated in the following maps. (Figures 1, 2, 3, 4, and 5.)

Figure 1: Northwest Florida Water Management District – “Regional Watersheds of the NWFWMD for Mitigation Banks, 7 Watersheds” (February 19, 2015), which is incorporated by reference herein.

Figure 2: Suwannee River Water Management District – “Watersheds of the SRWMD Mitigation Banks, 7 Watersheds” (February 19, 2015), which is incorporated by reference herein.

Figure 3: St. Johns River Water Management District – “Regional Watersheds for Mitigation Banking” (October 1, 2013), Appendix A, Figure 10.2.8-2, Applicants Handbook Volume II, which is incorporated by reference in subparagraph 62-330.010(4)(b)3., F.A.C., [October 1, 2013] (http://www.flrules.org/Gateway/reference.asp?No=Ref-03181), and in subsections 40C-4.091(1) [October 1, 2013] (https://www.flrules.org/Gateway/reference.asp?No=Ref-02524), 40C-42.091(1) [October 1, 2013] (https://www.flrules.org/Gateway/reference.asp?No=Ref-02525), and 40C-44.091(1), F.A.C., [October 1, 2013] (https://www.flrules.org/Gateway/reference.asp?No=Ref-02526).

Figure 4: Southwest Florida Water Management District – “Drainage Basins and Watersheds within the Southwest Florida Water Management District” (October 1, 2013), Figure 2.6, Applicants Handbook Volume II, is incorporated by reference in subparagraph 62-330.010(4)(b)4., F.A.C., [October 1, 2013] (http://www.flrules.org/Gateway/reference.asp?No=Ref-03176), and in rule 40D-4.091, F.A.C., [October 1, 2013] (https://www.flrules.org/Gateway/reference.asp?No=Ref-02527).

Figure 5: South Florida Water Management District – Appendix D: “SFWMD Basins for Cumulative Impact Assessments & Mitigation Bank Service Areas” (October 1, 2013), Applicants Handbook Volume II, including Appendices A through D, is incorporated by reference in subparagraph 62-330.010(4)(b)5., F.A.C., [October 1, 2013] (https://www.flrules.org/Gateway/reference.asp?No=Ref-02528), and in paragraph 40E-4.091(1)(a), F.A.C., [October 1, 2013] (https://www.flrules.org/Gateway/reference.asp?No=Ref-02529).

A copy of the incorporated material identified above also may be obtained from the Agency Internet site or by contacting staff in an Agency office identified in the “References and Design Aids, Volume I,” available at http://www.dep.state.fl.us/water/rulesprog.htm#erp.

Figure 1: Northwest Florida Water Management District – “Regional Watersheds of the NWFWMD for Mitigation Banks, 7 Watersheds” (February 19, 2015)

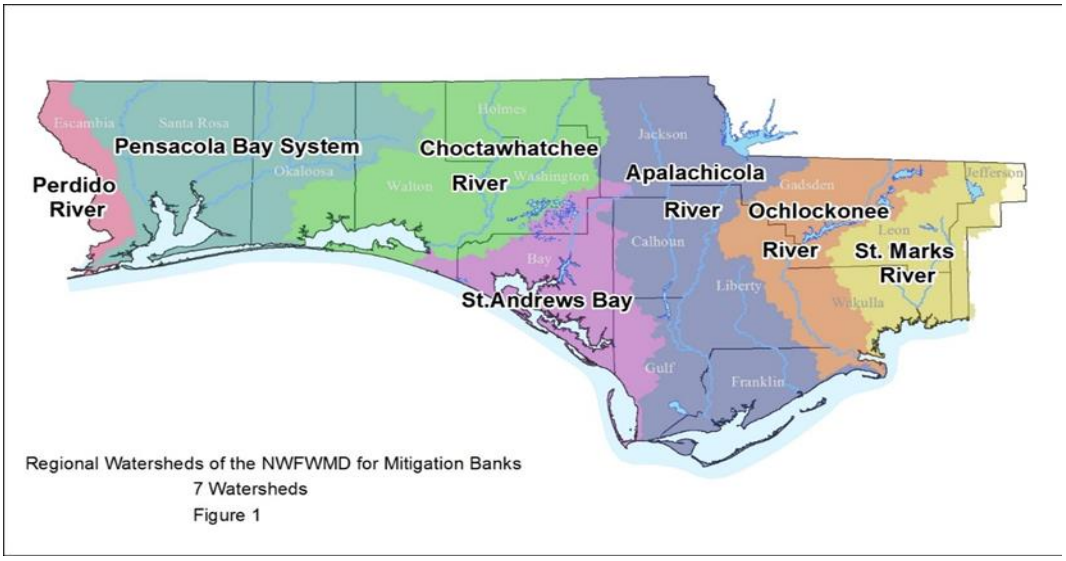


Figure 2: Suwannee River Water Management District – "Watersheds of the SRWMD Mitigation Banks, 7 Watersheds" (February 19, 2015)

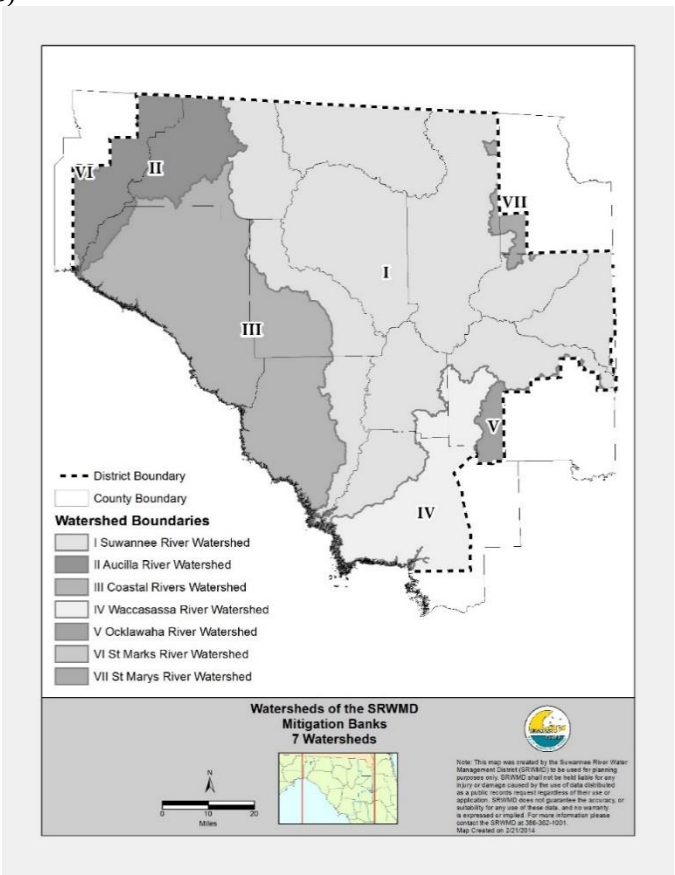


Figure 3: St. Johns River Water Management District – "Regional Watersheds for Mitigation Banking" (October 1, 2013)

