Chapter 13.06

WATER EFFICIENT LANDSCAPE

Sections:

13.06.010 Title.

The Ordinance codified in this Chapter shall be known as the Water Efficient Landscape Ordinance. (Ord. 508 § 1 (part), 1992)

13.06.020 Purpose.

A. The City of Ripon City Council hereby finds as follows:

1. That the present limited water supply is subject to ever-increasing demands;

2. That the City's economic prosperity depends on continued adequate supplies of water;

3. That City policy promotes conservation and efficient use of water;

4. That landscaping provide recreation areas, clean the air and water, prevent erosion, offer fire protection, and replace ecosystems; and

5. That landscape design, installation, and maintenance should be water efficient.

B. Consistent with these findings, the purpose of this ordinance is to:

1. Promote the values and benefits of landscapes recognizing the need to utilize water and other resources as efficiently as possible;

2. Establish a structure for designing, installing, and maintaining water efficient landscapes in new projects; and

3. Establish provisions for water management practices and water waste prevention for established landscapes. (Ord 508 § 1 (part), 1992)

13.06.030 Definitions.

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

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

B. "Application rate" means the depth of water applied to a given area, usually measured in inches per hour.

C. "Automatic controller" means a mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.

D. "Backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

E. "Conversion factors" means to convert the amount of water applied in inches per acre to gallons per square foot divided by 0.62, to convert cubic foot of water to gallons per cubic foot multiply by 7.48.

F. "Emitter" means irrigation fittings that deliver water slowly from the system to the soil.

G. "Established landscape" means that roots from seedlings or potted plants have extended into the surrounding soil.

H. "Establishment period" means the first year after installing the plan in the landscape.

I. "ET adjustment factor" means a factor applied to reference evapotranspiration that makes adjustments for plant factors and irrigation efficiency.

For example, in a combined plant mix with a site-wide average of 0.5, and an irrigation efficiency of 0.625, the Adjustment Factor would be 0.5 divided by .625 or .8.

J. "Evapotranspiration" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.

K. "Flow rate" means the rate at which water flows through pipes and valves (gallons per minute or cubic feet per second).

L. "Hydrozone" means 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 my be

irrigated or non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a non-irrigated hydrozone.

M. "Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time.

N. "Irrigation efficiency" means 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.

O. "Landscape irrigation audit" means a process to perform site inspections, evaluate irrigation systems, and develop efficient irrigation schedules.

P. "Landscaped area" means 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. Water features are included in the calculation of the landscaped area.

Q. "Lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

R. "Main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.

S. "Maximum Water Allowance" means, for design purposes, the upper limit of annual water use for the established landscaped area based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscaped area.

T. "Mulch" means any material such as leaves, bark, straw or other materials left loose and applied to the soil surface to reduce evaporation.

U. "Operating pressure" means the pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.

V. "Overspray" means the water which is delivered beyond the landscaped area, wetting pavements, walks, structures, or other non-landscaped areas.

W. "Plant factor" means a factor that when multiplied by reference evapotranspiration, estimates the amount of water used by plants. For purposes of this ordinance, the average plant factor of low water using plants ranges from 0 to 0.3, for average water using plants the range is 0.4 to 0.6, and for high water using plants the range is 0.7 to 1.0.

X. "Rain sensing device" means a system which automatically shuts off the irrigation system when it detects rainfall.

Y. "Record drawing" or "as-builts" means a set of reproducible drawings including significant changes in the work made during construction.

Z. "Nonpotable water" means it does not meet potable standards, but is satisfactory for landscape irrigation. It may include water that does not meet drinking water standards or treated recyclable sewage water.

AA. "Reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants.

BB. "Run off" means water which is not absorbed by the soil or landscape to which it is applied and flows from the area. For example, run off may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when the topography is severely sloped.

CC. "Soil moisture sensing device" means a device that measures the amount of water in the soil.

DD. "Soil texture" means the classification of a soil based on the percentage of sand, silt, and clay in the soil.

EE. "Sprinkler head" means a device which sprays water through a nozzle.

FF. "Static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

GG. "Station" means an area served by one valve or by a set of valves that operate simultaneously.

HH. "Turf" means a surface layer of earth containing mowed grass and its roots.

II. "Usable precipitation" means the amount of precipitation that contributes to the water needs

of the plants. Irrigation scheduling should be adjusted to reflect usable precipitation. However, for purposes of calculating the maximum water allowance and estimating water use, usable precipitation is not to be included as a factor.

JJ. "Valve" means a device used to control the flow of water in the irrigation system.

