

ORDINANCE NO. _____

BILL NO. _____

**A BILL FOR AN ORDINANCE AMENDING TITLE 14
MAUI COUNTY CODE, RELATING TO WATER CONSERVATION**

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI

SECTION 1. Section 14.03., Maui County Code, is amended to read as follows:

DRAFT

Chapter 14.03

WATER CONSERVATION

Sections:

14.03.010	Policy
14.03.020	Water Conservation Plan
14.03.030	Landscape Water Conservation
14.03.040	Leak Detection
14.03.050	Water Waste Prohibitions
14.03.060	Fixture and Facility Performance Standards
14.03.070	Retrofit on Resale Provisions
14.03.080	Water Reuse
14.03.090	

14.03.010 Policy Statement

The County's policy is to promote water conservation. The council finds and declares:

- A. Water is a valuable natural resource that should always be used wisely and be managed as a public trust.
- B. Unrestricted water use for nonessential needs may endanger the adequacy of the County's water supply for essential needs.
- C. A water conservation plan is essential to preserve water resources and to reduce the risk and severity of water shortages. Such a plan will significantly reduce the long-term and short-term consumption of water, thereby preserving available water for the future requirement of the County, while minimizing the hardship; caused to the general public. The enactment of a water conservation plan ordinance is further necessary in order to preserve and protect the public's health, safety and welfare.
- D. This Chapter shall be known as the Water Conservation Plan Ordinance

RECEIVED AT WAI MEETING ON 9/30/2019
Clare Apana

- E. The Director of Water Supply shall adopt rules as appropriate to implement the provisions of this section.

14.03.020 Water Conservation Plan

- A. The Department of Water Supply shall maintain and periodically update a water conservation plan and program. This plan include regulatory and non-regulatory elements such as prevention of water waste, measures to reduce outdoor water use, measures to insure efficient use of water within the distribution system, measures to maximize plumbing efficiency and other measures as deemed appropriate. The council shall enact regulatory elements of the water conservation plan by ordinance.
- B. The regulatory elements of the water conservation plan shall include as a minimum water use regulations relating to outdoor watering, provisions for prevention of water waste, plumbing efficiency and water reuse, as well as provisions to enable budgeting and implementation for non-regulatory measures as deemed appropriate.
- C. The Department of Water Supply shall provide to council an annual report on the implementation and effectiveness of its conservation program.
- D. The Department's Water Use, Development and Protection Plan shall include analysis of the costs and benefits of implementing various demand and supply side measures, and the conservation program shall be updated accordingly.
- E. Private purveyors of water utilizing or conveying more than ½ MGD (500,000 gallons per day) shall be required to maintain and periodically update a water conservation plan and program, to include as a minimum provisions for maximizing efficiency and minimizing water waste. A summary of this conservation plan and program shall be submitted and held on file with the Department of Water Supply.
- F. Operators of facilities or large landscapes requiring the use of 250,000 gallons per day or more shall also be required to maintain and periodically update a water conservation plan and program, which shall include a description of the water use, and measures instituted to maximize efficiency and minimize waste. A summary of this conservation plan and program shall be submitted and held on file with the Department of Water Supply.

14.03.030 Landscape Conservation

A. General Provisions

1. Periodic Update of Regulations

The Department of Water Supply, after consulting with and considering the recommendations of interested agencies, may from time to time propose to the Administration, Board and Council regulations to establish additional or revised procedures to implement this chapter, and to make more specific the standards and guidelines prescribed in this chapter. Such regulations as are approved by resolution of the Council shall have the force and effect of law unless otherwise indicated.

2. Definitions

The words used in this ordinance have the meaning set forth below:

Agricultural Operation *(This definition needs work)* A business venture in which crops are grown for the purposes of earning a livelihood, as represented and claimed on federal and state tax forms, or a subsistence operation of sufficient size and scope to support the residents of the property on which the agricultural activities take place. A few orchard trees or a vegetable garden do not constitute an agricultural operation.

Amendment Materials added to the soil, such as compost, leaf mold, peat moss, ground bark or other materials, which improve aeration and percolation of clay soil and may help hold water in sandy soils.

Anti-drain Valve or Check Valve A valve located under a sprinkler head to hold water in the system so it minimizes drainage from lower elevation sprinkler heads.

Application Rate The depth of water applied to a given area, usually measured in inches per hour.

Athletic Field A turf area used primarily for organized sports.

Automatic Control Valve A device used to control the flow of water at a particular section of the irrigation system.

Automatic Controller A mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.

Backflow Prevention Device A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation

system.

Bubblers	Irrigation heads which deliver water to the soil adjacent to the heads.
Check Valve	A valve located under a sprinkler head to hold water in the system so it minimizes drainage from the lower elevation sprinkler heads.
Controller	A device that operates each irrigation zone for a determined time and frequency, based upon irrigation schedule or in some cases feedback of soil moisture content or climatic conditions.
Covenants	Agreements entered into by property owners, leaseholders and renters which set conditions for the use, maintenance and or sale of property.
Damaged Land Reclamation Project	A parcel or parcels of land which are the subject of plans or efforts to restore or reclaim ecological or other values after that land has been quarried, mined or used for other purposes disruptive to the natural landscape. Such project may have the goals of restoring a site to a condition similar to or compatible with that which existed prior to such use, or to develop the site to some other productive use of the land; to restore forests, pasture, crops, wildlife area, or etc. However, exemptions under this ordinance, shall not apply to projects or efforts to develop a site for subsequent development/construction.
Development	The construction, erection or emplacement of one or more buildings, structures, or surface improvements on land which is a premise in order to establish or expand a principal residential or non-residential use.
Distribution Uniformity	Measure of the uniformity of irrigation water applied over a given area. Sometimes calculated based on the ratio of the average low quarter depth of irrigation water compared to the average depth of irrigation water applied.
Drip Emitter	An irrigation emission device that delivers a measured reduced quantity of water at a consistent rate of discharge.
Drip Irrigation	Low pressure, low volume irrigation applied slowly near or at ground level to minimize runoff and loss to evaporation.
Ecological Restoration Project	A project intended for the restoration of a native ecosystem or area, and not intended for continued irrigation.

