**Agriculture and Landscape/Recreation Demands**

**FIRST DRAFT**

**Note:** Sections 2.0 and 2.1 apply to all sectors and are identical.

**CFWI - 2.0 Demonstration of Water Demand, Allocations, and Source Identification**

Within the CFWI Area, sections, CFWI - 2.0, excluding subsections, and CFWI - 2.1, inclusive of subsections, shall supersede it their entirety, section \_\_\_\_ of the SJRWMD Applicant’s Handbook; sections \_\_\_\_ of the SWFWMD Applicant’s Handbook; and sections \_\_\_\_ of the SFWMD Applicant’s Handbook.

To receive a permit, an applicant must demonstrate that the proposed water use is a reasonable-beneficial use of water, as required by Section 373.223, F.S., including meeting the conditions of issuance. The proposed withdrawal of water must be supported with information that provides reasonable assurance that the withdrawal quantities are necessary to supply a certain reasonable demand. Only the portion of demand for which an applicant is able to provide such reasonable assurance will be permitted. Additional or alternative provisions to the below are required for uses within the Southern and Dover/Plant City Water Use Caution Areas in accordance with Rule 62-42.500, F.A.C.

An Applicant’s allocation reflects a consideration of factors including demands and, as applicable, treatment losses, other sources of water (such as reclaimed water), conservation, and water purchased, sold, or transferred. When necessary to prevent water resource impacts, allocations can be expressed in increments over the permit term.

In no case, however, will the allocation be greater than the total rated capacity of all existing and proposed withdrawal facilities.

Applicants using reclaimed water to meet their total water needs are not required to obtain water use permits except as otherwise provided in section 373.250, F.S. However, if reclaimed water is utilized to meet any part of the applicant's water demand, the applicant shall identify the quantities from these sources used to meet the demand.

Each permit issued by the District shall identify the source of withdrawal, the use type, and the location of the withdrawal.

A water user shall obtain one permit for all withdrawals that are intended to serve contiguous property. Two or more properties represented to be separate properties shall be aggregated and treated as a single property for permitting purposes when the District determines that the properties are physically proximate and (a) either share the same irrigation infrastructure or (b) are operated as a common enterprise. However, when multiple use types, as defined in Rule 40C-2.501, F.A.C., are served by separate withdrawal facilities, the District is authorized to issue separate individual permits. For example, a farm on contiguous property which has four wells must 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. This requirement to aggregate two or more properties shall not apply when the separate properties have existing permits that require metering for all withdrawals or the water user requests a permit modification to the permits to require metering for all withdrawals.

**CFWI - 2.1 Allocation Expression**

Applicants shall request quantities in gallons per day for each component of demand according to the demand components listed for each use type.

CFWI - 2.1.1. Annual Quantity

The annual quantity is determined by calculating the total quantity of water to be withdrawn over a 12-month period. A daily average is calculated by dividing the annual quantity by the days in the year. The annual quantity must equal the quantities required by each demand component for the particular use.

CFWI - 2.1.2. Peak Month

The peak month allocation represents the greatest quantity permitted to be used in any single month. The peak month allocation is determined by identifying the peak month demand for the associated use type.

## **2.2 Public Supply Use Type**

## **2.3 I/C/I Use Type**

## **2.4 Mining/Dewatering Use Type**

## **2.5 Agricultural Use Type**

Within the CFWI Area, this section, CFWI – 2.5, shall supersede in its entirety sections \_\_\_\_\_ of the SJRWMD Applicant’s Handbook; sections \_\_\_\_\_ of the SWFWMD Applicant’s Handbook; and section \_\_\_\_\_ of the SFWMD Applicant’s Handbook.

Applicants must demonstrate that the quantities applied for relate to one or more of four use categories: irrigation, livestock, aquaculture, and other agricultural water needs.

## **2.5.1 Irrigation Demand Components (Supplemental Irrigation Requirement)**

The reasonable demand for supplemental irrigation shall be calculated as described in this section. Factors in determining the supplemental irrigation requirement include crop type, planted acreage, irrigation method, soil type, planting dates, and periods of irrigation.

1. Supplemental Irrigation

The supplemental irrigation requirement is the amount of water needed for a particular crop beyond the amount of water provided by effective rainfall.

The peak month and annual allocations will be based on the supplemental irrigation requirement for a \_\_\_\_\_\_ year drought condition unless otherwise set forth in a recovery or prevention strategy.

The Supplemental Applicant’s Handbook Design Aid describes how AFSIRS may be used to determine the supplemental irrigation requirement for all crop types. The Design Aid is not incorporated by reference in Chapter 62-41, F.A.C., and therefore does not constitute a rule of the Department. It is intended solely to provide applicants with useful tools, example calculations, and design suggestions that may assist in the calculation of demand for irrigation under Chapter 62-41, F.A.C.

