

APPLICANT'S HANDBOOK:
CONSUMPTIVE USES OF WATER
CHAPTER 40C-2, F.A.C.



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ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4500

TABLE OF CONTENTS

	<u>Page</u>
PART I - POLICY AND PROCEDURES	
1.0 Introduction	
1.1 Policy	1-1
1.2 Purpose	1-1
1.3 Organization	1-1
1.4 Applicable Statutes	1-1
2.0 Definitions	
2.0 Definitions	2-1
3.0 Activities Requiring a Permit	
3.1 Implementation Date of the Consumptive Use Permitting Program.....	3-1
3.2 Thresholds	3-2
3.3 Permits Required.....	3-5
3.4 Exemptions.....	3-6
3.5 General Permits.....	3-11
4.0 Application Preparation	
4.1 Preapplication Conference.....	4-1
4.2 Forms and Instructions	4-2
4.3 Additional Information	4-2
4.4 Listing of Adjacent Property Owners	4-2
4.5 Permit Processing Fee.....	4-6
4.6 Checklist for Application Completeness	4-6
5.0 Procedures for Processing	
5.1 Procedures Required.....	5-1
5.2 Initial Receipt	5-1
5.3 Request for Additional Information.....	5-2
5.4 Staff Evaluation.....	5-3
5.5 Regulatory Meeting	5-5

6.0	Permits	
6.1	Permit Conditions	6-1
6.2	Use/Source Classifications	6-1
6.3	Water Shortage Procedures	6-4
6.4	Identification Tags	6-4
6.5	Duration.....	6-5
6.6	Enforcement	6-9
6.7	Monitoring Requirements.....	6-9

PART II - CRITERIA FOR EVALUATION

7.0	Introduction to Criteria for Evaluation	
7.1	Purpose	7-1
7.2	Source of Criteria.....	7-1
7.3	Existing Use/Proposed Use Distinction.....	7-1
8.0	Criteria for Evaluating Existing Uses	
8.1	Reasonable-Beneficial	8-1
8.2	Allowable Under the Common Law.....	8-1
9.0	Criteria for Evaluation Proposed Uses	
9.1	Reasonable-Beneficial	9-1
9.2	Interference with Presently Existing Legal Uses.....	9-1
9.3	Public Interest.....	9-1
9.4	Reasons for Recommendation of Denial	9-1
10.0	Reasonable-Beneficial Use Standard	
10.1	Definition of Reasonable-Beneficial Use	10-1
10.2	State Water Policy.....	10-1
10.3	Reasonable-Beneficial Use Criteria.....	10-2
11.0	Evaluation Criteria for Other Types of Applications	
11.1	Modification to an Existing Permit.....	11-1
11.2	Transfer of Permit.....	11-1
11.3	Temporary Use.....	11-1

12.0	Evaluation of Proposed Use of Water	
12.1	Annual Allocation.....	12-1
12.2	Public Supply-Type Uses	12-1
12.3	Commercial/Industrial-Type Uses	12-8
12.4	Mining-Type Uses	12-10
12.5	Agricultural, Nursery, and Aquacultural Uses	12-10
12.6	Golf Course and Recreational-Type Uses	12-14
12.7	Other Use Types	12-15
12.8	Augmentation of Surface Waters	12-15
12.8	Backup Allocations for Reclaimed Water Uses.....	12-16
13.0	Available Water/Competing Applications	
13.1	Insufficiency of Available Water	13-1
13.2	Competing Applications in an Area of Limited Allocable Available Water.....	13-2
14.0	Hydrologic Testing Program	
14.0	Hydrologic Testing Program.....	14-1
PART III - LIMITING CONDITIONS		
15.0	Introduction to Permit Conditions	
15.1	Purpose	15-1
15.2	Organization.....	15-1
16.0	General Conditions	
16.0	General Conditions	16-1
17.0	General Conditions by Type of Use	
17.1	Public Supply-Type Uses	17-1
17.2	Commercial/Industrial-Type Uses	17-2
17.3	Mining-Type Uses	17-2
17.4	Agricultural Uses	17-2
17.5	Nursery Use.....	17-4
17.6	Aquaculture Use.....	17-5
17.7	Golf Course/Recreation Use.....	17-6
18.0	Special Conditions	
18.0	Special Conditions	18-1
19.0	Other Conditions	
19.0	Other Conditions.....	19-1

PART IV - APPENDICES

Appendix A -- Chapter 40C-1, F.A.C.

Appendix B -- Chapters 40C-2, 40C-20, 40C-22, and 40C-23, F.A.C.

Appendix C -- Applications Forms

- (1) Individual and Standard General Consumptive Use Permit Application Form Number 40C-2-1082-1
- (2) Notice of Intent to Use Noticed General Permit for Short Term Construction Dewatering Form Number 40C-22-0590-1
- (3) Notice of Intent to Use Noticed General Permit for Fire Protection Purposes Form Number 40C-22-0590-2 and Water Audit Form and Instructions, Form Number 40C-2.0590-3
- (4) Notice to District of Dewatering Activity Form Number RDS-50.

Appendix D -- Sample Consumptive Use Permit

Appendix E -- Chapter 62-40, F.A.C.

Appendix F -- Guidelines for Conducting an Aquifer Performance Testing Program

Appendix G --- Sample Condition Compliance Forms

Appendix H -- Modified Blaney Criddle Formula

Appendix I -- Water Saving Measures for Water Conservation Plans

Appendix J -- Alternatives to In-Line Flow Meters for Measuring Water Use

Appendix K -- Chapter 40C-8, F.A.C., Minimum Flows and Levels

PART I
POLICY AND PROCEDURES

1.0 Introduction

1.1 Policy

In implementing the consumptive use permitting program established by Chapters 40C-2, 40C-20, and 40C-22, F.A.C., a policy of the District is to assist those affected in understanding the program and in completing applications.

1.2 Purpose

It is the purpose of this Handbook to provide the applicants, potential applicants, and others interested with information regarding the consumptive use permitting program.

1.3 Organization

This Handbook is divided into four parts which provide information regarding the programs, policy and procedures (Part I), criteria used in permit evaluation (Part II), conditions which may be attached to consumptive use permits (Part III), and supplemental materials such as relevant statutes and rules (Part IV).

Additional information may be obtained by contacting:

Resource Management Department
Division of Water Use Regulation
4049 Reid Street
Palatka, Florida 32177-2529
(386) 329-4500

1.4 Applicable Statutes and Rules

The consumptive use permit application process is governed by Chapter 373 and Chapter 120, F.S., and Chapters 28-106, 28-107, 40C-1, 40C-2, 40C-20, and 40C-22, F.A.C. Copies of these statutes (abridged) and rules are included in this Handbook (Part IV) and should be consulted for a comprehensive understanding of the application process.

2.0 Definitions

- (a) Aquifer - A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield useful quantities of ground water to wells and springs.
- (b) Artesian Well - An artificial hole in the ground from which water supplies may be obtained and which penetrates any water-bearing rock, the water in which is raised to the surface by natural flow, or which rises to an elevation above the top of the water-bearing bed. "Artesian Wells" are defined further to include all holes, drilled as a source of water, that penetrate any water-bearing beds that are a part of the artesian water system of Florida, as determined by representatives of the Florida Geological Survey or Department of Environmental Regulation.
- (c) Back-up allocation - an allocation of water authorized for use during periods when the primary source becomes unavailable.
- (d) Chemigation - The application of pesticides through an irrigation system.
- (e) Confined Aquifer - An aquifer that is overlain by a confining bed which has a significantly lower hydraulic conductivity than the aquifer.
- (f) Confining Bed - A body of relatively "impermeable" material stratigraphically adjacent to one or more aquifers. In nature, however, its "hydraulic conductivity" may range from nearly zero to some value distinctly lower than that of the aquifer.
- (g) Consumptive Use - Any use of water which reduces the supply from which it is withdrawn or diverted.
- (h) Evaporation - The process by which water is changed from the liquid to the vapor state. In hydrology, evaporation is vaporization that takes place at a temperature below the boiling point, such as from a stream or lake or moist soil.
- (i) Evapotranspiration - Water withdrawn from a land area by evaporation from water surfaces and moist soil and by transpiration from plants.
- (j) Facility - Equipment used for the withdrawal of water from a particular source. Facilities may be, but are not limited to, wells, pumps, pipelines, flumes, canals, ditches, swales, artificial ponds, etc.
- (k) Fertigation - The application of fertilizers through an irrigation system.

- (l) Flow Meter - An instrument used for the precise measurement of water flow through a closed pipe.
- (m) Frost or Freeze Damage - Prolonged exposure to low temperature extremes such that the crop or plant is economically damaged.
- (n) Heat Stress Damage - Prolonged exposure to high temperature extremes such that the crop or plant is economically damaged.
- (o) Intermediate Aquifer - An aquifer consisting of those rocks underlying the surficial aquifer system and overlying the Floridan aquifer system. Typically the aquifer contains water under confined conditions and has low to moderate yields of water to wells.
- (p) Irrigation - The process of artificially applying water to plant growth media or directly to living plant material.
- (q) Landscape Irrigation - The outside watering of shrubbery, trees, lawns, grass, ground covers, plants, vines, gardens and other such flora that are situated in such diverse locations as residential and recreation areas, cemeteries, public, commercial and industrial establishments, and public medians and rights of way.
- (r) Micro-irrigation - The frequent application of small quantities of water on or below the soil surface as drops or tiny streams of spray through emitters or applicators placed along a water delivery line. Micro-irrigation includes a number of methods or concepts such as bubbler, drip, trickle, mist or microspray, and subsurface irrigation.
- (s) Off-site property - real property that is not owned by the applicant or permittee.
- (t) Pesticide - Any substance or mixture intended for preventing, destroying, repelling or mitigating any pest or intended for use as a plant regulator, defoliant, or desiccant.
- (u) Potentiometric Surface - A surface which represents the static head in an aquifer. The potentiometric surface is determined by the levels to which water will rise in wells which are tightly cased into the aquifer. The water table and the artesian pressure surface are examples of potentiometric surfaces.
- (v) Reclaimed Water - Water that meets or exceeds FDEP standards for reuse and that is reused for a beneficial purpose after flowing out of any wastewater treatment facility.

- (w) Reuse - The deliberate application of reclaimed water, in compliance with Department and District rules, for a beneficial purpose.
- (x) Secondary Use - a consumptive use of water by an entity, separate from water supplier (see definition in paragraph (kk) below), whose use of water is supplied in whole or in part by a water supplier where the use of such water was not reviewed for consistency with the criterion in 9.3 and the applicable requirements contained in 10.3(a), (b), (d), (e), (f), (g), (i) and (k) as part of the consumptive use permit application for the water supplier.
- (y) Seepage Irrigation System - A means to artificially supply water for plant growth which relies primarily on gravity to move the water over and through the soil, and does not rely on emitters, sprinklers or any other type of device to deliver water to the vicinity of expected plant use.
- (z) Semi-Confined Aquifer - A completely saturated aquifer that is bounded above by a semi-pervious layer and below by a layer that is either impervious or semi-pervious. A semi-pervious layer is defined as a layer which has a low, though measurable, permeability.
- (aa) Service Connection - The point of transfer of potable water or reclaimed water from a water supply distribution pipe to an individual user or separate occupancy unit (i.e. house, mobile home, apartment, condominium, commercial or industrial park unit, shopping center store, etc).
- (bb) Traveling Volume Guns - Slow-moving, self-propelled irrigation systems whereby water is projected through nozzles onto a limited portion of a field, and which require manual repositioning after each pass.
- (cc) Two in Ten Year Drought - A drought, the severity of which statistically may be expected on the average of two years in a ten year period.
- (dd) Unconfined Aquifer - A permeable bed only partly filled with water and overlying a relatively impervious layer. Its upper boundary is formed by a free water table or phreatic level under atmospheric pressure.
- (ee) Water Audit - An accounting of all water into and out of a use facility as well as an in-depth record and field examination of the distribution system that carries the water, with the intent to determine the operational efficiency of the system and identify sources of water loss and revenue loss.
- (ff) Water Conservation Plan - A formal document containing a combination of goals, objectives and methods, and an implementation schedule of actions specifically designed to maximize water conservation and water use efficiency.

- (gg) Water Conservation Promoting Rate Structure - A water supply utility rate structure designed to encourage the utility's water customers to reduce discretionary water use by providing financial incentives to the customers to conserve water.
- (hh) Water Control Structure - A flashboard riser or similar structure that acts to hold water at a planned level.
- (ii) Water Supplier - an entity, such as a water utility, that has obtained a consumptive use permit to withdraw water, of which some portion is distributed to another entity for a secondary use.
- (jj) Water Supplier/Secondary Use Group - a collection of permitted water uses encompassing the withdrawal and use of water. The members include the water supplier and persons to whom a portion of this water is distributed for a secondary use.
- (kk) Water Table - That surface of a body of unconfined ground water at which the pressure is equal to that of the atmosphere; defined by the level at which water within an unconfined aquifer stands in a well that penetrates the aquifer far enough to hold standing water.
- (ll) Well - Any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, acquisition, development or artificial recharge of ground water, but such term does not include any well for the purpose of obtaining or prospecting for oil, natural gas, minerals, or products of mining or quarrying, for inserting media to dispose of oil brines or to repressure oil-bearing or natural gas-bearing formation, or for storing petroleum, natural gas, or other products, or for temporary dewatering of subsurface formations for mining, quarrying, or construction purposes.
- (mm) Xeriscaping - A water conserving landscaping method that incorporates the principles of design, appropriate plant selection, soil improvement, efficient irrigation, mulching, turf concentration, and proper maintenance.

3.0 Activities Requiring a Permit

3.1 Implementation Date of the Consumptive Use Permitting Program

3.1.1 The effective dates of implementation are found in Section 40C-2.031, F.A.C., (see Appendix B). There are three geographic regions in the District which are used in determining the effective date of implementation of the consumptive use permitting program (Figure 3.1-1).

These are:

- (a) The Upper St. Johns River Basin (Area A of Figure 3.1-1) -- effective date December 31, 1976.
- (b) The Green Swamp Subbasin (Area B of Figure 3.1-1) -- effective date December 1, 1980.
- (c) The remaining portions of the District (Area C of Figure 3.1-1) -- January 1, 1983.

3.1.2 The effective date of implementation for the District's general water use permitting program (Chapter 40C-20, F.A.C.) is July 23, 1991. (See paragraph 40C-2.031(1)(d), F.A.C.). This program was implemented for the entire District on this date.

3.1.3 The effective date for the program implemented within the Delineated Area regulating the use of water from wells with casing diameters between three point five and six inches and regulating freeze protection uses not previously permitted, is 12-6-93.

3.1.4 The effective date of implementation of the District's secondary use permit (those uses requiring a permit pursuant to paragraph 40C-2.041(1)(g), F.A.C., and section 3.2.3) is 2-15-95.

3.1.5 The significance of the designated effective date is that it and the date of application are used to determine which criteria are to be used in evaluation of an initial permit application. Those uses existing on the effective date of implementation are to be evaluated using the criteria described in Section 8.0 of this Handbook, provided a substantially completed application is received by the District within two years of the date of implementation (See subsection 40C-2.301(1), F.A.C.). Those uses which are to commence after the effective date of implementation for each area or for which a substantially completed application was not filed in the two year time period are to be evaluated using the criteria described in Section 9.0 of this Handbook (see subsection 40C-2.301(2), F.A.C.).

3.1.6 Those users who were not required to obtain a consumptive use permit under the provisions of previous District consumptive use rules but who are required to obtain a permit after January 1, 1983, are required to obtain a permit, even if the use is in an area which has an earlier implementation date.

3.2 Thresholds

3.2.1 A consumptive use permit is required for every consumptive use of ground or surface water which:

- (a) exceeds 100,000 gallons per day (estimated on an average annual basis); or
- (b) is from a facility (wells, pumps, etc.) or facilities which are capable of withdrawing one million gallons of water per day or more; or
- (c) is from a well in which the outside diameter of the largest permanent water bearing casing is six inches or greater. For purposes of this section, the diameter of the well at ground surface will be considered to be the diameter of the well for its entire length unless the well owner or well contractor can demonstrate that the well has a smaller diameter water bearing pipe below ground surface.

3.2.2 Unless expressly exempted in 3.4, a consumptive use permit is required for all withdrawals from a well with a casing diameter of between five and six inches, and uses of water for freeze protection of agricultural and nursery property greater than five acres in size, within the Delineated Area as set forth in 6.7.1.6.

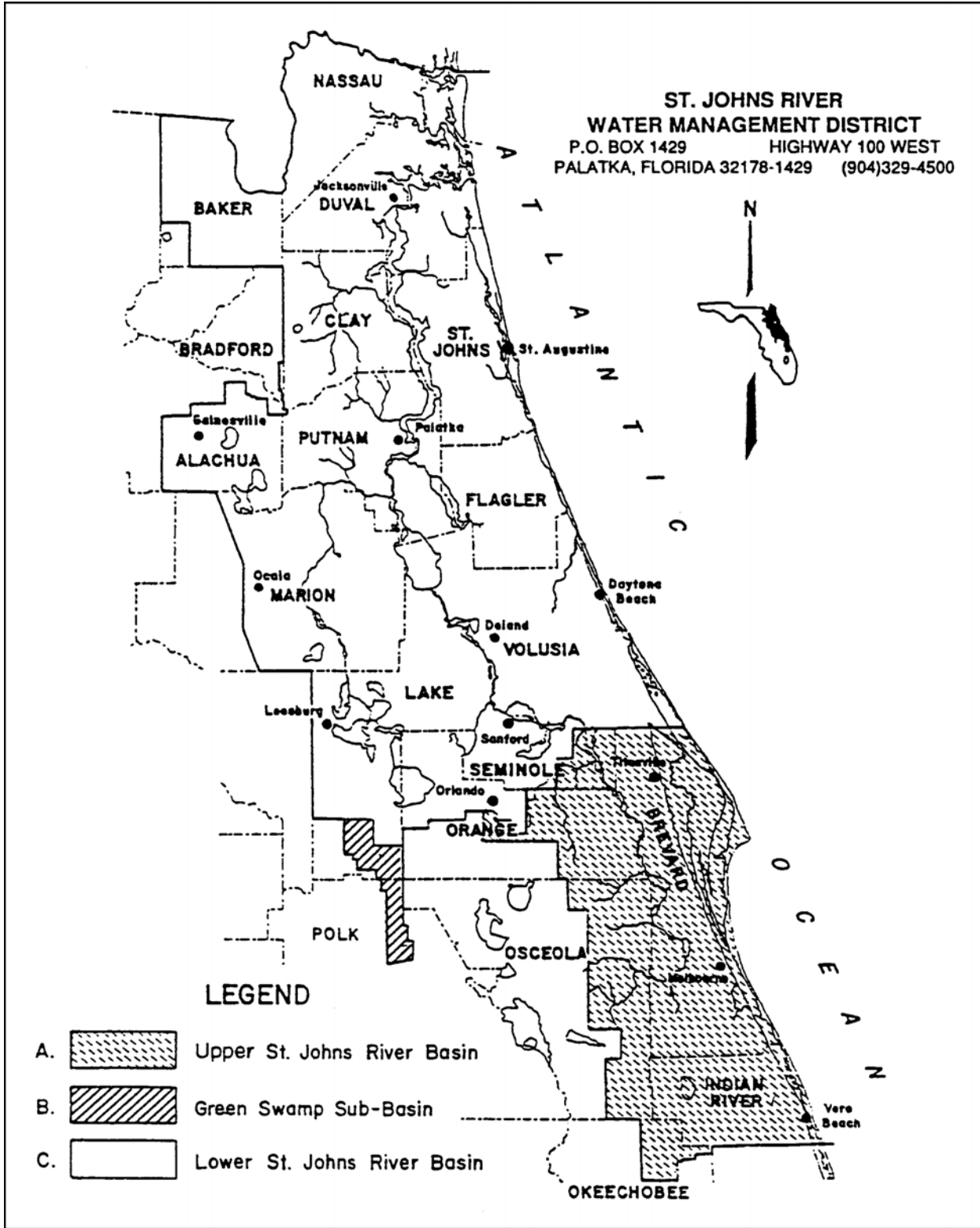


Figure 3.1-1. Areas within the District having differing effective dates for implementation of Consumptive Use Rules

- 3.2.3** Any secondary use of water which exceeds 100,000 gallons per day (estimated on an average annual basis), and was not reviewed for consistency with the criterion in section 9.3 and the applicable requirements contained in paragraphs 10.3(a), (b), (d), (e), (f), (g), (i), and (k) as part of the consumptive use permit application for the water supplier, must obtain a consumptive use permit. In determining whether the 100,000 gallons per day threshold is met, total withdrawals for all uses on contiguous properties that are owned, operated, or controlled by an individual, corporation, governmental agency, or other person shall be considered. Such secondary use need only satisfy the criterion in section 9.3 and the applicable requirements contained in paragraphs 10.3(a), (b), (d) (e), (f), (g), (i) and (k). The requirement to obtain a permit under this paragraph will provide greater water savings and assurances that all uses of water are consistent with the public interest and are reasonable-beneficial. This will be achieved through the creation of a direct permitting relationship between the District and persons with secondary uses, alleviating the water supplier from the burden to satisfy all of the District's consumptive use permitting criteria for each of the secondary uses.
- 3.2.4** Except for secondary uses, the requirement for obtaining a permit is associated with the initial consumptive use.
- 3.2.5** The thresholds specified in subsection 3.2.1 above refer to total water withdrawal for all uses on contiguous properties that are owned, operated or controlled by an individual, corporation, governmental agency, or other person.
- 3.2.6** Consumptive uses of water which are non-exempt, which do not qualify for a general permit by rule under section 40C-2.042, F.A.C., or a noticed general permit under chapter 40C-22, F.A.C., and involve a withdrawal of less than 500,000 gallons per day on an average annual basis, are processed as a standard general permit under chapter 40C-20, F.A.C.
- 3.2.7** A water user should obtain one permit for all withdrawals which are intended to serve contiguous property; thus, a farm on contiguous property which has four wells should apply for one permit; the application will include information about each of the wells, the intended use for the water from each well, or pump, and a general indication of when the water will be withdrawn.