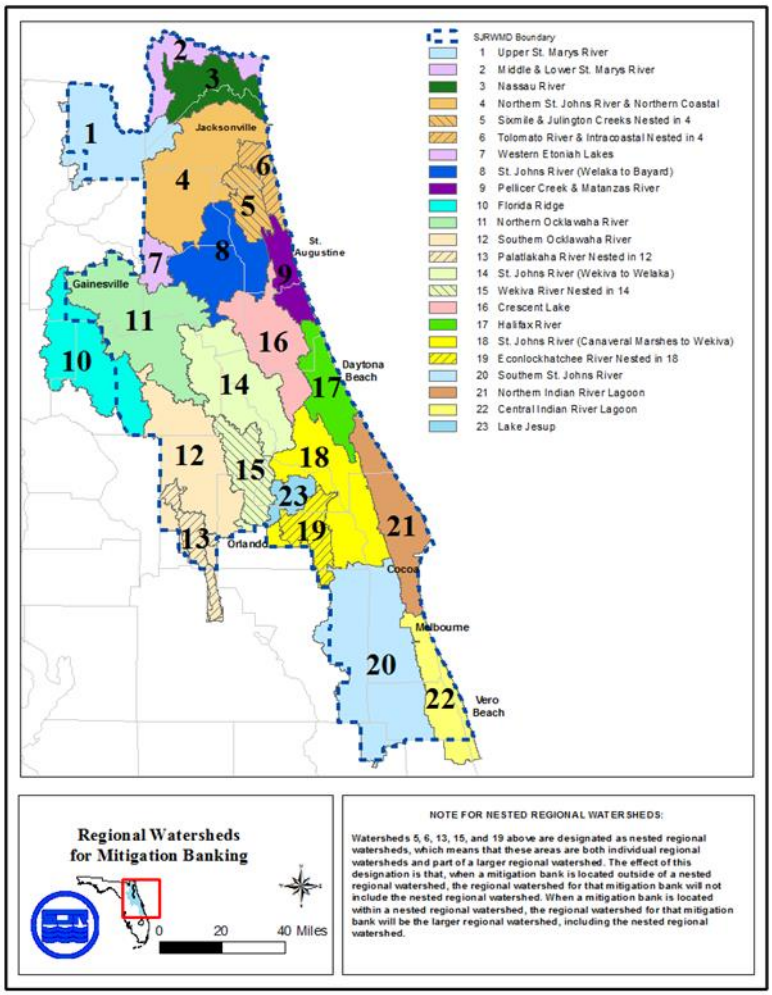


Figure 4: Southwest Florida Water Management District – "Drainage Basins and Watersheds within the Southwest Florida Water Management District" (October 1, 2013)

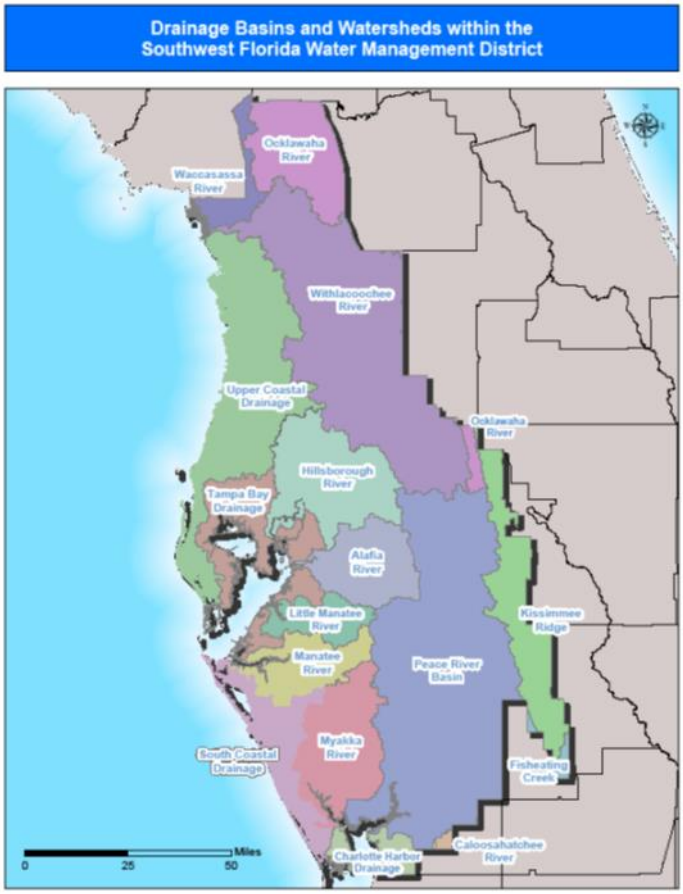
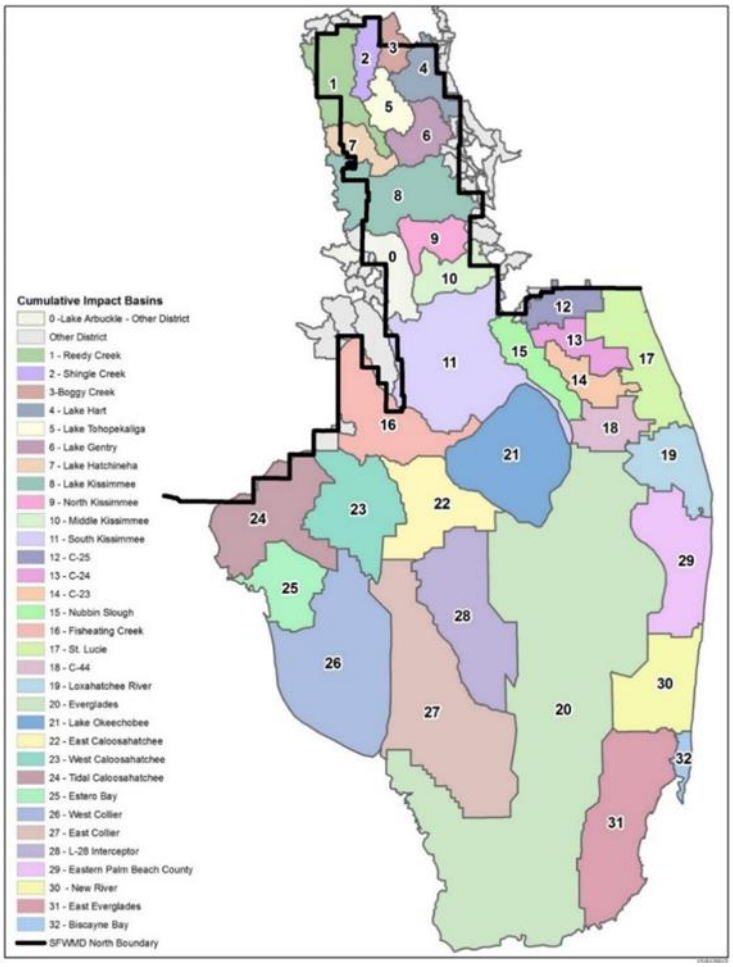


Figure 5: South Florida Water Management District – Appendix D: "SFWMD Basins for Cumulative Impact Assessments & Mitigation Bank Service Areas" (October 1, 2013)



(10) “Success” means when a Mitigation Bank meets the success criteria provided in the Mitigation Bank Permit and in section 10.3.6 of Applicant’s Handbook, Volume I, incorporated by reference in rule 62-330.010, F.A.C.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.200, Amended 12-12-94, 8-21-00, 5-21-01, 2-19-15.

62-342.300 Use of a Mitigation Bank.

Rulemaking Authority 373.4136(11) FS. Law Implemented 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.300, Amended 5-21-01, Repealed 2-16-12.

62-342.400 Criteria for Establishing a Mitigation Bank.