Emitter	Drip irrigation fittings that deliver water slowly from the system to the soil.
Established Landscape	The point at which plants in the landscape have developed roots into the soil adjacent to the root ball.
Establishment Period	The period until the plants in the landscape have developed roots in the soil adjacent to the root ball. Generally the first year after installing a plant in the landscape.
ET Controller	Controller that automatically adjusts the watering time and frequency based on local weather conditions such as rain, wind, heat, or estimated evaporation and transpiration rates.
Evapotranspiration	The quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.
Flow Rate	The rate at which water flows through pipes and valves.
Flow Restriction Device	Device applied by the water utility to the customer's meter that restricts the volume of flow to the customer.
Fugitive Water	The pumping, flow, release, escape or leakage of any water from any pipe, valve, faucet, connection, diversion, well or any facility for the purpose of water supply, transport, storage, disposal or delivery to adjacent property or the public right-of-way.
Hand Watering	The application of water for irrigation purposes through a hand-held hose, including hoses moved into position by hand and left to flow freely or through a shut-off nozzle.
Heritage Plants	Any plant or group of plants which meet one or more of the following criteria: 1) having a relationship to an event of cultural or historical significance, 2) is deemed of public interest or special interest by the County's <i>Arborist Committee</i> ; 3) a tree having a circumference of 72"; 4) a native species which is classified as rare, endangered , threatened or species of concern, 5) <i>other criteria</i> ?
High Water Use Turf	A surface layer of earth containing regularly mowed grass, with its roots, which requires large volumes and or frequent application of water throughout its life. High water use grasses include but are not limited to varieties of bluegrass, varieties of ryegrass, varieties

of fescue and bent grass.

High Water Use Plants	High-water-using plants are characterized by high transpiration rates, shallow rooting, and the need for frequent watering. <i>Refer to the Maui County Planting Plan and/or DWS list of plants.</i>
Hydrozone	A portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or non-irrigated, but should have similar characteristics in terms of water needs of the plants, precipitation rate of irrigation devices, solar radiation, wind conditions, soil type and slope. A naturalized area planted with native vegetation that will not need supplemental irrigation once established is a non-irrigated hydrozone.
Irrigation Audit	Procedure to collect and present information concerning the design, maintenance, uniformity of application rate, precipitation rate, efficiency, and general condition of an irrigation system and its components.
Infiltration Rate	The rate of water entry into the soil expressed as a depth of water per unit of time in inches per hour.
Irrigation Efficiency	The measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum irrigation efficiency for purposes of this ordinance is 0.625. Greater irrigation efficiency can be expected from well designed and maintained systems.
Landscape Irrigation Audit	A process to perform site inspections, evaluate irrigation systems, and develop efficient irrigation schedules.
Landscaped Area	The entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, hardscapes (such as decks and patios), and other non-porous areas. Includes the public right-of-way. Water features are included in the calculation of the landscaped area.
Lateral Line	The water delivery pipeline that supplies water to the emitters or sprinklers from the valve. (this definition applies to landscape irrigation only)

Low Head Drainage	A condition in which water siphons out of the lowest head in a sprinkler zone after watering is completed. When the water flow to the zone has been shut off at the end of its cycle, the remaining water in the lines will drain downhill to the lowest point. If a sprinkler head is located in the lowest part of the system, water will flow out of that head until an equilibrium has been reached or all of the water has emptied out of that zone's pipes. This can usually be corrected by adjustments to the system or installation of devices, called drain check valves, that can prevent low head drainage
Low Water Use Plants	Plants which are able to survive without supplemental water once established as specified in _____ plant list.
Main Line	The pressurized pipeline that delivers water from the water source to the valve or outlet. (this definition applies to landscape irrigation only)
Mature Landscape	The point at which plants in the landscape have developed roots into the soil adjacent to the root and are somewhat self-sufficient.
Mister	A device that produces a cooling effect by emitting fine particles of water into the air in the form of a mist.
Moisture Sensing Device	A device that measures the amount of water in the soil
Model Home	A dwelling built first by a developer to allow potential purchasers to see what the finished product will look like once the other homes in the development are completed.
Mulch	Any material such as leaves, bark, straw, wood chips or other materials applied to the soil surface to reduce evaporation.
New Development	Any development approved by Maui County after the effective date of this ordinance, including those developments which have received some approvals prior to the effective date of this ordinance but which have not already submitted all construction plans or constructed landscape improvements.
Operating Pressure	The pressure at which a system of sprinklers operates, usually indicated at the base of a sprinkler.

Overhead Sprinkler Irrigation System	A system in which water is distributed by overhead high-pressure sprinklers or guns or by lower-pressure sprays. A system utilizing sprinklers, sprays, or guns mounted overhead on permanently installed risers is often referred to as a <i>solid-set</i> irrigation system.
Overspray	Water which is delivered beyond the landscaped area, wetting pavements, walks, structures, or other non-target landscaped areas.
Percolation	The movement of water through the soil
Practical Turf Areas	The use of turf only in those areas of active play or recreation such as sports fields, school yards, picnic grounds, other areas with intense foot traffic, etc. These shall be planted with drought tolerant and non-invasive varieties of turf. Native grasses are encouraged.
Rain Sensing or Shut-off Device	A system which automatically shuts off the irrigation system when it rains
Recreational Area	An area devoted to active sports, play or picnicking, or to facilities and equipment for recreational purposes, swimming pools, tennis courts, playgrounds, community clubhouses, and other similar uses.
Recycled Water, Reclaimed Water, or Treated Effluent Water	Treated or recycled water of a quality suitable for nonpotable uses such as landscape irrigation, not intended for drinking.
Rotary Nozzle	A rotating, multi-stream, multi-trajectory rotating (MSMTR) sprinkler which distributes water in a number of individual streams of varying trajectories. This helps to uniformly distribute water throughout the radius range. Rotary nozzles are generally the size of the nozzles in fixed spray heads and thread onto pop-up heads just as spray nozzles do. They can also be threaded onto shrub adapters for installation onto risers. Rotary nozzles have variously cut nozzle openings that rotate during use to distribute the water more evenly throughout the watering pattern than spray heads. Rotary nozzles are designed to be installed on the risers of some of the most commonly used spray heads. They can be easily installed by simply unscrewing the existing spray nozzle and screwing on the rotary nozzle. Nozzle adjustment for radius or arc is a simple