3.2.8 Water users who will conduct withdrawals from points which are not intended to serve one contiguous property may submit a single permit application for all withdrawal points collectively.

3.2.9 If the permittee seeks to change the requirements and circumstances under which the existing permit was issued, the permittee must submit an application to modify the permit, except as provided in subsection 3.3.2(b) below.

3.3 Permits Required

3.3.1 A permit is required for the following activities:

- (a) After two years from the date of implementation, to continue a use which was existing on the date of implementation, if that use meets or exceeds the thresholds established in Section 40C-2.041, F.A.C. (see also subsection 3.2.1 above).
- (b) After the date of implementation to commence a new use, if such use exceeds the thresholds established in Section 40C-2.041, F.A.C. (see also subsection 3.2.1 above).
- (c) To continue a use after the expiration date specified on a permit granted by the District.

See Section 4.0 for application information or Part II for information regarding criteria for evaluation.

3.3.2 Transfers and Modifications

- (a) The District must be notified, in writing, within 30 days of any sale, conveyance, or other transfer of a well or facility from which the permitted consumptive use is made or within 30 days of any transfer of ownership or control of the real property at which the permitted consumptive use is located. All transfers of ownership or transfers of a permit are subject to the requirements of chapter 40C-1.
- (b) A permit holder must apply to the District for a modification if he intends to increase the amount of withdrawal beyond that specified on the permit, put the water to a use other than that specified on the permit, or otherwise modify the conditions of the permit. However, a modification involving one or more of the following changes

may be applied for by submitting a letter to the District provided that the water use is not increased:

1. Moving the location of a proposed well within 200 feet of the permitted location.
2. The addition of a domestic use with irrigation of landscape less than one acre.
3. Change in crop type.
4. Adding a surface water pump to the same source.
5. Reduction in allocation a reduction in the number of wells, or a reduction in the project acreage.
6. Changing to a reclaimed or stormwater source.
7. Changing the method of monitoring water use.
8. Replacement of an existing well with a well producing from the same aquifer horizon so long as the replacement well is within 200 feet of the existing well it is intended to replace.

See Section 4.2 for information regarding application procedure and Section 11.1 and 11.2 for information regarding evaluation criteria which will be applied to an application to modify a permit.

3.3.3 A temporary consumptive use permit may be issued while the application for a consumptive use permit is pending. See Section 4.2 for application information and Section 11.3 for information regarding criteria for evaluation.

3.4 Exemptions

3.4.1 The following types of use are exempt from the requirements to obtain a consumptive use permit:

- (a) Domestic uses -- the use of self-supplied or individually-supplied water for the individual personal household purposes of drinking, bathing, cooking, or sanitation.

- (b) Electrical power plants which have received certification under the provisions of Part II, Chapter 403, F.S., and industrial sites which have been certified with the provisions of the Florida Industrial Siting Act, Chapter 288, F.S.
- (c) Withdrawals of ground or surface water to facilitate construction on or below ground surface or to remove pollutants from contaminated water, in the following circumstances:
 - 1. Ground water may be withdrawn in any quantity for any duration if it is recharged on site to the aquifer from which it was withdrawn by either infiltration or direct injection;
 - 2. Surface water may be withdrawn in any quantity for any duration only from wholly-owned impoundments or works which are no deeper than the lowest extent of the uppermost water bearing stratum and which have no surface hydrologic connection off site, and the surface water must be recharged on site to the uppermost water bearing stratum by either infiltration or direct injection.
 - 3. Infiltration under this subsection may be accomplished by the use of land application or by discharge to wholly-owned impoundments or works, so long as there is no surface discharge off site. The withdrawal and recharge under this subsection must be done in a manner that does not contravene Sections 40C-2.301(2)(b), (4)(f)(g)(h)(i) and (5).
 - 4. Ground water may be withdrawn from wells which withdraw from the surficial aquifer provided the cumulative withdrawals at any one time do not exceed 100,000 gallons per day.
- (d) Withdrawals of groundwater for aquifer performance tests requested by District staff as information needed to review a consumptive use permit application, provided that the withdrawal of water for the pump test shall be for a period of not more than 30 days, shall not interfere with existing uses of water and shall be performed in accordance with an aquifer performance test plan approved by District staff.
- (e) Withdrawals of surface water solely for flood control when:

1. the withdrawal is accomplished by and was approved as part of a surface water management system which has received a management and storage of surface waters permit pursuant to chapter 40C-4, F.A.C., or
 2. the withdrawal is conducted by a municipality, county, agency of the executive branch of the state or the federal government and is accomplished by a surface water management system which meets the terms and conditions of the exemption contained in subsection 40C-4.051(2), F.A.C., and the withdrawal is consistent with the system's plans, specifications, and performance criteria existing on the relevant exemption date.
- (f) Secondary uses which fit into one of the following categories:
1. Uses supplied solely by reclaimed water obtained from a water supplier.
 2. Permitted consumptive uses, such as public water supply systems, augmented with water obtained via an interconnection with a water supplier, provided use of the combined water supply was reviewed and approved by the District as part of the application for the consumptive use being augmented.
- (g) Withdrawals of ground or surface water to facilitate construction (not including borrow or mining excavations) on or below ground surface (dewatering) subject to the following conditions:
1. The withdrawal is conducted by one of the following:
 - (i) A conventional wellpoint system consisting of one or more stages of wellpoints installed near the excavation in lines or rings. These wellpoints shall be installed in variable spacings, and connected to a common header pumped by one or more wellpoint pumps.
 - (ii) Vacuum underdrain consisting of a typical pipeline dewatering with the underdrain or "sock" placed horizontally below the design invert elevation of the pipeline via a large trenching machine. The underdrain shall be connected to a pump with the

water conveyed through the underdrain and discharged from the pump.

- (iii) Shallow vacuum wells consisting of one or more stages installed near an excavation in lines or rings. Vacuum wells shall be constructed of six inch or smaller pipe with a slotted screen area near the bottom of the well, and connected to a common header pumped by one or more pumps.
 - (iv) Hydraulic pumps to dewater stormwater management ponds and basins, as part of their construction or maintenance, through the discharge control structure. The stormwater management pond or basin and associated discharge control structure must be permitted by the District and in operation phase at the time the dewatering is to occur.
2. The withdrawal is 300,000 gallons per day or less.
 3. The withdrawal does not exceed 30 days in duration.
 4. The water withdrawn is not discharged directly into an Outstanding Florida Water (OFW), Class I or Class II waterbody. A direct discharge means a discharge which enters OFW, Class I or Class II waters without an adequate opportunity for prior mixing and dilution to prevent significant degradation.
 5. The following turbidity control measures are implemented, as appropriate, for any withdrawals discharged off-site:
 - (i) If the discharge is to be to a drainage system, the water shall be piped directly into the drainage structure, if possible; but if the discharge is through a swale or overland, to a structure or water body, the path of discharge shall be lined with visqueen plastic, sod or hay bales appropriately, to prevent a turbid discharge to the structure or water body.
 - (ii) If water will discharge to an open water body, appropriate fabric silt screen or hay bales shall be used to prevent turbid discharges. When possible, a detention area shall be established to allow

suspended solids to settle prior to entering the water body.

- (iii) If the above turbidity control measures are inadequate to retain sediment on-site and prevent turbid discharge, additional or modified erosion and sediment control measures must be selected, implemented, and operated as necessary to prevent violations of water quality standards as specified in chapter 62-302, F.A.C.

- (h) Withdrawals of surface water (dewatering) by a drainage pump, which serves an agricultural operation, provided that the operation of the pump has been authorized by a permit issued pursuant to Chapter 40C-44, F.A.C., or Chapters 40C-4 or 40C-40, F.A.C., which incorporated the requirements of Chapter 40C-44, F.A.C. However, activities which are exempt from the requirements of Chapters 40C-4, 40C-40, or 40C-44, F.A.C., are not exempt from the need to obtain a consumptive use permit by this paragraph (h).

3.5 General Permits

3.5.1 Noticed General Permits

The District has determined that certain minor consumptive uses have, either singly or cumulatively, a minimal adverse impact on the water resources of the District. Therefore, the District has granted certain noticed general permits for these minor consumptive uses in Chapter 40C-22, F.A.C. Persons using a noticed general permit under Chapter 40C-22, F.A.C., shall be subject to the notice provisions of section 40C-1.1012, F.A.C., before the first consumptive use is conducted pursuant to the noticed general permit. Compliance with the limiting conditions of the noticed general permit is required to qualify for a noticed general permit. The noticed general permits in Chapter 40C-22, F.A.C., are:

- (a) 40C-22.020 Noticed General Permit for Fire Protection Purposes
- (b) 40C-22.030 Noticed General Permit for Short-term Construction Dewatering

See Chapter 40C-22, F.A.C., (Appendix B) for more information regarding the terms and conditions of these noticed general permits.

3.5.2

Consumptive uses of water which are non-exempt, which do not qualify for a general permit by rule under section 40C-2.042, F.A.C., or a noticed general permit under Chapter 40C-22, F.A.C., and involve a withdrawal of less than 500,000 gallons per day on an average annual basis, can be processed as a standard general permit under chapter 40C-20, F.A.C.

4.0 Application Preparation

4.1 Preapplication Conference

4.1.1 At the applicant's request, District staff will arrange for and participate in a preapplication conference. At a preapplication conference the staff will be prepared to discuss with the applicant such information as:

- (a) application completion, processing and evaluation procedures;
- (b) hydrologic information which will be required for evaluation of the application (see Section 14.0 of this Handbook);
- (c) hydrologic information which is available at that time;
- (d) the criteria which will be utilized in evaluation of the application; and
- (e) other hydrologic, environmental or water quality concerns known to the staff, based on published reports and available information.

4.1.2 To schedule a preapplication conference potential applicants should contact the Director, Division of Water Use Permitting at the District Headquarters.

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

St. Johns River Water Management District
Altamonte Springs Service Center
975 Keller Road
Altamonte Springs, FL 32714
(407) 659-4800

St. Johns River Water Management District
Jacksonville Service Center
7775 Baymeadows Way, Suite 102
Jacksonville, FL 32256
(904) 730-6270

St. Johns River Water Management District
Palm Bay Service Center
525 Community College Parkway
Palm Bay, FL 32909
(321) 984-4940

4.2 Forms and Instructions

The form for application for an individual and standard general consumptive use permit has been adopted as a rule in Section 40C-2.900, F.A.C. A copy of the form is included in Appendix C of this Handbook. The form must be used for the application for a permit as well as application for a modification, renewal or temporary use. An application which includes a request for a temporary use permit must be accompanied by a letter stating why such a permit is needed.

4.3 Additional Information

4.3.1 Except in the review of applications for a secondary use, in order to properly evaluate the impacts of a withdrawal, the District may require the submission of detailed hydrologic information in addition to that which is requested on the application form.

4.3.2 If such information is required, then it will be requested at the time of the preapplication conference or usually within thirty days of the filing of a completed application form (see Section 5.3 of this Handbook). Failure to correct an error or omission or to supply additional information shall not be grounds for permit denial unless the District timely notifies the applicant within this thirty day time period.

4.3.3 Information which may be requested includes that which will be obtained from the hydrologic testing program described in Section 14.0 of this Handbook.

4.4 Listing of Adjacent Property Owners

4.4.1 The purpose of providing notice to adjacent landowners or users who may be impacted by a use is to allow them to file objections based on hydrologic or environmental effects of proposed permits in a timely manner during the processing of the permit application and prior to action by the Board. By providing an opportunity for objection or comment, the District can benefit from having all relevant information present during application review. The District intends that adjacent property owners with a substantial interest in the proposed action be made aware of the action, but realizes it may be impractical to provide notice to all owners with land adjoining the property which is the subject of the permit application. For this reason, the notice will vary with source and magnitude of use. The noticing provision does not restrict those who may object to a permit application (since anyone who can demonstrate a substantial interest in the proceeding may become a party to the proceeding) but only limits the number of those who will normally be given individual notice. However, adjacent landowners are not noticed when an application for a secondary use is submitted.

All noticing of adjacent landowners will be done by SJRWMD. Except for applications for secondary uses, the responsibility of the applicant is to provide the District with a complete list of adjacent landowners as required by the table below:

- (a) If the permit applied for is to use water to be withdrawn from a well or combination of wells, all owners of property within the distances prescribed below as measured from the well or wells, or at the option of the applicant, all owners of property contiguous with or within the distances prescribed of the boundaries of the applicant's property:

<u>Withdrawal Amount</u>	<u>Distance from well</u>	<u>Property Boundary</u>
1. If the withdrawal during any single day is less than 1,000,000 gallons and if the withdrawal is less than 100,000 gallons average per day on an annual basis	None	None
2. If the withdrawal during any single day is to exceed 1,000,000 gallons but not more than 5,000,000 gallons or if the withdrawal is to exceed 100,000 gallons average per day on an annual basis but not more than 500,000 gallons average	600 feet	100 feet

<u>Withdrawal Amount</u>	<u>Distance from well</u>	<u>Property Boundary</u>
3. If the withdrawal during any single day is to exceed 5,000,000 gallons but not more than 10,000,000 gallons or if the withdrawal is to exceed 500,000 gallons average per day on an annual basis but not more than 1,000,000 gallons average	1,320 feet	200 feet
4. If the withdrawal during any single day is to exceed 10,000,000 gallons or if the withdrawal is to exceed 1,000,000 gallons average per day on an annual basis	2,640 feet	400 feet

In the event that an applicant meets more than one criterion as specified above, the listing of owners within the greater distance shall be required.

- (b) If the permit applied for is to use water to be withdrawn from a surface water body, all riparian owners of land adjoining such surface water body:

<u>Source</u>	<u>Withdrawal</u>	
	<u>Amount</u>	<u>Distance</u>
1. Lake where applicant owns all of the shoreline, or artificial retention pond	All	None
2. Lakes not exceeding 80 acres in size	All	All land owners around lake; 660 feet downstream (if lake has an outlet)
3. Lakes exceeding 80 acres in size	All	660 feet (from withdrawal point)
4. Streams	Not exceeding 5,000,000 gallons average per day on an annual basis	660 feet upstream 1,320 feet downstream (from withdrawal point)
	Exceeding 5,000,000 gallons average per day on an annual basis	1320 feet upstream and 2640 feet downstream from withdrawal point

4.4.2 In the event the number of adjacent landowners exceeds 100, upon request by the applicant, the District will publish an advertisement in a newspaper of general circulation in the affected area, in lieu of the applicant providing a complete list of adjacent landowners and the District providing individual notice as set forth under 4.4.1 above.

4.5 Permit Processing Fee

The non-refundable permit processing fee as specified in chapter 40C-1, F.A.C., must be submitted concurrently with the filing of the application. An application submitted without the fee will not be considered complete, and the applicant will be so notified (see subsection 5.3.2).

4.6 Checklist for Application Completeness

The following items must be submitted at the time of an application:

- (a) an application form with all spaces filled in;
- (b) the application fee;
- (c) a listing of adjacent property owners as prescribed in subsection 4.4.1 of this Handbook; and
- (d) a water conservation plan, if applicable under section 12.0, Applicant's Handbook: Consumptive Uses of Water.

5.0 Procedures for Processing

5.1 Procedures Required

- 5.1.1** For both individual and standard general permit applications, the District is required to follow certain procedural guidelines set forth in Chapter 120, F.S., the Administrative Procedures Act, and Chapters 28-101 through 28-110, F.A.C., the Uniform Rules of Procedure. These guidelines provide rules of procedure and public visibility for all District activities which affect the public; this includes the scheduling of meetings, establishment of rules and criteria, and the procedures to be followed in reviewing and acting on permit applications. Additionally, the District has adopted Chapter 40C-1, F.A.C., General and Procedural, which describes the District's organization and clarifies the specific procedures of the St. Johns River Water Management District.
- 5.1.2** Individual and standard general consumptive use permit applications are processed in the same manner until the application becomes technically complete.
- 5.1.3** This section provides a brief overview of the procedures which the District will follow in receiving, processing, and acting on individual and standard general consumptive use permit applications. It is not a substitute for Chapter 120, F.S., or Chapters 28-106, 28-107, and 40C-1, F.A.C.; but is rather to be considered a brief explanation of District procedures which conform to Chapters 120, 28-106, 28-107, and 40C-1.
- 5.1.4** Chapter 120, F.S., and Chapters 28-106, 28-107 and 40C-1, F.A.C., are attached as appendices in Part IV.

5.2 Initial Receipt

- 5.2.1** When the application form is completed and signed, it must be delivered to the address indicated on the form. The application should include any supporting documentation, and the appropriate permit processing fee (see Section 4.6 for completion checklist).
- 5.2.2** The District then conducts a review of the application to determine that all information listed in Section 4.6 is included. If the application does not contain all of the required information, the necessary additional information will be requested from the applicant. If all of the required information is

included, the application is assigned to a member of the technical staff for review and evaluation using the criteria discussed in Part II of this Handbook.

5.3 Request for Additional Information

5.3.1 The first step of this review process is to determine if all the technical data needed for a complete review of the application has been provided. In most cases the information requested on the application form is sufficient to evaluate the use against the criteria listed in Part II of this Handbook. In those cases where the information is not sufficient, the District staff will request that the additional information be supplied and will inform the applicant as to the reason that such information is required. The type and amount of information varies, depending upon the impact of the proposed use. Examples of data that may be required include:

historical records (withdrawals and water quality),

well construction data,

well logs,

aquifer pumping tests,

well surveys,

projections of future use,

information supporting need for quantities requested, and

information regarding any permits required under the provisions of Chapter 40C-4 , F.A.C., which may impact upon, or be impacted by the use.

5.3.2 Whenever the District requests additional information, the request will be accompanied by citation of a specific rule pursuant to Section 373.232, F.S. If the application is determined to be incomplete, the District will request the necessary additional technical information within 30 days after the receipt of the application. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notifies the applicant within the thirty day time period.

- 5.3.3** The applicant has 120 days from the date of the request for additional information to supply that information to the District. If an applicant requires more than 120 days in which to complete an application, the applicant may notify the District in writing of the circumstances and for good cause shown the application 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 is diligently acquiring the requested information, and that the additional time period requested is both reasonable and necessary to supply the information.
- 5.3.4** If, within the given time frame, the applicant does not submit requested information (which was requested within 30 days after receipt of the application), the application will be prepared for denial based on section 40C-1.1008, F.A.C., (see Appendix A). In such instances, a notice of intent to deny will be provided to the applicant no less than 14 days prior to the meeting at which the Board will consider denial.
- 5.4 Individual Permits**
- 5.4.1 Staff Evaluation**
- 5.4.1.1** When the individual permit application is complete, the staff will commence with the technical review of the application. Criteria used in the evaluation are defined and discussed in Part II of this Handbook.
- 5.4.1.2** When the technical staff has completed its review and determined if the recommendation will be for approval or denial, the application is then reviewed by the Director of the Division of Permitting, and the Director of the Department of Resource Management to determine that the recommendation is consistent with the criteria for evaluation (see Part II).
- 5.4.1.3** All reviews will be completed and the application will be presented to the Board for action within 90 days after the application is determined to be complete.
- 5.4.1.4** The applicant should be given a minimum 14 days notice when the staff's review is complete and the application has been scheduled for a Board meeting. This notice includes the place, date and time of the meeting, and a copy of the staff report which recommends approval or denial. The staff report recommending approval or denial of the application shall be the District's Notice of Intended Action. The applicant is advised to read the

report carefully. If any part of the report is in error, or if the applicant does not agree with the staff's recommendation, the applicant should contact the District staff prior to the date set for action by the Governing Board.

If after contacting District staff regarding its report, the applicant is still dissatisfied with the staff's position, by waiving the ninety day time frame, the applicant has the option of requesting that the application be removed from the agenda and rescheduled at a later time.

5.4.1.5 Notification to Public for Input

When the District receives an application, it will provide notice that an application has been filed. Such notice will be given by regular mail to property owners listed on the application form, or by publication of a newspaper advertisement when requested by the applicant pursuant to section 4.4.2 in those instances when the number of adjacent landowners exceeds 100. Additionally, notice of the application will be given by regular mail to those persons who have previously filed a written request for notification of pending applications within the affected area.