KK. "Water conservation concept statement" means a one-page checklist and a narrative summary of the project as shown in Section 13.06.040 C.(1). (Ord. 508 § 1 (part), 1992)

13.06.040 Provisions for New or Rehabilitated Landscapes.

A. Applicability

(1) Except as provided in Section 13.06.040 A.(2) this section shall apply to:

a) All new and rehabilitated landscaping for public agency projects and private development projects including, but not limited to, industrial, commercial, and recreational projects; and

b) Developer-installed landscaping in single-family and multi-family projects.

(2) This section shall not apply to:

a) Homeowner-provided landscaping at single-family and multi-family projects;

b) Cemeteries;

c) Registered historical sites; or

d) Any project with a landscaped area for less than 2,500 square feet.

B. Landscape Documentation Package.

(1) A copy of the landscape documentation package conforming to this chapter shall be submitted to the City. The City shall review and approve the landscape documentation package.

(2) A copy of the landscape documentation package shall be provided to the property owner or site manager along with the record drawings and any other information normally forwarded to the property owner or site manager.

(3) A copy of the water conservation concept statement and the certificate of substantial completion shall be sent by the project manager to the City.

C. Elements to be contained in the Landscape Documentation Package.

(1) Water conservation concept statement: Each landscape documentation package, along with a narrative summary of the project, shall include a cover sheet, referred to as the water conservation concept statement to verify that the elements of the landscape documentation package have been completed.

(2) Calculation of the maximum water allowance;

a) A project's maximum water allowance shall be calculated using the following formula:

MNA = (ETo)(ETA)(CF)(LA) where
MNA = maximum water allowance in gallons per year
ETo = reference evapotranspiration in inches per year
ETA = ET adjustment factor
CF = conversion factor
LA = landscaped area in square feet

b) Portions of landscaped areas in public and private projects such as parks, playgrounds, sports fields, golf courses, or school yards where turf provides a playing surface or serves other recreational purposes may require water in addition to the maximum water allowance. A statement shall be included with the landscape design plan designating areas to be used for such purposes and specifying any needed amount of additional water above the maximum water allowance.

(3) Landscape design plan: A landscape design plan meeting the following requirements shall be submitted as part of the landscape documentation package.

a) Plant selection and grouping:

(i) Any plants may be used in the landscape, providing the estimated water use recommended does not exceed the maximum water allowance.

(ii) If possible, plants having similar water use should be grouped together in distinct hydrozones.

(iii) Plants should be selected appropriately based upon their adaptability to the climatic, geologic, and topographic conditions of the site. Protection and preservation of native species and natural areas is encouraged.

b) Water features.

(i) Recirculating water shall be used for decorative water features.

(ii) Pool and spa covers are encouraged.

c) Landscape design plan specifications: The landscape design plan shall be drawn on project base sheets at a scale that accurately and clearly identifies:

(i) Landscape materials, trees, shrubs, groundcover, turf, and other vegetation; planting symbols shall be clearly drawn and plants labeled by botanical name, common name, container size, spacing, and quantities of each group of plants indicated.

(ii) Property lines and street names.

(iii) Streets, driveways, walkways, and other paved or concrete areas.

(iv) Pools, ponds, water features, fences, and retaining walls.

(v) Existing and proposed buildings and structures including elevation, if applicable.

(vi) Natural features including, but not limited to, rock outcroppings, existing trees, and shrubs that will remain.

(vii) Tree staking, plant installation, soil preparation details, and any other applicable planting and installation details.

(viii) A calculation of the total landscaped area.

(ix) Designation of recreational areas.

(4) Irrigation design plan: An irrigation design plan meeting the following conditions shall be submitted as part of the landscape documentation package.

a) Irrigation design criteria:

(i) Runoff and overspray. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures. Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates, therefore minimizing runoff.

Special attention shall be given to avoid runoff on slopes and to avoid overspray in planting areas with a width less than ten feet, and in median strips.

(ii) Equipment.

Water meters. Separate landscape water meters shall be required for projects other than single family homes or any project with a landscaped area of less than 5,000 square feet.

Controllers. Automatic control systems shall be required for all irrigation systems and must be able to accommodate all aspects of the design as well as multiple water cycles.

Valves. For plant groups which require different water regimes or amounts of water, separate valves are required. Anti-drain (check) valves shall be installed at strategic points to minimize or prevent low-head drainage.

Sprinkler heads. Heads and emitters shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance.

Rain sensing devices. Rain sensing devices are required on all irrigation systems.

Soil moisture sensing devices. Soil moisture sensing devices are encouraged.

b) Nonpotable Water.

(i) A dual water system shall be installed to permit use of water that does not meet drinking water standards and future use of recycled water, unless a written exemption is granted by the City.

(ii) Irrigation systems shall make use of nonpotable water unless a written exemption has been granted by the City of Ripon stating that recycled water is not available and will not be available in the foreseeable future.

c) Irrigation design plan specifications.