screw adjustment. The irrigation schedule can then be adjusted to reflect the lower precipitation rate and higher distribution uniformity. Rotary nozzles offer a low cost opportunity to improve the efficiency of many existing systems, particularly on smaller turf areas (approximately half an acre), which are among the highest water using (and wasting) sites. Water turns a small turbine (water wheel or fan) in the base of the unit which drives a series of gears that cause the head to rotate. The gear drive mechanism is sealed from dirt and debris. The nozzle can be installed on a spray head which normally uses conventional fixed pattern and variable arc spray nozzles. The rotary nozzle distributes the water in a pattern similar to a rotor head in the way that it rotates, compared to a normal spray nozzle which does not rotate. Due to their low precipitation rate, highly uniform distribution, and increased radius range, rotary nozzles can use less water than spray nozzles if the irrigation system is designed and installed properly. Rotary nozzles may be inserted into the body of the head after it has been installed. However, uniform and complete coverage depends selection of the appropriate nozzle for the area to be covered. Two different nozzles will cause the same rotary head to vary the distance of throw by 10 feet or more and increase water use by factors of two or three.

Run-off

Water which is not absorbed by the soils or landscape to which it is applied. For example, run-off may result from water that it applied at too great a rate (application rate exceeds infiltration rate) or when there is a severe slope. This section does not apply to stormwater run-off which is created by natural precipitation rather than human-caused or applied water use.

Shut-off Nozzle

Device attached to the end of a hose that completely shuts off the flow, even if left unattended.

Single Family Residential

A lot or premise upon which is established one dwelling only. Of the allowable principal uses, such use shall be the only use on that lot or premise.

Smart Controller

Controller that automatically adjusts the watering time and frequency based on soil moisture, rain, wind, evaporation and transpiration rates or plant type.

Soil Moisture device,

A device, usually either a tensiometer or conductivity based

Sensing Device	used for sensing moisture in soils, and for controlling irrigation systems based on soil moisture. By sensing actual moisture levels in soils, such devices can save water in systems which have been over-irrigating. Preventing over irrigation can increase turf health. The use of automated soil moisture sensors also save labor by eliminating the need for re-programming and temporary rain shut-offs thereby reducing both water and labor costs for owners.
Soil Texture	The classification of soil based on the percentage of sand, silt and clay in the soil
Spray Irrigation	The application of water to landscaping by means of a device that projects water through the air in the form of small particles or droplets.
Sprinkler Head	A device which discharges water through a nozzle.
Static Water Pressure	The pipeline or municipal water supply pressure when water is not flowing.
Station, Circuit or Zone	An area served by one valve or by a set of valves that operate simultaneously.
Temporary Irrigation System	Irrigation systems which are installed and permanently disabled within a period of 36 contiguous months.
Turf	A surface layer of earth containing mowed grass with its roots. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore paspallum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.
Uniformity	Describes how evenly water is applied over a given area.
Useable Precipitation or Effective Rainfall	The amount of precipitation that contributes to the water needs of plants. Irrigation scheduling should be adjusted to reflect useable precipitation.
Valve	A device used to control the flow of water in the irrigation system.
Water Conservation Concept Statement	A one page checklist and narrative summary of the project as shown in section _____.
Warm Season Turf	Turf grasses which need warm weather to germinate and grow.

Warm season grasses can generally tolerate drought conditions due to root systems which tend to be deeper and more extensive than the root systems of cool season grasses. Zoysia grass, Bermuda grass, St. Augustine grass and other grasses are examples of warm season grasses. See also Turf, above.

Water Waste

The non-beneficial use of water. Non beneficial uses include but are not limited to: 1) landscape water which is applied in such a manner rate and or quantity that it overflows the landscaped area being watered and runs onto adjacent property or public right-of-way; 2) landscape water which leaves a sprinkler, sprinkler system or other applicaiton device in such a manner or direction as to spray onto adjacent property or public right-of-way; 3) washing of vehicles, equipment or hard surfaces such as parking lots, aprons, pads, driveways or other surfaced areas when water is applied in sufficient quantity to flow from that surface onto adjacent property or the public right of way; 4) water applied in sufficient quantity to cause ponding on impervious surfaces.

3. Applicability

a.. This section shall apply to:

1. Water conservation landscape requirements shall apply to all new developments, excluding individual single family homes of less than ¼ acre.
2. New development or refurbishment projects involving more than two homes.
3. Common areas in new and retrofitted developments
4. Commercial , residential and industrial developments.
5. New development applications shall include landscape documentation packages which require final approval at the time of final project approval. Public parks, with the exception of turf requirements
6. Golf Courses, with the exception of turf requirements.
7. Cemeteries, with the exception of turf requirements.
8. School Grounds, with the exception of turf requirements.

b. This section shall not apply to

1. Non-irrigated landscapes
2. Landscapes that are irrigated entirely with reclaimed water.
3. Individual Home-owner provided landscaping of

- less than ¼ acre.
- 4. Home-owner provided landscaping of individual homes in areas where rainfall exceeds 50"/year.
- 5. Ecological restoration projects which do not require a permanent irrigation system
- 6. Damaged-land reclamation projects that do not require a permanent irrigation system.
- 7. Commercial or subsistence agricultural operations are exempt from provisions of this ordinance except that provisions for prevention of water waste and prohibition of nuisance plants still apply.

14.03.031 Site Design & Plant Selection

A. Hydrozones

- 1. Plants having similar water use shall be grouped together in different hydrozones.
- 2. Fire prevention shall be addressed in areas that are fire prone. Information about fire prone areas and appropriate landscaping for fire safety is available from <the Fire Department?>.