The District will also publish a notice of the pending application in a newspaper having general circulation in the affected area (however, the District will not publish a newspaper notice when it has published an advertisement pursuant to section 4.4.2). Such notice will be published upon receipt of the application for a permit. In order for the District staff to properly evaluate any information which interested persons may submit, these persons should contact the District within 14 days of the date of publication of notice of receipt of application if they have objections, comments or information regarding the proposed withdrawal. Notice of intended agency action will be provided to the Applicant and to persons who have requested notice as required by section 120.60, F.S., and section 373.116, F.S.

5.4.1.6 Objections

Written objections should be received by the District at least 7 days prior to the date of the regulatory meeting at which the permit application is scheduled for Governing Board consideration in order to be included in the official record of the application and made available to the Board in their deliberations.

Unless an objection to a permit application is received or a request for an administrative hearing in accordance with chapter 28-106 and section 40C-1.1007, F.A.C., is received, the application may be presented to the Governing Board on a consent agenda and therefore may not receive individual consideration.

If the applicant is notified that the District staff will recommend denial to the Board, or the Governing Board does in fact deny the permit, then the applicant may request an administrative hearing in accordance with chapter 28-106 and section 40C-1.1007, F.A.C.

5.4.2 Regulatory Meeting

5.4.2.1 The Governing Board of the SJRWMD normally meets on the Tuesday preceding the second Wednesday of each month to act on permit applications. At each regulatory meeting the Board has copies of the staff reports, along with the staff's recommendations, which were provided to them several days before the meeting to allow time for consideration. When applications are formally presented to the Board for action, the Board invites comments from the applicants, District staff, persons who may be impacted by the use, and members of the general public.

5.4.2.2 Upon presentation of an application, the Board will either approve the application, deny the application, or continue the application for consideration at a later day.

5.4.2.3 If the applicant, an objector, or any other person whose substantial interest may be determined is dissatisfied with staff recommendation or an action taken by the Board, they may file a petition for an administrative hearing in accordance with chapter 28-106 and section 40C-1.1007, F.A.C.

5.5 Standard General Permits

5.5.1 Standard general permits differ from individual permits in that they are granted by rule to all non-exempt consumptive uses which meet the following requirements:

- (a) The proposed consumptive use must not exceed 500,000 gallons per day on an average annual basis.
- (b) The criteria in section 40C-2.301, F.A.C., must be met.

- (c) The person who seeks a standard general permit must submit a complete permit application form 40C-2-1082-1 to the District at least 30 days prior to undertaking the consumptive use and must receive the permit prior to commencing the withdrawal.

5.5.2 If, upon District staff review, one of the following factors is present, an individual permit shall be required:

- (a) the proposed consumptive use exceeds 500,000 gallons per day on an average annual basis; or
- (b) District staff finds that the application does not comply with all of the evaluation criteria of section 10.0; or
- (c) a substantial objection has been filed with the District within 14 days of receipt of the notice of receipt as provided in section 5.5.5. Receipt of the notice of receipt shall be deemed to be the fifth day after the date on which the written notice is deposited in the United States mail. Substantial objection means a written statement directed to the District regarding a permit which identifies the objector, concerns hydrologic or environmental impacts of the proposed consumptive use, and relates to applicable rule criteria.

5.5.3 Upon determination that one of the factors listed in subsection 5.5.2 is present, District staff will notify the applicant that an individual permit is required, and the provisions of section 5.4 shall be followed. If an individual permit is required pursuant to paragraphs 5.5.2(b) or (c) above, no additional permit application fee shall be required.

5.5.4 Staff Evaluation

5.5.4.1 Upon completion of the standard general permit application, the staff will technically review the application using the criteria defined and discussed in Part II of this Handbook.

5.5.4.2 The final staff evaluation includes a determination as to whether the proposed consumptive use meets the criteria for obtaining a general permit. If District staff finds that general permit application does not meet those criteria, then the application will be processed as an application for an individual permit, the applicant will be so notified, and provided a written explanation of the need for an individual permit.

5.5.4.3 Within 30 days after a general permit application is complete, the District staff will issue the general permit or notify the applicant that the permit application is upgraded to individual status.

5.5.5 Notification to Public for Input

At the time that the District has received a general permit application, it will provide public notice that the application has been filed. Such public notice will be sent by regular mail to those people who have previously filed a written request for notification of pending applications within the affected area, and adjacent property owners identified pursuant to section 4.4.

6.0 Permits

6.1 Permit Conditions

Each consumptive use permit which is issued by the District will include certain conditions with which the permittee must comply. General conditions are those to which all users are subject; other standardized conditions may be included for agricultural, industrial, mining and public supply type uses. Additionally, special conditions may also be included. A more detailed discussion of general conditions, conditions by type of use, and special conditions is presented in Part III of this Handbook.

6.2 Use/Source Classifications

Each permit issued by the District will be classified according to the source of withdrawal, the type of use, and the location of the withdrawal, as a subclass of such class or category of source.

6.2.1 The purpose of the classification system is to assist the District in its data collection and analysis programs and to provide a framework for use in water shortage planning and response efforts.

6.2.2 Source Classes: Each permit shall be identified with one or more of the following source classifications:

- (a) Streams or other watercourses
- (b) Lakes or other impoundments
- (c) Unconfined aquifers
- (d) Confined or semi-confined aquifers
- (e) Water Supplier
- (f) Reclaimed Water

6.2.3 Type of Use Classes: Each permit shall be identified with one or more of the following use classifications:

- (a) Aquacultural use - The use or withdrawal of water for the commercial cultivation of animal and plant life in a water environment, including but not limited to food fish, aquatic bait, game fish, aquatic plants (i.e. watercress), alligators, tropical fish, shellfish, and turtles.

- (b) Aesthetic use -- the use of water for fountains, waterfalls, and landscape lakes and ponds where such uses are entirely ornamental and decorative.
- (c) Agricultural use -- the use of water for the commercial production of crops, commercial nursery production, or the growing of farm products including, but not limited to, vegetables, citrus and other fruits, pasture, rice and other commodities for human consumption or domestic animal feed.
- (d) Commercial and industrial process use -- the use of water essential to the production of the goods or services provided by a business establishment.
- (e) Cooling and air conditioning use -- the use of water for heating or cooling, or for air conditioning.
- (f) Dewatering use -- the removal of water from a specific area to facilitate mining or construction.
- (g) Diversion and impoundment into non-District facilities -- the diversion or extraction of water into non-District impoundments and delivery systems designed for purposes including, but not limited to, maintaining structural integrity, providing agricultural water and other non-recreational, non- aesthetic uses.
- (h) Domestic use -- the use of water for the individual personal household purposes of drinking, bathing, cooking, or sanitation.
- (i) Essential use -- the use of water strictly for fire fighting purposes, health and medical purposes and the use of water to satisfy federal, state or local public health and safety requirements.
- (j) Freeze protection -- the use of water to protect agricultural and nursery crops from damage due to low temperatures.
- (k) Golf course use -- water used to irrigate an establishment designed and used for playing golf.
- (l) Household type use -- the use of water for personal needs or for household purposes such as drinking, bathing, heating, cooking, sanitation or cleaning, whether the use occurs in a residence or in a business or industrial establishment.

- (m) Landscape irrigation -- the outside watering of plants in a landscape such as shrubbery, trees, lawns, grass, ground covers, plants, vines, gardens and other such flora that are situated in such diverse locations as residential and recreation areas, cemeteries, public, commercial, and industrial establishments, and public medians and rights of way.
- (n) Livestock use -- the use of water for watering or washing of livestock.
- (o) Navigation use -- water discharged from ground or surface sources either to tidewater or to downstream lakes or reaches of rivers or canals for the purpose of permitting or promoting boating activity.
- (p) Nursery use -- the use of water on premises on or in which nursery stock is grown, propagated or held for sale or distribution or sold or reshipped, including but not limited to sod, ferns, ornamental foliage and greenhouses.
- (q) Outside uses -- the use of water outdoors for the maintenance, cleaning and washing of structures and mobile equipment including automobiles and the washing of streets, driveways, and sidewalks.
- (r) Power production -- the use of water for power generation and the use of water for cooling and for replenishment of cooling reservoirs.
- (s) Recreation area use -- the use of water for the maintenance and support of intensive recreational areas such as, but not limited to, playgrounds, football, baseball, and soccer fields.
- (t) Soil flooding -- use of water for raising of water levels on agricultural lands for purposes not directly related to crop growth including but not limited to soil preservation and pest control.
- (u) Water based recreation use -- water used for public or private swimming and wading pools, including water slides. This term does not include pools specifically maintained to provide habitat for aquatic life.
- (v) Water utility use -- water used for withdrawal, treatment, transmission and distribution by potable water systems.
- (w) Wetland enhancement/creation - the use of water to saturate the soils to promote or restore wetland functions.

- 6.2.4** Location of Withdrawal: Each permit shall be classified as to the location from which the withdrawal is made. Such location shall include the legal description (township, range and section) and the county of the withdrawal.
- 6.2.5** Additionally, the Board may establish additional classifications if it determines that they are necessary.

6.3 Water Shortage Procedures

Under certain conditions the Governing Board may declare that a water shortage exists within all or parts of the District. Furthermore, the Board may impose water use restrictions on one or more permit classifications in response to the water shortage situation. A detailed description of water shortage planning and implementation efforts is contained in the District Water Shortage Plan, chapter 40C-21, F.A.C. When the restrictions imposed under a water shortage declaration are applicable to a permitted use, the specified water shortage restrictions shall supersede any inconsistent terms or conditions of the permit. In this event, notice shall be provided to the permittee as required by subsection 373.246(6), F.S.

6.4 Identification Tags

- 6.4.1** Except for secondary use withdrawal facilities, a permanent identification tag will be issued for each withdrawal facility which is included in a consumptive use permit. The tag must be attached to the withdrawal facility.
- 6.4.2** The purpose of having these tags is to assist the District in its monitoring and enforcement efforts, particularly during periods of water shortage.

6.5 Permit Duration

6.5.1 20 Year Permits

When requested by an applicant, a consumptive use permit shall have a duration of 20 years provided the applicant provides reasonable assurance that the proposed use meets the conditions for issuance in section 40C-2.301, F.A.C., and the criteria in Part II, Applicant's Handbook: Consumptive Uses of Water, for the requested 20 year permit duration.

6.5.2 Durations other than 20 Years:

- (a) When an applicant fails to provide reasonable assurance to support a 20 year duration or when the applicant does not request a duration of 20 years, a consumptive use permit shall have a duration of 10 years unless the Governing Board determines that a different permit duration is warranted based on a consideration and balancing of the factors listed in section 6.5.3. However, in no case shall the duration of an individual permit exceed the life of the activity for which the water is used.
- (b) When an applicant requests a permit duration greater than 20 years pursuant to subsection 373.236(2), F.S., the Governing Board shall issue a consumptive use permit with the requested duration up to a maximum of 50 years, provided the applicant is a municipality or other governmental body or a public works or public service corporation, the applicant demonstrates that the requested duration is required to provide for the retirement of bonds for construction of waterworks and waste disposal facilities, and the applicant provides reasonable assurances that the proposed use meets the conditions for issuance in section 40C-2.301, F.A.C., and the criteria in Part II, Applicant's Handbook: Consumptive Use of Waters, for the requested permit duration.

6.5.3 Special Durations Factors:

The following factors shall be considered and balanced in determining whether the permit shall be given a duration other than as specified in section 6.5.2(a):

- (a) Whether the permit is for a secondary use as defined in section 3.2.3. The District shall seek to:
 - 1. Assign the initial consumptive use permit required under 3.2.1 (secondary use) the same expiration date as specified in the consumptive use permit issued for the water supplier.

2. Simultaneously review subsequent renewal applications for the water supplier and all related permitted secondary uses, and upon renewal, set the new expiration date for secondary use consumptive use permits the same as is assigned to the permit for the water supplier. When one or more applicants within the water supplier/secondary users group fails to timely complete its consumptive use permit renewal application, final action will be taken on the applications which have been completed.
 3. Assign an applicant within a water supplier/secondary use group who completes a renewal application for a consumptive use permit at a later time, the same expiration date as was assigned to the previously issued consumptive use permit renewals within the same water supplier/secondary use(s) group.
- (b) Whether a longer duration is necessary for a municipality or other governmental body or for a public works or public service corporation to retire bonds for the construction of water works and water disposal facilities. If an applicant feels that an extended duration is required for such purposes, then the applicant must furnish letters from the bonding authority, stating that the extended duration is required and the reason that it is required.
 - (c) Whether a lower quality water source can reasonably be expected to become available for the permitted consumptive use during the time period of the applicable permit duration of section 6.5.2(a), and the permittee is not proposing to use this water source when it becomes available. Consideration of this factor will result in a shorter duration than the applicable duration specified in section 6.5.2(a) to enable the District and the permittee to reevaluate the ability of the permittee to use the lower quality source at the time that it becomes available. However, the applicant can eliminate this factor from consideration by electing to reduce the requested allocation by the amount which would reasonably be delivered from the lower quality source.
 - (d) Whether the consumptive use permit will require the permittee to perform mitigative or remedial action for an impact caused or projected to be caused by the consumptive use, and, for a renewal, whether the permittee must implement action to correct non-compliance with the previous consumptive use permit. Consideration of this factor will lead toward a duration shorter than the applicable duration of section 6.5.2(a) in order to evaluate, at an

earlier date, the effectiveness of the mitigative or remedial actions or corrections.

- (e) Whether greater than 50% of the total allocation is derived from reclaimed water or stormwater sources. Consideration of this factor will lead toward a duration longer than the applicable duration of section 6.5.2(a). Where 95% or greater of the allocation is derived from reclaimed water or stormwater sources, consideration of this factor will lead toward a duration of 20 years.
- (f) Whether 50% or greater of the annual wastewater volume generated from the allocated use is distributed to other water users (not including secondary users for which the permittee is the water supplier) for reasonable-beneficial reuse. Consideration of this factor will lead to a duration longer than the applicable duration of section 6.5.2(a) to encourage the investment in reuse of reclaimed water.
- (g) Whether a shorter duration is necessary to insure that the source is capable of producing the requested amount of water without causing unmitigated adverse impacts. The applicant can eliminate this factor from consideration by electing to reduce the requested amount to that which can be produced by the source without causing unmitigated adverse impacts.
- (h) Whether, and the extent to which, the permit duration will significantly harm the economic feasibility of the proposed use. Consideration of this factor will lead to a longer duration than the applicable duration of section 6.5.2(a) where the application duration of those sections will significantly harm the economic feasibility of the proposed use.
- (i) Whether the permittee is able to implement all available water conservation measures which are generally feasible for that size and type of use. Where the permittee is unable to implement all available water conservation measures which are generally feasible for that size and type of use, consideration of this factor will lead to a shorter duration than the applicable duration of section 6.5.2(a) to enable the District and the permittee to reevaluate, at an earlier date, the ability of the permittee to implement these water conservation measures.

Whether the permittee is implementing innovative and extraordinary water conserving measures which are beyond those generally feasible for that type of use. Where the permittee proposes to implement innovative and extraordinary water conservation measures, consideration of this factor will lead to a longer duration

than the applicable duration of section 6.5.2(a) as an incentive for the investment in innovative and extraordinary water conservation.

- (k) The cost of developing proposed alternative water supplies (for example: new lower quality sources, surface water sources, interconnecting wellfields, artificial recharge, aquifer storage and recovery, reclaimed water). Where the permittee is proposing to develop and use alternative water supplies, consideration of this factor will lead to a duration longer than the applicable duration of section 6.5.2(a) to encourage investment in, and development of, alternative water supplies.

6.5.4 Compliance Reports:

Where necessary to maintain reasonable assurance that the conditions for issuance of a 20 year permit can continue to be met during the term of the permit, the District will require the permittee to submit a compliance report pursuant to subsection 373.236(3), F.S., no more than once every five years. The report shall contain sufficient information to maintain reasonable assurance that the permittee's use of water will continue, for the remaining duration of the permit, to meet the conditions for permit issuance set forth in the District rules that existed at the time the permit was issued for 20 years by the District. In providing such reasonable assurance, the compliance report must, at a minimum, include:

- (a) all of the information required by the District's "Individual and Standard General Consumptive Use Permit Application Number 40C-2.1082-1" contained in Appendix C; and
- (b) all of the information specifically required by the compliance report condition(s) on the permit.

Following the District's review of this report, the District will modify the permit as necessary to ensure that the use of water authorized by the permit will continue to meet the conditions for permit issuance set forth in the District rules that existed at the time the permit was issued for 20 years. The District shall provide notice of intent to modify the permit as required by sections 120.569 and 120.60, F.S., and section 40C-1.007, F.A.C.

6.6 Enforcement

Chapter 373, F.S., provides for the enforcement of District rules. In addition to the authority of the Governing Board 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.). Any person who violates any provision of Chapter 40C-2, F.A.C., is guilty of a misdemeanor of the second degree, and may be prosecuted by the District.

Further information regarding the District's monitoring and enforcement programs may be obtained by contacting:

Division of Water Use Compliance
St. Johns River Water Management District
4049 Reid Street
Palatka, Florida 32177-2529
(386) 329-4500

6.6.1 Secondary Use Enforcement and Compliance

In the event a person responsible for a secondary use of water fails to timely obtain a consumptive use permit as required under this rule, or fails to comply with a consumptive use permit authorizing the secondary use, the District shall address the alleged violation with the person responsible for the secondary use of water. In such cases, the District shall not assert that the water supplier for the secondary use is liable for alleged permitting violations by the person responsible for the secondary use of water.

6.7 Monitoring Requirements

Issuance of a Consumptive Use Permit requires that the withdrawals will not result in significant unmitigated adverse impacts on the water resources and existing legal users, and that the use continues to be in the public interest. To ensure that these criteria continue to be met after a permit is issued, monitoring and reporting activities are required as conditions of any individual permit. Where appropriate, the District's monitoring requirements may be satisfied by providing reports required by other agencies.

6.7.1 Withdrawal Quantity

6.7.1.1

All individual consumptive use permittees issued permits under subsection 40C-2.041(1), F.A.C., must measure the quantity of water used, diverted or withdrawn from any source in accordance with the requirements of this section. Measuring of actual pumpage provides a means to develop historical records in order to accurately project future reasonable demand, to assess

impacts to the resource and existing water and land uses, to enable the District to assess the effectiveness of conservation measures, and to ensure that quantities withdrawn do not exceed permitted allocations. Each source must be measured, but monitoring plans should be developed that do not require duplicative monitoring of water that is withdrawn from a source for storage and then withdrawn from storage for use.

Whenever flow meters are used, they must maintain a 95% accuracy, be verifiable and be installed according to manufacturer's specifications. Whenever an alternative method to flow meters is used to measure withdrawals, it must be verifiable and 90% accurate.

6.7.1.2 Applicants for proposed uses of water must install in-line totalizing flow meters on all withdrawal points prior to beginning the permitted use. If an applicant demonstrates that it is not feasible to use a flow meter to measure water withdrawals, the District may approve the use of an alternative method for measuring flow. In addition, if the District determines that flow meters are inappropriate for measuring the flow, an alternative method for measuring the flow may be approved.

6.7.1.3 Beginning March 1, 1993, permitted users with individual permits issued prior to July 23, 1991, must measure the quantity of water used by either installing in-line totalizing flow meters or implementing an alternative for measuring flow. Examples of alternative methods for measuring water use are provided in Appendix J.

If an alternative to flow meters is used to calculate the withdrawal quantity, such method must be fully described and any calculations necessary included with the initial submittal of data, for District staff approval. Acceptance of an alternative will be made on a case-by-case basis. If after a period of one year, the selected alternative fails to accurately measure the withdrawal quantities, in-line flow meters or another alternative must be used.

In addition, in specific cases where the District determines that flow meters are necessary to ensure that the consumptive use complies with the reasonable-beneficial use criteris in subsection 40C-2.301(4), F.A.C., flow meters shall be required by permit condition.

6.7.1.4 If an individual permit is modified after July 23, 1991, to add withdrawal points, change withdrawal points or increase allocation, in-line totalizing flow meters must be installed to measure any proposed uses prior to beginning the use. In the case of permitted users seeking only an increase in allocation from an existing permitted withdrawal point, the District may authorize the continued use of an alternative method to measure flow provided the applicant demonstrates that the alternative being used is

verifiable and 90% accurate. In addition, if an applicant demonstrates that it is not feasible to use a flow meter to measure the new or modified withdrawals, the District may approve the use of an alternative method for measuring flow. If the District determines that flow meters are inappropriate for measuring the flow, an alternative method for measuring flow may be approved.

6.7.1.5 In areas delineated in section 6.7.1.5:

- (a) All applicants for proposed uses must install totalizing flow meters prior to beginning the permitted use, and
- (b) All permitted users with individual permits issued prior to July 23, 1991, must install in-line, totalizing flow meters on all withdrawal points within 90 days of the District providing the meter(s) with a manufacturer's warranty. To ensure that the District provides the correct meter for each withdrawal point, within 60 days of receiving a written request from the District, all permittees must supply the following information:
 - 1. a plan view and longitudinal cross-section of the well head area showing the location of all pumps, pressure gauges, valves, backflow preventers, junctions, bends, and slopes, with all elevations referenced to land surface,
 - 2. inside and outside pipe diameters,
 - 3. a description of the pipe material, and
 - 4. an estimate of the average flow rate.