The following criteria shall be met to establish a Mitigation Bank:

(1) The banker shall provide reasonable assurance that the proposed Mitigation Bank will:

(a) Improve ecological conditions of the regional watershed;

(b) Provide viable and sustainable ecological and hydrological functions for the proposed mitigation service area;

(c) Be effectively managed in perpetuity;

(d) Not destroy areas with high ecological value;

(e) Achieve mitigation success; and,

(f) Be adjacent to lands which will not adversely affect the perpetual viability of the Mitigation Bank due to unsuitable land uses or conditions.

(2) The banker shall also provide reasonable assurance that any surface water management system to be constructed, altered, operated, maintained, abandoned, or removed within the Mitigation Bank area will meet conditions of issuance of part IV of chapter 373, F.S., and the rules adopted thereunder.

(3) A Mitigation Bank may be implemented in phases if each phase independently meets the requirements of subsections 62-342.400(1) and (2), above.

(4) The banker shall:

(a) Have sufficient legal or equitable interest in the property to meet the requirements of rule 62-342.650, F.A.C.; and,

(b) Meet the financial responsibility requirements of rule 62-342.700, F.A.C.

Rulemaking Authority 373.4136(11) FS. Law Implemented 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.400, Amended 5-21-01.

62-342.450 Mitigation Bank Permit and Mitigation Bank Conceptual Approval Applications.

Any person or entity proposing to establish a Mitigation Bank must apply for a Mitigation Bank Permit. An application for a Mitigation Bank Permit shall also constitute an application for any required permit authorized under part IV of chapter 373, F.S. Mitigation Bank Permit applications shall be processed according to chapter 120, F.S. The Agency will process and take action on all permit applications under part IV of chapter 373, F.S., necessary for the implementation of any Mitigation Bank for which it has responsibility under the operating agreements between the Department and the Districts incorporated by reference in rule 62-113.100, F.A.C. A person or entity who wishes to obtain an estimation of the legal and financial requirements necessary for a Mitigation Bank, information necessary for evaluation of a Mitigation Bank Permit application, and potential Mitigation Credits to be awarded under a Mitigation Bank Permit, may apply for a Mitigation Bank Conceptual Approval Permit. To provide the Agency with reasonable assurances that the proposed Mitigation Bank will meet the criteria in section 373.4136, F.S., and in this chapter, and that any proposed system will meet the applicable criteria of part IV of chapter 373, F.S., each Mitigation Bank Permit application submitted to the Agency shall include the information required under part IV of chapter 373, F.S., as applicable, and the information specified below as appropriate for the proposed bank:

(1) A description of the location of the proposed Mitigation Bank which shall include:

(a) A map at regional scale showing the project area in relation to the regional watershed and proposed mitigation service area;

(b) A vicinity map showing the project area in relation to adjacent lands and offsite areas of ecologic or hydrologic significance which could affect the perpetual viability or ecological value of the bank;

(c) An aerial photograph identifying boundaries of the project area;

(d) A highway map showing points of access to the Mitigation Bank for site inspection; and,

(e) A legal description of the proposed Mitigation Bank.

(2) A description of the ecological significance of the proposed Mitigation Bank to the regional watershed in which it is located.

(3) A description and assessment of current site conditions which shall include:

(a) A soils map of the project area;

(b) A topographic map of the project area and adjacent hydrologic contributing and receiving areas;

(c) A hydrologic features map of the project area and adjacent hydrologic contributing and receiving areas;

(d) Current hydrologic conditions in the project area;

(e) A vegetation map of the project area;

(f) Ecological benefits currently provided to the regional watershed by the project area;

(g) Adjacent lands, including existing land uses and conditions, projected land uses according to comprehensive plans adopted

pursuant to chapter 163, F.S., by local governments having jurisdiction, and any special designations or classifications associated with adjacent lands or waters; and,

(h) A disclosure by the applicant of any material fact which would affect the contemplated use of the property.

(4) A mitigation plan describing the actions proposed to establish, construct, operate, manage and maintain the Mitigation Bank which shall include:

(a) Construction-level drawings detailing proposed topographic alterations and all structural components associated with proposed activities;

(b) Proposed construction activities, including a detailed schedule for implementation;

(c) The proposed vegetation planting scheme and detailed schedule for implementation;

(d) Measures to be implemented during and after construction to avoid adverse impacts related to proposed activities;

(e) A detailed perpetual management plan comprising all aspects of operation and maintenance, including water management practices, vegetation establishment, exotic and nuisance species control, fire management, and control of access; and,

(f) A proposed monitoring plan to demonstrate mitigation success.

(5) An assessment of improvement or changes in ecological value anticipated as a result of proposed mitigation actions which shall include:

(a) A description of anticipated site conditions in the Mitigation Bank after the mitigation plan is successfully implemented;

(b) A comparison of current fish and wildlife habitat to expected habitat after the mitigation plan is successfully implemented; and,

(c) A description of the expected ecological benefits to the regional watershed.

(6) Evidence of sufficient legal or equitable interest in the property which is to become the Mitigation Bank to meet the requirements of rule 62-342.650, F.A.C.

(7) Draft documentation of financial responsibility meeting the requirements of rule 62-342.700, F.A.C.

(8) Any additional information which the Agency requests in order to evaluate whether the proposed Mitigation Bank meets the criteria of section 373.4136, F.S., and this chapter.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.450, Amended 12-12-94, 5-21-01, 2-19-15.

62-342.470 Establishment of Mitigation Credits.

(1) Based upon the information submitted by the applicant, and an assessment of the proposed Mitigation Bank under the criteria of section 373.4136, F.S., the Agency will assign a number of Mitigation Credits to the proposed Mitigation Bank, or phases thereof.

(2) Mitigation Credits assigned for enhancement, restoration or preservation of wetlands or uplands will be based on the extent of improvement in ecological value resulting from these activities as determined using a functional assessment method relative to that obtained by successfully creating one acre of wetland. In determining the degree of improvement in ecological value, the following factors will be considered. However, no credits shall be released until the requirements of rules 62-342.650 and 62-342.700, F.A.C., are met.

(a) The extent to which target hydrologic regimes can be achieved and maintained.

(b) The extent to which management activities promote natural ecological conditions, such as natural fire patterns.

(c) The proximity of the Mitigation Bank to areas with regionally significant ecological resources or habitats, such as national or state parks, Outstanding National Resource Waters and associated watersheds, Outstanding Florida Waters and associated watersheds, and lands acquired or to be acquired through governmental or non-profit land acquisition programs for environmental conservation; and the extent to which the Mitigation Bank establishes corridors for fish, wildlife or listed species to those resources or habitats.

(d) The quality and quantity of wetland or upland restoration, enhancement, preservation, or creation.

(e) The ecological and hydrological relationship between wetlands and uplands in the Mitigation Bank.

(f) The extent to which the Mitigation Bank provides habitat for fish and wildlife, especially habitat for species listed as threatened, endangered or of special concern, or provides habitats which are unique for that mitigation service area.

(g) The extent to which the lands that are to be preserved are already protected by existing state, local or federal regulations or land use restrictions.

(h) The extent that lands to be preserved would be adversely affected if they were not preserved.

(i) Any special designation or classification of the affected waters and lands.

(3) Some Mitigation Credits may be released for use prior to meeting all of the performance criteria specified in the Mitigation Bank Permit. The release of all mitigation credits awarded will only occur after the bank meets all of the success criteria specified in the permit. The number of credits and schedule for release shall be determined based upon the performance criteria for the Mitigation Bank, the success criteria for each mitigation activity, and a consideration of the factors listed in section 373.4136(5), F.S. However, no credits shall be released until the requirements of rules 62-342.650 and 62.342.700, F.A.C., are met. Additionally, no credits awarded for freshwater creation shall be released until the success criteria included in the Mitigation Bank Permit are met.