B. Turf Restrictions

- 1. The maximum allowed turf and or decorative water area (expressed as percent of planted area) shall be 20% for new industrial, commercial, institutional, and public or quasi-public developments, residential developments with common areas, residential lots greater than ¼ acre or located in areas that receive less than 50" of rain per year.
- 2. If turf is an essential part of the development, such as playing fields for schools or public parks, a higher percentage will be allowed, and will be evaluated on an individual basis.
- 3. No turf shall be allowed in median strips or in areas less than 8' wide.
- 4. Turf grass perimeters shall be minimized to improve irrigation efficiency. Long narrow strips of turfgras such as traffic medians and areas between curbs and sidewalks are not permitted, unless the turf selected requires no more water than a low-water use groundcover.
- 5. No turf shall be allowed in median strips less than 8 feet wide.
- 6. To minimize runoff, turf shall not be utilized on slopes exceeding 10%.
- 7. Public parks, golf courses, cemeteries, school grounds and playing fields are exempted from turf limitations.
- 8. Parks, golf courses, cemeteries, school grounds, and sports fields, though exempt from turf limitations, shall in no circumstance have water requirements that exceed those which would result if the area were planted in 100% warm season turf.

C. Plant Materials

1. Plants shall be selected appropriately based upon their adaptability to the climatic, geologic and topographical conditions of the site.
2. The planting of trees is encouraged wherever it is consistent with other provisions of this ordinance.
3. Protection and preservation of native species and natural vegetation are encouraged. Wherever practical, native species adapted to the natural rainfall of the area should be selected. Guidance may be found in the Maui County Planting Plan, *list additional sites ? the Department of Water Supply's (landscape brochure, website - or list sites hear, UH, maui nui botanical garden etc. ?)*
4. 85% of the plants in non-turf areas shall be well suited to the natural climatic conditions of the subject area, and require little additional water.
5. No more than ten percent of the plants selected for non-turf areas may be considered high-water use plants.
6. Nothing in this or any other section of this ordinance shall compel removal of heritage plants.
7. Parks, Golf Courses, Cemeteries, and School Grounds, though exempt from turf restrictions applying to other landscapes, shall use drought tolerant turf species and shall use low-water use plants as much as possible.
8. The use of plants listed as nuisance species in either the Maui County Planting Plan, DWS Plant Brochure, Hawaiian Ecosystems At Risk, list of priority species for removal by the Maui Invasive Species Committee, or other list of nuisance species is prohibited. Landscapes shall conform with the provisions of under HRS chapter 152 and HAR Title 4 Subtitle 6 Chapter 68 referring to noxious weeds.
9. Groundcovers other than lawns shall be used on slopes exceeding 10% to reduce runoff

D. Ornamental Water Features (Fountains, Ponds, Pools, Others)

1. Water bodies that are part of the landscaping for new and rehabilitated developments shall be restricted and subject to permit, except where such water bodies are integral to the operations of the development.
2. Decorative water bodies in which potable water is sprayed into the air shall be discouraged.
3. Recirculating water shall be used for decorative water features.
4. Outdoor fountains shall be equipped with wind shutoff valves.
5. Outdoor fountains shall be equipped with rain shutoff controls.
6. Outdoor fountains shall be equipped with automated timers.
7. All ornamental uses of water in the common areas of a projects

such as ponds, lakes and fountains shall be supplied, operated and maintained with alternative sources of water, such as reclaimed water, brackish water, or cooling tower water if they are available.

8. Natural water features are not restricted, but should be clearly identified in the landscape design.
 9. Covers for pools and spas are encouraged.
- E. Soils & Grading
1. Soil types and infiltration rates shall be considered when designing irrigation systems.
 2. Design should include soil analysis to determine
 - c. Soil texture, indicating the percentage of organic matter
 - d. Approximate soil infiltration rate (measured or derived from soil infiltration rate tables)
 - e. pH
 - f. Measure of total soluble salts
 3. Grading shall be minimized to avoid soil compaction
 4. Where topsoil layers are thin, mulch shall be added to the soil surface after planting.
 5. Non-porous material shall not be placed under mulch amendments.

14.03.033 Water Source Selection

- A. Recycled Water
1. The installation of recycled water irrigation systems shall be required for new developments wherever a reclaimed water distribution system has been installed and can be used in compliance with regulatory requirements, in accordance with 20.30.010 or 14. (reclaimed water provisions) unless a written exemption has been granted and signed by the Departments of Public Works and Water Supply. (revise to match current reclaimed water code)
 2. Irrigation systems in commercial, industrial, hotel and motel developments shall make use of recycled or brackish water unless a written exemption has been granted by the County Department of Public Works & Waste Management, stating that non-potable water meeting all health standards is not available and will not be available in the foreseeable future.
 3. Recycled water irrigation systems shall be designed and operated in accordance with all State and County codes.
 4. Notwithstanding other provisions of this section, non-potable water shall be used for irrigation of Golf Courses, according to the provisions of Maui County Code §20.24 or §14.08(reserved).

14.03.034 Equipment

- A. Automatic irrigation systems shall be used for landscapes in which the

- irrigated area exceeds 2 acres.
- B. All irrigation systems shall be equipped with a controller capable of dual or multiple programming for separation of turf and non-turf areas, multiple cycle capabilities and flexible calendar programming.
 - C. All irrigation controllers shall be equipped with water a percent adjustment feature.
 - F. Irrigation controllers shall be equipped with a rain shutoff device.
 - G. All automatically controlled irrigation systems shall utilize *SMART controllers* capable of responding appropriately for each lawn circuit.
 - H. Drip systems shall be constructed of non-corrosive materials.
 - I. Drip irrigation systems shall be utilized wherever trees, shrubs or groundcovers are irrigated.
 - J. Drip and bubbler irrigation systems shall not discharge water in excess of 1.5 gallons per minute per device.
 - K. Irrigation systems shall be designed and equipment selected and maintained to provide a distribution uniformity not less than 85% for drip irrigation, 70% for rotors, and 60% for spray heads.
 - L. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance.
 - M. Sprinkler heads which are used on slopes exceeding 10% and which are located within 10 feet of any hardscape shall have a precipitation rate that does not exceed 0.85 inches per hour
 - N. Pop-up sprinklers in turf areas shall be at least 4" high.
 - O. Sprinkler head orientation and throw shall be designed to minimize run-off and overspray into non-irrigated areas.
 - P. Large sprinkler zones shall be equipped with high uniformity rotary nozzles.
 - Q. Serviceable check valves are required where elevation differential may cause low head drainage.
 - R. Any irrigation equipment located within 12" of pedestrian and vehicular use shall be located entirely below grade or otherwise adequately protected from potential damage.
 - S. Where pressure exceeds manufacturers recommendations, pressure regulating nozzles are required on spray heads.