The District shall provide one meter for each withdrawal point within a permittee's project. Where the District determines that additional meters are required to provide more accurate information, to avoid excessive retrofit costs associated with meter installation, or to prevent excessive pressure losses, the District may provide more than one meter per withdrawal point.

Meter replacement, when necessary, shall be at the permittee's expense. If within 5 years of installation the meter is destroyed by an act of God, the manufacturer or the District shall replace the meter.

If a permittee demonstrates that it is not feasible to use a flow meter to measure water withdrawals, the District may approve the use of an alternative method for measuring flow. Any proposed alternative must be 90% accurate, verifiable and approved by the District prior to implementation.

6.7.1.6 Delineated Area.

Beginning at the confluence of Deep Creek and the St. Johns River, thence Southerly along the St. Johns County - Flagler County line to State Road No. 11; thence Southerly along State Road No. 11 to State Road No. 15; thence Southerly along State Road 15 to the Southern boundary of Section 17, Township 17 South, Range 30 East; thence Westerly along the Section lines to the St. Johns River; thence Northerly along the St. Johns River to the Western boundary of Section 18, Township 13 South, Range 27 East; thence Northerly along the Section lines to State Road No. 309; thence Northerly along State Road No. 309 to US Highway No. 17; thence Northerly along US Highway No. 17 to the St. Johns River; thence Northerly along the St. Johns River to the confluence of Rice Creek and the St. Johns River; thence Westerly along Rice Creek to US Highway No. 17; thence Northerly along US Highway No. 17 to State Road No. 209; thence Easterly and Southerly along State Road No. 209 to the Southerly line of Section 26, Township 8 South, Range 27 East; thence Easterly along said prolongation and along the Section lines to the St. Johns River where it intersects the St. Johns County boundary line; thence Southerly to the Point of Beginning at the confluence of Deep Creek and the St. Johns River.

6.7.1.7 District authorized staff, upon proper identification, shall be provided with an opportunity to perform independent measurements of flow using District monitoring equipment and to inspect system operation to determine compliance with the permit. The District will ensure that the measurements are made in a manner that does not interfere with the permittee's water use activities.

6.7.1.8.1 Total monthly withdrawal quantities shall be recorded continuously by the permittee, totaled monthly, and reported to the District at least every six months (semi-annually) on District Form No. EN-50 or District Form No. EN-52. However, a permittee may be required by permit condition to record pumpage on a daily basis from each withdrawal point and report the daily withdrawal totals on a monthly basis to the District when the District determines that special circumstances warrant. The required flow meter(s) must be tested for accuracy once every 3 years within 30 days of the anniversary date of permit issuance, and recalibrated if the difference between the actual flow and the meter reading is greater than 5%. District Form No. EN-51 must be submitted to the District within 10 days of the inspection/calibration.

6.7.1.9 The water quantity monitoring requirements contained in section 6.7.1 are not applicable to standard general permits for water uses that do not exceed the thresholds set forth in section 3.2.1(a) and (b) and that only authorize the use of water for landscape irrigation other than provided for in paragraph 40C-2.042(2)(a).

PART II
CRITERIA FOR EVALUATION

7.0 Introduction to Criteria for Evaluation

7.1 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 consumptive use permit applications. The staff recommendation on permit approval will be based upon the criteria for evaluation.

7.2 Source of Criteria

The criteria for evaluation of consumptive use permits have been developed from guidelines established in Chapter 373, F.S., (Water Resource Act of 1972); Chapter 62-40, F.A.C., (State Water Policy); and Governing Board Policy as stated in Chapter 40C-2, F.A.C., (Consumptive Uses of Water), in this Handbook, and in permitting decisions. Copies of Chapter 373, F.S. (abridged), Chapter 40, F.A.C., and Chapter 40C-2, F.A.C., are included as appendices in Part IV of this Handbook.

7.3 Existing Use/Proposed Use Distinction

7.3.1 Existing Uses

In establishing the consumptive use permitting program, the Water Resources Act of 1972 (Chapter 373, F.S.) provided that uses which are existing on the effective date of implementation of Chapter 40C-2, F.A.C., are to be evaluated according to whether the use is:

- (a) reasonable-beneficial; and
- (b) allowable under the common law of the State of Florida.

(See Section 8.0 of this Handbook.)

Such users must file an application within two years of the effective date of implementation in an area in order to preserve their status as an existing user. Otherwise, their use will not be considered as an existing legal use, and upon application for a permit will be considered a proposed new use.

7.3.2 Failure to apply for a permit when the use requires a permit under 40C-2.041, F.A.C., within two years of the effective date of implementation (see

subsection 3.1.1 of this Handbook) will create a presumption that the use has been abandoned. If the user intends to make further use of the water, he will be required to submit an application which will be evaluated using the criteria established for a proposed use (see subsection 7.3.3 of this Handbook).

7.3.3 Proposed Uses

Chapter 373, F.S., also provides that, in order to receive a permit, an applicant must establish that a proposed use of water is:

- (a) reasonable-beneficial;
- (b) will no interfere with any presently existing legal use of water; and
- (c) is in the public interest.

(See Section 9.0 of this Handbook.)

8.0 Criteria for Evaluating Existing Uses

Section 373.226, F.S., provides a two-fold test for evaluating uses which are existing on the effective date of implementation: Each use must be reasonable-beneficial and it must be allowable under the common law of the State.

8.1 Reasonable-Beneficial

The District will utilize the criteria established in Section 40C-2.031(4)(a), F.A.C. and explained in Section 10.3 of this Handbook to determine whether a use is reasonable-beneficial.

8.2 Allowable Under the Common Law

8.2.1 Common law provided for situation-specific judicial resolution of conflict between water users. Utilizing the common law doctrine of riparian rights or reasonable use, a court makes a determination between two competing water users, as to which one is to be preferred over another or whether one water use would be allowed to the preclusion of another. In making such a determination, a court utilizes a number of judicially created factors. The factors used by courts have evolved over the last two centuries and have been more or less universally accepted throughout the eastern United States in deciding water rights. The Board will examine the common law in determining whether an existing use (see 7.3.1) is allowable under the common law of the State. Existing uses, to be continued following implementation, must be reasonable-beneficial and must be allowable under the common law of the State.

8.2.2 Florida's common law for water is primarily based upon the riparian doctrine. Essentially, this doctrine provides that all qualified users have equal right to the reasonable use of surface and ground water. Nine factors have been identified as being important in determining whether a use is "reasonable":

- (a) the purpose of the respective use;
- (b) the suitability of the use to the watercourse or lake;
- (c) the economic value of the use;
- (d) the social value of the use;
- (e) the extent and amount of harm caused by the use;

- (f) the practicability of adjusting the quantity of the water used by each use;
- (g) the protection of existing values of land, investments, and enterprises;
- (h) the burden of requiring the users causing harm to bear the loss; and
- (i) the practicality of avoiding harm.

8.2.3

Because the common law relies on situation-specific decisions, the District must use the common law criterion in permit evaluation and decisions for existing uses as it applies to each individual applicant's situation. In conducting such an evaluation, the District will utilize the nine factors listed in subsection 8.2.2 above, as they have evolved under the common law.

9.0 Criteria for Evaluation Proposed Uses

Section 373.223, F.S., provides a three-fold test for evaluating each proposed use: It must be a reasonable-beneficial use, it must not interfere with any presently existing legal use of water, and it must be consistent with the public interest.

9.1 Reasonable-beneficial

The District will utilize the criteria established in Section 10.3 of this Handbook to determine whether a use is reasonable-beneficial.

9.2 Interference with Presently Existing Legal Uses

9.2.1 The use of water must not cause an interference with a legal use of water which existed at the time of the application for the initial consumptive use permit.

9.2.2 Interference with a legal use of water is defined as a decrease in the withdrawal capability of any individual withdrawal facility of a legal use of water which was existing at the time of the application for the initial permit such that the existing user experiences economic, health, or other type of hardship (see subsection 9.4.4 of this Handbook).

9.2.3 Subsection 9.2.1 - 9.2.3 shall not be construed so as to affect the evaluation of the public interest under the provisions of Sections 373.223 and 373.233, F.S., and 40C-2.301 and 40C-2.311, F.A.C.

9.3 Public Interest

For purposes of this section, "public interest" means those rights and claims on behalf of people in general. In determining the public interest in consumptive use permitting decisions, the Board will consider whether an existing or proposed use is beneficial or detrimental to the overall collective well-being of the people or to the water resource in the area, the District and the State.

9.4 Reasons for Recommendation of Denial

9.4.1 A permit will also be denied if, at the time of permit consideration, a proposed use is not a reasonable-beneficial use, will interfere with presently existing uses, or is not in the public interest as described in Sections 9.1, 9.2 or 9.3 above. As a complement to the criteria described in 9.1, 9.2 and 9.3 above, the Governing Board has established that certain conditions, by their very nature, will not meet the three tests for issuance of a permit. These are

described in subsections 9.4.2 - 9.4.7 below. These six conditions are of such significance that they are listed as reasons for denials. The six conditions are:

- (a) the proposed use will induce significant saline water intrusion to such an extent as to be inconsistent with the public interest; or
- (b) the proposed use will cause the water table or surface water level to be lowered so that stages or vegetation will be adversely and significantly affected on lands other than those owned, leased or otherwise controlled by the applicant; or
- (c) the proposed use will cause the water table level or aquifer potentiometric surface level to be lowered so that interference will be caused to legal users; or
- (d) the proposed use will require the use of water which pursuant to subsection 373.223(3), F.S., and subsection 40C-2.301(4), F.A.C., the Board has reserved from use by rule; or
- (e) the proposed use will cause the rate of flow of a surface watercourse to be lowered below a minimum flow which has been established pursuant to subsection 373.042(1), F.S., or section 40C-8.031, F.A.C., or
- (f) the proposed use will cause the level of a water table aquifer, the potentiometric surface level of an aquifer, or the water level of a surface water to be lowered below a minimum level which has been established pursuant to subsection 373.042(2), F.S., or section 40C-8.031, F.A.C.

9.4.2 Saline Water Encroachment

The issuance of a permit may be denied if the permit would allow withdrawals of water that would cause significant saline water intrusion. Significant saline water intrusion is defined as saline water encroachment which detrimentally affects the applicant or other existing legal users of water, or is otherwise detrimental to the public interest. The District uses the following criteria for determining saline water encroachment:

- (a) Movement of a particular saline water interface to a greater distance inland or towards a wellfield than has historically occurred as a consequence of seasonal fluctuations or drought. For purposes of this document, a saline water interface is defined as a zone of dispersion between two geochemical types of ground water or a zone of change between areas of ground water with significantly different chloride concentrations.

- (b) A significant increase from background levels in chloride concentrations at the base of the aquifer or producing zone within the area of influence of the well field. Background levels are the chloride concentrations that existed before withdrawals commenced.
- (c) A significant detrimental change in the geochemistry of the ground water at the base of the aquifer or producing zone within the area of influence of the wellfield. An example of such a change in geochemistry is where a newly constructed well may yield a bicarbonate type water initially, but after withdrawals commence the well or nearby wells yield a sodium chloride type water. This change is an indication that intrusion of saline water has taken place during the withdrawal of water.

In each situation, the determination of significant saline water intrusion will be made on a case by case basis.

9.4.3 Offsite Damages

The issuance of a permit will be denied as inconsistent with the public interest if the permit would allow withdrawals of water that would cause an unmitigated adverse impact on an adjacent land use which existed at the time of permit application. Adverse impacts on land use are exemplified by, but not limited to:

- (a) significant reduction in water levels in an adjacent surface water body,
- (b) significant potential for land collapse or subsidence caused by a reduction in water levels, or
- (c) damage to crops, wetlands or other types of vegetation.

The permittee may accept adverse impact on his own land as long as the public interest is not adversely affected. In all cases, it is the permittee's responsibility to mitigate adverse impacts which his use causes on adjacent land uses which existed at the time of permit application.

9.4.4 Interference with Existing Legal Users

The issuance of a permit will be denied if the permit would allow withdrawals of water that would cause an interference with a legal use of water which existed at the time of permit application.

It is presumed that an interference occurs when the withdrawal capability of any individual withdrawal facility of a presently existing legal use of water experiences a 10% or greater reduction in withdrawal capability or when the existing user experiences economic, health, or other type of hardship as a result of the new use.

The percentage reduction in withdrawal capability is calculated in the following way:

$$\% \text{ Reduction} = \frac{\text{(withdrawal capability prior to impact (gpm) - withdrawal capability after impact (gpm))}}{\text{withdrawal capability prior to impact}} \times 100$$

If presently existing legal uses rely on wells fitted with centrifugal pumps, then the evaluation of interference will be made assuming that the length of the drop pipe is equal to the lift capability of the centrifugal pump affixed to the well.

If presently existing legal uses rely on wells fitted with non-centrifugal pumps, or on centrifugal pumps other than described in the aforementioned cases, the District will evaluate adverse impact on a case by case basis.

If the requested allocation will not cause an interference with legal uses of water which existed at the time of permit application, and it also meets other evaluation criteria, then this will be the amount allocated. If the requested volume causes an interference, staff will calculate the allocation that will not interfere with legal uses of water that existed at the time of permit application. Staff will then recommend this amount as a maximum allocation unless the interference is eliminated by the applicant.

9.4.5 Water Reserved from Use

Section 373.223(3), F.S., states that the Governing Board "by regulation may reserve from use by permit, applicants, water in such locations and quantities, and for such seasons of the year, as in its judgement may be required for the protection of fish and wildlife or the public health and safety. Such reservations shall be subject to periodic review in the light of changed conditions. However, all presently existing legal uses of water shall be protected so long as such use is not contrary to the public interest." The Governing Board has established a policy that protection of the water resource from significant harm is required for protection of the public interest. Thus, based on information obtained through its research and analysis programs, the District may delineate areas where no further permitted withdrawals will be allowed. The District is currently formulating

Basin Management Plans which are intended to identify areas where such reservation may be required. Once each plan has been completed and adopted (after public hearing), the Board may utilize the plan to specify maximum withdrawal limits; these limits will be adopted by rule prior to being used for regulatory purposes.

9.4.6 Minimum Flows

Minimum surface water flows are set forth in Chapter 40C-8, F.A.C., for specified bodies of water.

9.4.7 Minimum Levels

Minimum ground and surface water levels are set forth in Chapter 40C-8, F.A.C.

10.0 Reasonable-beneficial Use Standard

10.1 Definition of Reasonable-beneficial Use

Section 373.019(4), F.S., defines "Reasonable-beneficial Use" as "the use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest."

10.2 State Water Policy

Section 62-40, F.A.C., provides that, in determining whether a use is a reasonable-beneficial use, consideration should be given to any evidence presented concerning the following factors:

- (a) the quantity of water requested for the use;
- (b) the demonstrated need for the use;
- (c) the suitability of the use to the source of water;
- (d) the purpose and value of the use;
- (e) the extent and amount of harm caused;
- (f) the practicality of mitigating any harm by adjusting the quantity or method of use;
- (g) whether the impact of the withdrawal extends to land not owned or legally controlled by the user;
- (h) the method and efficiency of use;
- (i) water conservation measures taken or available to be taken;
- (j) the availability of reclaimed water for and the practicality of reuse, or the use of waters of more suitable quality;
- (k) the present and projected demand for the source of water;
- (l) the long term yield available from the source of water;
- (m) the extent of water quality degradation caused;
- (n) whether the proposed use would cause or contribute to flood damage;

- (o) whether the proposed use would significantly induce salt water intrusion;
- (p) the amount of water which can be withdrawn without causing harm to the resource;
- (q) whether the proposed use would adversely affect public health; and
- (r) other relevant factors.

10.3 Reasonable-beneficial Use Criteria

Based upon the statutory guidance and the delineation of factors found in State Water Policy, the Governing Board has determined that the following criteria must be met in order for a use to be considered reasonable-beneficial:

- (a) The use must be in such quantity as is necessary for economic and efficient utilization. The quantity applied for must be within acceptable standards for the designated use (see Section 12.0 for standards used in evaluation of need/allocation).
- (b) The use must be for a purpose which is both reasonable and consistent with the public interest.
- (c) The source of the water must be capable of producing the requested amounts of water. This capability will be based upon records available to the District at the time of evaluation. An eight of ten year capability will be considered acceptable.
- (d) The environmental or economic harm caused by the consumptive use must be reduced to an acceptable amount. The methods for reducing harm include: reducing the amount of water withdrawn, modifying the method or schedule of withdrawal, or mitigating the damages caused (see also subsections 9.4.3 and 9.4.4 of this Handbook).

- (e) All available water conservation measures including those in Rule 40C-2.042(1) or (2), F.A.C., as applicable must be implemented unless the applicant demonstrates that implementation is not economically, environmentally or technologically feasible. Satisfaction of this criterion may be demonstrated by implementation of an approved water conservation plan as required in section 12.0 of Applicant's Handbook: Consumptive Uses of Water. Appendix I provides an outline of water conservation measures which the applicant may undertake to meet this requirement. Individual provisions in Appendix I are not requirements per se, and do not exclude alternative conservation measures the applicant may wish to propose to the District.
- (f) When reclaimed water is readily available it must be used in place of higher quality water sources unless the applicant demonstrates that its use is either not economically, environmentally or technologically feasible.

In determining whether reclaimed water is readily available, the District will consider the following factors:

- (1) Whether a suitable source of reclaimed water exists;
 - (2) Whether the source is offered to or controlled by the applicant,
 - (3) Whether the applicant is capable of accessing the source; and
 - (4) any other relevant information.
- (g) The lowest acceptable quality water source, including reclaimed water or surface water (which includes stormwater), which is addressed in paragraph 40C-2.301(4)(f), must be utilized for each consumptive use. To use a higher quality water source an applicant must demonstrate that the use of all lower quality water sources will not be economically, environmentally, or technologically feasible. If the applicant demonstrates that use of a lower quality water source would result in adverse environmental impacts that outweigh water savings, a higher quality source may be utilized. This criterion shall not be used to require the use of lower quality sources for direct human consumption or human food preparation. Entities using water for these purposes and also for other purposes, such as irrigation, must evaluate the feasibility of using lower quality sources for such other purposes. However, it is possible that the unavailability of higher quality sources may necessitate the development of lower quality sources in order to meet projected demands, including the

demands resulting from direct human consumption and human food preparation needs.

- (h) The consumptive use should not cause significant saline water intrusion or further aggravate currently existing saline water intrusion problems.
- (i) The consumptive use should not cause or contribute to flood damage.
- (j) The water quality of the source of the water should not be seriously harmed by the consumptive use.
- (k) The consumptive use shall not cause or contribute to a violation of state water quality standards in receiving waters of the state, as set forth in chapters 62-3, 62-4, 62-302, 62-520, and 62-550, F.A.C., including any anti-degradation 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 National Resource Waters set forth in sections 62-4.242(2) and (3), F.A.C. A valid permit issued pursuant to chapters 62-660 or 62-670, F.A.C., or section 62-4.240, F.A.C., or a permit issued pursuant to chapters 40C-4, 40C-40, 40C-42, or 40C-44, F.A.C., shall establish that this criterion has been met, provided the applicant is in compliance with the water quality conditions of that permit.

11.0 Evaluation Criteria for Other Types of Applications

11.1 Modification to an Existing Permit

Each application for modification to an existing permit will be evaluated using the criteria listed in Section 9.0 above (see also 40C-2.301(2)). The proposed modification must be for a reasonable-beneficial use, it must not interfere with presently existing legal uses, and it must be in the public interest. Likewise, it must not result in any of the conditions which are listed as reasons for recommendation of denial (see Section 9.4 above as well as 40C-2.301(3)).

11.2 Transfer of Permit

The District will transfer a permit under the same terms and conditions contained in the permit provided that the source and use remain the same. Any change in the terms or conditions of the permit, including the amount of withdrawal and type of use, require the submission of an application for modification of a permit (see 11.1 above), or submission of an application for a new use.

11.3 Temporary Use

11.3.1 Pursuant to Section 373.244, F.S., and section 40C-2.441, F.A.C., an applicant who has filed an application for a consumptive use permit will be granted a temporary use permit if it appears to the Governing Board that the temporary permit is necessary for consumptive use of water prior to final action on an application for a permit pursuant to section 40C-3.01(2), F.A.C.

11.3.2 The temporary permit will be considered at each regular meeting of the Governing Board. At each meeting the Board will consider whether the use is reasonable-beneficial, whether it interferes with existing legal uses, and whether it is in the public interest (see Section 373.244, F.S., and Section 9.0 in this Handbook). The Governing Board may terminate a temporary permit or refuse to extend one further upon a finding that the water use does not meet the criteria of reasonable-beneficial use, non-interference with existing legal uses, and public interest. The Board may also terminate a temporary permit or refuse to continue one if it finds that the water use is no longer reasonable, is interfering with a presently existing legal use of water, or is inconsistent with the public interest, or adverse effects are occurring as a result of the water use, or that water authorized under such permit is no longer required by the applicant.

12.0 Evaluation of Proposed Use of Water

12.1 Annual Allocation

(a) Annual Allocation

The particular quantity of water permitted on an annual basis is that amount of water which the Governing Board has permitted for use on a yearly basis. The District staff will calculate a recommended annual allocation using methodologies based upon type of use (see Sections 12.4, 12.5, 12.6, and 12.7 of this Handbook).