(4) If at any time the banker is not in material compliance with the terms of the Mitigation Bank Permit, no Mitigation Credits may be withdrawn. Mitigation Credits shall again be available for withdrawal if the banker comes back into compliance.

(5) The Mitigation Bank Permit shall contain a ledger listing the number and type of Mitigation Credits in the Mitigation Bank. The ledger will provide the maximum number and type of Mitigation Credits which would be available for withdrawal when the Mitigation Bank meets all of the performance criteria in the permit.

(6) Mitigation Credits that have been released may be used to offset adverse impacts from an activity regulated under part IV, chapter 373, F.S. Mitigation credits may be used in whole or in part. However, Mitigation Credits in increments of less than a hundredth of one credit shall not be used.

(7) The Agency shall maintain a ledger of the Mitigation Credits available in each Mitigation Bank. Mitigation Credits shall be withdrawn as a minor modification of the Mitigation Bank Permit. To use Mitigation Credits, the impact permit applicant must submit to the agency permitting the impact, documentation from the banker demonstrating that Mitigation Credits have been reserved, sold or transferred to the permit applicant, and that the banker has requested that the Mitigation Credits be withdrawn from the Mitigation Bank. If the agency permitting the impact determines that use of the Mitigation Credits proposed by the applicant is appropriate to offset the adverse impacts, it shall notify the Agency. Upon receipt of this notice, the Agency shall determine if a sufficient number and type of Mitigation Credits are available, withdraw the Mitigation Credits as a minor modification of the Mitigation Bank Permit, and notify the agency permitting the impact and the banker by letter of the withdrawal of the Mitigation Credits and the remaining balance of Mitigation Credits.

(8) When the Department or a District is the banker, each Agency shall maintain its own ledger. The District or Department shall annually submit a report of the Mitigation Credits sold, transferred, or used from its Mitigation Bank to the permitting Agency.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.470, Amended 5-21-01, 2-19-15.

62-342.600 Mitigation Service Area.

(1) A Mitigation Service Area will be established for each Mitigation Bank in the Mitigation Bank Permit under the criteria of section 373.4136(6), F.S. Except as provided herein, Mitigation Credits may only be withdrawn to offset adverse impacts in the Mitigation Service Area. The boundaries of the Mitigation Service Area shall depend upon the geographic area where the Mitigation Bank could reasonably be expected to offset adverse impacts.

(2) A Mitigation Service Area may be larger than the regional watershed if the Mitigation Bank provides exceptional ecological value such that adverse impacts to wetlands outside the regional watershed could reasonably be expected to be adequately offset by the Mitigation Bank because of local ecological or hydrological conditions. A Mitigation Service Area may be smaller than a regional watershed, if adverse impacts throughout the regional watershed cannot reasonably be expected to be offset by the Mitigation Bank because of local ecological or hydrological conditions.

(3) Mitigation Service Areas may overlap and Mitigation Service Areas for two or more Mitigation Banks may be approved for a regional watershed.

(4) If the requirements in rule 62-342.300, F.A.C., are met, the following projects or activities shall be eligible to use a Mitigation Bank, notwithstanding the fact that they are not completely located within the Mitigation Service Area:

(a) Projects with adverse impacts partially located within the Mitigation Service Area.

(b) Linear projects, such as roadways, transmission lines, distribution lines, pipelines, or railways.

(c) Projects with total adverse impacts of less than one-half acre in size.

(5) When Mitigation Credits are applied to offset adverse impacts within the same regional watershed as the Mitigation Bank, the Mitigation Credit requirement shall be the same as that specified for mitigation on the project site.

(6) When Mitigation Credits are applied to offset adverse impacts outside the regional watershed, the Mitigation Credit requirement shall be higher than that specified for mitigation on the project site if necessary to adequately offset the adverse impacts of the project, except for linear projects, as referenced in paragraph (4)(b), above, when the impact being offset is within the Mitigation Service Area of the Mitigation Bank to be used.

Rulemaking Authority 373.4136(11) FS. Law Implemented 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.600, Amended 12-12-94, 5-21-01.

62-342.650 Land Use Restrictions on Mitigation Banks.

(1) Before Mitigation Credits may be used from a Mitigation Bank or any phase of a Mitigation Bank, the banker shall either:

(a) Cause a fee interest to be conveyed to the Board of Trustees of the Internal Improvement Trust Fund ("Board of Trustees"); or

(b) Cause a conservation easement to be conveyed to both the Department and the District. The grantor of a conservation easement may convey a conservation easement to additional grantees, but such conveyance shall be subordinate to the conservation easement granted to the Department and the District. Mitigation Banks on federal, state, or water management district owned land shall be encumbered in perpetuity by conservation easements, or other mechanisms shall be employed to ensure preservation according to the Mitigation Bank Permit.

(2) If the Mitigation Bank is located within an area identified in an Agency acquisition plan, and the Agency determines that the ecological value of the bank can be increased by incorporating the bank into the Agency's land management programs, the Agency may award additional Mitigation Credits if the fee interest in the bank is conveyed to the Agency as opposed to a conservation easement.

(3) All conservation easements shall be granted in perpetuity without encumbrances, unless such encumbrances do not adversely affect the ecological viability of the Mitigation Bank. All conservation easements shall be of a form and content sufficient to ensure preservation of the Mitigation Bank according to the permit, and shall, at a minimum, meet requirements and restrictions of section 704.06, F.S., except as provided in subsection 62-342.650(9), F.A.C. The conservation easement shall also provide that the banker shall have access to the property and the authority to perform all acts necessary to ensure compliance with the Mitigation Bank Permit (unless the banker is the fee owner of the property), and that the Agency shall have access and the authority to perform these acts if the banker fails to do so.

(4) All real property conveyances of the fee interest shall be in fee simple and by statutory warranty deed, without encumbrances that adversely affect the integrity of the bank and are acceptable to the Board of Trustees. The Board of Trustees will accept a quit claim deed to aid in clearing minor title defects or otherwise resolve a boundary question in the Mitigation Bank.

(5) As part of providing reasonable assurance that the Mitigation Bank site will be preserved in perpetuity, the grantor of the property or conservation easement shall provide the following unless the Agency determines during the permit review process such items are not necessary to ensure preservation of the Mitigation Bank according to the permit:

(a) A boundary survey of the real property interest being conveyed. The survey must be certified, by a land surveyor and mapper, registered in the State of Florida, to meet the requirements of the Agency and the minimum technical standards set forth by the Florida Board of Professional Surveyors and Mappers in rules 5J-17.050 through 5J-17.052, F.A.C., under section 472.027, F.S.

(b) A certified appraisal or other documentation demonstrating the market value of the property or interest to be conveyed to determine the appropriate amount of title insurance.

(c) A marketable title commitment issued to the Agency as beneficiary in an amount at least equal to the fair market value, as established in paragraph 62-342.650(5)(b), F.A.C., of the interest being conveyed. An owner's title insurance policy (ALTA Form B) naming the Agency as beneficiary shall be issued to the Agency within the time frames specified by the permit. The coverage, form and exceptions of the title insurance policy shall ensure that the Mitigation Bank will be preserved according to the Mitigation Bank Permit.