14.03.035

Irrigation Scheduling

- A. Irrigation scheduling shall incorporate the use of evapotranspiration data or soil moisture data to apply the appropriate levels of water for different climates and regions.
- B. Landscape irrigation shall be scheduled between 7:00 P.M. and 10:00 A.M. to reduce evaporation losses.
- C. Irrigation schedules shall be set according to plants actual water needs.

14.03.036

Prevention of Runoff, Overspray or Other Water Waste

- A. Irrigation systems shall be designed, installed, operated and maintained so

- as to prevent run-off, overspray, or low-head-drainage, including but not limited to 1 landscape water which is applied in such a manner rate and or quantity that it overflows or sprays the landscaped area being watered and runs onto adjacent property or public right-of-way; 2 washing of vehicles, equipment or hard surfaces such as parking lots, aprons, pads, driveways or other surfaced areas when water is applied in sufficient quantity to flow from that surface onto adjacent property or the public right of way; 3 water applied in sufficient quantity to cause ponding on impervious surfaces.
- B. Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates therefor minimizing runoff.
 - C. Sprays shall not be used in areas less than eight feet wide.
 - D. Water application per cycle shall match soil absorption rates. Avoid runoff by discontinuing the application of water as soon as it occurs. Watering in stages can allow water to soak in between applications, thus improving the efficiency of water use.
 - E. Conventional sprinklers shall not be used where the perimeter to area ratio (P/A) exceeds 0.25.
 - F. Drip, low volume spray, or high uniformity rotary nozzles should be used to minimize run-off
 - G. Sprinkler heads with a precipitation rate of 0.85" per hour or less shall be used on slopes exceeding 15% to minimize run-off, or exceeding 10% within 8 feet of hardscape.
 - H. Turf grass perimeters shall be minimized to improve irrigation efficiency. Long narrow strips of turf grass such as traffic medians and areas between curbs and sidewalks are not permitted.
 - I. This ordinance is intended to prevent water waste, and is not intended to supercede existing County provisions regarding prohibition of Water Waste.
 - J. No property holder's association may establish criteria for landscaping that prohibits owners from removing turf grass and installing water-efficient landscaping in compliance with these provisions.
 - K. Even where hand watering is employed, over-watering as evidenced by soggy soils, continually wet pavement, standing water, run-off into streets or other hardscape shall be prevented and shall be considered a violation of this ordinance.

14.03.037

Maintenance

- A. Landscapes shall be maintained to insure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting and repairing irrigation equipment; resetting or adjusting automatic controllers, aerating and dethatching turf areas, replenishing mulch, soil amending, fertilizing, pruning and weeding in all landscape areas.

- B. Whenever possible, repair of irrigation equipment shall be done with the originally specified materials, their equivalents, or compatible materials of greater efficiency.
- C. Repairs of leaks, breaks or malfunctioning equipment shall be made promptly. It shall be unlawful to allow leakage or other inefficient condition caused by equipment malfunction to continue beyond a reasonable time. For purposes of this section, a reasonable time shall not exceed 48 hours.
- D. Leaking or faulty system elements shall be shut off until repairs can be made.

14.03.038 Monitoring, Meters, Audits, Certification

A Meters

- 1. Separate landscape water meters shall be installed for all projects except for single family homes or projects with a landscaped area of less than 10,000 square feet.

B Landscape Irrigation Audits & Certification

- 1. All new non-residential developments, or residential developments with common with landscaped and irrigated areas greater than 10,000 square feet are required to have a landscape audit prior to (release of bond and) close of sale in which a certified irrigation designer or certified auditor shall conduct a final field observation and certify that the landscape has been designed in accordance with the provisions of this section. The certified irrigation designer or auditor shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, that an irrigation audit has been performed, and provide a list of any observed deficiencies.
- 2. All existing landscaped and irrigated areas which exceed 10,000 square feet, and to which the County provides water including green belts, common areas, multi-family housing, schools, businesses, parks, cemeteries, hotels, motels, golf courses and publicly owned landscapes shall have a landscape irrigation audit at least once every five years. These audits shall reference and be in accordance with the standards set by the Irrigation Association.

14.03.039 Education, Incentives and Enforcement

A. Public Education

- 1. Information on conservation which is provided by County agencies during the permit process shall be provided by consultants and representatives to each affected applicant.
- 2. New development shall provide information to all buyers or long-term leaseholders regarding the design, installation and maintenance of water efficient landscapes.
- 3. If a residential development utilizes model homes during

marketing, model homes must abide by the provisions of this section, including the use of non-invasive drought tolerant plants and a maximum of 20% turf or water area..

4. Signs shall be used to identify the water efficient landscape and featuring elements such as hydrozones, irrigation equipment and others which contribute to the overall water efficient theme.
5. Developers shall provide buyers with sample landscape plans using non-invasive plants adapted to the natural rainfall of the area.
6. The developer shall also provide information about water conservation by distributing pamphlets to buyers regarding this subject. Such pamphlets are now available from the Maui County Department of Water Supply and other agencies.

B Incentives

1. The Department of Water Supply may adjust its rate and fee structure as necessary to provide for landscape conservation incentives where these are anticipated to result in economically viable conservation savings.
2. The Department of Water Supply may withdraw incentive programs when these are deemed no longer effective or cost-beneficial.