(b) Maximum Daily Use

The maximum daily use, as recommended by District staff, is determined by multiplying the average day allocation by an acceptable maximum day to average day withdrawal ratio.

(c) Annualized Incremental Allocation

The annual quantity of water permitted will be designated for each year of the permit duration. The annual quantity permitted for each year will be based upon the projected need for that year. Thus, uses which will require increasing amounts of water to accommodate growth will be provided with incremental increases in quantity of water permitted on a yearly basis.

12.2 Public Supply-Type Uses

An amount of water required for reasonable-beneficial uses must be demonstrated by the applicant. For public water supply systems, this amount is calculated based upon the projected requirements of the population as to its industrial, commercial and other users supplied by the permittee. Population requirements are calculated by multiplying the 10-year projected population for an authorized service area by the calculated or estimated per capita daily water use. Projected population shall be determined using the methods and data sources specified in Subsection 12.4.1; use shall be calculated or estimated as prescribed in Subsection 12.4.2. Other methods of determining water requirement may be used as approved by staff.

If the applicant's requested quantity exceeds the amount of water required for reasonable-beneficial uses as calculated pursuant to this Section, the staff will recommend a projected requirement based on its analysis of population projections for the service area and historical or design per capita use of water.

Reasonable-beneficial requirement for the public supply-type use is the highest allocation which staff can recommend. If all other criteria are satisfied, staff will recommend this amount as the annual allocation.

12.2.1 Population Projections

A ten-year population growth should be projected by using accepted projection techniques. The following sources of growth projections are based on accepted techniques and may be used:

The appropriate local government adopted comprehensive plan

Detailed DER Population Studies

201/208 Planning Studies

University of Florida, Bureau of Economic and Business Research
Population Data

Regional Planning Council Data

Special population studies (special population studies should only be used if the sources listed above are unavailable)

The District will also consider evidence submitted in the application which indicates appropriate adjustments to the population base due to changes in the number of residents in the service area actually served by the utility. Evidence on the location of large unique users not related to population, such as golf courses and industrial plants, will also be considered.

12.2.2 Per Capita Daily Water Use

Historical average per capita daily water use will generally be acceptable as evidence of total daily water use. Historical average per capita daily water use is calculated either by dividing average day water withdrawals for the current pumpage period by the permanent population for the same period of time or by determining the per capita daily water use for the five most recent years. The greatest or most accurate per capita use derived from either of the two methods may then be used in projecting future water use. In some cases the historical demand patterns will not be appropriate for projection purposes. This may occur, for instance, when there are current large users whose growth is not related to population or when future development may take on characteristics very different from those of present development. In such cases alternative per capita estimates may be appropriate and should be used, accompanied by appropriate documentation.

If the historical usage is greater than 150 gallons per capita day (GPCD) the District will request specific information from the applicant which explains the high per capita use.

If no data or historical use of water exist, a design per capita use acceptable to the District staff may be used. For any proposed development the design per capita use must be explained.

12.2.3 Service Area

(a) Public Service Commission Service Territory

If the applicant is regulated by the Public Service Commission (PSC), the service area should be that area for which the utility has obtained a certificate from the PSC. If the projected future service area is larger than the area certificated at the time of application, staff will solicit the opinion of the PSC as to the ability of the applicant to serve the area. If the PSC determines that the applicant is capable of serving the area and there are no known objections to the service area expansion, staff may recommend an allocation for the projected service area. If this is done, a special condition will be attached requiring that the applicant receive a certificate from the PSC for the expansion within two years of permit issuance. If a permittee will not serve a new demand located within either the existing or proposed service area, the permitted allocation may be subject to modification.

If the PSC indicates that the applicant may not be capable of serving the expanded area or if there are objections to the expanded service area, staff may recommend an allocation based on projected water use within the existing certificated service territory until objections or other difficulties are resolved; after objections and other difficulties are resolved, staff may then recommend an allocation for the proposed area.

(b) Local Government Franchise

If the applicant is regulated by local government, the service territory should be that area for which the applicant has obtained a franchise.

If the projected future service area is larger than the area franchised at the time of application, staff will solicit the opinion of local government as to the ability of the applicant to serve the area.

If local government determines that the applicant is capable of serving the area and there are no known objections to the service territory expansion, staff may recommend an allocation for the

projected service territory with a special condition that the applicant receive a franchise from local government for expansion within two years. If local government indicates that the utility may not be capable of serving the expanded service territory, staff may recommend an allocation based on projected water use within the existing service territory; after objections and other difficulties are resolved, staff may then recommend an allocation for the proposed area.

(c) Unregulated Service Territory

If the applicant is not regulated by either local government or the PSC, the projected service area must conform to the area that the utility can reasonably serve within a ten year projected time frame. If the applicant is a municipality, service areas outside of municipal boundaries must be explained by attachment of agreements or contracts to the application. Staff will solicit the assistance of the PSC in determining whether the PSC has certificated the area outside of municipal boundaries to any other utility.

(d) Conflicting Service Territories

If conflicting service area claims arise between applicants or between an applicant and another water supplier whose service areas are not regulated, the users must resolve the dispute between themselves or staff will recommend an allocation based on the non-disputed portions of the projected service areas. If service claims arise between users whose service areas are regulated by local government, local government must resolve the service area dispute; otherwise, staff will recommend an allocation based on the non-disputed portions of the projected service area.

12.2.4 Maximum Day to Average Day Withdrawal Ratio

The methodology used in determining the maximum day to average day ratio will vary depending upon the available data. In general, the maximum day to average day withdrawal ratio, used in determining projected maximum daily withdrawals, is calculated by dividing the historical maximum day withdrawal by the average day withdrawal for a given period of record. Listed below are methodologies used to calculate the maximum day to average day ratio depending on the available data. Extensive non-domestic use may of course cause variations in methodologies.

In cases where several years of pumpage records are available, a maximum day to average day withdrawal ratio is calculated for each year. The most suitable ratio may then be chosen from the last three years of record. In cases

of a new use when either no records are available or there are less than one year's records, a ratio of between 1.5 and 2.0 will be used, although engineering documents justifying a different ratio are acceptable evidence in determining a different ratio.

When a utility operates more than one treatment plant and the plants operate independently (no interconnections), a maximum daily withdrawal is determined for each treatment plant and its associated wellfield(s).

12.2.5 Water Conservation Plan

12.2.5.1 All permit applicants for a public supply-type water use who satisfy the following water conservation requirements at the time of permit application are deemed to meet the criterion in 10.3(3):

- (a) An audit of the amount of water used in the applicant's production and treatment facilities, transmission lines, and distribution system using the District's Water Audit Form No. 40C-22-0590-3 (see Appendix C-3) must be submitted. The audit shall include all existing production, treatment and distribution systems accessible to the applicant. The audit period must include at least 12 consecutive months within the three year period preceding the application submittal.
- (b) An applicant is required to perform a meter survey, and to correct the water audit to account for meter error, if the initial unaccounted for water is 10% or greater based on the results of the initial water audit. The purpose of this survey is to determine a potential correction factor for metered water use by testing a representative sample of meters of various ages. The survey also helps to determine the appropriateness of a meter change-out program. As part of the survey, the applicant must randomly test 5% or 100 meters, whichever is less. The sampling must be of meters representing an even distribution of type and age, or cumulative lifetime flow. A documented meter change-out program that can provide an estimate of the overall meter accuracy may be substituted for this requirement.
- (c) An applicant whose water audit, as required under paragraph 12.2.5.1(a), shows greater than 10% unaccounted for water use, must complete the leak detection evaluation portion of Form 40C-22-0590-3. Based upon this evaluation, an applicant may choose to implement a leak detection program immediately or develop an alternative plan of corrective action to address water use accountability and submit a new water audit to the District within two years. If the subsequent audit shows greater than 10% unaccounted for water, the applicant must implement a leak detection

and repair program within one year unless the applicant demonstrates that implementation is not economically feasible. In all cases, this evaluation and the repair program may be designed by the applicant to first address the areas which are most suspect for major leaks. The evaluation and repair program may be terminated when the permittee demonstrates that its unaccounted for water loss no longer exceeds 10%.

- (d) Implementation within the first year after permit issuance of a meter replacement program will be required for those applicants whose small and medium meter survey indicates that a group or type of meters is not 95% accurate. Permittees will be required to replace meters which have been in operation for 15 years or longer or have a cumulative lifetime flow exceeding the maximum lifetime operational flow specified by the manufacturer, unless a comparison of meter survey information to meter manufacturer specifications indicates a decreased accuracy of the meters. An alternative meter replacement schedule shall be approved by the District upon a showing by the applicant that the meter manufacturer specifications predict a different lifetime or gallonage capacity or based upon the results of a meter survey performed by the applicant.

- (e) A customer and employee water conservation education program which includes all of the elements listed below as nos. 1 through 10 must be implemented. The frequency and extent to which each of the elements must be implemented will depend upon the size of the applicant's utility, the financial means of the applicant, the degree to which excess water use is identified as a problem, the particular types of uses which are identified as responsible for the excess water use, and any other relevant factors. Implementation of these may be achieved through collaboration with other entities, including the District.
 - 1. Televised water conservation public service announcements.
 - 2. Provide water conservation videos to local schools and community organizations.
 - 3. Construct, maintain, and publicize water efficient landscape demonstration projects.
 - 4. Provide water conservation exhibits in public places such as trade shows, festivals, shopping malls, utility offices, and government buildings.

5. Provide/Sponsor water conservation speakers to local schools and community organizations.
6. Provide water conservation articles and/or reports to local news media.
7. Display water conservation posters and distribute literature.
8. Provide landscape irrigation audits and irrigation system operating instructions to local small businesses and residents.
9. Establish a water audit customer assistance program which addresses both indoor and outdoor water use.
10. Provide water conservation information to customers regarding landscape irrigation, including the requirements contained within Rule 40C-2.042, F.A.C.

(f) The applicant must submit a written proposal and implement a water conservation promoting rate structure, unless the applicant demonstrates that the cost of implementing such a rate structure is not justified because it will have little or no effect on reducing water use. In the event that the applicant has a water conservation promoting rate structure in effect, the applicant must submit a written assessment of whether the existing rate structure would be more effective in promoting water conservation if it were modified, and if so, describe and implement the needed changes. Upon request, the District will assist the applicant by providing available demographic data, computer models, and literature. In evaluating whether a proposed rate structure promotes water conservation, the District will consider customer demographics, the potential for effectiveness, the appropriateness to the applicant's particular circumstances, and other relevant factors. Those permittees required to implement a water conservation rate structure must provide written reminder notices to their customers at least twice a year of the financial incentive to conserve water in order that the rate structure does not lose its effectiveness.

(g) When an applicant operates a reclaimed water system and requests a back-up water source to meet peak demands for reclaimed water, the applicant must submit a management plan designed to minimize the need for augmentation. In developing this plan, the applicant must consider:

1. creation of additional storage,

2. use of lower quality water sources for back-up,
3. pressure reduction,
4. designation of primary and secondary customers,
5. financial incentives for voluntary use reductions,
6. reclaimed water interconnects with adjacent communities,
7. peak demand irrigation restrictions,
8. providing customers with written information supporting the need to conservatively use reclaimed water, and
9. any other measures identified by the District.

The plan must include an explanation of how the above nine items were considered by the applicant.

- (h) When an audit and/or other available information indicates that there is a need for additional water conservation measures in order to reduce a project's water use to a level consistent with projects of a similar type, or when an audit and/or other information indicates that additional significant water conservation savings can be achieved by implementing additional measures, other specific measures will be required by the District, to the extent feasible, as a condition of the permit. Additional water conservation measures include those listed in Appendix I.

12.2.5.2 Applicants who cannot implement all of the items listed in 12.2.5.1 must submit documentation demonstrating that the proposed use will otherwise meet the criterion in section 10.3(e).

12.3 Commercial/Industrial-Type Uses

12.3.1 Allocation

The reasonable need for a requested allocation must be based upon the amount of water needed to perform an industrial process in an efficient, non-wasteful and economic manner. If the criteria listed in section 8.0 or 9.0 are satisfied, the allocation will be equal to the reasonable need for water. A reasonable need for water is the greatest allocation which staff will recommend.

12.3.2 Water Conservation Plan

12.3.2.1

All individual permit applicants for commercial/industrial-type water uses must submit a water conservation plan for their facility to the District at the time of permit application. The plan must contain specific activities designed to conserve water.

- (a) An audit of the amount of water used in the applicant's various operational processes, landscaping practices, and household facilities. Subsequent implementation of a leak detection and repair program will be required within the first year of permit issuance if analysis of the audit results indicates such measures would be cost effective. New permittees must conduct such an audit within two years after permit issuance.
- (b) A program for making technological, procedural, and/or programmatic improvements to the applicant's facilities and processes to decrease water consumption. Appendix I provides an outline of water conservation measures which the applicant may undertake to meet this requirement. Individual provisions in Appendix I are not requirements per se, and do not exclude alternative conservation measures the applicant may wish to propose to the District.
- (c) An analysis of the economic, environmental and technical feasibility of reusing reclaimed water, recycling water on-site, utilizing the lowest acceptable quality water source, and providing reclaimed water for reuse or stormwater for use.
- (d) Develop and implement an employee awareness and consumer education program concerning water conservation.
- (e) Procedures and timeframes for implementation, and for periodic assessment and revision of the water conservation plan.

Applicants may be able to fulfill some or all of the water conservation plan elements (b) and (d) by demonstrating present water conserving activities which meet the intent of each element. In evaluating whether existing water conserving activities are sufficient to meet the applicable criteria in section 40C-2.301, F.A.C., the District will take into consideration the use type and efficiency of the specific use relative to other similar users.

12.3.2.2

All permittees must implement the conservation plan approved by the District in accordance with the schedule contained therein. A report detailing the progress of plan implementation must be submitted to the District on or before the midpoint of the permit duration. The water conservation plan

requirements contained herein are applicable to subsequent applications for permit renewals. However, subsequent plans will be viewed as refinements to existing plans, incorporating technological and procedural innovations as these are developed.

12.4 Mining-Type Uses

The reasonable need for a requested allocation must be based on the amount of water needed to be discharged from a mining pit in order to economically and effectively mine the pit. In some cases, dewatering may involve lowering the water table several feet in order to lower the level below "Caprock" which is used as an operating floor and drying surface. In other cases, it may involve completely dewatering a pit in order to remove minable rock and sand using pans and scrapers. The reasonable allocation may vary for a particular dewatering operation depending upon the excavation method. Staff may recommend the greater reasonable allocation if all other criteria are satisfied. However, if the greater reasonable allocation will generate adverse impacts, staff will recommend the excavation method with a lower reasonable allocation which satisfies all criteria. For example, a rockpit may be excavated using either draglines or scrapers. Drag-lining may require dewatering only several feet in order to expose "Caprock" as an operating surface. The use of scrapers requires totally dewatering the pit in order to use the floor of the pit as an operating surface. If staff cannot recommend total dewatering of a mining pit because of adverse impacts then staff may recommend the second alternative, drag- lining, with its smaller discharge if it satisfies all criteria.

If all criteria listed in Section 8.0 or 9.0 are satisfied, the allocation is equal to the reasonable need for water. The reasonable need for water is the greatest volume which staff can recommend.

12.5 Agricultural, Nursery, and Aquacultural Uses

12.5.1 Supplemental Irrigation Requirement

The reasonable need for an agricultural use is based on the amount of water needed to supply the supplemental irrigation requirements of the type of crop grown. The supplemental irrigation requirements are determined through use of the modified Blaney-Criddle formula for evapotranspiration. The formula is explained in detail in Appendix H. The model is based on the type of crop grown, the irrigation method employed, the season the crop is grown, general crop location, and associated atmospheric conditions. In determining reasonable need, the supplemental irrigation requirements used are those which would be requested in a two in ten year drought. Where supplemental irrigation data are not available from the modified Blaney-Criddle method, an average annual industry water figure is used.

12.5.2 System Efficiency Ratio

Efficiency of the irrigation system is accounted for in the annual allocation by multiplying the total supplemental irrigation requirement times the system efficiency ratio. The system efficiency ratio is obtained by use of the following formula:

$$\frac{100}{\text{System Efficiency}} = \text{System Efficiency Ratio}$$

Thus, for an irrigation system which has an efficiency standard of 75%, the ratio is:

$$\frac{100}{75} = 1.33$$

The system efficiency ratio is therefore 1.33, and a user must pump 1.33 gallons to put 1 gallon on a crop.

The recommended reasonable use is derived by multiplying the supplemental irrigation requirement times the system efficiency ratio.

The system efficiency factors listed below are presumed to be significant in determining supplemental irrigation requirements:

(a) Low Pressure - Low Volume Systems

1. Trickle Irrigation -- 98%
2. Drip Irrigation -- 90%
3. Jet Irrigation -- 80%

(b) Sprinkle Systems

1. Center Pivot -- 80%
2. Overhead Sprinkler -- 70%
3. Traveling Gun -- 70%
4. Texas Sidewalker -- 70%

(c) Flood and Seepage Systems

1. Pipeline Seepage -- 60%
2. Ditch Seepage -- 50%
3. Crown Flood - 50%

It is important to note that the allocation for a particular use is figured after evaluation of other criteria relevant to permitting. Thus, in some areas of the District, the amount of water required for an inefficient system may not be recommended by the staff, and a smaller system efficiency ratio would be utilized.

System efficiency will be used as a factor of consideration in determining which restrictions will be imposed at the time of a water shortage declaration.

12.5.3 Livestock

The reasonable need for livestock use will be derived by multiplying the estimated total number of animals by gallons needed per day per animal as estimated by the Institute of Food and Agricultural Sciences (IFAS).

The livestock per capita water use will be determined utilizing the factors listed below unless the applicant can demonstrate that a different factor is appropriate for his particular needs:

	<u>Use per Animal (gpd)</u>
Beef Cattle	12
Chickens	0.10
Dairy Cattle	150
Dogs	0.10
Goats	2
Hogs	2
Horses	12
Rabbits	0.05
Sheep	2
Turkeys	1

Evidence which is appropriate for demonstrating that a different factor should be utilized includes published IFAS data or historical use data for the particular operation.

12.5.6 The maximum monthly withdrawal as recommended by District staff is generally specified on agricultural or other irrigation permits. This amount is determined by the dry month needs of the CUP (calculated for a 2 in 10 year drought) or that amount needed for freeze protection.

12.5.7 Water Conservation Plan

12.5.7.1 All individual permit applicants for agricultural, nursery, and aquacultural uses must submit a water conservation plan for their operation to the District at the time of permit application. The plan must contain specific activities designed to conserve water. The water conservation plan must include provision for the following:

- (a) A program for increasing the water use efficiency of the applicant's operation. As part of this program, each grower must conduct an analysis of the operation's current water use practices and the water saving potential of proposed practices. This analysis can be completed using the Soil Conservation Service's Farm Irrigation Rating Method (FIRM) (SCS Engineering Technical Note FL-17, United States Department of Agriculture, Soil Conservation Service, 1987) or an equivalent method. Based on the results of the FIRM Analysis, the applicant must implement direct and indirect water saving measures. Appendix I provides an outline of water conservation measures which the applicant may undertake to meet this requirement. Individual provisions in Appendix I are not requirements per se, and do not exclude alternative conservation measures the applicant may wish to propose to the District.
- (b) An analysis of the economic, environmental and technical feasibility of reusing reclaimed water, recycling water on-site, and utilizing the lowest quality water source possible.
- (c) Procedures and timeframes for implementation, and for periodic assessment and revision of the water conservation plan.

Applicants may be able to fulfill the water conservation plan element (a) by demonstrating present water conserving activities which meet the intent of the element. In evaluating whether existing water conserving activities are sufficient to meet the applicable criteria in section 40C- 2.301, F.A.C., the District will take into consideration the use type and efficiency of the specific use relative to other similar users.

12.5.7.2 All permittees must implement the conservation plan approved by the District in accordance with the schedule contained therein. A report detailing the progress of plan implementation must be submitted to the District on or before the midpoint of the permit duration. The water conservation plan requirements contained herein are applicable to subsequent applications for permit renewals. However, subsequent plans will be viewed as refinements to existing plans, incorporating technological and procedural innovation as these are developed.

12.5.7.3 A single conservation plan can be submitted to fulfill the requirements of this rule and those requirements set forth in subsection 40C-44.021(4), F.A.C., of the District's Regulation of Agricultural Surface Water Management Systems rule, provided all required components of each rule are included.

12.6 Golf Course and Recreational - Type Use

12.6.1 Water Conservation Plan

12.6.1.1 Each applicant for an individual consumptive use permit for a golf course or recreational-type water use must submit a water conservation plan for their facility to the District at the time of permit application. The plan must contain specific activities designed to conserve water. At a minimum, the water conservation plan must include:

- (a) A program for increasing the water use efficiency of the applicant's operation. Appendix I provides an outline of water conservation measures which the applicant may undertake to meet this requirement. Individual provisions in Appendix I are not requirements per se, and do not exclude alternative conservation measures the applicant may wish to propose to the District.
- (b) An analysis of the economic, environmental and technical feasibility of reusing reclaimed water, recycling water on-site, and utilizing the lowest quality water source possible.
- (c) Develop and implement an employee awareness and player education program concerning water conservation.
- (d) Procedures and timeframes for implementation, and for periodic assessment and revision of the water conservation plan.