(d) A Phase I environmental audit identifying any environmental problems which may affect the liability of the Agency or Board of Trustees and any additional audits as are necessary to ensure that the Agency or the Board of Trustees is not subject to liability under federal or state laws relating to the treatment or disposal of hazardous substances or ownership of land upon which hazardous substances are located, or to ensure that there are not hazardous substances present on the property which would adversely affect construction, implementation, and perpetual management of the Mitigation Bank.

(6) The Agency shall require additional documentation or actions from the grantor of the conservation easement or fee interest if

such additional documentation or actions are necessary to ensure that the Mitigation Bank will be preserved according to the Mitigation Bank Permit.

(7) The banker shall pay the documentary revenue stamp tax and all other taxes or costs associated with the conveyance, including the cost of recording the deed or conservation easement and any other recordable instruments required by the Agency or Board of Trustees, unless prohibited or exempt by law, as a condition of the receipt of the conveyance.

(8) All real estate taxes and assessments which are or which may become a lien against the property shall be satisfied of record by the banker before recording the conservation easement. If necessary, the banker shall, in accordance with section 196.295, F.S., place funds in escrow with the county tax collector. The mitigation banker shall also provide the Agency with annual documentation demonstrating that such taxes and assessments have been paid.

(9) As a condition of receipt of the conveyance the banker shall remove all abandoned personal property, solid waste, or hazardous substances from the property that: reduces the proposed ecological value of the property; will adversely affect the construction, implementation or management of the bank; will adversely affect the construction, alteration, operation, maintenance, abandonment or removal of any surface water management system to be constructed in the bank; or poses a risk of liability to the Board of Trustees or the Agency.

(10) The banker shall record the conservation easement or property deed required in the Mitigation Bank Permit. The banker shall submit to the Agency the original recorded conservation easement or property deed as soon as such document is returned from the public records office.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.650, Amended 12-12-94, 5-21-01, 2-19-15.

62-342.700 Financial Responsibility.

(1) To provide reasonable assurances that the proposed Mitigation Bank will meet the requirements of section 373.4136, F.S., this rule and the associated permit conditions, non-governmental bankers shall provide proof of financial responsibility for: (a) the construction and implementation of the bank, and (b) the perpetual management of the bank, as required in this section. Governmental entities shall provide proof of financial responsibility under subsection 62-342.700(15), F.A.C. The amount of financial responsibility provided in the mechanisms required in this rule shall be based on the cost estimates determined under subsection 62-342.700(13), F.A.C.

(2) Submitting Financial Responsibility Documentation. The applicant shall provide draft documentation of the cost estimate and required financial responsibility mechanisms described in subsections 62-342.700(5) through (11) and 62-342.700(13), F.A.C., with the permit application, and shall submit to the Agency the executed or finalized documentation within the time frames specified in the permit. The provisions of this section shall also apply to any modifications to the Mitigation Bank Permit.

(3) General Terms for Financial Responsibility Mechanisms. In addition to the specific provisions regarding financial responsibility mechanisms for construction and implementation in subsection 62-342.700(4), F.A.C., and perpetual management in subsection 62-342.700(12), F.A.C., the following terms shall be complied with:

(a) The financial responsibility mechanisms shall be payable at the direction of the Agency to its designee or to a standby trust or standby escrow. The financial responsibility mechanism shall be retained by the Agency if it is of a type which is retained by the beneficiary according to industry standards.

(b) Demonstration of financial responsibility shall be continuous until complete satisfaction of the applicable permit conditions and approved release of financial responsibility by the Agency.

(c) Collectively, the financial responsibility mechanisms must guarantee that the banker will perform all of its obligations under the permit. Within 90 days after receipt by both the banker and the Agency of a notice of cancellation or termination of a financial responsibility mechanism, the banker shall establish a financial responsibility mechanism that meets the criteria of this rule, subject to the Agency's written approval.

(d) A banker may satisfy the requirements of this section by establishing more than one acceptable financial responsibility mechanism per Mitigation Bank. Whenever more than one mechanism is used, the banker shall identify the specific financial responsibility mechanism for each individual activity on the cost estimate as required under subsection 62-342.700(13), F.A.C.

(e) A banker may use a financial responsibility mechanism allowed under this section for more than one Mitigation Bank. The amount of funds available through the mechanism must be no less than the sum of funds that would be required for separate mechanisms for each Mitigation Bank.

(f) A banker must notify the Agency by certified mail within 10 days after the commencement of a voluntary or involuntary proceeding:

1. To dissolve the banker;

2. To place the banker in receivership;

3. For entry of an order for relief against the banker under Title 11 of the United States Code; or

4. A general assignment of its assets for the benefit of creditors under chapter 727, F.S.

A banker will be without the required financial assurance in the event of the suspension or revocation of the authority of any trustee to act as trustee, or in the event of a bankruptcy or receivership of the issuing institution of a financial responsibility mechanism, or the revocation of the authority of such institution to issue such instruments. The banker must notify the Agency within 10 days, and establish other financial assurance within 60 days after such an event.

(4) Financial Responsibility for Construction and Implementation.

(a) No financial responsibility shall be required where the construction and implementation of the Mitigation Bank, or a phase thereof, is completed and successful, as determined by the Agency pursuant to the final success criteria in the Permit, prior to the withdrawal of any credits.

(b) Financial responsibility for the construction and implementation activities of the Mitigation Bank, or each phase thereof, may be established by surety bonds, performance bonds, irrevocable letters of credit, insurance policies, escrow accounts, or trust funds, as described below.

(c) The amount of financial responsibility established shall equal 110 percent of the cost of construction and implementation of the Mitigation Bank, or each phase thereof, in accordance with subsection 62-342.700(13), F.A.C., and as adjusted in accordance with subsection 62-342.700(14), F.A.C., during the course of the project. When the bank has been completely constructed, implemented, and is trending toward success in compliance with the permit, the respective amount of financial responsibility shall be released.

(d) The financial responsibility mechanism shall become effective prior to the release of any mitigation credits.

(5) Surety or Performance Bond.

(a) A banker may satisfy the requirements of subsection 62-342.700(1), F.A.C., by obtaining a surety or performance bond that conforms to the requirements of this subsection. The company issuing the bond must be authorized to do business in Florida. The company must also be among those listed as acceptable sureties in the latest Circular 570 of the U.S. Department of the Treasury (July 1, 2017), which is incorporated by reference herein and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09504, or a Florida-domiciled surety or insurance company with at least an A- rating from the A.M. Best and authorized to write individual bonds up to 10 percent of the policyholder's surplus. The banker shall provide documentation evidencing that the bond company meets these requirements.

(b) The surety or performance bond shall be worded in substantial conformance with Form 62-342.700(5), "Mitigation Bank Performance Bond to Demonstrate Construction and Implementation Financial Assurance" (June 12, 2018), which is incorporated by reference herein and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09498. This form and all the forms incorporated in rule 62-342.700, F.A.C., also are available from the Department of Environmental Protection's Internet site, https://floridadep.gov/water/submerged-lands-environmental-resources-coordination/content/forms-environmental-resource; or by contacting the Division of Water Resource Management, Department of Environmental Protection, 2600 Blair Stone Road, MS #2500, Tallahassee, Florida 32399-2400, (850)245-8336. Deviations from the form shall be identified and submitted to the Agency.