C Enforcement

1. Inspection

g.a. The County shall have the right to inspect new developments for compliance prior to granting final approvals.

h.b. Inspection for new development or other inspection shall be carried out with due regard for the convenience and schedule of the owners, the privacy of the occupants, and shall be during business hours unless requested otherwise by the landscape owner and approved by the Department Director.

i.c. Where consent to an inspection has been refused, or has been unobtainable within a reasonable period of time, OR where a report of violation has been made to the County, the County shall have the right to make un-announced inspection. Such inspection shall be during normal business hours and shall be conducted with due regard for the privacy of occupants.

2. Penalties

a. Any responsible party found to violate the provisions of this ordinance shall be subject to progressively higher fees, leading to to County-installed flow restriction and ultimately to meter removal.

b. In lieu of paying fees for first and second violations only, the responsible party may elect to have a landscape water audit performed by an authorized landscape irrigation auditor, *(to be conducted in accordance with the current*

edition of the landscape auditors handbook). The audit must be performed within 30 days of the violation notice, and the recommendations of the audit must be implemented within 60 days of the violation notice. If these deadlines are met, the fees for violation will be waived. As of the third violation on a premise, the responsible party will be required to have an audit, implement the audit AND pay the fees.

- c. For the purposes of assessing fees or flow restriction for violations, any previous violation shall not be considered if a period of five years has elapsed since the last violation was incurred, or the property is acquired by a new owner.

14.03.040 Leak Detection and Prevention

- A.. The Department shall monitor consumers' water consumption and issue high consumption notices to customers when warranted.
- B. The Department shall maintain a leak detection program.
- C. The Department shall prioritize the replacement of old and leak-prone mains
- D. The Department shall assist residents and businesses in detection and prevention of leaks through education, distribution of tablets to detect toilet leaks, or other measures as appropriate. The department shall encourage members of the public to report water leaks.

14.03.050 Water Waste Prohibitions

- A. No person, firm, corporation or government agency shall waste, cause or permit to be wasted any water.
- B. No person, firm, corporation or government agency shall cause or permit the flow of fugitive water onto adjacent property or public right of way, except as resulting from fire-fighting, system flushing or other public need or public facilities maintenance need.
- C. No person, firm, corporation or government agency shall utilize potable water for construction dust control.
- D. No person, firm, corporation or government agency shall utilize misters except as specifically permitted.
- E. Washing of sidewalks, walkways, driveways, parking lots and other hard-surfaced areas by direct hosing of potable water is hereby prohibited, except as may be necessary and appropriate under other regulations specifically to dispose of flammable or otherwise dangerous liquids or substances, or otherwise necessary to prevent or eliminate dangers to public health and safety.
- F. The escape of water through breaks or leaks within the customer's plumbing or distribution system for any substantial period of time within

which the break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of 48 hours after the customer discovers the break or leak is a reasonable time within which to correct the break or leak.

- G. Use of any irrigation in a manner that does not comply with 14.03.030-039 of this chapter is hereby prohibited.
- H. Other provisions of this section notwithstanding, the use of water for required flushing to maintain water quality, and for fire training operations as needed is allowed.

14.03.060 Fixture & Facility Performance Standards

14.03.061 General

- A. Purpose
The purpose of this section is to reduce unnecessary water consumption, sewer flows and energy use by establishing water conserving standards for plumbing fixtures. Several types of fixtures and appliances for bathroom, kitchen, laundry, cooling and other uses can reduce water consumption and hot water heating needs. The purpose of this section is to provide minimum standards for such appliances, to insure efficient use of water in accordance with the national energy policy act and chapter 16.2 of the Maui County Code.
- B. Applicability
 - 1. This section shall apply to
 - a. All new structures
 - b. Retrofit or renovation of existing structures
 - c. Structures which are undergoing transfer of ownership
 - 2. This section shall not apply to showers faucets or other fixtures which require a higher flow for safety reasons, such as safety showers for hazardous materials removal or etc.
- C. Periodic Update
The Department of Water Supply, Department of Environmental Management or Planning Department DSA, after consulting with and considering the recommendations of interested agencies, may from time to time propose to the Administration, Board and Council updates to standards and guidelines prescribed in this chapter. Such regulations as are approved by resolution of the Council shall have the force and effect of law unless otherwise indicated.
- D. Conformance with Maui County Code Chapter 16.2 and Uniform Plumbing Code Chapter 10
Low flow fixtures in accordance with Maui County Code 16.20 and chapter 10 of the Uniform Plumbing Code, are hereby required.

14.04.062 Performance Standards

The following performance standards shall apply to all new construction and to replacement of fixtures.

- A. The flow rate of toilets shall not be greater than 1.6 gallons per flush. (US Energy Policy Act) Toilets with a flow rate equal to or less than 1.28 gallons per flush are encouraged, and rebate programs will not be issued for toilet replacement over the 1.28 gpf average recommended by LEED. (US Green Building Council Leadership in Energy and Environmental Design, as well as by EPA Water Sense)
- B. The flow rate of showerheads shall not exceed 2.5 gpm at 80 psi or 2.2 gpm at 60 psi (or 1.5)
- C. The flow rate of Kitchen Faucets shall not exceed 2.5 gpm at 80 psi, nor 2.2 gpm at 60 psi
- D. The flow rate of Bathroom Faucets shall not exceed 2.5 gpm at 80 psi, nor 2.2 gpm at 60 psi (1.5, 1.2, 1 also available and required in some places)
- E. The flow rate of Urinals shall not exceed 1 gpm (waterless urinals are also available and encouraged ?)
- F. Residential Dishwashers shall require no more than 7 gallons per load (? 6.5 by 2011, 6.25 by 2016, 6 by 2025 ?) (Oregon rebates 6.5 or less now) (*National Appliance Energy Conservation - Vickers 2001 - check ref- 4.5*)
- G. Commercial Dish Washers
 1. Pre-Rinse Spray Valves on new Commercial dishwashers shall have a flow rate of equal to or less than 1.6 gpm at 60 psi. (*Calif code Title 20 division 2 chapter 4 article 4 §1605.3*) (1.6 - 2.65 at 80 available per a different article)
 2. Ware Washing units shall have flow rates of less than 1 gallon per rack
- H. Residential Clothes Washers shall have a water factor of 8.5 or less, and use no more than 27 gallons per load. (*Old washers use 4d 32-59 gallons per load, current efficient washers can use 18-25 gallons per load*) (*Calif code 8.5 effective jan 1, 07*)
- I. Commercial Clothes Washers shall have a maximum water factor of 9.5 (*Effective in California code jan 1, 2007*)
- J. Cooling
 1. In accordance with §14.25A.040 of the Maui County Code, discharge of cooling system water to the public wastewater system is prohibited, except in cases where reclaimed water is used, or when cooling water is utilized in another on-site process.
 2. New water cooling systems must recirculate water. Installing a new non-recirculating (also known as single-pass or once-through) cooling system is prohibited.
 3. Commercial Ice makers shall either utilize air or if water is utilized, shall be equipped with re-circulating closed loop chilled water.
 4. Evaporative coolers and other cooling systems shall be maintained

