

2009



Inland Empire Landscape Alliance

January 2009

Chino Basin Water Efficient
Landscape Ordinance

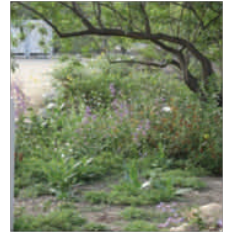


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Inland Empire Landscape Alliance Technical Committee's 2009 Chino Basin Water Efficient Landscape Ordinance

Each member of the Inland Empire Landscape Alliance has recognized the importance of water efficiency as a critical component of providing reliable water supplies to our communities. With approximately 60% of all residential water use within the Chino Basin currently used for outdoor irrigation and drought conditions becoming critical across the state, adopting policies that encourage efficient outside water use is of paramount importance.

Recognizing the need for outdoor water use efficiency, several local city council members suggested that the cities and water agencies serving the Chino Basin would benefit from the formation of a voluntary collaborative working group, in which landscaping policies could be reviewed and implementation coordinated. IEUA staff took the lead and developed the Inland Empire Landscape Alliance (IELA) in December 2006. The IELA has spent the past two years working with local agencies to evaluate existing landscape policies and to provide information about all aspects of landscape water efficiency, through a series of educational newsletters, workshops and tours focused on plant palettes, irrigation materials and techniques, low impact development practices, and measures that cities are currently implementing within their communities to be wise water stewards.

When, in February 2008 the Department of Water Resources released a "Model Water Efficient Landscape Ordinance" which every city in the State of California must either adopt, or be in compliance with through their own ordinance by January 2010 as mandated in AB1881 (Laird, 2006), the IELA came together to evaluate and comment on the ordinance. Members found the February 2008 DWR Model Ordinance to be prescriptive, cumbersome, expensive and unwieldy to implement. As a result, the IELA formed a Technical Committee to generate a regional model ordinance with the goal of incorporating the requirements of AB1881, creating regional consistency, and actively promoting the best interest of the region.

The resulting ordinance has successfully met these goals. On behalf of the Inland Empire Landscape Alliance Technical Committee I am proud to present the "Chino Basin Water Efficient Landscape Ordinance".

Sincerely,

Richard W. Atwater
Chief Executive Officer/General Manager
Inland Empire Utilities Agency



ORDINANCE

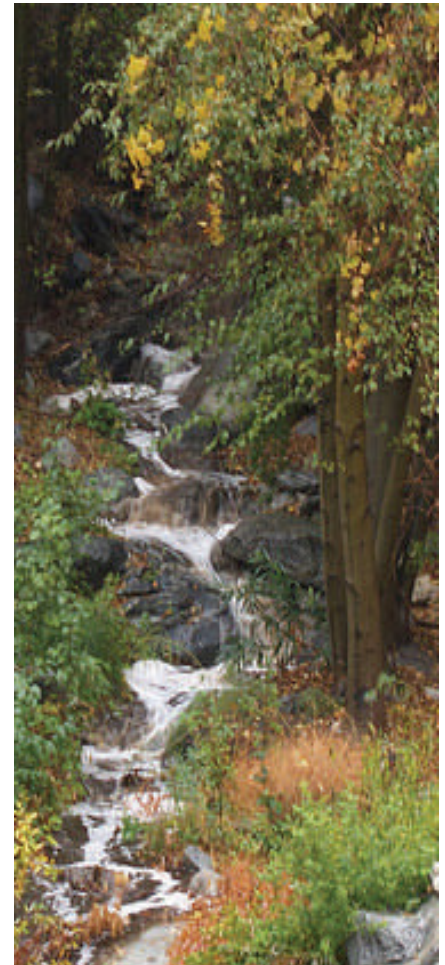
Section 1. SHORT TITLE. This Ordinance shall be known as the “Chino Basin Water Efficient Landscape Ordinance”.

Section 2. PURPOSE AND INTENT. The purpose of the Chino Basin Water Efficient Landscape Ordinance is:

- A. That this Ordinance be at least as effective in conserving water as the model ordinance adopted pursuant to Government Code §65595;
- B. To assure beneficial, efficient, and responsible use of water resources for all customers/users within the Chino Basin;
- C. To retain the land’s natural hydrological role within the Santa Ana Watershed and promote the infiltration of surface water into the groundwater in the Chino Basin;
- D. To acknowledge that landscape water use accounts for more than 60% of all domestic water use in the Chino Basin;
- E. To recognize that landscapes enhance the aesthetic appearance of developments and communities;
- F. To encourage the appropriate design, installation, maintenance, and management of landscapes so that water demand can be decreased, runoff can be retained, and flooding can be reduced without a decline in the quality or quantity of landscapes;
- G. To preserve existing natural vegetation and the incorporation of native plants, plant communities and ecosystems into landscape design, where possible;
- H. To promote and encourage the use of low water use plants;
- I. To minimize the use of cool season turf;
- J. To promote the conservation of potable water by maximizing the use of recycled water and other water conserving technology for appropriate applications.
- K. To promote public education about water conservation and efficient water management;
- L. To reduce or eliminate water waste.

Section 2- Purpose & Intent

- Be as effective as the DWR Model Ordinance
- To use water wisely and prevent water waste through landscape design elements



Section 3- Applicability

- 2,500 square-foot public/ developer installed landscape projects requiring a permit
- 5,000 square-foot homeowner installed landscape projects requiring a permit



Section 3. APPLICABILITY.

- A. After January 1, 2010, this ordinance shall apply to all of the following landscape projects:
- i. new construction and rehabilitated landscapes for public agency projects and private development projects with a total project net landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;
 - ii. new construction and rehabilitated landscapes which are developer-installed residential projects with a total project net landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;
 - iii. new construction which are homeowner-installed residential projects with a total project net landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check, or design review;
 - iv. existing landscapes that are one acre or more with a dedicated or mixed use water meter are limited to preparing a water efficient landscape worksheet according to the specifications for existing landscapes in the Landscape Documentation package.
 - v. recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries shall prepare a water efficient landscape worksheet, landscape and irrigation maintenance schedule, and irrigation audit, survey and water use analysis. Existing cemeteries are limited to preparing a water efficient landscape worksheet according to the specifications for existing landscapes in the Landscape Documentation package.
 - vi. Special Landscaped Areas, such as areas dedicated to edible plants, irrigated with recycled water, or dedicated to active play, shall prepare a water efficient landscape worksheet and landscape documentation package according to the specifications for Special Landscaped Areas.
- B. This ordinance does not apply to:
- i. registered local, state or federal historical sites;
 - ii. ecological restoration projects that do not require a permanent irrigation system;

- iii. mined-land reclamation projects that do not require a permanent irrigation system; or
- iv. botanical gardens and arboretums open to the public.

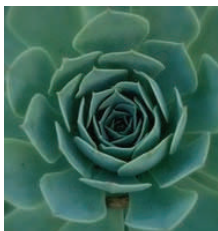
Section 4. LANDSCAPE DESIGN and PLANT REQUIREMENTS.

A landscape documentation package prepared by a licensed landscape architect shall include the following landscape design criteria:

- A. Plant Selection and Grouping.
 - i. Any plant may be used in the landscape, providing the EAWU (estimated annual applied water use) does not exceed the MAWA (maximum annual applied water allowance) and that the plants meet the specifications set forth in (ii), (iii) and (iv).
 - ii. Plants having similar water needs shall be grouped together in distinct hydrozones.
 - iii. Plants shall be selected appropriately based upon their adaptability to the climate, geologic, and topographical conditions of the site. Protection and preservation of existing native species and natural areas is encouraged. The planting of appropriate trees is encouraged.
 - iv. Minimize the use of turf. Turf areas shall be used wisely in response to functional needs and shall not exceed the MAWA (maximum annual applied water allowance). Where turf is installed the use of warm season turf is strongly encouraged.
 - v. Fire prevention needs shall be addressed in areas that are fire prone. Design should be consistent with regulations from the fire department.
 - vi. Invasive species of plants should be avoided especially near parks, buffers, greenbelts, water bodies, and open spaces because of their potential to cause harm in sensitive areas.
 - vii. Encourage the appropriate use of mulch within developed landscapes to retain moisture.
- B. Water Features
 - i. Recirculating water systems shall be used for decorative water features.
 - ii. Where available, recycled water shall be used as the source for water features (excluding swimming pools and spas).
 - iii. The surface area of a water feature will be included in the Maximum Applied Water Allowance (MAWA) calculation with the evaporation rate equivalent to that of a high water use plant.