If the method described above is not applicable due to localized allocation coefficients such as soil characteristics, hydrologic conditions, crop type, or crop coefficient, the applicant must provide reasonable assurance supporting the requested quantity for the supplemental irrigation requirement for its crop type(s). Typically reliable sources of information include NRCS and FDACS publications. The Applicant must demonstrate that the proposed method accurately determines supplemental irrigation water use needs based on site-specific conditions, exemplified by the type of crop grown, the irrigation method employed, the season in which the water is used to grow the crop, general crop location including soil type, and associated atmospheric conditions.

1. System Efficiency

Applicants shall use efficient practices for the irrigation system selected. Accepted system efficiency is provided in Table 2-1. The applicant may use an alternative method to determine system efficiency if the system efficiencies in Table 2-1 are not applicable due to factors associated with the particular irrigation system. In such a case, the applicant must provide reasonable assurance supporting an alternative system efficiency. Typically reliable sources of information include information provided by the manufacturer of the system or IFAS, NRCS and FDACS publications.

## **Table 2-1. Irrigation Application Efficiencies Used to Determine Supplemental Irrigation**

|  |  |  |  |
| --- | --- | --- | --- |
| **System** | **Method** | **Efficiency (%)** | **Multiplier (=100/Efficiency)** |
| Micro-Irrigation | Drip |  |  |
|  | Spray Jet, Spinners |  |  |
| Sprinkler Irrigation | Sprinkler (overhead, undertree) |  |  |
|  | Traveling Gun |  |  |
|  | Portable Gun |  |  |
| Surface | Semi-Closed Ditch |  |  |
|  | Seepage  |  |  |

1. Standard Irrigation System for Citrus

The accepted irrigation system efficiency for citrus projects is a micro-irrigation system such as drip, spray jet, spinners, or other system capable of meeting the equivalent irrigation system efficiency of a micro-irrigation system. The allocation shall reflect this system efficiency even if the system itself is not a micro-irrigation system. The accepted standard irrigation system efficiency for citrus projects will be required of all initial consumptive use applicants whose irrigation systems are not constructed. Upon permit renewal or when acreage is added to a permit during modification, the standard irrigation system for citrus will be required for new acreage. New acreage includes: (1) acres not previously proposed for irrigation and (2) acres previously proposed for irrigation and still proposed for irrigation, but for which the permittee did not construct irrigation system under its current permit.

## **2.5.2 Criteria for Use Categories**

2.5.2.1 Agricultural Irrigation

For agricultural irrigation, the Applicant shall demonstrate that an irrigation system exists or is proposed and is capable of delivering the requested amount. For proposed systems, a schedule for implementation of the irrigation system is required.

1. The four major categories of agricultural irrigation-related water use are:
	1. *Supplemental Irrigation*: The supplemental irrigation requirement for agricultural uses is calculated as specified in Subsection 2.5.1. For improved pasture irrigation, see Section 2.5.3.
	2. *Field Preparation, Crop Establishment, And Heat Stress*: If an allocation is requested for such purposes, quantities shall be calculated for water demands above the supplemental crop requirements. These quantities will be based on a demonstrated demand, such as plant cooling and soil saturation for bed preparation.

Quantities for heat stress protection shall be calculated based on the number of acres to be protected, the crop grown, the irrigation system used, and the hours of pumpage required. If the number of hours is not known, the peak quantity will be based on the best available data for crop protection recurrence and duration. The applicant may proposed to use alternative factors if the factors described above are not applicable due to issues associated with the particular crop. In such a case, the applicant must provide reasonable assurance supporting the use of alternative factors. Typically reliable sources of information include information provided by the manufacturer of the system, or IFAS, NRCS and FDACS publications.

* 1. *Other Water Uses*: These uses are permitted on an individual basis for chemigation, irrigation system flushing and maintenance, and leaching of salts from the root zone. The total allocated inches per irrigated acre per season for these uses is equal to [under development]% for low volume irrigation systems and [under development]% for overhead irrigation systems of the allocated inches per irrigated acre per cropping season of the supplemental irrigation requirement.
	2. *Freeze Protection*: Where freeze protection quantities are necessary, the quantities shall be calculated based on the number of acres to be protected and the type of freeze protection utilized. The freeze protection allocation will be made on the basis of a 24-hour maximum daily requirement per freeze event. The following values will be utilized for standard freeze protection calculations.

Flood: [under development]

Sprinkler: [under development]

Micro-sprinkler: [under development]

If the above described standard freeze protection values are not applicable, the applicant must provide reasonable assurance supporting freeze protection values (mgd/acre) for its crop type(s). Typically reliable sources of information include IFAS, NRCS and FDACS publications.

1. Uses and Irrigation Allocation Rate

Applicants intending to grow annual crops over the permit term shall submit an application representing the most water-intensive crop scenario intended, considering both annual average and peak month quantities needed. The Permittee may then change crop types during the permit term without modification, provided that (a) the crop actually irrigated uses no more water than the most water-intensive crop permitted, and (b) the quantity that the District permits for the acreage and crop actually irrigated is not exceeded.

