

# Memorandum



**Date:** June 5, 2007

**To:** Honorable Chairman Bruno A. Barreiro and  
Members, Board of County Commissioners

**From:** George M. Burgess  
County Manager

A handwritten signature in black ink, appearing to read "Burgess", written over the printed name of George M. Burgess.

Agenda Item No. 12(B)3

**Subject:** Set of standards and directions for the development community that addresses water conservation issues and alternative water supplies

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At the request of the Government Operations and Environment Committee Chair, an Advisory Committee was established with the goal of developing countywide guidelines that address water conservation issues and alternative water supplies for the development community, specifically, for new development. The Advisory Committee is comprised of several departments including the Department of Environmental Resources Management, the General Services Administration, the Building Department, Park and Recreation, Planning and Zoning, the Building Code Compliance Office, the Fire Department, the Public Works Department and the Water and Sewer Department. In addition to County staff, the Advisory Committee includes representation from stakeholder groups such as the American Society of Landscape Architects, the South Florida Builders Association, the Sierra Club, the Latin Builders Association, the Tropical Audubon, the Association of Cuban American Engineers, the Florida Regional Planning Council, the Farm Bureau, the South Florida Water Management District, the Audubon Society and the Greater Miami Chamber of Commerce.

The Advisory Committee held five meetings between January 26, 2007 and April 20, 2007. These meetings were advertised in the County's meeting calendar and were open to public comment. The Advisory Committee, as part of its review process, evaluated the documents including "Green Building" practices, the Florida Friendly Landscape Guidelines and the Florida Yards and Neighborhoods criteria.

The Advisory Committee has summarized its findings as shown on Attachment A which consists of recommendations for 1) Residential New Construction, 2) Commercial Development, 3) Alternative Water Supplies, and 4) Public Information/Education/Legislation recommendations. In the first category, Residential New Construction, the recommendations are divided into two parts, indoor water use specifications such as high efficiency toilets, faucets, clothes washers, and outdoor water use specifications which include the implementation of the Florida Friendly Landscape Guidelines, gutter downspouts, roof runoffs and rain harvesting for recharge purposes as well as drip irrigation or micro-sprinklers. Examples of recommendations made in the second category, Commercial Development, take into account the use of automatic shut-offs, solenoids, controllers, flow restrictors, plumbing fixtures for toilets and faucets, designs for toilet and fixtures that reduce the volume of water wasted and the installation of overflow sensors on equipment cooling towers. The third category, Alternative Water Supplies, bases its recommendations on the eventuality that water service is not available in a particular area, as such the construction of a 1 million gallons per

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day reverse osmosis plant is proposed as an option or the construction of an alternative water supply water treatment plant and distribution system. If water service is available and the area is considered to be within a reuse zone, developers should consider installing "purple pipes". The fourth category, Public Information/Education/Legislation provides recommendations on the dissemination of public information and education and legislation regarding water conservation.



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Assistant County Manager

# Attachment A

## Water Conservation Issues & Alternative Water Supplies for the Development Community

### 1. Recommendations for Residential New Construction

#### Residential Indoor Water Use Specifications

1. Only High Efficiency Toilets (HET) which shall be defined as 1.2 gallons per flush, that meet the standard specifications of the Unified North America Requirements (UNAR) and display the Environmental Protection Agency's WaterSense label shall be installed. [http://cuwcc.org/Uploads/product/HET\\_06-07-19.pdf](http://cuwcc.org/Uploads/product/HET_06-07-19.pdf)
2. There shall be one control valve, or one set of hot and cold valves required for each High Efficiency Showerhead which shall be defined to provide no more than 1.5 gallons per minute (gpm).
3. High Efficiency faucets which shall be defined to provide 1.0 gpm.
4. Residential units equipped with clothes washer connections shall have installed High Efficiency (HE) Clothes Washer(s) with a water factor of 6 or less (Tier 3b) as identified by the Consortium for Energy Efficiency at <http://www.ceel.org/reid/seha/rwsh.rwsh-prod.pdf>, Energy Star (and WaterSense certified when available).
5. Dishwashers shall be rated with use of 6.5 gallons/cycle or less, Energy Star and WaterSense certified.
6. Multi-unit residential – apply items 1-6 and:  
Require sub-metering for all multi-unit residential development which will include: separate meter and monthly records kept of all major water-using functions such as cooling towers and individual buildings.