Section 4- Landscape Design & Plant Requirements

- Set a water budget for each landscape and select plant materials that stay within the water budget
- Minimize the use of turf-grasses
- Promote the use of California friendly® plants



Section 5- Irrigation Requirements

- Incorporate efficient irrigation design into the landscape design so that the landscape remains within budget
- Install a dedicated landscape meter for landscaped areas over 5,000 square-feet
- Mandates the installation of a smart irrigation controller which can automatically adjust irrigation scheduling based on weather

Section 5. IRRIGATION REQUIREMENTS.

- A. All irrigation systems shall be designed to prevent runoff, over-spray, low head drainage and other similar conditions. Soil types and infiltration rates shall be considered when designing irrigation systems. Irrigation systems shall be designed, constructed, managed, and maintained to achieve as high an overall efficiency as possible.
- B. Dedicated (separate) landscape water meters shall be installed for all projects greater than 5,000 square feet, except for single family residences (Authority Cited: Statutes of 2006, AB 1881, Chapter 559, Article 44.5, Section 535). Dedicated landscape water meters are highly recommended on landscape areas less than 5,000 square feet to facilitate water management.
- C. All irrigation systems shall include:
 - i. A SMART irrigation controller, or other equivalent technology which automatically adjusts the frequency and/or duration of irrigation events in response to changing weather conditions shall be required. The planting areas shall be grouped and irrigated in relation to hydrozones based on similarity of water requirements (i.e. turf separate from shrub and groundcover, full sun exposure areas separate from shade areas; top of slope separate from toe of slope);
 - ii. Anti-drain check valves shall be installed to prevent low-head drainage in sprinkler heads;
 - iii. A pressure regulator when the static water pressure exceeds the maximum recommended operating pressure of the irrigation system; and,
 - iv. A rain sensor with an automatic rain shut-off feature shall be required.





Section 6. SOIL AND GRADING REQUIREMENTS.

- A. Soil testing shall be performed after mass grading, prior to landscape installation to ensure the selection of appropriate plant material that is suitable for the site, and reported in a soil management plan. The soil management plan shall include:
 - i. determination of soil texture, indicating the available water holding capacity;
 - ii. an approximate soil infiltration rate (either) measured or derived from soil texture/infiltration rate tables. A range of infiltration rates shall be noted where appropriate;
 - iii. measure of pH and total soluble salts; and,
 - iv. recommended amendments.
- B. Grading on site shall be designed to minimize unnecessary soil compaction, erosion and water waste. Grading plans must satisfy the city/county grading ordinances and be submitted as part of the landscape documentation package.

Section 6- Soil Requirements

- Requires soil testing so that it can be taken into account when selecting plant material and setting irrigation run-times
- Minimization of compaction and grading to encourage water infiltration

Section 7- Implementation, Compliance & Enforcement

- Designed to closely follow the cities' current permitting procedures
- Projects must submit a completed Landscape Documentation Packages
 - simple concept drawing of plant & irrigation design
 - includes a plant list , soil plan, and irrigation schedule
 - construction "as-built" drawings reviewed and signed by a landscape architect

Section 7. IMPLEMENTATION.

- A. Applicants subject to the requirements of this Ordinance shall submit a complete Landscape Documentation Package to the Administrator. The Application may be submitted in two parts: A Landscape Concept Plan, which is submitted with a discretionary permit application or when otherwise required by the local agency, and Landscape Construction Drawings, submitted as a ministerial application. All applications and plans shall conform to the plant, irrigation, and water budget formula requirements set forth in this ordinance and the Landscape Documentation Package.
- i. Landscape Concept Plan shall include:
- a) design statement, irrigation notes, planting notes and a conceptual plant palette identifying proposed hydrozones;
 - b) MAWA calculation for the landscape project area.

ii. Landscape Construction Drawings

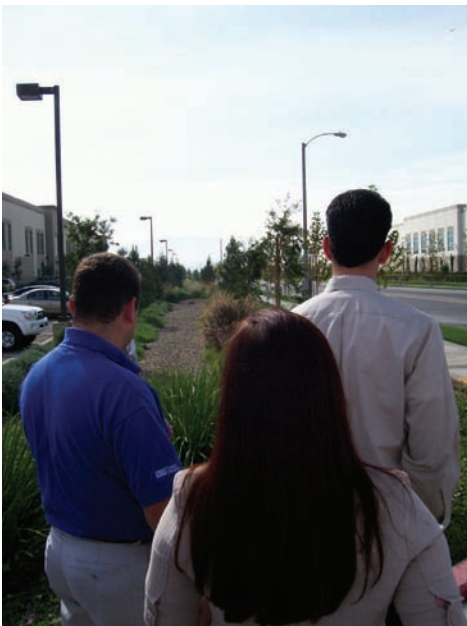
All applications subject to the requirements of this ordinance shall include landscape construction drawings that comply with the design standards and specifications contained in the Ordinance. The construction drawings shall be in compliance with the landscape concept plan.

All landscape construction drawings shall include an irrigation plan, a planting and soils plan and a water management plan with detailed notes and legends necessary for a complete landscape plan review.

If the Construction Drawings differ significantly from the Landscape Concept Plan (at the determined by the Administrator) the Applicant must resubmit an overall water budget calculation in accordance with the Landscape Documentation Package.

a) Irrigation Plan

The irrigation plan shall be a separate document from the planting plan. The irrigation plan shall be prepared in accordance with the requirements of the Ordinance and include pressure calculations and the location, installation details, and specifications of control valves, irrigation heads, piping, irrigation controllers, and power supply.



b) Planting Plan & Soils Plan

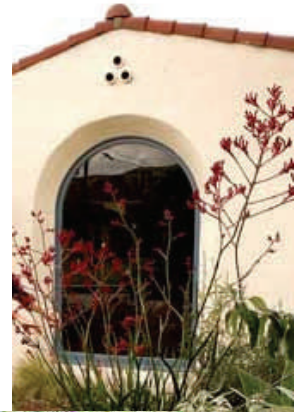
The planting plan shall include, but not be limited to:

1. A description of any existing plant material to be retained or removed.
2. A plan showing the planting areas and hydrozones, plant spacing, plant location and size, natural features, water features and all paved areas.
3. A legend listing the common and botanical plant names and total quantities by container size and species.
4. A description of the seed mixes with application rates and relevant germination specifications.
5. Soil management plan, including the soil test results and recommendations.
6. The grading plan shall be submitted for reference.

c) Water Management Plan

A Water Management Plan shall be prepared in accordance with the requirements of the Ordinance. The Plan shall include:

1. An introduction and statement of site conditions as described above, or a landscape concept plan.
2. Identification of the party(ies) responsible for implementation of the Water Management Plan.
3. The anticipated water requirements in inches per year, and water budget for the various hydrozones identified in the landscape concept plan to include calculations demonstrating an overall water budget that requires no more irrigation than the 0.7 of the ET adjustment factor.
4. A description of the water delivery systems, including the type of irrigation system to be used; water conservation methods to be applied, and precipitation rates for each hydrozone.
5. Seasonal irrigation water schedules or procedures for programming of proposed SMART controllers.