(c) Under the terms of the bond, the surety shall become liable on the bond obligation when the mitigation banker fails to perform under the terms of the Mitigation Bank Permit. In all cases, the surety's liability shall be limited to the sum stated in the bond.

(d) The mitigation banker who uses a surety or performance bond to satisfy the requirements of subsection 62-342.700(4), F.A.C., must establish a standby escrow or standby trust fund when the surety or performance bond is acquired. Under the terms of the bond, all amounts paid by the surety under the bond will be deposited directly into the standby escrow or standby trust fund for distribution by the agent or trustee in accordance with the Agency's instructions. The standby escrow agreement and standby trust fund agreement must meet the requirements specified in subsections 62-342.700(9) and 62-342.700(10), F.A.C., respectively.

(e) The bonding company shall provide notice of cancellation of a bond by certified mail to the banker and to the Agency. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the banker and the Agency, as evidenced by the return receipt.

(f) A bond may be canceled by the banker if the Agency has given prior written consent. The Agency shall provide such consent when either the banker substitutes alternative financial assurance allowed under this rule and such alternate financial assurance is approved by the Agency and is effective or the Agency approves release of financial assurance in accordance with paragraph 62-342.700(4)(c), F.A.C.

(6) Irrevocable Letter of Credit.

(a) A mitigation banker may satisfy the requirements of subsection 62-342.700(1), F.A.C., by obtaining an irrevocable letter of credit that conforms to the requirements of this subsection. The irrevocable letter of credit shall be provided by a federally insured depository that is "well capitalized" or "adequately capitalized" as defined in Section 38 of the Federal Deposit Insurance Act [12 USC 1831o(b)], incorporated by reference herein and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09505. The banker shall submit documentation evidencing that the federally insured depository is appropriately capitalized.

(b) The irrevocable letter of credit shall be worded in substantial conformance with Form 62-342.700(6), "Mitigation Bank Irrevocable Letter of Credit to Demonstrate (Construction and Implementation or Perpetual Management) Financial Assurance" (June 12, 2018) [available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09499, and as described in paragraph (5)(b), above], incorporated by reference herein. Deviations from the form shall be identified and submitted to the Agency.

(c) A mitigation banker who uses an irrevocable letter of credit to satisfy the requirements of subsection 62-342.700(4), F.A.C., must also establish a standby escrow or standby trust fund when the irrevocable letter of credit is acquired. Under the terms of the irrevocable letter of credit, all amounts paid pursuant to a sight draft by the Agency will be deposited by the issuing institution directly into the standby escrow or standby trust fund to be distributed by the agent or trustee in accordance with instructions from the Agency. This standby trust fund must meet the requirements specified in subsections 62-342.700(9) and 62-342.700(10), F.A.C., respectively.

(d) Letters of credit must be irrevocable and issued for a period of at least one year, and the expiration date must be automatically extended for a period of at least one year unless, at least 120 days prior to the expiration date, the issuing institution notifies both the banker and the Agency by certified mail of a decision not to extend the expiration date. The terms of the irrevocable letter of credit must provide that the 120 days begins on the date when both the banker and the Agency have received the notice, as evidenced by the return receipts.

(7) Insurance Policy.

(a) A mitigation banker may satisfy the requirements of subsection 62-342.700(1), F.A.C., for construction and implementation activities by obtaining an insurance policy that conforms to the requirements of this subsection. The insurance policy shall be provided by an insurance company that is authorized to transact insurance in the State of Florida and has at least an A- rating from the A.M. Best. The banker shall provide documentation to the Agency evidencing that the insurance company meets these requirements.

(b) The insurance policy must be worded in substantial conformance to Form 62-342.700(7), "Mitgation Bank Insurance Coverage Form" (June 12, 2018), incorporated by reference herein [available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09500 and as described in paragraph (5)(b), above]. Deviations from the form to meet insurance company documentary requirements must satisfy all criteria listed on the "Mitigation Bank Insurance Coverage Form" and be identified and submitted to the Agency.

(c) The insurance policy must be issued for a period of no less than one year beyond the anticipated completion and success of the mitigation bank, or the last success criterion insured, which ever occurs first based on the construction and implementation schedule in the mitigation bank permit.

(d) The insurance policy must be non-cancellable for the term of the policy. The insurance policy shall include a provision to notify the Agency and banker by certified mail at least 120 days prior to the termination of the policy, nonrenewal of the policy, or a change to the terms and conditions of the policy. The insurance policy must automatically renew for the same terms and conditions of the policy unless the insurance company provides notice of nonrenewal to the banker and the Agency as required in this subsection.

(e) Under the terms of the insurance policy, the Agency must have the authority to file claims when the banker either fails to perform under the terms of the mitigation bank permit, as determined solely by the Agency, or fails to replace the insurance policy with an alternative financial responsibilty mechanism prior to the termination of the insurance policy. The insurance policy must afford the Agency with the sole authority to determine whether the action taken or proposed to be taken by the insurance company is sufficient to satisfy a claim made by the Agency. A claim is satisfied when the amount received by the Agency is greater than or

equal to the most recent approved cost estimate or adjustment in accordance with subsections 62-342.700(13) and 62-342.700(14), F.A.C., respectively, and the bank is in compliance with the terms of the permit.

(f) The mitigation banker who uses an insurance policy to satisfy the requirements of subsection 62-342.700(4), F.A.C., must establish a standby escrow or standby trust fund when the insurance policy is acquired. Under the terms of the insurance policy, all amounts paid by the insurance company in satisfaction of a claim will be deposited directly into the standby escrow or standby trust fund for distribution by the agent or trustee in accordance with the Agency's instructions.

(g) The declaration's page of the insurance policy shall include all of the following items:

1. Insured location – the bank address;
2. Mitigation bank permit number;
3. Insurer's claim's notice address;
4. Regulatory entities and addresses, to include the U.S. Army Corps of Engineers;
5. Surplus line agent – name, address, license number;
6. Producing agent's name, address, and other contact information;
7. Insured's name, address, and other contact information;
8. Policy premium;
9. Limit of liability;
10. Policy inception and expiration dates;
11. Service fee;
12. Premium receipts tax; and
13. Deductible amount.

(8) Escrow.

(a) A mitigation banker may satisfy the requirements of subsection 62-342.700(1), F.A.C., by a deposit of cash into an interest-bearing escrow account with the Florida Department of Financial Services.

(b) The escrow agreement must be worded in substantial conformance to Form 62-342.700(8), "Standby Escrow Agreement" (June 12, 2018), incorporated by reference herein [available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09503 and as described in paragraph (5)(b), above]. Deviations from the form must be identified and submitted to the Agency.

(c) The escrow agreement must be irrevocable until the Agency approves release of financial security in accordance with paragraph 62-342.700(4)(c), F.A.C., and authorizes a final payout.

(9) Standby Escrow.

(a) A mitigation banker using a surety or performance bond, irrevocable letter of credit, or insurance policy shall contemporaneously establish either a standby escrow with the Florida Department of Financial Services meeting the requirements of this subsection or a standby trust fund under subsection 62-342.700(10), F.A.C.

(b) The standby escrow agreement shall be worded in substantial conformance with Form 62-342.700(8), F.A.C., incorporated by reference in paragraph 62-342.700(8)(b), F.A.C., except that the agreement will identify that it is establishing a standby escrow account. Deviations from the form must be identified and submitted to the Agency.

(c) The standby escrow agreement must be irrevocable until the Agency determines that it is no longer required.

(10) Standby Trust Fund.