#### Residential Outdoor Water Use Specifications:

1. Florida Friendly Landscapes guidelines and principles shall be applied to all landscape installations in compliance with Florida Yards & Neighborhoods criteria.
2. Gutter downspouts, roof runoff, and rain harvesting shall be used to encourage increased recharge and other non-potable uses on the property, thru the use of elements and features such as rain barrels and directing runoff to landscaped areas.
3. Require and provide "Florida Friendly Landscapes" within all public rights-of-way.
4. Use drip irrigation or micro-sprinklers when appropriate.
5. Use of porous surface (bricks, gravel, turf block, mulch, pervious concrete, etc) whenever possible on walkways, driveways, and patios.
6. Florida Yards and Neighborhoods Program information on Florida Friendly Landscapes shall be included in the sales literature provided to homebuyers.
7. The landscape plan and plant palette shall be developed based on site characteristics (soil, drainage, structural limitations (utilities, overhangs, lights, etc.) and shall include:
  - a. Per the County's Landscaping Ordinance, existing native trees, palms and associated native understory, shall be retained and preserved along with identified undergrowth and be a focal point of the landscape.
  - b. 80% of plant materials to be utilized on site shall be from the Florida-Friendly Plant List and shall have a moderate to high drought tolerance.
  - c. All plants will be grouped in the landscape plan by similar water and maintenance requirements and shall be spaced to allow for maturation.
  - d. Turf areas will be evenly shaped for ease of maintenance and will be no less than 4 feet wide and will not be placed on any berms.

- e. No more than 30% of the total area required for landscaping may be turf or grass.
- f. Soils analysis should be completed and used in the plant selection process where applicable and a copy should be provided to the home buyer.
- g. Limit use of rock mulch due to heat loading: rock mulch shall not exceed 5% of total landscaped area.
- h. Use of environmentally friendly organic mulches that are applied 3 inches deep around plants and trees with two inches clear around each plant.
- i. Homes with landscapes adjoining surface water bodies should provide for maintenance free or low maintenance zone up to 10 feet within and to the water body. This area can be enhanced with natural wetland vegetation, in any case, the area should be planted to eliminate erosion potential.

**The Irrigation Plan for Common Areas:** Shall be developed to meet the water use requirements of the landscape plan.

- a. All landscape beds shall be irrigated by a low volume irrigation system, preferably utilizing bubbler and low trajectory spray heads.
- b. All landscape plant beds shall be irrigated with low-volume irrigation appropriate for plant type.
- c. Turf shall be irrigated by zones separate from zones for irrigation of shrubs and ground cover plantings.
- d. Swing joints or flex pipe shall be used when installing sprinklers to help prevent broken pipes and sprinklers.
- e. Irrigation systems shall be designed for minimum overlap.
- f. Soil moisture sensors or other water saving technologies shall be installed. Devices shall be installed and function according to manufacturers' recommendations.

## 2. Commercial Development Recommendations

1. Use waterless technologies where available.
2. Maximize use of on-site sources of water.
3. Choose equipment that is water and energy efficient.
4. Install automatic shut offs, solenoids and controllers to turn water off when not in use.
5. Install flow restrictors when possible.
6. Eliminate once-through cooling.

### Plumbing Fixtures and Practices

#### Toilets and Urinals

- a. Ensure all water closets use no more than 1.3 gallons per flush, high efficiency toilets (HETs) can achieve 20 to 25% water use savings.
- b. Use toilets included the Uniform North American Requirements (UNAR) certified list.
- c. Consider waterless urinals.

#### Faucets

- a. Install hand washing faucets or aerators that use no more than 1.0 gallons per minute.
- b. Install sensor controls on hand washing faucets in public restrooms.
- c. Install showerheads that use no more than 1.5 gallons per minute.

#### Plumbing Design

- a. Use tankless water heating or other devices that reduce water wasted waiting for the water to get hot where possible.

- b. Post prominent signs in all restrooms and other water using areas listing telephone numbers to promptly report leaks and other plumbing problems.

#### *Cooling Towers*

- a. Eliminate all once-through cooling.
- b. On cooling towers, install both makeup and blowdown meters.
- c. Equip cooling towers with overflow sensors on the overflow pipes to alert the operator to problems that can waste thousands of gallons daily.
- d. All cooling towers should achieve at least (5.0) cycles of concentration.

#### *Boilers*

- a. Equip boilers with makeup meters and conductivity controllers for blowdown control.
- b. Reuse or return steam condensate to the boiler wherever possible.
- c. Install makeup meters on all recirculating closed water loops used for heating and cooling systems so that leaks in the recirculating systems can be easily detected.

#### *Equipment Selection*

- a. Eliminate all water cooled equipment using once-through cooling.
- b. All water-cooled equipment should be eliminated unless it uses chilled water or cooling tower loop. This includes ice makers, refrigeration equipment, and ice cream machines.

#### *Dishwashing Equipment*

- a. Dishwashers should use less than 1.2 gallons per rack for fill-and-dump machines and less than 0.9 gallons per rack for all other types of machines. For under the counter machines, water use should not exceed 1.0 gallons per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines.
- b. Pre-rinse spray valves that use 1.6 gallons per minute and have a shot off valve.

#### *Food Preparation*

- a. Use connectionless steamers. They do not need either a water supply or a wastewater drain.
- b. Select ice machines that use no more than 20 gallons per hundred pounds of ice made.