Section 7- Implementation, Compliance & Enforcement (continued)

- A certificate of completion must be submitted by the applicant to the local agencies designated Administrator or designee prior to issuing a certificate of occupancy (consistent with current plan check procedures)
- Administrator may inspect projects before, during, and immediately after installation to verify that project is in compliance
- A copy of the completed packet will be given to the water department/agency. If the site is found to go over their water budget, they will be subject to a water audit

6. A maintenance plan for the ongoing operation and maintenance of the irrigation system.
7. All applications for model homes shall include the nature of public information documents and signage that will be placed at model homes describing water conservation principles used in the landscaping for the model home.

B COMPLIANCE/ENFORCEMENT

The Administrator or designee shall have the duty and authority to administer and enforce this ordinance.

- i. Prior to issuance of a building permit for a project subject to this Ordinance, or as otherwise specified in the conditions of approval for a project must go through the following review and approval process:
 - a) Prior to the issuance of a permit, a complete landscape documentation package prepared by an independent licensed landscape architect shall be submitted to the Administrator for review and approval. The licensed landscape architect shall ensure that all components of the package adhere to the requirements of this Ordinance. Any documentation packages submitted without the signature of a licensed landscape architect shall not be accepted for review.
 - ii. Prior to issuance of a certificate of occupancy or final inspection for a project subject to this ordinance, a Certificate of Completion shall be submitted to the Administrator certifying that the landscaping has been completed in accordance with the approved Planting and Irrigation Plans for the project. The Certificate of Completion shall be signed by a licensed landscape architect and shall indicate that:
 - a) The landscaping has been installed in conformance with the approved Planting and Irrigation Plans;
 - b) The smart irrigation controller has been set according to the irrigation schedule;
 - c) The irrigation system has been adjusted to maximize irrigation efficiency and eliminate overspray and runoff; and

- d) A copy of the irrigation schedule has been given to the property owner.
- iii. Upon notice of the Applicant, the Administrator shall have the right to enter the project site to conduct inspections for the purpose of enforcing this Ordinance before, during and immediately after installation of the landscaping.
- iv. A copy of the completed Landscape Documentation Package shall be given to the appropriate water managing department/agency. If the property is found to be in excess of their established MAWA, the property shall be subject to a landscape water audit.

Section 8- Recycled Water

- Recycled water shall be used when available

Section 8. RECYCLED WATER

- A The installation of recycled water irrigation systems (i.e., dual distribution systems) shall be required to allow for the current and future use of recycled water, unless a written exemption has been granted stating that recycled water will not be available in the foreseeable future.
- B Irrigation systems shall make use of recycled water unless a written exemption has been granted stating that recycled water meeting all public health codes and standards is not available and will not be available in the foreseeable future.
- C The recycled water irrigation systems shall be designed and operated in accordance with all local agency and State codes.



Section 9. STORMWATER MANAGEMENT

- A Stormwater management combines practices to minimize runoff and water waste to recharge groundwater, and to improve water quality. Implementing stormwater best management practices into the landscape, irrigation, and grading design plans to minimize runoff, and increase retention and infiltration are highly recommended onsite.
- B Project applicants shall refer to the local agency or Regional Water Quality Control Board for information on any stormwater ordinances and stormwater management plans.

Section 9- Storm water Management

- Storm water management BMPs are highly

Parking lot drains into landscape strip



Rain from the roof of this commercial structure drains into the plant beds below.





Glossary of Terms



"Administrator"	person at the local agency who has the authority to approve a permit, plan check, and design review for a project.
"amendments"	any material added to a soil to improve its physical properties, such as water retention, permeability, water infiltration, and drainage.
"anti-drain check valve"	a valve located under a sprinkler head to hold water in the system to prevent drainage from the lower elevation sprinkler heads when the system is off
"applicant"	Any person required to submit a Landscape Design Application. Applicant may include the property owner or an agent of the owner.
"applicant"	means the individual or entity submitting a Landscape Documentation Package required under Section 492.5, to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his/her designee.
"application rate"	means the depth of water applied to a given area, measured in inches per minute, or inches per hour, or gallons per hour.
"applied water"	the portion of water supplied by the irrigation system to the landscape.
"automatic rain shut-off feature"	a system which a component which automatically suspends the irrigation system event when it rains.
"botanical gardens and arboretums"	gardens in which a variety of plants are grown for scientific and educational purposes.
"certified landscape irrigation auditor"	a person certified to perform landscape irrigation audits by an accredited educational institution or a professional trade organization.
"control valve"	a device used to control the flow of water in the irrigation system. It may also mean all of the sprinklers or emitters in a line controlled by the valve.
"controller"	an automatic timing device used to remotely control valves or heads to set an irrigation schedule. A weather-based controller is a controller that uses evapotranspiration or weather data. A self-adjusting irrigation controller is a controller that uses sensor data (i.e., soil moisture sensor).

GLOSSARY

"developer"	A landowner or owner's agent responsible for the development of land. Does not include homeowners or landlords of single-family homes.
"discretionary permit"	any permit requiring a decision making body to exercise judgment prior to its approval, conditional approval, or disapproval.
"ecological restoration project"	a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
"Estimated Annual Applied Water Use" or "EAWU"	the portion of the Estimated Total Water Use that is derived from applied water (see draft documentation package for formula/calculation). The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance.
"hydrozone"	a section or zone 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.
"infiltration rate"	the rate of water entry into the soil expressed as a depth of water per unit of time (i.e., inches per hour).
"installation application"	Application to the local jurisdiction for new landscaping or re-landscaping which may include a landscape concept plan and/or landscape construction drawings. The portion of the application submitted with a discretionary permit application will include a landscape concept plan. The ministerial portion of the application will include landscape construction drawings.
"invasive species"	non indigenous species that adversely affect the habitats they invade economically, environmentally, or ecologically
"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 0.71.
"irrigation system"	The network of piping, valves and irrigation heads.
"landscape architect"	a person licensed to practice landscape architecture in this state pursuant to Chapter 3.5 (commencing with Section 5615) of Division 3 of the Business and Professions Code.

"landscape concept plan"	the portion of a landscape documentation package that includes a design statement, irrigation notes, planting notes, the plant palette, and conforms with the requirements of this ordinance. See draft documentation package for a sample landscape documentation package.
"landscape construction drawings"	the portion of a landscape documentation package that includes the irrigation plan, plant and soils plan, water amangement plan, and conforms with the requirements of this ordinance. See draft documentation package for a sample landscape documentation package.
"landscape documentation package" or "documentation package"	the complete packet of documents required under Sections 4, 5, and 6 to be submitted to the local agency. Documentation packages include the landscape concept plan and landscape construction drawings (irrigation plan, plant and soils plan, water management plan). See draft documentation package for a sample.
"landscape water audit"	an in depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. Audits include, but are not limited to: inspection, system tune-up, system test with distribution uniformity and verification of minimal overspray or run off that causes overland flow, preparation of an irrigation schedule
"local agency"	the city or county, including a charter city or charter county, that is responsible for adopting and implementing the ordinance. A local agency is the entity responsible for the approval of a permit, plan check, and design review for a project
"low-head drainage"	drainage from a sprinkler that is caused by water flowing down an irrigation system from a higher level of elevation
"mulch"	Any organic material such as leaves, bark, or inorganic material such as pebbles, stones, gravel, decorative sand or decomposed granite left loose and applied to the soil surface to reduce evaporation.
"operating pressure"	the pressure at which an irrigation system of sprinklers is designed by the manufacturer to operate, usually indicated at the base of a sprinkler.
"overspray"	The water that is delivered beyond the landscaped areas by the irrigation system onto pavements, walks, structures or other non-landscaped areas
"planting plan"	plan submitted with the construction drawings indicating a list and quantity of plants

GLOSSARY

"potable water"	water meant for human consumption that is treated to legal standards for human consumption.
"pressure regulator"	a device used in sprinkler systems for radius and high pressure control.
"project net landscape area," "landscaped area," or "landscape project area"	means all of the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, side-walks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).
"rain sensor"	a system component which detects rainfall and automatically overrides the irrigation system during rain events.
"recycled water"	Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.
"rehabilitated landscapes"	any re-landscaping project that requires a permit, plan check, or design review and meets the requirements of Section 2.
"runoff"	water that is not absorbed by the soil or landscape to which it is applied and flows from the area.
"SMART irrigation controller"	weather-based or soil moisture-based irrigation controller that monitors and uses information about the environmental conditions at a specific location and landscape to automatically adjust watering schedules.
"Soil Management Plan"	Plan submitted with the construction drawings indicating results from soil tests and recommended soil amendments
"Soil test"	test done by soil test lab that indicates at minimum soil texture, water holding capacity, pH, and soluble salts
"soil type"	the classification of soil based on the percentage of its composition of sand, silt, and clay
"special landscape area"	means an area of the landscape dedicated to edible plants, areas irrigated with recycled water, and areas dedicated to active play such as parks, sports fields, golf courses, where turf provides a playing surface.
"sprinkler head"	a device which delivers water through a nozzle.