The irrigation design plan shall be drawn on project base sheets. It should be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan described in Section 13.06.040 C.(3).

The irrigation design plan shall accurately and clearly identify:

(i) Location and size of separate water meters for the landscape, where required.

(ii) Location, type and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, soil moisture sensing devices, rain switches, quick couplers, and backflow prevention devices.

(iii) Static water pressure at the point of connection to the public water supply.

(iv) Flow rate in gallons-per-minute, application rate in inches-per-hour, and design operating pressure in pounds-per-square-inch for each station.

(v) Nonpotable irrigation systems as specified in Section 13.06.040 C.(4) b).

(5) Irrigation schedules.

a) Projected irrigation schedules to satisfy the conditions submitted as part of the landscape documentation package.

The estimated water use recommended for the established landscape shall not exceed the project's maximum water allowance.

b) An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas. The irrigation schedule may include usable precipitation as a factor, however, the estimated water use calculation shall not include usable precipitation.

c) The total amount of water for the project shall include water designated in the annual irrigation schedule, plus water needed for any water features, which shall be considered as a high water using hydrozone.

d) Recreational areas designated in the landscaped design plan shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the maximum water allowance because of high plant factors (but not due to irrigation inefficiency).

e) Whenever possible, irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management System (CIMIS) weather stations.

f) Whenever possible, landscape irrigation shall be scheduled between 11:00 p.m. and 10:00 a.m. to avoid irrigating during times of high wind or high temperature, and to assure compliance with the City's water conservation ordinance.

(6) Maintenance.

A regular maintenance schedule shall be included as part of the landscape documentation package.

(7) Landscape Irrigation Audits.

A schedule of landscape irrigation audits shall be submitted as part of the landscape documentation package.

a) Audits shall be in accordance with the State of California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook or as prescribed by the City Engineer.

(8) Grading Design Plan.

Grading design plans shall be submitted as part of the landscape documentation package.

a) They shall be drawn on project base sheets, separate but using the same format as the landscape design plan.

b) The grading design plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade.

(9) Soils.

a) Soil texture information shall be submitted as part of the landscape documentation package along with the projected infiltration rates.

b) A mulch where desirable shall be utilized in all planting areas.

(10) Certification.

a) Upon completing the installation of the landscaping and the irrigation system, an irrigation audit shall be conducted by personnel acceptable to the City Engineer prior to the final field observation.

b) A licensed landscape architect or contractor, certified irrigation designer, or other qualified professional in the opinion of the City Engineer shall conduct a final field observation and shall provide a certificate of substantial completion to the City. The certificate shall specifically include reference to the landscaping, automatic irrigation system, and the irrigation audit, along with a list of any observed deficiencies to the owner of record.

c) Certification shall be accomplished by completing a Certificate of Substantial Completion and delivering it to the City. A sample of such form to be used will be provided by the City.

D. Public Education.

(1) Publications.

a) The City shall provide information to owners of all new, single family residential homes regarding the design, installation, and maintenance of water efficient landscapes.

b) Information about the efficient use of landscape water shall be provided to water users throughout the community.

(2) Model Homes.

At least one model home in each project consisting of eight or more homes shall demonstrate via signs and information the principles of water efficient landscapes described in this ordinance.

a) Signs shall be used to identify the model as an example of a water efficient landscape and featuring elements such as hydrozones, irrigation equipment and others which contribute to the overall water efficient theme.

b) Information shall be provided about designing, installing and maintaining water efficient landscapes. (Ord. 508 § 1 (part), 1992)

13.06.050 Provisions for Existing Landscapes.

A. Water management.

(1) All existing landscaped areas to which the City provides water that are one acre or more, including green belts, common areas, multi-family housing, schools, businesses, parks, cemetery, and publicly owned landscapes shall have a landscape irrigation audit at least every five years.

(2) If the project's water bills indicate that they are using less than or equal to the maximum water allowance for that project site, an audit shall not be required.

(3) Recognition of projects that stay within the maximum water allowance is encouraged.

B. Water Waste Prevention.

(1) The City of Ripon, as a water purveyor, shall prevent water waste in areas where they provide water.

(2) Run off, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures shall be prohibited. (Ord. 508 § 1 (part) 1992)

13.06.060 Reference evapotranspiration.

The following numbers are given in inches, based on historical data, extrapolated from 12-month normal year ETo maps and U.C. publication 21426 for the closest area to the City of Ripon. (Ord. 508 § 1 (part), 1992)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. ETo
1.5	1.5	3.0	4.7	6.4	7.6	8.1	6.8	5.3	3.3	1.4	0.6	50.1