- properly so as to prevent un-necessary overflow into drain lines.
- K. Process Water
1. All uses of water for cooling, irrigation, or commercial or industrial processes that exceed 20,000 gallons per day shall be separately metered.
 2. New commercial car wash facilities shall recirculate and reuse a minimum of seventy five percent of wash and rinse water.

14.03.063 Submetering multi-family and multi-use buildings

All new multifamily and multi-use commercial structures shall be constructed so as to provide for the measurement of water use in each unit through submeters (owned by the property owner) or individual meters (owned by the Utility).

14.03.070 Retrofit on Resale Provisions

A. Definitions

The following definitions are applicable to this section

Bathroom Alteration mean any alteration of or addition to a bathroom in any structure which would require a plumbing permit for replacement of a toilet.

Bathroom Alteration Retrofit Certificate means a certificate that certifies that any responsible person who has completed a bathroom alteration has replaced any existing plumbing fixture in the altered bathroom with a water-conserving plumbing fixture.

Change of Ownership means a transfer, sale, or exchange of the fee interest in any real property.

Existing Plumbing Fixture means the following:

- (1) any toilet manufactured to use more than 3.5 gallons of water per flush;
- (2) any urinal manufactured to use more than one gallon of water per flush;
- (3) any showerhead manufactured to have a flow capacity of more than 2.5 gallons of water per minute;
- (4) any faucet that emits more than 2.2 gallons of water per minute; or
- (5) any residential reverse osmosis system that does not have a shutoff valve.

Existing Structure means either of the following:

- (1) any structure served by the County of Maui and equipped with toilets manufactured to use more than 3.5 gallons of water per flush, or urinals manufactured to use more than 1 gallon of water per flush; or
- (2) any structure served by the County of Maui and equipped with showerheads that have a flow capacity of more than 2.5 gallons of water per minute, faucets that emit more than 2.2 gallons of water per minute, or residential reverse osmosis systems that do not have a shutoff valves.

Retrofit means to replace any existing plumbing fixture in an exiting structure with a water-conserving plumbing fixture.

Transfer of Responsibility to Retrofit Certificate means a certificate filed by a transferor of any existing structure before a change of ownership that certifies that the transferor and the transferee mutually agree that responsibility for compliance

with this Section is assumed by the transferee of the existing structure.

Ultra-Low Flush Toilet Rebate Program means a County-sponsored water conservation program that offers a financial incentive to water customers who replace a toilet that is manufactured to use more than 1.6 gallons of water per flush with a toilet manufactured to use no more than 1.6 gallons of water per flush.

Water Conservation Certificate means a certificate filed by a transferor or transferee of any structure or existing structure before a change of ownership that certifies any structure or existing structure is equipped or retrofitted only with water-conserving plumbing fixtures or toilets manufactured to use no more than 3.5 gallons of water per flush.

Water-Conserving Plumbing Fixture means:

- (1) any toilet manufactured to use no more than 1.6 gallons of water per flush, that meets performance standards established by American Society of Mechanical Engineers Standards A112.19.2-1990 and A112.19.6-1990;
- (2) any urinal manufactured to use no more than 1 gallon of water per flush, that meets performance standards established by American Society of Mechanical Engineers Standards A112.19.2-1990 and A112.19.6-1990;
- (3) any showerhead manufactured to have a flow capacity of no more than 2.5 gallons of water per minute;
- (4) any faucet that emits no more than 2.2 gallons of water per minute; or
- (5) any residential reverse osmosis system that has a shutoff valve.

B. Requirements for Retrofit upon Change of Ownership

1. Before a change of ownership, the transferor of any existing structure shall replace any existing plumbing fixture with a water-conserving plumbing fixture.
2. Before a change of ownership, the transferor and the transferee of any existing structure may agree to transfer responsibility for compliance with this section to the transferee. If the transferee assumes responsibility for retrofitting, the transferee shall complete the retrofit within at least 90 calendar days of the change of ownership.
3. The transferor and the transferee of any existing structure may agree to have compliance with this section included as a condition of escrow, have the responsibility for retrofitting assumed by the transferee, and have the retrofit paid for from the proceeds of the sale of the existing structure.
4. If the transferor and the transferee agree to have compliance with this section included as a condition of escrow, the escrow agent shall retain a sufficient sum of money, agreed upon by the transferor and the transferee, to be retained from the proceeds of the sale to complete theretrofit.
5. The transferee shall complete the retrofit within at least 90

calendardays of the close of escrow.

6. After the transferee has completed the retrofit, the transferee shall submit proof of completion of the retrofit to the escrow agent. The escrow agent may release the retained funds from the proceeds of the sale upon receiving reasonable, satisfactory proof of completion of the retrofit from the transferee.
7. The *Department of Water Supply / DSA* ? shall establish administrative regulations for the procedures to be followed by the transferor, the transferee, and the escrow agent for complying with this section.
8. The transferor of any existing structure shall not be required to retrofit when a change of ownership occurs as a result of the following.
9. A court order, including an order by a probate court in the administration of an estate;
 - a. A foreclosure or voluntary or involuntary bankruptcy;
 - b. The exercise of eminent domain;
 - c. The administration of a deceased person's estate, guardianship, conservatorship, or trust;
 - d. One title co-holder of real property transferring, selling, or exchanging with one or more other title co- holders;
 - e. A transfer, without consideration, from one family member to another family member; or
 - f. A decree of dissolution of marriage, a decree of legal separation, or from a property settlement agreement incidental to such a decree.