"static water pressure"	the pipeline or municipal water supply pressure when water is not flowing.
"turf"	a surface layer of earth containing mowed grass or grass-like sedge with its roots. a groundcover surface of mowed grass or grass-like sedge. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are common cool-season turf. Bermuda grass, Kikuyu grass, Seashore Paspalum, St. Augustine grass, Zoysia grass, Carex pansa, and Buffalo grass are common warm-season turf.
"Water Efficient Landscape Worksheet"	worksheet which calculates a site's water budget. See Appendix draft documentation package for sample
"water feature"	any water applied to the landscape for non-irrigation, decorative purposes. Fountains, streams, ponds, lakes, and swimming pools are considered water features.
"Water Management Plan"	plan submitted with the construction drawings as part of the landscape documentation package.
"water schedules"	schedule of irrigation times throughout a given year
"water-conserving Landscape Design"	a landscape design developed to conserve water

Draft Landscape Documentation Packet





San Bernardino County

Land Use Services Department, Current Planning Division

San Bernardino County Government Center,
385 N. Arrowhead Ave., San Bernardino, CA 92415-0182
15456 W. Sage Street, Victorville, CA 92392
San Bernardino Office – (909) 387-4131 Victorville Office – (760) 843-4340
Fax (909) 387-3249 Fax (760) 843-4338



LANDSCAPE PLANS REVIEW FOR CUSTOM SINGLE FAMILY RESIDENCES INFORMATION SHEET AND APPLICATION

Some development projects that are processed by the Current Planning Division using the average cost (set) fee system require additional review for compliance with Conditions of Approval or provisions of the Development Code prior to project construction or implementation. This application and fee must be submitted in these cases to initiate and complete the required review process.

This is an administrative review process conducted by staff of the Planning Division.

Fee: Submit a money order or check made payable to "San Bernardino County" in the amount of **\$250.00**. (L645)

Application: Submit one copy of the completed application to the Current Planning Division. Use the application that is on the backside of this information sheet.

Documentation: Submit all documentation available providing proof of compliance with the Conditions of Approval or with provisions/requirements of the Development Code (i.e. water purveyor service letter, sewer letter, etc.).

Included in the documentation package are the following forms:

1. Application
2. Instruction sheet for designing acceptable plans
3. Glossary of terms
4. Sample Front Yard (Street Side) Landscape Plan
5. Front Yard Landscape Planting Plan
6. Front Yard (Street Side) Landscape Plan Template
7. Planning Grid
8. Sample Irrigation System Plan
9. Irrigation System Plan Template
10. Irrigation Schedule/Daily Run Times (2)
11. Irrigation System Tune-Up Checklist
12. Recommended Plant Lists
 - a. Valley
 - b. Desert
 - c. Mountain
 - i. Fire-Wise Landscaping Options
13. Certificate of Substantial Completion

**LANDSCAPE PLANS REVIEW FOR
AVERAGE COST APPLICATIONS
AND
CUSTOM SINGLE FAMILY RESIDENCES**

APPLICATION

Complete all sections of this form. If you believe that an item does not apply to your project, mark it "N/A." Do not leave any blank spaces.

Section 1 – APPLICATION INFORMATION

Owner's Name: _____

Address: _____

City: _____ Zip: _____

Phone: _____ FAX No.: _____ E-Mail: _____

Original Applicant Name: _____

Engineer/Representative Name: _____

Address: _____

City: _____ Zip: _____

Phone: _____ FAX No.: _____ E-Mail: _____

Section 2 - PROJECT DESCRIPTION

APN: _____

Parcel Map Number: _____

Community: _____

Water Purveyor: _____

Other: _____

Section 3 – SIGNATURE

I certify under penalty of perjury that I am the (check one)

☐ Legal Owner (all individuals must sign as their names appear on the deed to the land), **OR**

☐ Owner's legal Agent, and that the foregoing is true and correct. (Please submit an authorization letter from legal owners).

Signature _____ Date _____ Signature _____ Date _____

To be completed by County Staff: Filing Date: _____ Project No.: _____ JCS Project No.: _____

**County of San Bernardino
Landscape Plan Instruction Sheet and Checklist**

1. ☐ **Gather Design Ideas**
 - a. Look at our list of approved low water use plants as a beginning point of reference.
 - b. Take the interactive list to the nursery with you when you look for potential plants.
 - c. Look at Local Water Districts Landscape Ordinance
2. ☐ **Develop your Plan**
 - a. Measure your property
 - b. Describe the setting:
 - i. Size, slope, soil type, sun, climate, views, etc.
 - ii. What plants exist, Joshua trees, scrub oak, etc.
 - iii. Take pictures
 - c. Use the example included in the packet; i.e., Example Front Yard Landscape Plan.
 - d. Remember, *Water Resource Efficiency* should be your main goal.
3. ☐ **Develop your Design**
 - a. Develop your design with the least impact to the land and to water resources.
 - b. Minimize grading/clearing of native vegetation.
 - c. How will you use your landscape? What purpose will it serve you?
 - d. Minimize Turf areas to the amounts of lawn you will actually use, such as that used for play or recreation.
 - e. Instead of turf, substitute Hardscape.
4. ☐ **Start Making Decisions About What You Would Like to Do:**
 - a. Swimming pools/spa surface area should be included in the maximum allowable turf area calculations. The combined area of turf and open water may not exceed 1,000 square feet.
 - b. What existing plants will you keep in place?
 - c. What existing plants will you relocate/transplant on site?
 - d. What existing plants will you eliminate and why?
 - e. What type of constant ground cover will you use?
 - f. Plan your design to retain as much water on the site as possible.
 - g. Think about permeable products, such as porous concrete, interlocking pavers, flagstone, which allow water to infiltrate into the ground versus running off.
 - h. Think about using light colors that reflect heat versus dark colors that absorb heat.
5. ☐ **Draw in Your Infrastructure**
 - a. Irrigation System
 - i. See Example Irrigation Plan
 - ii. Consider using a Smart Irrigation Controller, if an irrigation system is needed.
 - iii. Design the irrigation system to prevent runoff, over-spray, low-head drainage, etc.
 - iv. Think about long term maintenance issues.
 1. See Landscape Maintenance Tips
 - b. Where will you place Electrical Lines for night-scape and out door kitchen?