For each individual crop or plant type, the Permittee shall not exceed the annual quantity determined by following the below formula:

$$Total Irrigated Acres x Total Allocated Inches x 74.39= \frac{Gallons}{Day}$$

Where 74.39 is $\frac{27,154}{365}$ as defined below:

$$Acres x \frac{Inches}{Year} x \frac{27,154 Gallons}{Acre Inches} x \frac{1 year}{365 days}= \frac{Gallons}{Day}$$

Allocated inches per irrigated acre per season are determined separately for four major categories of water use (supplemental, field preparation/crop or plant establishment, other water uses), and their sum equals the total allocated inches needed for a specific irrigation system per irrigated acre per season. Acreage submitted to the District shall be based on area measurements rather than other measurements such as rolls of plastic. Other non-irrigation related water uses shall be permitted in accordance with the appropriate use type set forth in this Supplemental Applicant’s Handbook.

2.5.2.2 Improved Pasture Irrigation

For improved pasture irrigation, the Applicant shall demonstrate that an irrigation system exists or is proposed and is capable of delivering the requested amount. For proposed systems, a schedule for implementation of the irrigation system is required. The applicant shall provide reasonable assurance of the amount of improved pasture acreage reasonably expected to be irrigated in any given growing season as the basis for the net irrigated acreage. In determining the reasonable irrigation allocation for improved pasture, the following requirements shall apply:

1. Overhead sprinkler irrigation: The allocation will be based on the number of acres of pasture grass that will be irrigated and the irrigation equipment efficiency associated with overhead sprinklers (Table 2-1).
2. Subirrigation: The allocation will be based on the amount of water needed to maintain water levels of the irrigation canals that comprise the water delivery system. The applicant shall calculate the demands based on the number of acres of pasture grass that will be irrigated and supplemental irrigation demands as described in section 2.5.1. The irrigated acreage shall be determined from the extent to which the water is distributed to the root zone of the pasture grass.

Irrigation systems constructed with lateral ditch spacing of 400 feet or less are considered to provide irrigation to all the acreage incorporated within the system. For irrigation systems that consist of main ditches without laterals, or laterals with a spacing greater than is sufficient to provide irrigation to all the pasture grass, the irrigated acreage will be calculated by multiplying the length of the ditches by the effective irrigation area as determined by soil and pasture grass type. If the above lateral ditch spacing is not applicable due to soil and pasture grass type, the applicant must provide reasonable assurance supporting lateral ditch spacing greater than 400 feet.

2.5.2.3 Livestock

The reasonable demand for livestock use will be derived by multiplying the estimated total number of animals by gallons needed per day per animal. The livestock water use will be determined using the gallons needed per day per animal identified in Table 2-2.

**Table 2-2. Livestock Water Demands**

|  |  |
| --- | --- |
| **Animal** | **Use per animal (gpd)** |
| Beef Cattle | 12 |
| Chickens | 0.10 |
| Dairy Cattle | 150 |
| Goats | 2 |
| Hogs | 2 |
| Horses | 12 |
| Rabbits | .05 |
| Sheep | 2 |
| Turkeys | 1 |

If the above livestock water use values are not applicable due to the proposed livestock operations, or for livestock other than those listed above, the applicant must provide reasonable assurance supporting its values (gpd/animal) for its livestock. Typically reliable sources of information include IFAS, NRCS or FDACS publications.

2.5.2.4 Aquaculture

The reasonable demand for aquaculture is determined by the number and volume of ponds and tanks and their filling and recirculation requirements and other factors that may contribute to maintaining necessary water levels or water quality. In instances where there are discernable water sources and losses, applicants should rely on a water balance method for demonstrating reasonable demand.

2.5.2.5 Other Agricultural Water Demands

The reasonable demand for other agricultural uses, such as cooling of animals or product, spray tanks, non-potable shop needs, or disease control spray stations, is determined based on supporting information provided by the applicant. The applicant must provide reasonable assurance supporting the requested allocation in order to demonstrate that it is a reasonable-beneficial use. Typically reliable sources of information include IFAS, NRCS or FDACS publications.

## **2.6 Landscape/Recreation Use Type**

Within the CFWI Area, this section, CFWI-2.6, inclusive of subsections, shall supersede in its entirety section \_\_\_\_ of the SJRWMD Applicant’s Handbook, section \_\_\_\_ of the SWFWMD Applicant’s Handbook and section \_\_\_\_ of the SFWMD Applicant’s Handbook.

Landscape Irrigation includes the outside watering of shrubbery, trees, lawns, grass, ground covers, vines, gardens and other such flora, not intended for resale, which are planted and are situated in such diverse locations as residential and recreation areas, cemeteries, public, commercial and industrial establishments, and public medians and rights of way.

The supplemental irrigation requirement for landscape and recreation irrigation projects, including golf courses, shall be calculated pursuant to 2.5.1.A.

Non-irrigation recreational demands shall be calculated pursuant to 2.3.