D. Retrofit upon Bathroom Alteration

Upon bathroom alteration, the responsible person shall replace any existing plumbing fixture in the bathroom being altered with a water-conserving plumbing fixture.

E. Retrofit Exemptions

An exemption to the provisions of this section may be granted if under the following conditions :

1. A water-conserving plumbing fixture would be installed in an existing structure that has been identified by a local, state, or federal government entity as an historical site, and an historically accurate water-conserving plumbing fixture is not available;
2. Installation of a water-conserving plumbing fixture would require modifications to plumbing system components located beneath a finished wall or surface; or
3. The unique configuration of a building drainage system or portions of a public sewer, or both, require a greater quantity of water to flush the system in a manner consistent with public health.

F. Self-verification

1. Before a change of ownership, the transferor and the transferee of any structure or any existing structure shall complete the following procedures:
 - a. The transferor shall sign a Water Conservation Certificate certifying that the transferor has complied with the requirements of this section or is exempt from retrofitting as defined in _ above
 - b. After signing the Water Conservation Certificate, the transferor shall forward the Water Conservation Certificate to the transferee for review and signature.
 - c. The transferee shall sign the Water Conservation Certificate, thereby acknowledging awareness and understanding of the requirements of this section.
 - d. After the transferee has signed the Water Conservation Certificate, the transferor shall file the Water Conservation Certificate with the Department of Water Supply.
 - e. If the structure or existing structure goes through escrow, the transferor also shall file a copy of the Water Conservation Certificate with the escrow agent before the close of escrow.
2. In the event the transferor and transferee of an existing structure agree that the transferee shall have responsibility for the retrofit upon change of ownership pursuant to this section, before the change of ownership, the transferor and the transferee shall complete the following procedures:
 - a. The transferor and the transferee shall sign a Transfer of Responsibility to Retrofit Certificate certifying that the transferee has assumed responsibility for the retrofit.
 - b. After the transferor and the transferee have signed the Transfer of Responsibility to Retrofit Certificate, the transferor shall file the Transfer of Responsibility to Retrofit Certificate with the Department of Water Supply.
 - c. If the existing structure goes through escrow, the transferor also shall file a copy of the Transfer of Responsibility to Retrofit Certificate with the escrow agent before the close of escrow.
 - d. Upon completing the retrofit, the transferee shall sign a Water Conservation Certificate certifying that the transferee has complied with the requirements of this section.
 - e. Within at least 30 calendar days of the completion of the retrofit, the transferee shall file the signed Water Conservation Certificate with the Department of Water Supply.

3. If the transferor and the transferee have agreed to have compliance with this section included as a condition of escrow, have the responsibility for retrofitting assumed by the transferee, and have the retrofit paid for from the proceeds of the sale of the existing structure, then the transferor and the transferee shall complete the following procedures:
 - a. The transferor and the transferee shall sign a Transfer of Responsibility to Retrofit Certificate certifying that the transferee has assumed responsibility for the retrofit.
 - b. After the transferor and the transferee have signed the Transfer of Responsibility to Retrofit Certificate, and before the close of escrow, the transferor shall file the Transfer of Responsibility to Retrofit Certificate with the Building Official and a copy thereof with the escrow agent.
 - c. Upon completing the retrofit, the transferee shall sign a Water Conservation Certificate certifying that the transferee has complied with the requirements of this division.
 - d. Within at least 30 calendar days of the completion of the retrofit, the transferee, or the escrow agent on the transferee's behalf, shall file the signed Water Conservation Certificate with the Building Official.
4. The transferor of any structure that is in compliance with the requirements of this division shall not be required to file a Water Conservation Certificate with the Building Official before a change of ownership if a Water Conservation Certificate has been filed with the Water Department / DSA ? by a previous owner of the structure.
5. Upon completing the retrofit of a bathroom, the responsible person shall complete the following procedures:
 - a. The responsible person shall sign a Bathroom Alteration Retrofit Certificate certifying that the responsible person has complied with the requirements of this section.
 - b. Within at least 30 calendar days following completion of any bathroom alteration, the responsible person shall file the signed Bathroom Alteration Retrofit Certificate with the Building Official.

F. Agent

Nothing in this division is intended to create any duty upon the agent of a transferor or a transferee of any structure or any existing structure, unless otherwise mutually agreed to in writing.

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- A. Commercial properties within 100' of R-1 distribution systems are required to provide for use of reclaimed water in irrigation as prescribed in chapter §20.30 of the Maui County Code.

Incorporate Other Existing Provisions & Guidelines - re: contingencies etc.?

Existing Rules:

§ 3-2(b) "Whenever, in the Director's opinion, special conservation measures are advisable in order to forestall water shortage and a consequent emergency, the Department may restrict the use of water by any reasonable method of control"

§ 3-10 (a)(3) "Water service may be discontinued after due notice and opportunity for hearing as provided for by Chapter 01 of the Hawaii Revised Statutes for reasons as follows.....

(3) Where negligent or wasteful use of water exists on any premises

§4 Control of Water Usage During Drought

Includes Sections on

Declaration and notification of drought

Measures to control water usage

Penalties for failure to comply

Iao Water Management Rule

Existing (non-rule) Upcountry Drought Provisions

Other notes

Title 10 Part 430 of the Code of Federal Regulations (CFR) requires residential clothes washers manufactured on or after January 1, 2004, to be 22 percent more energy-efficient than pre-2004 models and clothes washers manufactured on or after January 1, 2007, to be 35 percent more energy-efficient than pre-2004 models.

The Federal Energy Policy Act of 2005 also mandated similar energy efficiency standards for commercial clothes washers manufactured after January 1, 2007. These standards apply to washers typically found in multi-family housing laundry rooms and in Laundromats.

The new energy standards are also projected to produce significant water conservation savings. These savings are projected to occur without any action by the Utility.