- c. Where will you place Gas Lines for ambience fire heater and out door kitchen?
 - d. Plan placement and impact of your Hardscape structures such as decks, fences, trellises, arbors, retaining walls, walkways, edging, and outdoor lighting.
6. ☐ **Draw in Your Plant Selection**
- a. Review the County's Approved Plant List for the:
 - i. Desert Region
 - ii. Mountain Region
 - iii. Valley Region
 - b. Choose plant species from the approved list (Exceptions will be granted by the Deputy Director of Advance Planning)
 - c. Think about plant size when full grown
 - d. Think about planting trees for:
 - i. Erosion control
 - ii. Carbon (CO₂) Sequestering benefits
 - iii. Shade and cooling effects
 - 1. Deciduous Trees and shrubs planted along the South Side of your home will shade the house periods of intense heat and when they drop their leaves, will warm the home during cooler seasons.
 - e. Think about Fire Safety
 - i. See Fire-wise landscaping tips
 - f. Build in colors/textures
 - g. Do you need plant material that screens for privacy from neighbors, streets, or unwanted views?
 - h. Consider Microclimates/hydrozones/seasons
 - i. For example: Arbors with vines can eventually alter the microclimate of plants around the arbor.
 - ii. Group plants together by the amount of water they use.
7. ☐ **Submit your Landscape Plan using the Template provided.**
8. ☐ **Submit your Irrigation Plan using the Template provided.**
9. ☐ **Submit your Planting Plan using the Form provided.**
10. ☐ **Submit Approved Regional Plant Checklist with selected plants.**
11. ☐ **Prepare and Submit 2 Irrigation Schedules:**
- a. One for the first six months of the establishment period
 - b. One for the mature landscape
12. ☐ **Look for your Approved Landscaping Plan Before Installing Landscape**
13. ☐ **Once Landscape is installed: Complete and Submit Certificate of Substantial Completion**

Glossary of Terms (to be added)

EXAMPLE FRONT YARD (STREET SIDE) LANDSCAPE PLAN

EXAMPLE FRONT YARD (STREET SIDE) LANDSCAPE PLAN

Right of Way

DRIVEWAY

WALKWAY

BUILDING SETBACK LINE

FRONT PROPERTY LINE

SIDEWALK

FACE OF CURB

STREET

25 ft. varies

Varies

maximum percentage allowed

JOB ADDRESS _____

OWNER _____

APN NO. _____

PERMIT NO. _____

Front Yard Area: xxxx Sq. Ft.

Pervious pavement area: xxx Sq. Ft.

Decomposed Granite: xxx Sq. Ft.

Turf Area: Calculated based on maximum percentage allowed

Irrigated plantings: xxx Sq. Ft.

Land Use Services Department
Current Planning Division

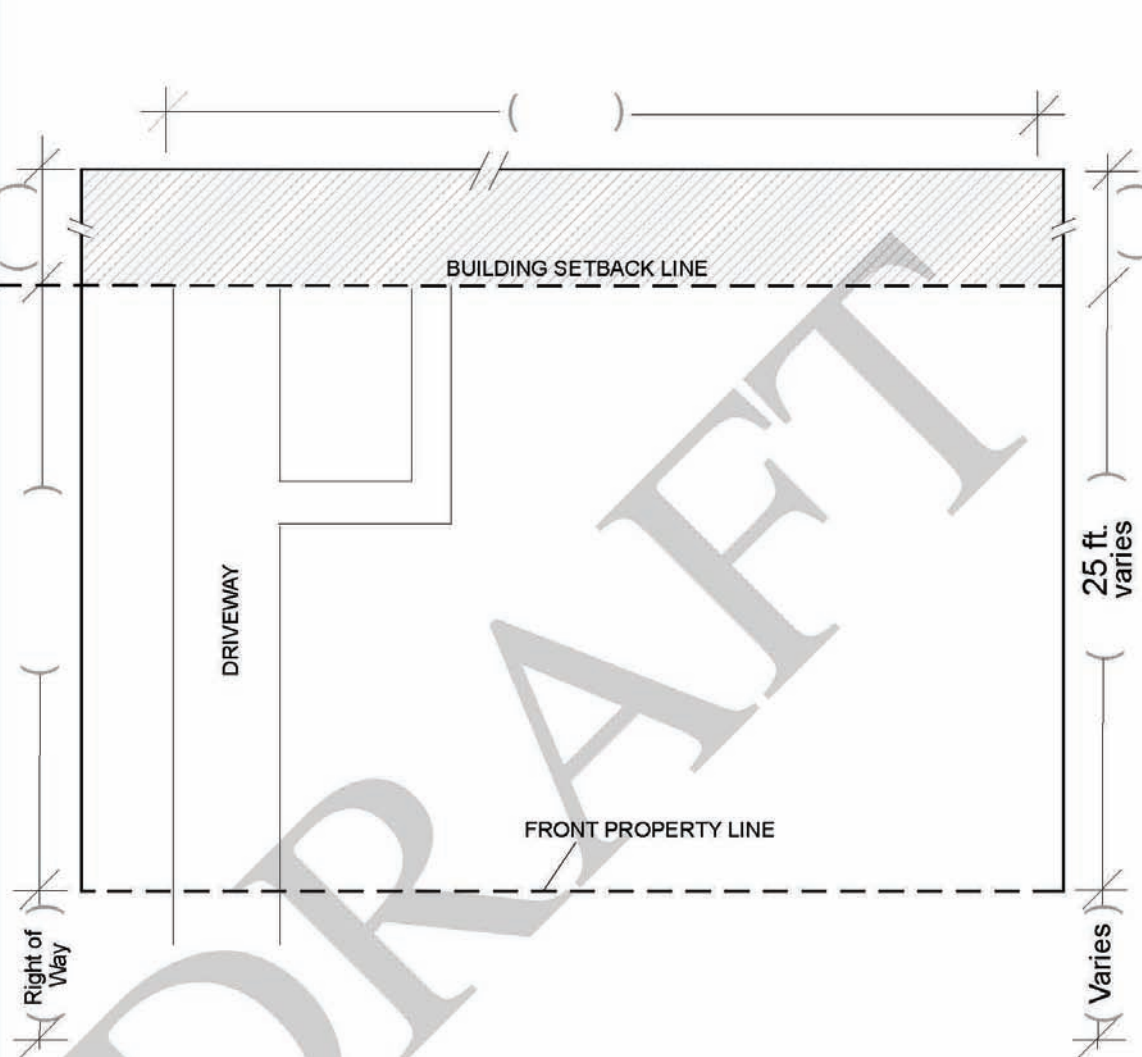
EXAMPLE FRONT YARD LANDSCAPE PLAN

385 N. Arrowhead Ave.
San Bernardino, CA 92415

(909) 387-4146
Fax (909) 387-0235

09/28/07

DRAFT LANDSCAPE DOCUMENTATION PACKET



The diagram illustrates a property layout for a landscape plan. It features a rectangular property boundary with a dashed line indicating the 'FRONT PROPERTY LINE'. A shaded area at the top represents the 'BUILDING SETBACK LINE'. A 'DRIVEWAY' is shown on the left side. The 'Right of Way' is marked on the left, and 'Varies' is marked on the right. A vertical dimension of '25 ft. varies' is indicated on the right side. A large 'DRAFT' watermark is overlaid diagonally across the center of the diagram.