Applicants may be able to fulfill the water conservation plan element (a) by demonstrating present water conserving activities which meet the intent of the element. In evaluating whether existing water conserving activities are sufficient to meet the applicable criteria in section 40C- 2.301, F.A.C., the

District will take into consideration the use type and efficiency of the specific use relative to other similar users.

12.6.1.2 All permittees must implement the conservation plan approved by the District in accordance with the schedule contained therein. A report detailing the progress of plan implementation must be submitted to the District on or before the midpoint of the permit duration. The water conservation plan requirements contained herein are applicable to subsequent applications for permit renewals. However, subsequent plans will be viewed as refinements to existing plans, incorporating technological and procedural innovations as they are developed.

12.7 Other Use Types.

All individual permit applicants for use types not specified above must submit a water conservation plan for their proposed use. The plan must contain specific measures designed to conserve water. At a minimum the water conservation plan must include the applicable elements described above in sections 12.2.5, 12.3.2, 12.5.7, and 12.6.1

12.8 Augmentation of Surface Waters

The proposed use of water to augment a surface water body requires the District to consider a number of factors of special interest when evaluating this use type. As a result, this section is designed to provide additional guidance in determining whether such a proposed use of water is reasonable-beneficial under section 10.3. This section is supplemental to the criteria in sections 9.0 and 10.3 and shall not be solely relied upon to evaluate whether a proposed use of water to augment a surface water body meets the conditions for issuance of a permit.

12.8.1 Augmentation for Aesthetic Purposes

The use of ground water for augmentation of a surface water body solely for an aesthetic purpose is not a reasonable-beneficial use of water. However, where such augmentation would result in economic benefits to offsite property, a proposed use of ground water to augment a surface water body for an aesthetic purpose will be considered under the criteria in sections 9.0, 10.3, and 12.8.2.

12.8.2 Augmentation For All Purposes

As part of the determination of whether a proposed use of water to augment a surface water body meets the reasonable-beneficial use criteria in section 10.3, the Governing Board will consider the following factors:

- (a) the economic and environmental benefits of the use,
- (b) the degree to which water withdrawn for augmentation will be recharged to the source,
- (c) the impact of the augmentation on existing stormwater management systems,
- (d) whether the surface water body is being used as a source of water for other uses,
- (e) whether the use is proposed to maintain minimum levels adopted pursuant to section 373.042, F.S.,
- (f) the total amount of water being used, and
- (g) and whether this amount is the minimum needed, considering seasonal fluctuations.

12.9

Back-up Allocations for Reclaimed Water Uses.

All consumptive use permits wherein the use of reclaimed water is authorized shall provide, if requested, an allocation for the use of water from another source(s) in emergency situations or if reclaimed water becomes unavailable, provided the request meets the permitting criteria in subsection 40C-2.301(2), F.A.C.

In determining the amount and duration of the allocation from other sources, the District shall evaluate the following:

- (a) The risk that reclaimed water may not be available in the future.
- (b) The nature of the use(s) served with reclaimed water.
- (c) The extent to which the applicant intends to rely on reclaimed water.
- (d) The extent of economic harm that may result if other sources are not available to replace the reclaimed water.
- (e) The source of the back-up water allocation.

13.0 Available Water/Competing Applications

Available water is water available for the permitting program. It is equal to the difference between the amount of safely usable water in an aquifer or basin minus the amount of water previously permitted. Usable water is that quantity of water defined by the District as both treatable using a feasible method of treatment and constituting a safe sustained yield from the aquifer or basin.

A site-specific determination of available water will involve evaluation of the following:

- (a) Water shortages in the applicant's area: If a water shortage has historically occurred in the applicant's area, staff will evaluate whether the amount of water meets the statutory criteria on a case by case basis.
- (b) Insufficiency of available water: An insufficiency of available water exists when the amount of usable water may be less than the amount of water which is both proposed and presently available for use. Safe sustained yield will be used in consideration of allocable water for an island or peninsular location and for areas in which rainfall recharge is the only source of water.
- (c) Proximity of saline water interface and potential for inland movement of the saline water interface (subsection 9.4.2).
- (d) Proximity of pollution sources and potential for significant contaminant transport towards wellfields (Section 10.3).

Pollution of wellfields is inconsistent with the public interest as well as not reasonable-beneficial. Staff may recommend denial of an application for any one of the following reasons: First, the occurrence of water resource shortages in the applicant's area does not allow the allocation permitting of quantities of water beyond existing that allocated by existing permits in force; second no available water is available on a site-specific basis; or third, the Governing Board had indicated that no available water is presently available on a regional basis for permitting within the aquifer or basin.

13.1 Insufficiency of Available Water

If a single proposed user applies for a quantity of water in an area where there is not enough water to satisfy both the permitted demand and the proposed demand, staff will recommend amount which represents the amount of available water which, when added to existing permitted quantities, will equal the amount of available water.

13.2 Competing Applications in an Area of Limited Allocable Available Water

Applications are competing when staff evaluation indicates that the amount of available water is inadequate for both or all the applicants.

In case of competing applications which otherwise meet the requirements for issuance of a permit staff will recommend the application which best serves the public interest. If both applications equally serve the public interest, staff will recommend preference to a renewal application over an initial application.

In case of proposed uses, if competing applications are all renewals or all initial applications and all applications equally serve the public interest, staff will calculate an equitable amount for permitting for all applicants in the following manner:

- (a) For public supply uses, per capita consumption will be set equal to the smallest value of either of the following: 1) the District-wide average, 2) the least value proposed by any applicant in competition.
- (b) For public supply uses, projected water use based on population growth for all applicants will be reduced on a percentage basis until the sum total of all withdrawals is equal to the sum total of allocable water.
- (c) For agricultural uses, the system efficiency ratio will be set at the value which is obtained by the most efficient system in use in the area.
- (d) For industrial uses, need will be analyzed based upon consideration of available water conservation methods.

14.0 Hydrologic Testing Program

Hydrologic data collection and evaluations by the applicant are a requirement for a consumptive use permit except when the District possesses sufficient hydrologic information to enable it to evaluate the application. A hydrologic testing program will be required in the following circumstances:

- (a) If evidence exists that there may be insufficient available water for permitting; or
- (b) If evidence indicates that existing legal uses may be interfered with by an applicant's anticipated well drawdown; or
- (c) If evidence indicates that ground water pollution exists or may be caused by a proposed withdrawal.

The need for hydrogeologic data collection and evaluations will be discussed during a pre-application meeting. The results of the data collection and evaluation should be submitted at the time of permit application. If such information is not included at the time of application, it will be requested pursuant to the provision of Section 5.3 of this Handbook.

Data collection must be performed when the amount of data is inadequate for staff to evaluate impacts associated with proposed withdrawals or if an allocation is desired which is larger than that which the staff has recommended to be reasonable. Data collection may involve the compilation of existing data and/or the collection of new data. The following are the types of data that may be required; rainfall, historical pumpage records, specific capacity data on individual wells, transmissivity, storage coefficient, leakance of the aquifer, water level elevations and record for wells or other water bodies, and the location of the saline water interface. A proposal for data collection should have staff approval prior to expenditure of funds.

Staff can reevaluate an application upon receipt of additional data. It should be emphasized that additional data collection will result in a higher allocation only if all criteria are satisfied by an allocation calculated from additional data.

If the applicant disagrees with the allocation recommended by staff because of the interpretation and evaluation of the data (assuming the quantity and quality of data are adequate), it will be in the best interest of the applicant to conduct a hydrogeologic evaluation if a larger allocation is desired. An evaluation may involve the interpretation of field data, analysis of impacts, movement of the saline front, migration of pollution plume and computer modeling of the ground water system. Hydrogeologic evaluations should only be performed by a qualified ground water expert.

The Guideline for Developing a Standard Aquifer Performance Test (Appendix F) represents the methodology considered most useful by staff in data collection and hydrogeologic evaluations.

PART III
LIMITING CONDITIONS

15.0 Introduction to Permit Conditions

15.1 Purpose

In order to properly manage the water resource, the District must place certain stipulations on each permit which is granted. Part III provides a listing of those typical limiting conditions which may be added to a consumptive use permit.

15.2 Organization

The District will apply three types of limiting conditions:

- (a) those that will be applied to all permits (General Conditions);
- (b) those that will be applied to all permits of a particular type of use;
and
- (c) those which are applied on a project-specific basis.

16.0 General Conditions

General conditions are those limiting conditions which will be applied to all permits. These are applied pursuant to Rule 40C-2.381, F.A.C., and are necessary to assure that the permitted use of water will be consistent with the provisions of Rule 40C-2.011 and will not be harmful to the water resources of the District.

- (a) District authorized staff, upon proper identification, will have permission to enter, inspect and observe permitted and related facilities in order to determine compliance with the approved plans, specifications and conditions of this permit.
- (b) Nothing in this permit should be construed to limit the authority of the St. Johns River Water Management District to declare a water shortage and issue orders pursuant to Section 373.175, F.S., or to formulate a plan for implementation during periods of water shortage, pursuant to Section 373.246, F.S., In the event of water shortage, as declared by the District Governing Board, the permittee must adhere to reductions in water withdrawals as specified by the District.
- (c) Prior to the construction, modification or abandonment of a well, the permittee must obtain a water well permit from the St. Johns River Water Management District or the appropriate local government pursuant to Chapter 40C-3, F.A.C. Construction, modification or abandonment of a well will require modification of the consumptive use permit when such construction, modification or abandonment is other than that specified and described on the consumptive use permit application form.
- (d) Leaking or inoperative well casings, valves, or controls must be repaired or replaced as required to eliminate the leak or make the system fully operational.
- (e) Legal uses of water existing at the time of permit application may not be significantly adversely impacted as a result of the consumptive use. If unanticipated significant adverse impacts occur, the District shall revoke the permit in whole or in part, to curtail or abate the adverse impacts, unless the impacts can be mitigated by the permittee.

NOTE: Adverse impacts are exemplified by but not limited to:

- (1) reduction of well water levels resulting in a reduction of 10% in the ability of an adjacent well to produce water;

- (2) reduction of water levels in an adjacent surface water body resulting in a significant impairment of the use of water in that water body.
 - (3) saline water intrusion or introduction of pollutants into the water supply of an adjacent water use resulting in a significant reduction of water quality; and
 - (4) change in water quality resulting in either impairment or loss of use of a well or water body.
- (f) Off-site land uses existing at the time of permit application may not be significantly adversely impacted as a result of the consumptive use. If unanticipated significant adverse impacts occur, the District shall revoke the permit in whole or in part to curtail or abate the adverse impacts, unless the impacts can be mitigated by the permittee.

NOTE: Adverse impacts are exemplified by but not limited to:

- (1) significant reduction in water levels in an adjacent surface water body;
 - (2) land collapse or subsidence caused by a reduction in water levels; and
 - (3) damage to crops and other types of vegetation.
- (g) The District must be notified, in writing, within 30 days of any sale, conveyance, or other transfer of a well or facility from which the permitted consumptive use is made or within 30 days of any transfer of ownership or control of the real property at which the permitted consumptive use is located. All transfers of ownership or transfers of permits are subject to the provisions of section 40C-1.612, F.A.C.
- (h) A District-issued identification tag shall be prominently displayed at each withdrawal site by permanently affixing such tag to the pump, headgate, valve or other withdrawal facility as provided by Section 40C-2.401, F.A.C. Permittee shall notify the District in the event that a replacement tag is needed.

17.0 General Conditions by Type of Use

17.1 Public Supply-Type Uses

The following general conditions are generally applied to permits for public supply-type uses:

- (a) If the permittee does not serve a new projected demand located within the service area upon which the annual allocation was calculated, the annual allocation will be subject to modification.
- (b) If water source is from wells, permittee must develop, implement, and submit to the District a wellfield operating program within six (6) months of permit issuance. This program must explain which wells are primary, secondary, standby (reserve), the order of preference in turning on wells, criteria for shutting down and restarting wells, and any other aspects of wellfield management and operation.
- (c) On the tenth day following the month of record, permittee must submit to the District copies of the DER monthly water treatment plant reports on a monthly basis following the month of record. The permit number must be attached to all reports.
- (d) The permittee must ensure that all service connections are metered.
- (e) Landscape irrigation is prohibited between the hours of 10:00 a.m. and 4:00 p.m., and shall not occur more than two days per week except as follows:
 - 1. Irrigation using a micro-irrigation system is allowed anytime.
 - 2. The use of reclaimed water for irrigation is allowed anytime.
 - 3. Irrigation of new landscape is allowed any time of day or any day for the initial 30 days and every other day for the next 30 days for a total of one 60 day period provided that the irrigation is limited to the minimum amount necessary for such landscape establishment.
 - 4. Watering in of chemicals, including insecticides, pesticides, fertilizers, fungicides, and herbicides when required by law, the manufacturer, or best management practices is allowed anytime within 24 hours of application.

5. Irrigation systems may be operated anytime for maintenance and repair purposes not to exceed ten minutes per hour per zone.
- (f) The water conservation plan submitted to the District on (date) , must be implemented in accordance with the implementation schedule contained therein.

17.2 Commercial/Industrial-Type Uses

The following general conditions are generally applied to permits for commercial/industrial-type uses:

- (a) The permittee must maintain records of total daily withdrawals from each source on a monthly basis for each year ending December 31st. These records must be submitted to the District on Form EN-3 by January 31st of each year.
- (b) If water source is from wells, permittee must develop and implement a Wellfield Operating Program within six (6) months of permit issuance. This program must explain which wells are primary, secondary, standby (reserve), the order of preference in turning on wells, criteria for shutting down and restarting wells, and any other aspects of wellfield management and operation. This program must be submitted to the District within six (6) months of permit issuance.

17.3 Mining Type-Uses

The following general conditions are generally applied to permits for mining-type uses:

- (a) Dewatering operations which cause shoaling in adjacent water bodies are an interference. Should the permittee's dewatering operation create shoaling in adjacent water bodies, the permittee is responsible for clearing such shoaling.
- (b) Permittee must establish an elevation reference point which has been determined from a USGS datum bench mark in order to record and monitor existing water level elevations.

17.4 Agricultural Uses

The following conditions are generally applied to individual permits for agricultural-type uses:

- (a) The allocations stated above may be exceeded when the permittee must use water for freeze protection. Freeze protection is defined as the periodic and infrequent use of water to protect agricultural and nursery crops from permanent damage due to low temperatures. This action would be taken in response to forecasts of freezing temperatures by weather forecasting services. The permittee must maintain records of when water withdrawals for freeze protection are taking place, including the date of such withdrawal, duration of each withdrawal, and the rate at which withdrawals are taking place. These records must be submitted along with any required withdrawal records.
- (b) Irrigation of agricultural crops is prohibited between the hours of 10:00 a.m. and 4:00 p.m., except as follows:
1. Irrigation using a micro-irrigation system is allowed anytime.
 2. The use of reclaimed water for irrigation is allowed anytime.
 3. The use of recycled water from wet detention treatment ponds to irrigate agricultural crops is allowed anytime provided the ponds are not augmented from any ground or off-site surface water sources.
 4. Irrigation is allowed any time of day for one 30 day period following planting of agricultural crops, provided that the irrigation is limited to the minimum amount necessary for crop or plant establishment.
 5. Chemigation and fertigation are allowed at any time of day one time per week, and anytime during the normal 4:00 p.m. to 10:00 a.m. irrigation hours.
 6. Watering in of chemicals, including insecticides, pesticides, fertilizers, fungicides, and herbicides when required by law, the manufacturer or best management practices is allowed anytime within 24 hours of application.
 7. Irrigation systems may be operated anytime for maintenance and repair purposes not to exceed ten minutes per hour per zone.
 8. Irrigation of agricultural crops by seepage systems which regulate off-site discharges through the use of water control structures is allowed anytime, provided the discharge does not overtop the control structure by more than one-half inch,

the structure is well maintained, and there is no discharge between 1:00 p.m. and 7:00 p.m. unless associated with a storm event.

9. The use of water to protect agricultural crops from frost or freeze damage is allowed when freezing temperatures or frost are predicted by an official weather forecasting service.
 10. The use of water to protect agricultural crops from heat stress damage is allowed anytime, provided the watering does not exceed ten minutes per hour per zone or one twenty minute period per day, whichever is applicable.
 11. Irrigation of agricultural crops by traveling volume guns which require manual repositioning is allowed anytime.
- (c) The water conservation plan submitted to the District on (date) , must be implemented in accordance with the implementation schedule contained therein.

17.5 Nursery Use

The following conditions are generally applied to individual permits for nursery-type uses:

- (a) Irrigation of nursery plants is prohibited between the hours of 10:00 a.m. and 4:00 p.m., except as follows:
 1. Irrigation using a micro-irrigation system is allowed anytime.
 2. The use of reclaimed water for irrigation is allowed anytime.
 3. The use of recycled water from wet detention treatment ponds to irrigate nursery plants is allowed anytime provided the ponds are not augmented from any ground or off-site surface water sources.
 4. Irrigation is allowed any time of day for one 30 day period following planting of nursery stock provided that the irrigation is limited to the minimum amount necessary for plant establishment.
 5. Chemigation and fertigation are allowed at any time of day one time per week, and anytime during the normal 4:00 p.m. to 10:00 a.m. irrigation hours.

6. Watering in of chemicals, including insecticides, pesticides, fertilizers, fungicides, and herbicides when required by law, the manufacturer or best management practices is allowed anytime within 24 hours of application.
 7. Irrigation systems may be operated anytime for maintenance and repair purposes not to exceed ten minutes per hour per zone.
 8. The use of water to protect nursery plants from frost or freeze damage is allowed when freezing temperatures or frost are predicted by an official weather forecasting service.
 9. The use of water to protect nursery plants from heat stress damage is allowed anytime, provided the watering does not exceed ten minutes per hour per zone or one twenty minute period per day.
- (b) The water conservation plan submitted to the District on (date) , must be implemented in accordance with the implementation schedule contained therein.

17.6 Aquaculture Use

The following limiting conditions are generally applied to aquaculture-type uses:

- (a) The permittee must install an aerator(s) to add oxygen to the facilities when necessary.
- (b) Facilities using reclaimed water may do so anytime provided appropriate signs are placed on the property to inform the general public and District enforcement personnel of such use. Such signs must be in accordance with local restrictions.
- (c) The water conservation plan submitted to the District on (date) , must be implemented in accordance with the implementation schedule contained therein.

17.7 Golf Course/Recreation Use

The following conditions are generally applied to individual permits for golf course-type uses and recreation-type uses:

- (a) Golf course and recreational irrigation is prohibited between the hours of 10:00 a.m. and 4:00 p.m., except as follows:

1. Irrigation using a micro-irrigation system is allowed anytime.
 2. Facilities using reclaimed water for irrigation may do so anytime.
 3. The use of recycled water from wet detention treatment ponds to irrigate golf courses and recreational areas is allowed anytime provided the ponds are not augmented from any ground or off-site surface water sources.
 4. Irrigation of, or in preparation for planting, new golf courses and recreational areas is allowed at any time of day for one 30 day period provided irrigation is limited to the amount necessary for plant establishment. Irrigation of newly seeded or sprigged golf course areas is allowed any time of day for one 60 day period.
 5. Chemigation and fertigation are allowed at any time of day one time per week, and anytime during the normal 4:00 p.m. to 10:00 a.m. irrigation hours.
 6. Watering in of chemicals, including insecticides, pesticides, fertilizers, fungicides, and herbicides when required by law, the manufacturer or best management practices is allowed anytime within 24 hours of application.
 7. Irrigation systems may be operated anytime for maintenance and repair purposes not to exceed ten minutes per hour per zone.
 8. The use of water to protect golf course turf from heat stress damage is allowed anytime, provided the watering does not exceed ten minutes per hour per zone.
- (b) The water conservation plan submitted to the District on (date) , must be implemented in accordance with the implementation schedule contained therein.

18.0 Special Conditions

In addition to the General Conditions (section 16.0) and the General Conditions by Type of Use (section 17.0) listed above, the District may find that special conditions should be applied on a site-specific basis. The following are special conditions which the District may apply:

- 18.0.1**
- (a) This permit will expire ___ years from the date of issuance.
 - (b) Maximum daily withdrawals must not exceed ___ million gallons.
(acre-feet)
 - (c) Maximum monthly withdrawals must not exceed _____ million gallons. (acre-feet)
 - (d) Maximum annual withdrawals must not exceed million gallons.
(acre-feet)
 - (e) Source classification is _____.
 - (f) Use classification is _____.
 - (g) Maximum daily pumpage must not exceed ___ million gallons unless otherwise specified by District staff as a consequence of drought conditions. If the need to exceed the above withdrawal arises, the permittee must notify District staff of the reason for the need.
 - (h) The permittee must measure and record the maximum withdrawal rate in gallons per minute of well number(s) _____ in May and October of each year. These records must be submitted to the District on Form EN-2 by July 31st of each year.
 - (i) Permittee must record water levels in the pit, rates, and volumes of water pumped on a daily basis. These records shall be tabulated on a monthly basis, and submitted to the District on Form EN-6 and EN-3 (on a monthly basis) by March 31st of each year.
 - (j) Permittee shall not lower the surface water level, water table level or potentiometric level below NGVD.
 - (k) A water sample must be taken from well number(s) _____ in May and October of the following years:_____. The sample(s) must be collected immediately following an irrigation cycle, whenever possible. If this is not possible, the well must be allowed to discharge at design capacity for at least 20 minutes before the sample is

collected. The samples must be analyzed for chlorides (C-), sodium (Na), potassium (K), calcium (Ca), magnesium (Mg), sulfate (SO₄), total alkalinity (HCO₃ + CO₃) and pH. In addition to the analyses, the report submitted to the District must include the date of sampling, well number, the length of time the well discharged before the sample was taken, the name of the person collecting the sample and the name of the company or person doing the actual analysis. These reports must be submitted to the District within 30 days of sampling.