(a) A mitigation banker using a surety or performance bond, irrevocable letter of credit, or insurance policy shall contemporaneously establish either a standby trust fund meeting the requirements of this subsection or a standby escrow under subsection 62-342.700(9), F.A.C. The trustee of the standby trust shall be an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal agency or an agency of the State of Florida. The banker shall provide documentation evidencing such regulation and examination to the Agency.

(b) The standby trust agreement shall be worded in substantial conformance with Form 62-342.700(10), "Mitigation Bank Standby Trust Fund Agreement to Demonstrate (Construction and Implementation or Perpetual Management) Financial Assurance" (June 12, 2018) [available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09502 and as described in paragraph (5)(b), above], incorporated by reference herein. Deviations from the form shall be identified and submitted to the Agency. This form and Form 62-342.700(11), incorporated in subsection 62-342.700(11), F.A.C., references the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-1 et seq. (February 19, 2015), which is incorporated by reference herein and available at http://www.flrules.org/Gateway/reference.asp?No=Ref-05064 and as described in paragraph (5)(b), above. A copy of the Act may

also be obtained by contacting the Division of Water Resource Management, Department of Environmental Protection, 2600 Blair Stone Road, MS #2500, Tallahassee, Florida 32399-2400, (850)245-8336.

(11) Trust Fund.

(a) A mitigation banker may satisfy the requirements of subsection 62-342.700(1), F.A.C., by establishing a trust fund that conforms to the requirements of this section. The trustee of the trust fund shall be an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal agency or an agency of the State of Florida. The banker shall provide documentation evidencing proof of such regulation and examination to the Agency.

(b) The trust fund agreement must be worded in substantial conformance to Form 62-342.700(11), "Mitigation Bank Trust Fund Agreement to Demonstrate Construction and Implementation Financial Assurance" (June 12, 2018) [available at http://www.flrules.org/Gateway/reference.asp?No=Ref-09501 and as described in paragraph (5)(b), above], incorporated by reference herein. Deviations from the form shall be identified and submitted to the Agency.

(12) Financial Responsibility for Perpetual Management.

(a) A banker shall establish financial assurance for the perpetual management of the Mitigation Bank, or phase thereof, using the financial responsibility mechanisms described in subsections 62-342.700(5) through 62-342.700(11), F.A.C., except that an insurance policy under subsection 62-342.700(7), F.A.C., may not be used. When an escrow agreement or trust fund is used, the requirements of subsections 62-342.700(8) and 62-342.700(11), F.A.C., respectively, must be met and all references to perpetual management in Forms 62-342.700(8) and 62-342.700(11) shall be selected. When a surety bond, performance bond, guarantee bond, or irrevocable letter of credit is used, a standby trust fund agreement must be established by the banker, and the requirements of subsections 62-342.700(5), 62-342.700(6), 62-342.700(9) and 62-342.700(10), F.A.C., respectively, must be met, and all references to perpetual management in Forms 62-342.700(8) and 62-342.700(11) shall be selected.

(b) The amount of financial responsibility provided shall be sufficient to be reasonably expected to generate annual revenue equal to the annual cost of perpetual management, established under subsection 62-342.700(13), F.A.C., at an assumed average rate of return of six percent per annum, for the bank, or for banks constructed in phases, for all phases for which credits have been released.

(c) The financial responsibility mechanism must be in effect prior to the withdrawal of credits from the Mitigation Bank, or applicable phase thereof.

(13) Cost estimates.

(a) For the purposes of determining the amount of financial responsibility that is required in this section, the banker shall submit a detailed written estimate, in current dollars, of the total cost of construction and implementation and of the cost of perpetual management of the Mitigation Bank. The written cost estimate shall be certified by a licensed professional whose license authority in the State of Florida includes the ability to provide such estimates.

(b) The cost estimate for construction and implementation shall include all costs associated with completing construction and implementation of the Mitigation Bank, or phase thereof, including, as applicable, earthmoving, planting, exotic/nuisance vegetation removal, prescribed fire, land surveying, structure installation, consultant fees, taxes, monitoring activities and reports.

(c) The cost estimate for the perpetual management of the Mitigation Bank shall be based on the costs of maintaining and operating any structures, controlling nuisance or exotic species, fire management, consultant fees, monitoring activities and reports, taxes, and any other costs associated with perpetual management. The amount of financial responsibility shall equal the cost of perpetual management for the bank, or, for banks constructed in phases for all phases for which credits have been released.

(d) The banker shall submit written cost estimates with verifiable basis for the estimates to the Agency along with the financial responsibility mechanism. If more than one financial responsibility mechanism is proposed for the construction and implementation or for perpetual management, the cost estimate shall specify the appropriate mechanism for each itemized cost.

(e) The costs shall be estimated based on a third party performing the work at the fair market value of services. The source of any cost estimates shall be indicated.

(14) Cost adjustments.

(a) Every two years, the banker shall undertake an estimate of the costs of the remaining construction and implementation, and perpetual management. The banker shall submit the estimate to the Agency in writing certified by a person licensed in the State of Florida to provide such estimates, accompanied by supporting documentation. Construction, implementation activity costs, and perpetual management costs shall be listed separately. The Agency shall review the cost adjustment statement and supporting documentation to determine if they reflect all construction, implementation costs and perpetual management costs. If the cost

adjustment statement and supporting documentation accurately reflect a good faith estimate of all construction, implementation costs and perpetual management costs, the Agency shall approve the cost adjustment statement.

(b) At each cost adjustment, the banker shall revise the construction, implementation, and perpetual management cost estimate for inflation and changes in the costs to complete or undertake the current phase of the Mitigation Bank or appropriate phase thereof in accordance with subsection 62-342.700(13), F.A.C.

(c) Revised cost estimates shall be used as the basis for modifying the financial responsibility mechanisms. If the value of any financial responsibility mechanism is less than the total amount of the current construction and implementation and perpetual management cost estimates, the banker shall, upon Agency approval of the cost adjustment statement, increase the value of the financial mechanism to reflect the new estimate within 60 days. If the value of any funding mechanism is greater than the total amount of the current cost estimate, the banker may reduce the value of the funding mechanism to reflect the new estimate upon receiving Agency approval of the cost adjustment statement.

(d) The Agency shall require adjustment of the amount of financial responsibility provided for construction, implementation and perpetual management at times other than the cost adjustment period when the estimated costs associated with compliance with the permit conditions exceed the current amount of financial responsibility and such financial assurances are deemed necessary to ensure compliance with the permit conditions.

(e) The banker may provide revised cost estimates more frequently than every two years. If at any time the banker learns that actual costs exceed estimated costs by more than 25 percent, the banker shall provide a revised cost estimate and adjust the corresponding amount of financial responsibility under this rule.

(15) Financial Responsibility for Governmental, Non-Department and Non-Water Management District, Mitigation Banks.

(a) A governmental entity other than the Department or Districts shall demonstrate reasonable assurances that it can meet the construction and implementation requirements in the Mitigation Bank Permit by any of the mechanisms in subsection 62-342.700(4), F.A.C., above, or by other financial mechanisms which are sufficient to meet the requirements of this section.

(b) Governmental entities other than the Department or Districts shall establish a trust fund for the perpetual management of the Mitigation Bank which meets the requirements of subsection 62-342.700(11), F.A.C., above. The trust fund for perpetual management may be funded as Mitigation Credits are withdrawn, provided that the trust fund is fully funded when all Mitigation Credits are withdrawn. Governmental entities shall comply with the cost adjustment provisions in subsection 62-342.700(14), F.A.C.