JOB ADDRESS _____

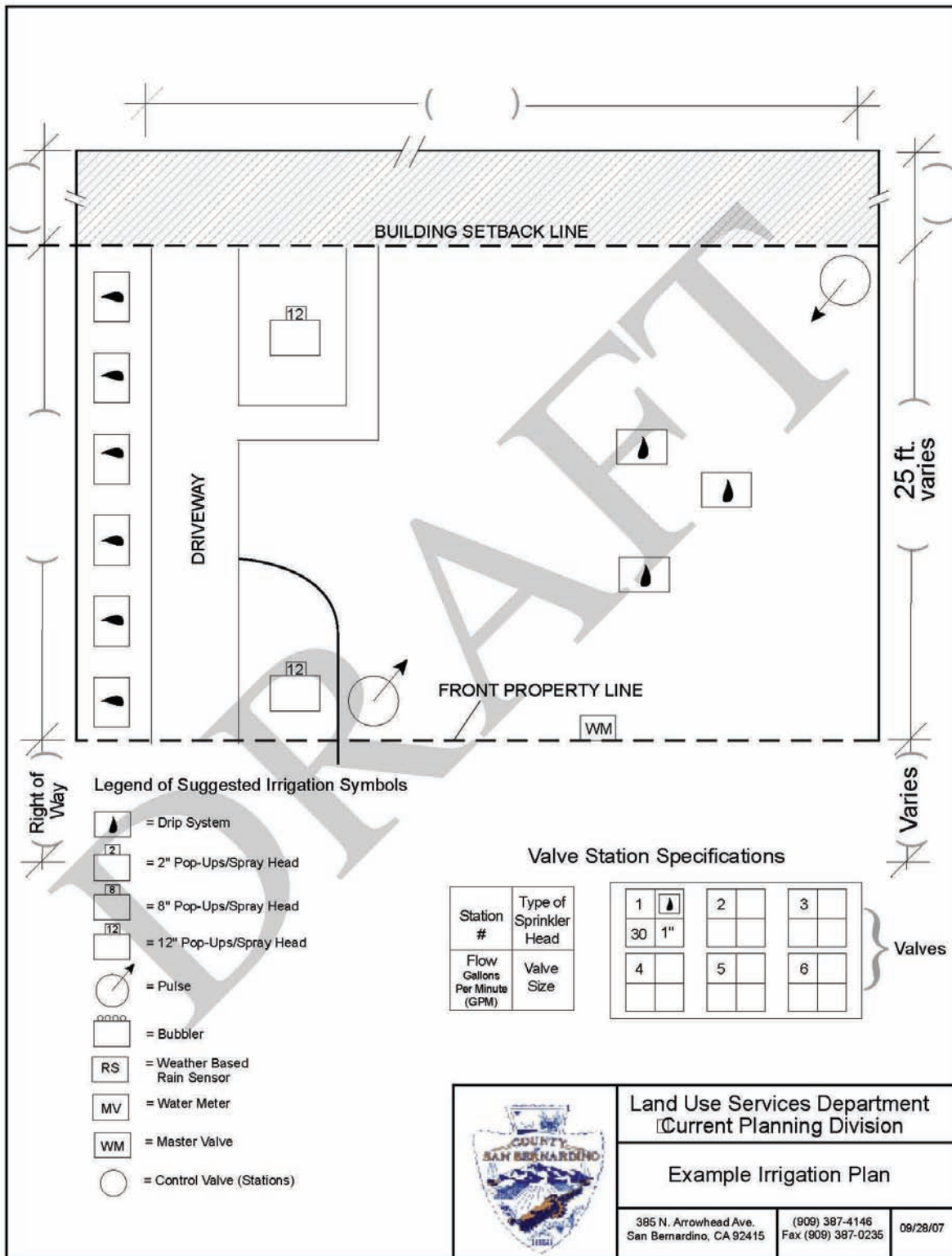
OWNER _____

APN NO. _____

PERMIT NO. _____

Front Yard Area: xxxx Sq. Ft.
 Pervious pavement area: xxx Sq. Ft.
 Decomposed Granite: xxx Sq. Ft.
 Turf Area: *Calculated based on maximum percentage allowed*
 Irrigated plantings: xxx Sq. Ft.

	Land Use Services Department Current Planning Division		
	Landscape Plan Template		
385 N. Arrowhead Ave. San Bernardino, CA 92415	(909) 387-4146 Fax (909) 387-0235	09/28/07	



The diagram is a site plan for a property. It shows a rectangular lot with a dashed line for the 'FRONT PROPERTY LINE' and a solid line for the 'BUILDING SETBACK LINE'. A shaded area at the top represents the building footprint. A 'DRIVEWAY' is shown on the left side. Dimensions are indicated with arrows and parentheses: the top width is (), the right side height is '25 ft. varies', and the bottom right corner is labeled 'Varies'. The left side is labeled 'Right of Way'. A large 'DRAFT' watermark is diagonally across the center.

JOB ADDRESS _____

OWNER _____

APN NO. _____

PERMIT NO. _____

Front Yard Area: xxxx Sq. Ft.
 Pervious pavement area: xxx Sq. Ft.
 Decomposed Granite: xxx Sq. Ft.
 Turf Area: *Calculated based on maximum percentage allowed*
 Irrigated plantings: xxx Sq. Ft.

	Land Use Services Department Current Planning Division	
	Irrigation Plan Template	
	385 N. Arrowhead Ave. San Bernardino, CA 92415	(909) 387-4146 Fax (909) 387-0235

6 MONTH ESTABLISHMENT IRRIGATION SCHEDULE DAILY RUN TIMES 3-5 DAYS A WEEK				
MONTH	MINUTES ROTORS	MINUTES SPRAY	MINUTES BUBBLERS	MINUTES DRIP
EXAMPLE	7	3	3	10
JANUARY				
FEBRUARY				
MARCH				
APRIL				
MAY				
JUNE				
JULY				
AUGUST				
SEPTEMBER				
OCTOBER				
NOVEMBER				
DECEMBER				

JOB ADDRESS _____

OWNER _____

APN NO. _____

PERMIT NO. _____

Front Yard Area: xxxx Sq. Ft.

Pervious pavement area: xxx Sq. Ft.

Decomposed Granite: xxx Sq. Ft.

Turf Area: *Calculated based on maximum percentage allowed*

Irrigated plantings: xxx Sq. Ft.



Land Use Services Department
Current Planning Division

6 MONTH ESTABLISHMENT
IRRIGATION SCHEDULE

385 N. Arrowhead Ave.
San Bernardino, CA 92415

(909) 387-4145
Fax: (909) 387-0235

05/29/07

DRAFT LANDSCAPE DOCUMENTATION PACKET

MATURE LANDSCAPE IRRIGATION SCHEDULE DAILY RUN TIMES 3-5 DAYS A WEEK				
MONTH	MINUTES ROTORS	MINUTES SPRAY	MINUTES BUBBLERS	MINUTES DRIP
EXAMPLE	7	3	3	10
JANUARY				
FEBRUARY				
MARCH				
APRIL				
MAY				
JUNE				
JULY				
AUGUST				
SEPTEMBER				
OCTOBER				
NOVEMBER				
DECEMBER				

JOB ADDRESS _____

OWNER _____

APN NO. _____

PERMIT NO. _____

Front Yard Area: xxxx Sq. Ft.

Pervious pavement area: xxx Sq. Ft.

Decomposed Granite: xxx Sq. Ft.

Turf Area: Calculated based on maximum percentage allowed

Irrigated plantings: xxx Sq. Ft.