- (l) A water sample must be taken from well number(s) _____ in May of the following years _____. The sample(s) must be collected immediately following an irrigation cycle, whenever possible. If this is not possible, the well must be allowed to discharge at design capacity for at least 20 minutes before the sample is collected. The samples must be analyzed for calcium (Ca), magnesium (Mg), sulfate (SO₄), total iron (Fe), and specific conductance. In addition to the analyses, the report submitted to the District must include the date of sampling, well number, the length of time the well discharged before the sample was taken, the name of the person collecting the sample, and the name of the company or person doing the actual analyses. These reports must be submitted to the District within 30 days of sampling.
- (m) The permittee must maintain records of total monthly withdrawals from each source. These reports must consist of either a monthly log of when withdrawals are taking place from each source and the average rate at which these withdrawals are taking place, or figures for total withdrawals for each month from each source. The monthly logs must be recorded on District form EN-2. The figures for total withdrawals for each month from each source must be recorded on District form EN-2. These records must be tabulated for one year period ending June 30th of each year, and submitted to the District by July 31st of each year.
- (n) Prior to initiation of use, the following withdrawal points must be equipped with in-line totalizing flow meters: (District Identification Nos.). Such meters must have and maintain an accuracy to within 95 percent of the actual flow.
- (o) The Permittee must maintain the required flow meter(s) or other District approved flow measuring device(s). In case of failure or breakdown of any meter or other device, the District must be notified in writing within 5 days of its discovery. A defective meter or other device must be repaired or replaced within 30 days of its discovery.

- (p) Total withdrawal from each monitored source must be recorded continuously, totaled monthly, and reported to the District at least every six months using District Form No. EN-50.
- (q) The permittee must have the required flow meter(s) tested once every 3 years within 30 days of the anniversary date of permit issuance, and recalibrated if the difference between the actual flow and the meter reading is greater than 5%. District Form No. EN-51 must be submitted to the District within 10 days of the inspection/calibration.

19.0 Other Conditions

In addition to the special conditions listed in subsection 18.0.1, the Governing Board may apply such other reasonable special conditions to meet localized problems as it deems necessary to ensure that the use meets the criteria established in section 40C-2.301, F.A.C.

Appendix A – Chapter 40C-1, F.A.C.

Organization and Procedure

<http://www.sjrwmd.com/programs/regulation/rules/pdfs/40C-1.pdf>

Appendix B

Chapters 40C-2, 40C-20, 40C-22, and 40C-23, F.A.C.

Chapter 40C-2: Permitting of Consumptive Uses of Water

<http://www.sjrwmd.com/programs/regulation/rules/pdfs/40C-2.pdf>

Chapter 40C-20: Standard General Water Use Permits

<http://www.sjrwmd.com/programs/regulation/rules/pdfs/40C-20.pdf>

Chapter 40C-21: The Water Shortage Plan

<http://www.sjrwmd.com/programs/regulation/rules/pdfs/40C-21.pdf>

**Chapter 40C-22: Noticed General Permits for
Consumptive Uses**

<http://www.sjrwmd.com/programs/regulation/rules/pdfs/40C-22.pdf>

Chapter 40C-23: Water Resource Caution Area

<http://www.sjrwmd.com/programs/regulation/rules/pdfs/40C-23.pdf>

Appendix C

- (1) **Individual and Standard General Consumptive Use Permit Application Form Number 40C-2-1082-1**
<http://www.sjrwmd.com/programs/regulation/rules/pdfs/cup10821.pdf>
- (2) **Notice of Intent to Use Noticed General Permit for Short Term Construction Dewatering Form Number 40C-22-0590-1**
<http://www.sjrwmd.com/programs/regulation/rules/pdfs/dewater.pdf>
- (3) **Notice of Intent to Use Noticed General Permit for Fire Protection Purposes Form Number 40C-22-0590-2**
<http://www.sjrwmd.com/programs/regulation/rules/pdfs/fire.pdf>
- (4) **Notice to District of Dewatering Activity Form Number RDS-50**
<http://www.sjrwmd.com/programs/regulation/rules/pdfs/RDS-50.pdf>

Appendix D

Sample Consumptive Use Permit

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 Reid Street
Palatka, Florida 32177-2529

PERMIT NO. _____ DATED ISSUED

A PERMIT AUTHORIZING:

LOCATION:

ISSUED TO:
(Owner)

Permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is be reference made a part hereof.

This permit does not convey to permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

Terms and conditions of this permit shall be binding upon any successor, assignee, or transferee. In the event of such transfer, the source and the use must remain the same as specified by this permit.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provision of Chapter 373, Florida Statutes.

PERMIT IS CONDITIONED UPON:

AUTHORIZED BY: St. Johns River Water Management District

Division of Permit Data Services

Governing Board

By: _____
(Director)

By: _____
(Assistant Secretary)

Appendix E – Chapter 62-40, F.A.C.

Chapter 62-40: State Water Policy

<http://www.dep.state.fl.us/legal/Rules/shared/62-40.pdf>

Appendix F

Guidelines for Conducting an Aquifer Performance Testing Program

GUIDELINES FOR DEVELOPING A STANDARD AQUIFER PERFORMANCE TEST PROGRAM

INTRODUCTION

When the impacts resulting from an existing or proposed ground water withdrawal cannot be adequately evaluated due to a lack of reliable hydrogeologic data, staff may request the applicant or permittee proposing the ground water withdrawal to develop and implement an aquifer testing program.

As an aid to the applicant or the permittee, staff has compiled a set of guidelines for developing and implementing a program. The guidelines are not meant to portray an inflexible attitude about the manner in which the program should be conducted, but are only designed to point out the general and basic aspects of an acceptable procedure for hydrogeologic data collection, presentation and interpretation. Depending on circumstances, alternative methodologies may be necessary. These circumstances should be discussed with staff prior to any well construction.

The guidelines are subdivided into separate sections dealing with: 1) the initial site investigation, 2) the construction of on-site wells, 3) the step drawdown test, 4) the constant rate discharge test, 5) the analysis of constant rate discharge test data, and 6) the contents of the Hydrogeologic Report.

The staff should be notified before any major deviations from the proposed guidelines are instituted.

The successful completion of an aquifer testing program does not necessarily result in a staff recommendation for the allocation of the quantity of water requested by the applicant or permittee. The data collected during the program, however, often supports a request for the withdrawal of ground water.

1. Initial Site Evaluation

The initial site evaluation should be performed as the first step in an APT program. During the initial site evaluation, the following items should be addressed:

- a. The most probable drilling depth and yield for a proposed test production well. These should be determined by reviewing existing data such as geologic well logs and hydrogeologic reports. A preliminary cross section indicating the thickness and water quality (if appropriate) associated with the various production and confining zones should be constructed prior to selecting a drilling depth.
- b. The location of possible sources of ground water contamination.

- c. The location of adjacent surface water bodies that may interact with the ground water system.
- d. The best means of routing the test production well's discharge water off-site.
- e. The location, total depth, cased depth, withdrawal rate, pumping schedule, pre-pumping water level, and specific capacity of adjacent pumping wells. If possible, the water levels should be referenced to the National Geodetic Vertical Datum (NGVD).
- f. The location, total depth, cased depth, and static water level of existing wells that may serve as observation wells during the constant rate discharge. If possible, the water levels should be referenced to the NGVD.
- g. The tentative locations, total depths and cased depths for the proposed test production well and observation wells necessary for the constant rate discharge test (see the subsection on Construction of On-Site Wells for recommended number of wells, radial distances and depths). The potential adverse impacts that proposed withdrawals may have on existing uses should be considered with locating the test production well.

After completing the initial site investigation the applicant or permittee should schedule a meeting and present the proposed testing program to the staff for discussion. The proposed program should specify the location, total depth and cased depth of the proposed test production well and observation wells; the pump discharge rate; the routing of pump discharge water; the method and frequency of collecting water quality data. The proposed program should follow the criteria specified in the following sections of these guidelines unless otherwise agreed to by the staff. All proposed aquifer testing programs should be discussed with the staff prior to the applicant accepting bids on the construction of test wells, test production wells or any services associated with the project.

2. Construction of On-Site Wells

In most cases, up to three production zone observation wells and one shallow or adjacent aquifer observation well may be necessary to conduct a constant rate discharge test. The construction of observation wells may be initiated after the proposed aquifer testing program has been agreed upon. The number of observation wells and radial distance from the test production well to observation wells may vary for a constant rate discharge test conducted within the Floridan Aquifer. The most distant observation well from the test production well may be designed to satisfy possible limiting conditions accompanying certain Consumptive Use Permits. The production zone observation wells should have screened or open hole segments that correspond to those of the test production well. The shallow or adjacent aquifer observation well should be located well within the calculated cone of depression of the test production well or located as determined by the step drawdown analysis. These wells should be constructed such that the anisotropic characteristics of the production zone (in the water table aquifer case) or the extent of the hydraulic connection across the semi-confining layers overlying or underlying the production zones (in the leaky artesian aquifer case) can be determined. All wells should be developed in a manner such that a good hydraulic connection exists between the wells and the zones being monitored. The cased portion of all production zone observation wells penetrating a confining strata of low permeability material should be cemented or sealed to the base of the confining strata.

During the installation of the test production well and all observation wells, cuttings should be collected every five feet or formation change, whichever comes first. When drilling wells in the Floridan Aquifer, the construction method used must be cable tool, reverse air, or air rotary once contact is made with carbonate strata of the Florida Aquifer. Cuttings should be collected every ten feet or formation change, whichever comes first.

During the installation of the test production well, sampling for water quality will commence as soon as possible below the bottom of the casing upon critical penetration of the water bearing formation. Additional samples should be collected at formation change, or when encountering a noticeable change of flow, whichever comes first. Samples collected at detected flow zones and formation changes will be analyzed for the following parameters:

- chlorides (Cl⁻)
- sodium (Na)
- potassium (K)
- calcium (Ca)
- iron (Fe)
- magnesium (Mg)
- total alkalinity (HCO⁻ + CO²⁻)
- total hardness
- total dissolved solids

specific conductance
pH
temperature

All water quality analyses for the above parameters must be conducted by a qualified, reputable lab. Copies of all analyses must be included in the Hydrogeologic Report. Additionally, water quality samples shall be collected at the addition of each drill rod and analyzed on-site for the following parameters:

chlorides (Cl-)
specific conductance
temperature
pH

A geologic log should be made for each well and a hydrogeologic cross section for the site of investigation should be developed using the geologic logs from each well. Geophysical logging of each well will be accomplished to determine final construction details and verify hydrologic data. The drill should include a device (meter or weir) to measure the discharge of formation water.

3. Step Drawdown Test

A step drawdown test should be performed on the completed and developed test production well as the third step in the aquifer testing program. The data collected during the step drawdown test can be used to predict the drawdown that will occur within the test production well at various discharge rates.

To perform the step drawdown test, it is necessary to have a means of obtaining access to the inner casing of the test production well so that water levels within the casing can be determined by using an electric water level probe or metal measuring tape. The pump used during the step drawdown test must be capable of operating at various discharge rates. A calibrated orifice weir or some other calibrated flow meter should be installed on the discharge side of the pump so that discharge can be determined. If the pumped water cannot be routed to a storage tank or off-site through an existing water distribution system, a closed conduit or plastic lined trench should be used to transport the pumped water so as not to cause ponding of water. As an alternative, it may be possible to route the pumped water to an existing adjacent surface water body.

The step drawdown test should be performed at four constant discharge rates which represent approximately 100%, 85%, 65%, and 50% of the design capacity of the test production well. The pumping period for each step should be a minimum of 30 minutes and the aquifer should be allowed to recover a minimum of 20 minutes after each pumping period or until the water level within the test production well has recovered to within 0.05 feet of the initial static water level. After the drawdown for 30 minutes of pumping has been determined, the discharge valve should be adjusted

to obtain the constant discharge rate for the next step and the pump should be turned off to allow ground water levels to recover. The drawdown is the difference between the initial static water level within the test production well casing and water level within the test production well casing after 30 minutes of constant discharge pumping. Water levels should be determined to the nearest 1/10 of a foot. A copy of the raw data collected during the step drawdown test should be provided to the staff.

The additional head loss that occurs as ground water flows into the test production well can be calculated using the coefficients determined by plotting the constant discharge (Q) for each step versus the specific drawdown (s/Q) for each step on arithmetic scale paper. Drawdowns observed within the test production well should be adjusted for well entrance losses and for partial penetration. Corrected drawdowns can then be used in a distance versus drawdown plot to determine the transmissivity of the aquifer or can be calculated by acceptable numerical procedures.

4. Constant Rate Discharge Test

Prior to initiating the constant rate discharge test, the prepumping static water level (referenced to the NGVD) should be determined in all observation wells, the test production well and adjacent surface water bodies. These water levels should be determined to the nearest 1/10 of a foot. If the constant rate discharge test is to be performed within 2,000 feet of tidal water or an adjacent pumping well, a continuous water level recorder should be placed on the well nearest the tidal water or adjacent pumping well for a minimum of 24 hours. The magnitude of the water level fluctuations indicated by the hydrograph will indicate if the raw drawdown and recovery data collected during the constant rate discharge test should be adjusted.

The time distribution and volume of adjacent pumpage and rainfall occurring two hours prior to initiating the constant rate discharge test should be recorded. If possible, adjacent pumpage should be curtailed and rainfall should not occur two hours prior to initiating the constant rate if pumpage cannot be curtailed.

The constant rate discharge test should be conducted as the fifth step in the aquifer testing program. When a constant rate discharge test is conducted within the Floridan Aquifer, a minimum 48 hour discharge period is recommended or until a steady state is achieved.

Not less than two hours prior to initiating the constant rate discharge test, the valve located on the discharge site of the test production well pump should be adjusted so that the initial discharge of the pump will be close to the constant discharge rate selected for the test. If possible, the discharge rate should approach the design capacity of the well. The actual pump discharge should be recorded throughout the test. If the pumped water cannot be routed to a storage tank or off-site through an existing water distribution system, a closed conduit or plastic lined trench should be used to transport the pumped water to an area 500 feet down gradient from the test

production well before it is discharged onto the land surface. As an alternative, it may be possible to route the pumped water to an existing adjacent surface water body.

Drawdown and recovery water level measurements should be made to the nearest 1/100 of a foot. A predetermined schedule for measuring drawdowns should be initiated as soon as the test production well pump starts to discharge. It is suggested that drawdown measurements be made according to the following schedule:

<u>Frequency of Measurement</u>	<u>Time after Pumping Started</u>
Approx. every 15 seconds	0 to 2 minutes
Approx. every 30 seconds	2 to 5 minutes
Approx. every 1 minute	5 to 15 minutes
Approx. every 5 minutes	15 to 60 minutes
Approx. every 10 minutes	60 to 100 minutes
Approx. every 0.5 hour	2 to 5 hours
Approx. every 1 hour	5 to 72 hours

Water quality samples are a vital part of the constant rate discharge test. Water samples shall be collected at intervals as determined are necessary for the site:

The samples collected are to be analyzed for the following parameters:

- chlorides (Cl-)
- sodium (Na)
- potassium (k)
- calcium (Ca)
- total iron (Fe)
- magnesium (Mg)
- total alkalinity (HCO + CO)

- total hardness
- total dissolved solids
- temperature (field)
- specific conductance
- pH (field)

All water quality analyses must be done by a qualified, reputable lab. Copies of all analyses must be included in the Hydrogeologic Report.

After pumping the well at a constant rate for the agreed upon discharge period, the pump is stopped and recovery water level measurements are made. Recovery data should be collected for a four hour period after the pump is stopped or until water levels have recovered within 0.05 feet of the initial static water level. It is suggested that recovery measurements be made according to the following schedule:

Frequency of Measurement	Time after Pumping Ceased
Approx. every 15 seconds	0 to 2 minutes
Approx. every 30 seconds	2 to 5 minutes
Approx. every 1 minute	5 to 15 minutes
Approx. every 5 minutes	15 to 60 minutes
Approx. every 10 minutes	60 to 100 minutes
Approx. every 0.5 hour	2 to 4 hours

The time distribution and volume of adjacent pumpage and on-site rainfall that occurred during the constant rate discharge test should be recorded. The constant rate discharge test should be terminated if water levels in observation wells start to rise due to the effects of recharge from rainfall.

A copy of all raw data collected during the constant rate discharge test should be provided to the staff.

5. Analysis of Constant Rate Discharge Test Data

The constant rate discharge test raw data should be analyzed by means of analytical or graphical techniques which are based on theory which reasonably depicts on-site conditions. The analysis should determine the transmissivity (gpd/ft) and storage coefficient of the production zone as well as the leakance (gpd/ft) of any overlying or underlying confining zones. Recharge from surface water sources should be considered in the analysis. An attempt should be made to explain inconsistencies in the observed data. When necessary, the raw drawdown and recovery data should be adjusted to account for the effects of tidal fluctuations, adjacent pumpage and the effects of partial penetration.

As an aid in analyzing data collected from a water table aquifer system, the applicant or the permittee may want to refer to the works of Neuman (1975) on fully penetrating water table wells with no storage capacity, Papadopulos (1967) on fully penetrating non-leaky artesian wells with storage capacity, Streltsova (1974) on partially penetrating water table wells with no storage capacity and Boulton and Streltsova (1976) on partially penetrating water table wells with storage capacity.

As an aid in analyzing data collected from a leaky artesian aquifer system, the applicant or permittee may want to refer to the works of Hantush and Jacob (1955) and Hantush (1959) on fully penetrating leaky artesian aquifer wells with no storage capacity and no aquitard storage changes, no storage capacity and aquitard storage changes, Papadopulos (1967) on full penetrating non-leaky artesian aquifer wells with storage capacity and Hantush (1961) and Weeks (1969) on the effects of partial penetration of aquifer wells with no storage capacity. Additional useful references dealing with the analysis of data collected during a constant rate discharge test are

Kruseman and DeRidder (1970), Lohman (1972) and Walton (1970). The above references are fully cited in the attached bibliography.

6. Hydrogeologic Report

As the final step in an aquifer testing program, the applicant or permittee should assemble an organized hydrogeologic report. The report should include the following items:

- a. A section describing the geologic and hydrogeologic conditions that exist at the site of investigation. The description should incorporate a hydrogeologic cross section developed from the geologic and geophysical well logs compiled for the test production well and the production zone observation wells. The cross section should indicate the thickness and relative location of each production and confining zone. Also, water quality with depth and the relative head for each zone should be illustrated on the cross section.
- b. A section describing the construction of the test production well, the four observation wells required for the constant rate discharge test and any other adjacent wells. The cased and uncased depth of each well should be indicated on a hydrogeologic cross section. The locations of pertinent wells and surface water bodies should be indicated on a 7 1/2 minute USGS quadrangle map. The report should indicate the distance from each well or surface water by to the test production well.
- c. A section describing the procedure used for running the step drawdown test and the constant rate discharge test as well as the technique used in determining the discharge of the test production well, in routing the pumped water away from the test production well and in determining the changes in water levels.
- d. A section describing how the data collected during the step drawdown test and the constant rate discharge test was analyzed to determine the hydraulic characteristics of the hydrogeologic system. The analysis of the data collected during the step drawdown test should include a plot of Q vs. s/Q . The analysis of the data collected during the constant rate discharge test should include a figure indicating the drawdown data collected from each well on a single plot of $\log t/r$ vs. $\log s$ on log-log paper (K & E Log paper No. 46- 7522) should be used when plotting constant rate discharge test data so that published type curves can be used to check indicated match points), a figure indicating the drawdown data collected from each well on a single plot of $\log t/r$ vs. s on semi-log paper and figure indicating the drawdown data collected from each well on a plot of $\log r$ vs. s on semi-log paper.

Any of the above figures not discussed in the text of the hydrogeologic report should be included in the report's Appendix. If a graphical solution involving type curves is

used in the determination of the aquifer characteristics, the pertinent curves and match points should be indicated. The report should indicate the basis for selecting the value of transmissivity, storage coefficient and leakance most representative of the hydrogeologic system.

- e. A section describing the impacts that proposed withdrawals will have on water levels and water quality within the selected production zone and adjacent confining zones or production zones. If the proposed withdrawals are from a water table aquifer system, the applicant or permittee should calculate the theoretical time variant cone of depression that would develop in the absence of rainfall after 30, 60 and 100 days of pumpage at the proposed withdrawal rate. The calculations for a water table aquifer system should utilize the most representative transmissivity value derived from the aquifer testing program and a storage coefficient of 0.2.