#### *Irrigation controllers*

- a. Soil moisture sensors or other water saving technologies shall be installed. Devices shall be installed and function according to manufacturers' recommendations.

#### *Irrigation equipment and design*

- a. Use drip irrigation or microsprinklers for planting beds (once plants are established, irrigation is not usually needed).
- b. Create hydrozoned areas, with beds and turf watered separately.
- c. Design systems to maintain manufacturer-recommended pressure to prevent misting and unnecessary pipe wear.

#### *Soil*

- a. Do not add soil on top of tree roots.

#### *Mulch*

- a. Use organic, preferably locally derived mulch, such as pine bark, dyed landscape mulch, or enviromulch. Avoid cypress mulch which encourages deforestation of natural areas.
- b. Limit use of rock mulch due to increased heat and reflection.
- c. Mulch should be 3-4 inches deep over the root zone and several inches away from the base of plants.

#### *Plant Selection*

- a. Use low-maintenance (drought tolerant) species. The Florida Extension Service's Florida Yards and Neighborhoods Program list these species in a publication for South Florida. <http://miami-dade.ifas.ufl.edu/programs/fyn/publications/dtpl.htm>.
- b. Plant selection should be based on the plant's adaptability to the existing conditions present at the landscaped area and native plant communities. Select plants that are drought and freeze tolerant.
- c. For areas with limited soil space such as parking lots, use naturally small stature trees or use palms. Information for small stature trees for restricted spaces, such as narrow swales and limited space residential lots where canopy and roots can become problem can be found at <http://miami-dade.ufl.edu/programs/urbanhort/publications/PDF/Samll%20Trees%20for%20Miami-Dade.pdf>.
- d. Florida-friendly landscape principles should be applied. These principles conserve water and protect the environment and include efficient irrigation, practical use of turf, appropriate use of mulches, and proper maintenance. (Ref. 373.185 F.S.).

### **3. Alternative Water Supply Recommendations**

#### **Infrastructure Requirements**

1. In the event that the MDWASD cannot provide services, the construction of Reverse Osmosis (RO) plants for

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developments equal or larger than 1 MGD water allocation.

- a. Requirement of installation of a potable water treatment plant and distribution system. This requirement should exempt the developer from water connection charges.
  - b. RO plants should be owned and operated by MDWASD – Chapter 24 language needs to be amended.
2. In the event that the MDWASD cannot provide services, the construction of satellite wastewater reclamation facilities producing irrigation quality reclaimed water (62-610, Part III), larger than 100,000 gallons per day.
    - a. Modify language in Chapter 24 to allow for the construction of wastewater reclamation facilities plants even if the project is within feasible distance of, or actually connected to sanitary sewers. The quality of the treated effluent should be reviewed to possibly allow for a lower level of treatment for irrigation and other uses.
    - b. Wastewater reclamation facilities should be owned and operated by MDWASD – Chapter 24 language needs to be amended.
  3. For developments where water supply is available, all developers should consider the installation of “purple pipes” if the development is within a reuse zone and feasible distance from the “Mandatory Reuse Area” (MRA).

#### **4. Public Information/Education/Legislation Recommendations**

1. Expand “Factual Data” concept to encourage water conservation.  
Revise Section 24-43.1(5) includes provisions for use of factual data in lieu of tabulated rates. Section can be expanded to provide credits for the use of water saving strategies (e.g., reuse of gray water for toilet flushing, dual-flush toilets, etc.).  
NOTE: This will require similar adoption in MDWASD rules.
2. Add “Non-Revenue Water” ordinance to Chapter 24, Miami-Dade County Environmental Protection Ordinance. Implement an Ordinance for “unaccounted-for” water (a.k.a. “non-revenue” water) that requires compliance with an established standard. The ordinance shall be structured to address “real” and “apparent” water losses in accordance with the principles established by the International Water Association (IWA) and IWA book ‘Losses in Water Distribution Networks - A Practitioner’s Guide to Assessment, Monitoring and Control.’ The ordinance can be incorporated into Chapter 24, Miami-Dade County Environmental Protection Code and managed by the Department of Environmental Resources Management (DERM) similar to the Volume Sewer Customer Ordinance.
3. Encourage the review and adoption of County ordinances for both:
  - landscape protection, preservation and management, and for
  - water conservation by the County and its municipalities
4. A Hot Water Recirculation System or Point-of-Use Hot Water heater shall supply water to hot water fixtures further than ten linear feet of pipe away from the hot water heater. All hot water pipes shall be insulated.
5. Promote use of grey water for toilets and other uses discharging to public sanitary sewers.
6. All withdrawal from the aquifer should be metered including residential irrigation wells.
7. Landscape irrigation controller, soil moisture sensor, and irrigation system run time information. This sleeve shall be connected to the irrigation controller for use by the homeowner.