Land Use Services Department
Current Planning Division

MATURE LANDSCAPE IRRIGATION SCHEDULE

385 N. Arrowhead Ave.
San Bernardino, CA 92415

(909) 387-4145
Fax: (909) 387-0235

05/28/07

Planning Grid 1 square = 1 foot

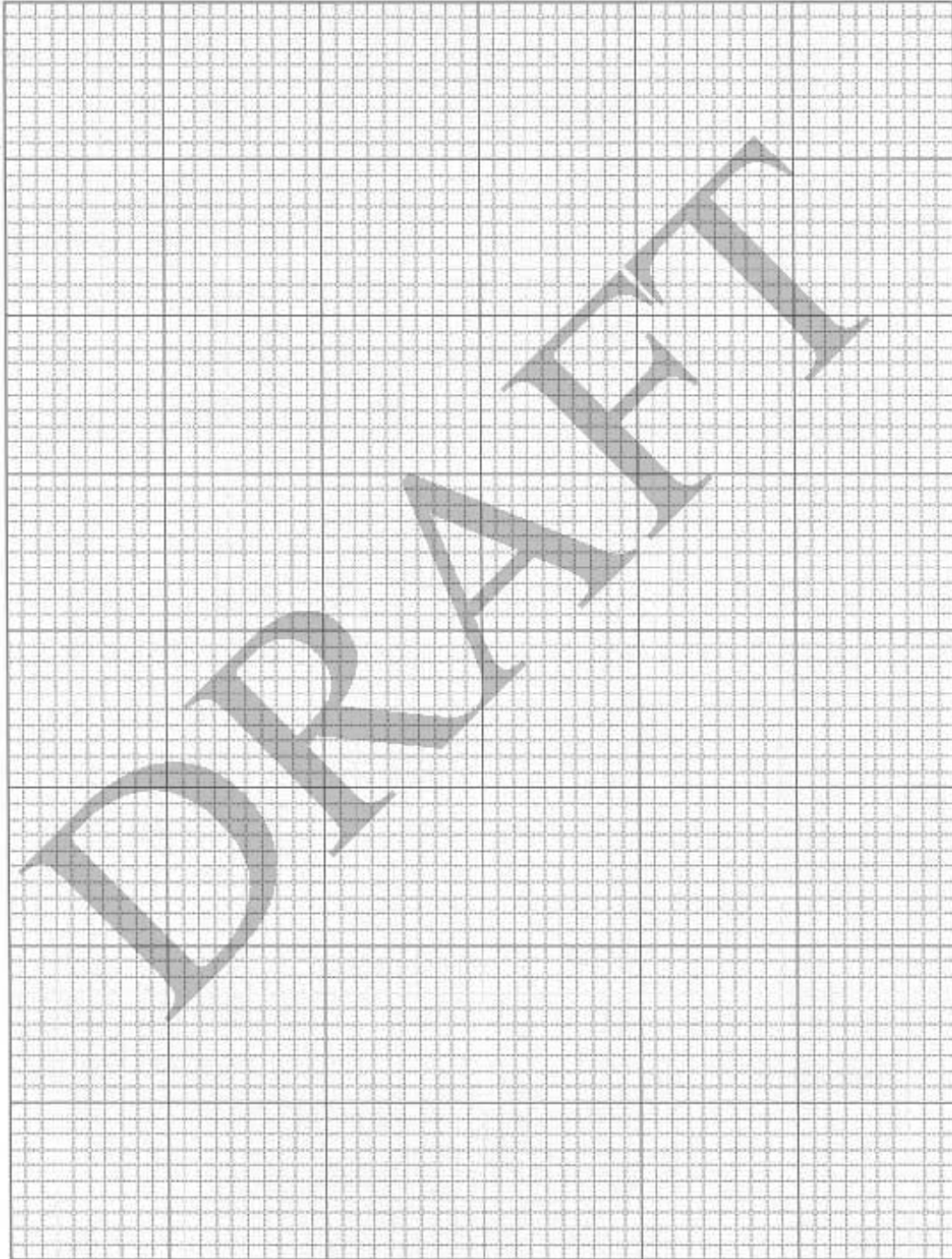


FIGURE 2 WATER BUDGET FORMULA AND CHARTS

COLOR BOXES ARE DATA ENTRY FIELDS.
FACTORS USED IN WATER BUDGET FORMULA

CHART 1: FINDING YOUR ETO

Insert Your Number in Space B of the
Landscape Water Use Calculation Sheet

CIMIS Station	Name	Reference ETo
24	Thermal	73.03
25	Rancho Mirage	71.40
34	Rancho California	49.54
36	Blythe	71.40
44	UC Riverside (Riverside)	56.37
55	Palm Desert	72.77
62	Temecula	66.14
118	Cathedral City	57.06
130	Temecula East	49.54
135	Blythe Northeast	70.80
136	Oasis	71.40
141	Mecca	62.68
151	Ripley	71.40
154	Salton Sea North	71.65
162	Indio	71.4
176	La Quinta	71.4
179	Winchester	57.33

CHART 2: DETERMINING YOUR PLANT FACTOR (PF)

Insert Your Plant Factor in Space D of the
Landscape Water Use Calculation Sheet

Plant Category	Average PF
High	0.8
Medium	0.5
Low	0.2
Very Low	0.1

CHART 3: LOCATING YOUR IRRIGATION EFFICIENCY (IE) FACTOR

Insert Your Number in Space F of the
Landscape Water Use Calculation Sheet

Application Method	IE Factor
Drip	0.90
Bubblers	0.85
MP Rotators	0.75
Rotors	0.75
Microsprays	0.70
Spray Heads	0.60
*With proper run times	

1. MAXIMUM ANNUAL WATER ALLOWANCE (MAWA)

INPUT the total square footage of landscape = **A** x .62
INPUT the Hist. ETo for the area = **B** x .8

$$MAWA = \frac{C}{748} \text{ gal / yr}$$

$$MAWA = \text{ccf}$$

2. ESTIMATED ANNUAL WATER USE (EAWU)

Hydrozone # 1
INPUT square footage of hydrozone = **E**
INPUT hydrozone irrigation efficiency = **F**
EAWU = **G** gal / yr
INPUT Plant Factor = **D**
Total Your Hydrozones

$$G + G + G + G + G = H$$

Finding Total (EAWU)

SubTotal EAWU = **H** cu ft / yr
Input Irrigation System Operation Factor = **I**
Total EAWU = **I**

Finding Your Total Allowance

$$MAWA - EAWU = \text{J} \text{ cu ft / yr}$$

(this number must be positive)

1. TO FIND MAWA

STEP 1: Calculate your total square footage of the landscape area and insert that number into Space A. (Round the number to the nearest hundred).

STEP 2: Find your city on the Reference Evapotranspiration Chart (1) and insert the number in Space B.

STEP 3: Multiply A x .62 x B x .8, put the answer in space C and divide by 748. This gives you your MAWA in gallons.

2. TO FIND EAWU FOR EACH HYDROZONE

STEP 1: Find your plant factor (CHART 2) for the hydrozone remembering to use the highest plant factor per hydrozone. If you have medium and a low in the same hydrozone, the factor is medium. Place that number in Space D.

STEP 2: Calculate your square footage for the hydrozone (Round to the nearest hundred) and put number in space E. Next, insert the hydrozone irrigation efficiency number from (CHART 3) into Space F.

STEP 3: Multiply ETo (From Chart 1) x D x E x 0.62, then divide that number by F x 748. This will give you the EAWU number for Space G.

STEP 4: Repeat steps 1-3 for each hydrozone.

STEP 5: Add all G's and put number into Space H.

STEP 6: Divide H by .85 and that will give you your Total EAWU (Space I). This is the irrigation system operating efficiency.

STEP 7: To find J, Subtract I (EAWU) from MAWA and that will give you the total water use for the project. The resulting number must be positive.

BE SURE TO RUN EAWU CALCULATION FOR EACH HYDROZONE WITHIN YOUR PROJECT.

EXISTING LANDSCAPES

FIGURE 3

The following blank work sheet may be modified as-needed for each project and shall be included on all Irrigation Plan submittals.