If the proposed withdrawals are from a leaky artesian aquifer system, the applicant or permittee should calculate the theoretical time variant cone of depression that would develop after 30, 60 and 100 days of pumpage at the proposed withdrawal rate and the steady state cone of depression that would develop at the proposed withdrawal rate. The calculations for a leaky artesian system should utilize the most representative transmissivity storage coefficient and leakance values derived from the testing program. In all cases, the applicant or permittee should calculate the cumulative cone of depression when withdrawals from multiple wells are proposed. The resultant cones of depression should be indicated on a 7 1/2 minute USGS quadrangle map.

The applicant should address the impacts that lowered water levels will have on the surrounding environment and adjacent existing legal uses.

- f. A section tabulating all water level, rainfall, pump discharge and adjacent pumping data collected throughout the testing program. Copies of hydrographs should also be included in this section. All water levels should be referenced to the National Geodetic Vertical Datum (NGVD).

BIBLIOGRAPHY

- Boulton, N.S. and T. D. Streltsova, 1976. The drawdown near an abstraction well of large diameter under non-steady conditions in an unconfined aquifer. *Journal of Hydrology*. v. 30, pp. 29-46.
- Hantush, M. S. and C. E. Jacob, 1955. Steady three-dimensional flow to a well in a two layered aquifer. *Trans. Am. Geophys. Un.* 36.
- Hantush, M. S., 1959. Non-steady flow to flowing wells in leaky aquifers. *Jour. Geophys. Res.* 64. pp. 1043-1052.
- Hantush, M. S., 1961. Drawdown around a partially penetrating well. *Proc. Am. Soc. Civil Engrs.* 87 HY4, pp. 83-98.
- Hantush, M.S., 1964. Hydraulics of wells. In *Advance in Hydrosience*, Ed. Ven Te Chow. v. 1. Academic Press, Inc., New York, pp. 281-442.
- Kruseman, G. P., De Ridder, N. A., 1970. Analysis and Evaluation of Pumping Test Data. *Internat. Inst. for Land Reclamation and Improvement, Bull.* 11, Wageningen, The Netherlands.
- Lohman, S. W., 1972. *Ground-Water Hydraulics*. U. S. Geological Survey Professional Paper 708.
- Neuman, S. P., 1975. Analysis of pumping test data from anisotropic unconfined aquifers considering delayed gravity response. *Water Resources Research*. v. 11, No. 2, pp. 329-342.
- Papadopoulos, I. S., 1967. Drawdown distribution around a large-diameter well. *Proc. of Ground Water Hydrology Symposium, Amer. Water Resources Assn.* pp. 157-167
- Streltsova, T. D., 1974. Drawdown in compressible unconfined aquifer. *Jour. of the Hydraulics Division, Proc. of ASCE*. v. 100, no. HY11, pp. 1601-1616.
- Walton, W. C., 1970. *Groundwater Resources Evaluation*. McGraw Hill Book Company, New York. 644 pp.
- Weeks, E. P., 1969. Determining the ratio of horizontal to vertical permeability by aquifer-test analysis. *Water Resources Research*. v. 5, no. 1, pp. 196-214.

Appendix G

Sample Condition Compliance Forms

http://www.sjrwm.com/programs/regulation/rules/pdfs/cup_cond_forms.pdf

Appendix H

Modified Blaney-Criddle Formula

MODIFIED BLANEY-CRIDDLE FORMULA

The District presently uses the Soil Conservation Service Method to determine the reasonableness of requested withdrawal quantities for the irrigation of agricultural crops. The method is described in detail in "Irrigation Water Requirements," Technical Release No. 21, USDA, September 1970. This Appendix is intended to be a brief summary of the major points of the method.

The District's use of the SCS method of determining irrigation water requirements should not be construed to mean that other methods are unacceptable. The District reserves the right to update methodologies as appropriate, considering advances in techniques and data published by credible research and/or reporting institutions.

The annual irrigation water requirement (IWR) is computed from:

$$\text{IWR} = \text{ET} - \text{RE}$$

where ET = Seasonal or annual crop evapotranspiration in inches, and

RE = Seasonal or annual effective rainfall in inches.

Evapotranspiration (ET)

ET is the depth of water transpired by plants plus the evaporation of water from soil or plant surfaces in a specified time. The SCS method uses the Blaney-Criddle technique of estimation with some modifications. "Blaney and Criddle found that the amount of water consumptively used by crops during their normal growing season was closely correlated with mean monthly temperatures and daylight hours. They developed coefficients that can be used to transpose the consumptive use data for a given area to other areas for which only climatological data are available." ET is determined on a monthly basis and then summed for seasonal or annual values. Monthly ET is determined by:

$$u = \frac{(.0173t - .314) kc tp}{100}$$

where u = monthly ET, inches,

t = mean monthly air temperature, F.,

kc = coefficient reflecting the growth stage of the crop, and

p = monthly percentage of daylight hours in the year.

Effective Rainfall (RE)

RE is that portion of the total annual or seasonal rainfall which is usable for crop production, without pumping, at the site at which it falls. The SCS procedure is based on an analysis of 27 rainfall stations throughout the United States using 50 years of data. These results are then modified to reflect Florida conditions through a frequency analysis of total rainfall using 19 stations with 30 years of data each. This procedure assumes that the variance of effective rainfall from year to year is in direct proportion to the variance of total rainfall. For the eight in ten year (80 percent) irrigation water requirement the ratio of the 80 percent chance total rainfall to the average total rainfall is determined. This ratio, when applied to the average monthly rainfall values, determines the 80 percent chance monthly rainfall values. The portion of these values that are effective is then calculated from the following relationships:

$$f = 0.531747 + 0.295164D - 0.057697D + 0.003804D$$

where D = net depth of application, inches.

$$ER = (0.70917R^{0.82416 - 0.11556}) (10) 0.02426u(f)$$

where R = the 80 percent chance monthly rainfall, and

u = the corresponding months ET value.

The monthly values are then summed to determine seasonal or annual amounts.

Appendix I

Water Saving Measures For Water Conservation Plans

WATER SAVING MEASURES FOR WATER CONSERVATION PLANS

The following are measures which qualify to meet conservation plan elements 12.3.2.1 (Commercial/Industrial), 12.5.7.1 (Agricultural, Nursery and Aquacultural Uses), and 12.6.1.1 (Golf Course/Recreational), Applicant's Handbook.

Individual provisions listed herein are not requirements per se, and do not exclude alternative conservation measures the applicant may wish to propose to the District.

To fulfill the water conservation plan requirements, applicants must undertake or have undertaken direct and indirect measures resulting in significant water savings. In making such determination, the District will consider the type of use, the potential water use efficiency that could be obtained using best available technologies, and the efficiency of other similar water uses.

Information specific to Public Supply is in 12.2.5.1 and 12.2.5.2, Applicant's Handbook, and in this Appendix.

A. INDUSTRIAL/COMMERCIAL

Direct Water Saving Measures:

1. Provide or reuse reclaimed water or stormwater in the place of higher quality water sources.
2. Substantially reduce once-through cooling procedures where technologically possible.
3. Replace water cooling with air cooling procedures where technologically possible
4. Propose other measures designed to reduce the amount of allocated water, for example, install automatic shutoff valves where technologically possible.

NOTE: Leak detection and repair do not qualify to meet the conservation plan requirements because these measures are considered essential to prevent water from being wasted per paragraph 40C-2.381(2)(a), F.A.C.

Indirect Water Saving Measures:

1. Develop a written company policy that establishes a commitment to water conservation efforts.
2. Establish an employee suggestion/incentive program which recognizes employees who submit water saving ideas.
3. Form a company water conservation committee.
4. Xeriscape the grounds of facility buildings.
5. Participate in a research project exploring an aspect of water use efficiency, upon request of a District contractor.
6. Submit a water use efficiency research concept to the District that results in an experimental study.
7. Develop and propose other strategies to reduce water consumption.

B. GOLF COURSE/RECREATIONAL

Direct Water Saving Measures:

1. Reuse reclaimed water or stormwater in the place of higher quality water sources; recycle water on site.
2. Reduce the amount of acreage currently irrigated. For example, cease irrigation of roughs, replace irrigated turf with landscape features that do not require watering, such as sand traps, dikes, or wooded areas.
3. Upgrade the present irrigation system to current technology for volume reduction.
4. Line irrigation withdrawal ponds.
5. Install a computerized irrigation system with a weather sensing station.
6. Propose other measures designed to reduce the amount of allocated water.

NOTE: Leak detection and repair do not qualify to meet the conservation plan because these measures are considered essential to prevent water from being wasted per paragraph 40C-2.381(2)(a), F.A.C.

Indirect Water Saving Measures:

1. Install a network of soil moisture monitoring and rain sensor devices to determine the actual irrigation demands.
2. Install an on-site weather station to assist in determining actual irrigation demands.
3. Evaluate and reassess overseeing practices.
4. Serve as a xeriscape demonstration site.
5. Participate in a research project exploring an aspect of water use efficiency, upon request of a District contractor.
6. Submit a water use efficiency research concept to the District that results in an experimental study.
7. Develop and propose other strategies to reduce water consumption.

C. AGRICULTURAL, NURSERY, AND AQUACULTURAL USES

As part of each applicant's water conservation plan, an analysis of the operation's current water use practices and the water saving potential of proposed practices must be performed. This analysis can be completed using the Soil Conservation Service's Farm Irrigation Rating Method (FIRM) (Engineering Technical Note FL-17, United States Department of Agriculture Soil Conservation Service 1987) or an equivalent method.

Additionally, the following are measures which qualify to meet the conservation plan requirements in Section 12.5.7.1(a), Applicant's Handbook.

Direct Water Saving Measures:

1. Reuse reclaimed water or recycle water on site.
2. Upgrade existing irrigation system to a more efficient irrigation system.
3. Implement commodity - specific improvements which result in water savings, e.g., land leveling or installation of water control structures, wind blocks, shade control structures; use of tailwater ponds, etc.
4. Propose other measures designed to reduce the amount of allocated water.

NOTE: Leak detection and repair do not qualify to meet the conservation plan requirements because these measures are considered essential to prevent water from being wasted per paragraph 40C-2.381(2)(a), F.A.C.

Indirect Water Saving Measures:

1. Install a network of soil moisture monitoring and rain sensor devices to determine the actual irrigation demands.
2. Install an on-site weather station to assist in determining actual irrigation demands.
3. Participate in the Benchmark Farms program, upon District request.
4. Participate in a research project exploring an aspect of water use efficiency, upon request of a District contractor.
5. Submit a water use efficiency research concept to the District that results in an experimental study.
6. Develop and propose other strategies to reduce water consumption.

WATER CONSERVATION PUBLIC SUPPLY

When an audit and/or other available information indicates that there is a need for additional water conservation measures in order to reduce a project's water use to a level consistent with projects of a similar type or when an audit and/or other information indicates that additional significant water conservation savings can be achieved by implementing additional measures, other specific measures will be required by the District, to the extent feasible, as a condition of the permit, including but not limited to:

1. Implementation of an enhanced employee/public education program beyond the minimum required in paragraph 12.2.5.1(e).
2. Implementation of a District approved automatic irrigation system shut-off device distribution program.
3. Implementation of a District approved indoor retrofit program.
4. Implementation of a District approved submetering retrofit program.
5. Implementation of monthly customer billing which includes all or some of the following items:
 - a) the corresponding month's water use for the previous year,
 - b) water conservation tips,
 - c) the previous month's water use, and/or
 - d) water use rates (per ccf or gal).
6. Implementation of a customer water audit program that analyzes water use and loss in the home. For example, providing the customer with an in-home water use analysis using software such as "Water Watch" which generates a computer model of home water use.
7. Implementation of a District approved water shortage plan or ordinance.
8. A program of technical systematic improvements such as:
 - a) improvements in the water treatment system to conserve water,
 - b) improved billing and accounting systems,
 - c) enhanced meter testing and replacement program,

- d) survey and replacement of improperly sized meters,
- e) a program to reduce or prohibit master metering; and
- f) a water main replacement program.

9. Local Government Ordinances

When requested by the District, county and municipally owned public supply applicants must consider adopting one or more of the following ordinances.

a. Landscape and Irrigation System Standards

To implement this measure, the permittee would enact an ordinance to reduce the amount of water needed for landscape irrigation, improve efficiency of landscape irrigation systems, and effectively implement section 373.185, Florida Statutes, and chapter 40C-24, Florida Administrative Code. This measure is most applicable to systems where the installation of in-ground landscape irrigation systems is common and use of water for landscape irrigation is a major factor in high water use, a high peaking ratio, or failure of supply to meet demand.

b. Plumbing Code

To implement this measure, the permittee would adopt or amend an ordinance to reduce unnecessary indoor water use in newly constructed buildings by reducing flow rates, insulating hot water pipes to reduce the need to run cold water through lines to get to hot water, and prohibit once through water-to-air heat pumps.

c. Required Use of Reclaimed Water

To implement this measure, the permittee would adopt or amend an ordinance to require potential reclaimed water users to connect to the local reclaimed water distribution system and to use reclaimed water in place of other sources when it is available.

d. Required Retrofit at Resale

This measure provides a mechanism to facilitate installation of ultralow flow plumbing devices to reduce indoor water use in older structures. The permittee would adopt or amend an ordinance to require the retrofit with ultralow flow plumbing devices in all buildings built prior to 1993, at such times as they are resold. The ordinance would also make recording of the deed contingent on proof that the retrofit has been performed.

(e) Xeriscape Ordinance

To implement this measure, the permittee would adopt a xeriscape landscape ordinance that incorporates the principles of design, appropriate plant selection, soil improvement, efficient irrigation, mulching, turf concentration, and proper maintenance.

Appendix J

Alternatives To In-Line Flow Meters For Measuring Water Use

Alternatives to In-Line Flow Meters for Measuring Water Use

The methodologies listed below are examples of alternatives to in-line flow meters for measuring flow to meet the requirements of section 6.7, Applicant's Handbook. Acceptance of an alternative in lieu of flow metering, will be made on a case-by-case basis after a review of each applicant's water use situation. To be approved in an individual case, each alternative must:

1. Maintain an accuracy of at least 90% in measuring flow,
2. Be independently verifiable by District staff,
3. Meet the specifications, conditions and assumptions on which each alternative methodology is based.

A. Electric Record Method (Electric Pumps).

Hour meters on electrical pumps used to calculate flows via pump performance curves.

Conditions

1. The applicant must provide a diagram which clearly indicates the location of each pump and its associated hour meter.
2. Each pump must be individually equipped with a direct reading electric meter that does not have additional electric inputs.
3. Each pump must have an up-to-date pump performance curve certified by the pump manufacturer or a professional engineer.
4. Every 6 months the permittee must submit monthly electric bills showing electrical usage for each separate electric meter, the number of hours each pump was run, and the RPMs at which each pump was run.
5. Each pumping well must contain an access port to measure static and pumping water levels, or a monitor well must be drilled to the same depth as the production well(s) and within 5 feet of each pumping well to measure these levels.
6. Once per year the flow from each withdrawal point must be measured using a sonic flow meter or other method approved by the District to ensure that the actual flow is within 10% of the flow predicted by the pump performance curve.

NOTE: If actual flow is not within 10% of predicted flow, new performance curves must be prepared by a pump manufacturer or professional engineer, the pump must be replaced by a pump with an accurate pump performance curve or an inline totalizing flow meter must be installed.

B. Fuel Record Method (Diesel Pumps).

Monthly quantities of diesel fuel used to calculate flows via pump performance curves and fuel versus flow curves.

Conditions

1. The applicant must provide a diagram which clearly indicates the location of each pump and its associated fuel tank.
2. Fuel usage must be individually attributable to each pump and must be accurately measured and verifiable.
3. Each pump must have an up-to-date pump performance curve certified by the pump manufacturer or a professional engineer.
4. Each pumping well must contain an access port to measure static and pumping water levels, or a monitor well must be drilled to the same depth as the production well(s) and within 5 feet of each pumping well to measure these levels.
5. Each pump must be fitted with a continuous recording hour meter which measures the total time the pump is operated.
6. A sonic flow meter or other District approved method must be used to determine the relationship between the time the pump is operated, the amount of fuel used, and the amount of water pumped. Different curves must be generated for each of the various pump rates and head differences to be encountered during pump operation.
7. Fuel consumption records must be submitted semi-annually for each individual pump, along with the number of hours each pump was run, the RPMs at which each pump was run and the head change over time at each pumping well.
8. Once per year the flow from each withdrawal point must be measured using a sonic flow meter or other District approved method to ensure that the actual flow is within 10% of the predicted flow.

NOTE: If actual flow is not within 10% of predicted flow, new performance curves must be prepared by a pump manufacturer or professional engineer, the pump must be

replaced by a pump p with an accurate pump performance curve, or an inline totalizing flow meter must be installed.

C. Manometer Method (Any Pump or Artesian Well)

Hour meters, pressure tubes, and sonic flow meter used to calculate flows via pump performance curves.

Conditions

1. The applicant must provide a diagram which clearly indicates the location of each pump or well and its associated manometer and hour meter.
2. Each pump or artesian well must be fitted with a recording manometer (pressure tube) and hour meter, each of which provides continuous readings.
3. Each pumping well must contain an access point to measure static and/or pumping water levels, or a monitor well must be drilled to the same depth as the production well(s) within 5 feet of the production well to obtain these levels.
4. A sonic flow meter or other District approved method must be used to determine the relationship between the discharge, the manometer readings, and the time the pump operated. Different curves must be generated for each of the various head levels to be encountered during pump or well operation.
5. Once per year the flow from each withdrawal point must be measured using a sonic flow meter to ensure that the actual flow is within 10% of the predicted flow.

NOTE: If actual flow is not within 10% of predicted flow, new performance curves must be prepared by a pump manufacturer or certified pump installer, the pump (if applicable) replaced, or a flow meter must be installed.

D. Permanent On-Line Sonic Meter Methods (Any Pump or Well)

Conditions

1. The applicant must provide a diagram which clearly indicates the location of each pump or well and its associated sonic meter.
2. Each sonic meter must be installed in accordance with all manufacturers specifications.
3. Each sonic meter must provide continuous totalizing readings.

4. The electrical and magnetic housings must be protected from vandalism and lightning.

E. Monitor Well Method

Conditions

This method can only be used in an area isolated from any influence on the ground water table other than the permittees' pumping.

1. The applicant must provide a diagram which clearly indicates the location of each pumping and monitor well(s).
2. The monitor well(s) must be cased into the same aquifer zone as the pump well.
3. Continuously recording hour meters must be placed in each pumping well.
4. The monitor wells must be drilled to the same depth as the production well(s) and equipped with devices to continuously monitor the changes in water level. Data must be available to factor out the yearly, monthly and daily changes in water level caused by seasonal variations and tidal fluctuations.
5. Two aquifer performance tests must be run on each well (one in the wet season, one in the dry season) to determine drawdowns in a monitor well or series of monitor wells at different rates of pumping. A discharge/drawdown curve must be developed relating flow to levels in monitor wells.
6. Once per year the flow from each withdrawal point must be measured using a sonic flow meter or a District approved alternative to ensure that the actual flow is within 10% of the flow predicted by drawdown/discharge curves.

NOTE: If actual flow is not within 10% of the predicted flow, a flow meter must be installed.

F. Water Control Structure

Conditions

1. The applicant must provide a diagram which clearly indicates the location of each water control structure.
2. A continuous recording water elevation meter must be placed in the canal upstream of the opening.

3. A rating curve must be developed by a professional engineer for each structure, relating its cross sectional opening at different weir levels to flow over time.
4. Flow measurements must be collected monthly and submitted to the District semi-annually detailing all openings and closings of the structures and associated flow measurements.

G. Sampling Method

An alternative to metering all wells in an area or on a contiguous piece of property. Involves installation of an in-line flow meter on one well and calculation of the flow from the others based on their hours of operation.

Conditions.

1. All unmetered wells must be of the same size and completed into the zones in the aquifer as each other and the metered well.
2. The geologic and hydrologic aspects of the property must be similar at the site of the metered and unmetered wells.
3. A pump efficiency curve must be developed for each of the metered and unmetered wells.
4. Both metered and unmetered wells must be equipped with continuous recording hour meters with totalizers.
5. A methodology for determining the regional change in head must be developed. Examples would include drilling a monitor well or use of monthly potentiometric maps produced by the District
6. A sonic flow meter or other District approve alternative must be used to develop a correlation between flows from the metered and unmetered wells at the start of the monitoring program. This correlation must be re-confirmed twice a year by re-checking with a sonic flow meter.
7. The following information must be collected monthly by the permittee and submitted to the District semi-annually:
 - a. Hours each pump used per month
 - b. Total gallons pumped per month from the metered well
 - c. Total gallons pumped per month from the unmetered wells based on the pump efficiency curve

d. Monthly potentiometric levels.

8. The maximum distance allowed between metered and unmetered wells will be established on a case-by-case basis considering the area topography, geology and crop type.

NOTE: As with all other alternatives, if calculated flows from unmetered wells are not within 10% of actual flow, installation of an inline totalizing flow meter may be required.

Appendix K – Chapter 40C-8, F.A.C.

Chapter 40C-8: Minimum Flows And Levels

<http://www.sirwmd.com/programs/regulation/rules/pdfs/40C-8.pdf>