Rulemaking Authority 373.4131, 373.4135(1), 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.700, Amended 12-12-94, 9-12-95, 5-21-01, 2-19-15, 6-12-18.

62-342.750 Mitigation Bank Permit and Mitigation Bank Conceptual Approval.

If the Mitigation Bank proposal meets the criteria of section 373.4136, F.S., chapter 62-330, F.A.C., and this chapter, the Agency shall issue a Mitigation Bank Permit to the banker. An authorization under this section may be issued in two forms: a Mitigation Bank Permit or a Mitigation Bank Conceptual Approval.

(1) The Mitigation Bank Permit authorizes the establishment, implementation and operation of the Mitigation Bank, authorizes the construction, alteration, operation, maintenance, abandonment or removal of any surface water management system proposed within the Mitigation Bank, and sets forth the rights and responsibilities of the banker and the Department for the implementation, management, maintenance and operation of the Mitigation Bank. The Mitigation Bank Permit shall include the following:

(a) A description of the Mitigation Service Area.

(b) The maximum number of Mitigation Credits available for use when the Mitigation Bank, or phase thereof, is deemed successful, the type of Mitigation Credits awarded, and the number and schedule of Mitigation Credits available for use prior to success.

(c) The success criteria by which the Mitigation Bank will be evaluated.

(d) The financial responsibility mechanism(s) which must be employed by the banker, and provisions for adjustment of the financial responsibility mechanism.

(e) Requirements for the execution and recording of the conservation easement or conveyance of the fee interest as provided in rule 62-342.650, F.A.C.

(f) A ledger listing Mitigation Credits available in the Mitigation Bank.

(g) A schedule for implementation of the Mitigation Bank, and any phases therein.

(h) The perpetual management requirements for the mitigation bank.

(i) The conditions required under chapter 62-330, F.A.C., for construction, alteration, operation, maintenance, abandonment or removal of any surface water management system proposed within the Mitigation Bank.

(2) A Mitigation Bank Permit shall automatically expire five years from the date of issuance if the banker has not recorded a conservation easement or conveyed fee simple interest, as appropriate, over the real property within the Mitigation Bank, or phase thereof, in accordance with the Mitigation Bank Permit; or, when no property interest is required to be recorded, the Mitigation Bank Permit shall automatically expire if no construction has been commenced pursuant thereto. Except as provided above, a Mitigation Bank Permit shall be perpetual unless revoked or modified.

(3) A Mitigation Bank Conceptual Approval estimates the legal and financial requirements necessary for the Mitigation Bank, information necessary for evaluation of the Mitigation Bank Permit application, and potential Mitigation Credits to be awarded pursuant to the Mitigation Bank Permit. The Mitigation Bank Conceptual Approval does not authorize the use or withdrawal of Mitigation Credits, or any construction within the Mitigation Bank. The level of detail provided in the Mitigation Bank Conceptual Approval will depend on the level of detail submitted with the application. A Mitigation Bank Conceptual Approval shall be valid for a term of five years from the date of issuance.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.750, Amended 5-21-01, 2-19-15.

62-342.800 Surrender, Transfer, or Modification of Mitigation Bank Permits.

(1) If no credits have been used or sold, a banker may apply to surrender a Mitigation Bank Permit, or permitted phase thereof, by submitting a written request to the Agency. The written request must identify which phase of the Mitigation Bank will be surrendered, indicate the extent of mitigation work performed in that phase, and describe the conservation property interest encumbering that phase. The Agency shall authorize release from a Mitigation Bank Permit when no credits have been used, and relinquishment of the phase would not compromise the ecological value of the remaining portions of the Mitigation Bank. A surrender and release of a geographic phase of a Mitigation Bank shall be made by modification of the Mitigation Bank Permit.

(2) If a property interest has been conveyed as provided in rule 62-342.650, F.A.C., for a Mitigation Bank Permit which is surrendered as provided above, the Agency shall convey the property interest back to the grantor of that interest.

(3) If a surface water management system has been constructed or altered within the Mitigation Bank, the banker shall obtain any permits required under part IV of chapter 373, F.S., and chapter 62-330, F.A.C., to operate or abandon the surface water management system.

(4) To transfer a Mitigation Bank Permit, the banker shall meet the requirements of chapter 62-330, F.A.C., and the entity to whom the permit will be transferred must provide reasonable assurances that it can meet the requirements of the permit. If the transfer to the Agency is proposed, the current banker shall provide an updated cost estimate and adjust the final responsibility mechanism, as appropriate, prior to transfer of the permit.

(5) A Mitigation Bank Permit can be issued as a modification of a Mitigation Bank Conceptual Approval.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.800, Amended 12-12-94, 5-21-01, 2-19-15.

62-342.850 Department or Water Management District Mitigation Banks.

The Department or a District may construct, operate, manage, and maintain a Mitigation Bank under this section after obtaining a Mitigation Bank Permit from the appropriate reviewing Agency.

(1) The Department or District may apply to establish a Mitigation Bank by submitting a Mitigation Bank plan, meeting the applicable permitting criteria of this section, in one of the following formats:

(a) A Mitigation Bank plan identifying one or more parcels of lands to be acquired for mitigation site(s).

(b) A Mitigation Bank plan identifying one or more parcels of land in which the Department or District has a legal or equitable interest.

(2) Land Use Restrictions on Department or District Mitigation Banks. The Department or District shall maintain the land within the Regional Mitigation Bank pursuant to the terms of the Mitigation Bank Permit. Any change in the land use shall require a modification of the Mitigation Bank Permit.

(3) Notwithstanding any other provision of this chapter, the Department or District may sell, transfer, or use Mitigation Credits prior to acquiring the proposed mitigation site as set forth in its Mitigation Bank Permit.

(4) Financial Responsibility. A portion of the funds contributed to a Department or District Mitigation Bank from the sale of credits shall be dedicated for the construction and implementation of the Mitigation Bank, and a portion of the funds shall be dedicated for the long-term management of the bank as set forth in the Mitigation Bank Permit. Funds derived from the sale of Mitigation Credits which are not necessary for the construction, implementation, and long-term management of a Department or District Regional Mitigation Bank shall be dedicated for the initiation of other Department or District Mitigation Banks, or expansion of other Department or District land acquisition or restoration projects which improve regional ecological conditions.

(5) Procedures for Establishment of Mitigation Banks. Mitigation Banks established by the Department or Districts shall be permitted, as applicable, under the procedures in the Operating Agreements Concerning Environmental Resource Permitting, Management and Storage of Surface Waters Regulation, and Wetland Resource Regulation, as adopted by the Department paragraphs 62-113.100(3)(f), (m), (s), (x), and (aa), F.A.C.

(6) Each Water Management District is encouraged to establish at least two mitigation banks in the District not later than January 1, 1995, or report to the Secretary as to why such mitigation banks have not been established, any attendant problems to establishing such mitigation banks, and a proposed time frame for establishment of such banks.

Rulemaking Authority 373.4131, 373.4136(11) FS. Law Implemented 373.4131, 373.4135, 373.4136 FS. History–New 2-2-94, Formerly 17-342.850, Amended 12-12-94, 5-21-01, 2-19-15.

62-342.900 Mitigation Banking Forms.

Rulemaking Authority 373.4136(11) FS. Law Implemented 373.4135, 373.4136 FS. History–New 5-21-01, Repealed 2-19-15.