Riverside County Ordinance 859 Landscape Water Use Calculations WORKSHEET			
1 Maximum Annual Water Allocation (MAWA)			
INPUT the total square footage of landscape =		<input type="text"/>	x .62
INPUT the Hist. ETo for the area =		<input type="text"/>	x .8
MAWA =		<input type="text"/>	gal / yr
		748	
MAWA =		<input type="text"/>	
2 Estimated Annual Water Use (EAWU)			
Hydrozone # 1		INPUT Plant Factor = <input type="text"/> (Turf)	
INPUT square footage of hydrozone =		<input type="text"/>	
INPUT hydrozone irrigation efficiency =		<input type="text"/>	
EAWU =		<input type="text"/>	cu ft / yr
Hydrozone # 2		INPUT Plant Factor = <input type="text"/> (High)	
INPUT square footage of hydrozone =		<input type="text"/>	
INPUT hydrozone irrigation efficiency =		<input type="text"/>	
EAWU =		<input type="text"/>	cu ft / yr
Hydrozone # 3		INPUT Plant Factor = <input type="text"/> (Med)	
INPUT square footage of hydrozone =		<input type="text"/>	
INPUT hydrozone irrigation efficiency =		<input type="text"/>	
EAWU =		<input type="text"/>	cu ft / yr
Hydrozone # 4		INPUT Plant Factor = <input type="text"/> (Low)	
INPUT square footage of hydrozone =		<input type="text"/>	
INPUT hydrozone irrigation efficiency =		<input type="text"/>	
EAWU =		<input type="text"/>	cu ft / yr
Hydrozone # 5		INPUT Plant Factor = <input type="text"/> (Very Low)	
INPUT square footage of hydrozone =		<input type="text"/>	
INPUT hydrozone irrigation efficiency =		<input type="text"/>	
EAWU =		<input type="text"/>	cu ft / yr
SubTotal EAWU =		<input type="text"/>	cu ft / yr
Input Irrigation System Operation Factor		0.85	
Total EAWU =		<input type="text"/>	
MAWA - EAWU =		<input type="text"/>	cu ft / yr
(this number must be positive)			

NEW LANDSCAPES WITH AND WITHOUT SPECIAL LANDSCAPE AREA.

MAWA

Without Special Landscape Area

(1) Example MAWA calculation: A hypothetical landscape project in Fresno, CA with an irrigated landscape area of 50,000 sq. ft. without any Special Landscape Area (SLA = 0, no edible plants or recreational areas or use of recycled water). To calculate MAWA, the annual (ET_o) value for Fresno is 51.1 inches as listed in the Reference Evapotranspiration (ET_o) Table in Section 495.

To convert from gallons per year to hundred-cubic-feet per year:
= 1,108,870/748 = 1,482 hundred-cubic-feet per year
(100 cubic feet = 748 gallons)

With Special Landscape Area

(2) In this next hypothetical example, the landscape project in Fresno, CA has the same ET_o value of 51.1 inches and a total landscape area of 50,000 square feet. Within the 50,000 square foot project, there is now a 2,000 square foot area planted with edible plants. This 2,000 square foot area is considered to be a Special Landscape Area.

MAWA = (ET_o) (0.62)[0.7 x LA+0.3 x SLA]
MAWA = (51.1 inches)(.0.62)[0.7 x 50,000 square feet + 0.3 x 2,000 feet]
= 31.68 x [35,000 + 600] gallons per year
= 31.68 x 35,600 gallons per year
= 1,127,808 gallons per year or 1,508 hundred-cubic-feet per year

ETWU

Estimated Total Water Use, The Estimated Total Water Use shall be calculated using the equation below. Estimate Total Water use shall not exceed MAWA.

$$ETWU = (Eto)(0.62)((PF \times HA)/IE + SLA)$$

Where:

ETWU = Estimated total water use per year (gallons)
ET_o = Reference Evapotranspiration (inches)
PF = Plant Factor from WUCOLS (see Section 491)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor
IE = Irrigation Efficiency (minimum 0.71)

Without Special Landscape Area

(1) Example ETWU calculation: Total Landscape area is 50,000 square feet, and plant water use type, plant factor and hydrozone area, are shown in the table below. The ETo value is 51.1 inches per year. No water requirement for recreational area, area permanently and solely dedicated to edible plants and area irrigated with recycled water.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)*	Area (square feet)	PF x Area (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	10,000	7,000
3	Medium	0.5	16,000	8,000
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	24,700

*Plant Factor from WUCOLS

$$\text{ETWU} = (\text{Eto})(0.62)(24,700/0.71 + 0)$$

$$= 1,102,116 \text{ gallons per year}$$

Compare ETWU with MAWA. The ETWU (1,102,116 gallons per year) is less than MAWA (1,108,870 gallons per year). In this example the water budget complies with the MAWA.

With Special Landscape Area

(2) Example ETWU calculation: Total Landscape area is 50,000 square feet, and 2,000 square feet of which is planted with edible plants. The edible plant area is considered a Special Landscape Area. The ETo value is 51.1 inches per year. The plant type, plant factor and hydrozone area, are show in the table below.

Hydrozone	Plant Water Use Type (s)	Plant Factor (PF)*	Area (square feet)	PF x Area (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	10,000	7,000
3	Medium	0.5	16,000	8,000
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	24,700
6	SLA		2,000	2,000

$$\text{ETWU} = (\text{Eto})(0.62)(24,700/0.71 + 2,000)$$

$$= 1,111,936 \text{ gallons per year}$$

Compare ETWU with MAWA. For this example:

$$\text{MAWA} = (51.1 \text{ inches})(0.62)[0.7 \times 50,000 \text{ square feet} + 0.3 \times 2,000 \text{ feet}]$$

$$= 31.68 \times [35,000 + 600] \text{ gallons per year}$$

$$= 31.68 \times 35,600 \text{ gallons per year}$$

$$= 1,127,808 \text{ gallons per year}$$

The ETWU is (1,111,936 gallons per year), less than MAWA (1,127,808 gallons per year). For this example, the water budget complies with the MAWA.

Schedule of Tools for Development



TECHNICAL COMMITTEE SCHEDULE TO DEVELOP TOOLS

Technical Committee Schedule to Develop Tools

February 2009: Prioritize Tools Needed for Implementation and Establish Sub-Committees

- Present Final Landscape Alliance Regional Model Water Efficient Landscape Ordinance to the Landscape Alliance Board for adoption.
- Through Technical Committee Meetings, many tools have been identified that would assist with implementation including:
 - 1) an interactive landscape water budget calculator;
 - 2) methodology to establish water budgets and track water data including notification and recommendations for penalties;
 - 3) recommended plant lists and documentation package;
 - 4) a survey of what smart or weather based irrigation controllers exist within the service area and develop support materials for customers in preparation for mandatory weather-based irrigation controller installation and scheduling.

March-May 2009: Sub-Committee Meetings to Establish Work Plan and Panel Workshop

- Technical Committee Sub-Committees will meet to establish project parameters and schedules.
- Experts will be invited to participate and advise work groups as necessary.
- The Inland Empire Landscape Alliance Blog will be used to keep other committees apprised of findings during these months.

June 2009: Technical Committee Reconvenes

- Sub-Committees will present updates on their progress and recommendations to the Technical Committee members.
- If necessary, any additional implementation tools/measures will be considered.



Special thanks go to the Landscape Alliance Technical Committee, who met over 10 times this past year and provided numerous hours of their time, effort, expertise, and support to bring the “Chino Basin Water Efficient Landscape Ordinance” together. Technical Committee members include:

Jesus Plasencia, Brent Arnold and Mike Kellison from the City of Chino; Commissioner Barry Fischer, Betty Donovanik, and Christina Shilling from the City of Chino Hills; Shawnika Johnson and Sonya Montgomery from the City of Fontana; Carolyn Bell and Jamie Richardson from the City of Ontario; Michael Diaz from the City of Montclair; Jeff Barnes, Jennifer Nakamura, and Waen Messner from the City of Rancho Cucamonga; Karen Peterson and Sylvia Scharf from the City of Upland; Director Kati Parker, Gerry Foote, and Juan Zamora from the Chino Basin Water Conservation District; Rita Kurth from the Cucamonga Valley Water District; Elizabeth Hurst from the Inland Empire Utilities Agency; Justin Scott-Coe and Mary Ann Melleby from the Monte Vista Water District; Brad Buller of Land Matters Consulting; Shellie Zias-Roe from San Bernardino County; Susan Lien Longville from the California State University San Bernardino Water Resources Institute; Patrick Larkin from the Rancho Santa Ana Botanic Garden; Jeff Chamlee from Architerra Design Group; and Jeff Simonetti from the Baldy View Chapter of the Building Industry Association.



Photograph courtesy of Roger's Gardens

Inland Empire Landscape Alliance: Model Water Ordinance



2009