

EMERYVILLE PLANNING COMMISSION

STAFF REPORT

Agenda Date: December 8, 2011

Report Date: December 1, 2011

TO: Emeryville Planning Commission

FROM: Diana Keena, Associate Planner
Planning and Building Department

SUBJECT: **Water Efficient Landscape Ordinance
(ORD 11-003)**

SUMMARY

The proposed draft ordinance would amend the Emeryville Municipal Code to add Article 70, Water Efficient Landscaping, to Chapter 4 of Title 9, amend section 9-4.54.2(a), Water Conservation, of Article 54 of Chapter 4 of Title 9; add Chapter 36, Water Waste Prohibition, to Title 5; and amend Section 1-1.03 of Chapter 1 of Title 1 and Section 1.2.01 of Chapter 2 of Title 1 regarding penalties.

BACKGROUND

The California Water Conservation in Landscaping Act of 2006 (AB 1881) requires each city to adopt a Model Water Efficient Landscape Ordinance developed by the California Department of Water Resources (DWR) or the city's own local water efficient landscape ordinance that achieves the same goals.

DISCUSSION

This ordinance is based on the DWR model ordinance. It includes the following changes to the model ordinance:

- provisions requested by the Bay-Friendly Landscaping staff at Stopwaste.org (the Alameda County waste management agency),
- adjustments to make it consistent with East Bay Municipal Utility District service requirements, and
- updates to match the mandatory outdoor water conservation sections of the new Calgreen Building Code.

It has been edited in the following ways:

V.B.

- to fit into the Emeryville Municipal Code and the Design Review process;
- to eliminate unnecessary cross-references, references that do not apply to Emeryville, definitions of un-used and self-explanatory terms, and language about how cities may coordinate with water purveyors (East Bay Municipal Utility District declined to implement any provisions, but does wish to receive plans);
- to clarify references; and
- to provide local data and examples for use in water use calculations.

The Water Efficient Landscaping ordinance applies to new construction and rehabilitated landscapes with landscape areas greater than or equal to 1,000 square feet. Public agency and private development projects are subject to the ordinance.

The proposed Article 70 of Chapter 4 of Title 9 of the Emeryville Municipal Code requires compliance with requirements detailing Water Efficient Landscape Requirements as specified by the Director of Planning and Building. The referenced requirements are attached. The requirements for new or rehabilitated landscape projects with 1,000 to 2,500 square feet of landscaped area address planting, mulch, grading and irrigation.

The requirements for landscapes with 2,500 square feet or more of landscaped area include a landscape documentation package including project information, a water efficient landscape worksheet, a soil management report, a landscape design plan, an irrigation design plan and a grading design plan, as part of the Design Review application. Prior to issuance of a Certificate of Occupancy, a certificate of completion and scheduling of irrigation and maintenance would be required. The worksheet includes calculation of a Maximum Applied Water Allowance and Estimated Total Water Use. The Estimated Total Water Use must be less than the Maximum Applied Water Allowance. These requirements include designation of hydrozones (areas containing plants with similar water needs) and address in detail soil, plants, water features, mulch, grading, irrigation systems, and irrigation schedules.

Exceptions to the ordinance include: a) projects with landscape areas less than 1,000 square feet; b) registered historical sites; c) ecological restoration projects that do not require a permanent irrigation system; d) plant collections, as part of botanical gardens and arboretums open to the public; and e) cemeteries.

The proposed ordinance includes an amendment to Section 9-4.54.2(a) of the Emeryville Municipal Code to refer to the new Article 70. Article 54 is about landscaping, Section 2 is regulations for all districts, and subsection (a) is Water Conservation. The existing ordinance has a lower area threshold (only 500 square feet). The requirements in the old section are present in updated forms in the new ordinance.

The proposed Chapter 36 of Title 5 includes two requirements for operation and maintenance of irrigation systems. All landscape irrigation systems must prevent irrigation runoff from leaving the target landscape, and systems approved starting this year must have an irrigation efficiency of 0.71 (ratio of water beneficially used to amount of water applied).

ENVIRONMENTAL REVIEW

The proposed ordinance is exempt from environmental review under State CEQA Guidelines Section 15307 regarding actions by a regulatory agency for protection of natural resources, and Section 15061(b)(3), the general rule that CEQA does not apply to projects where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment.

RECOMMENDATION

Staff recommends that the Planning Commission recommend City Council adoption of the Water Efficient Landscaping Ordinance described in the attached resolution, and review the requirements referred to in the draft ordinance.

Attachments: Resolution recommending City Council adoption of proposed amendments
Emeryville Water Efficient Landscape Requirements – Smaller Landscapes
City of Emeryville Water Efficient Landscape Requirements - Larger Landscapes

PLANNING COMMISSION RESOLUTION NO. ORD11- 003

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF EMERYVILLE TO INITIATE ADDING ARTICLE 70 TO CHAPTER 4 OF TITLE 9 OF THE EMERYVILLE MUNICIPAL CODE CONCERNING WATER EFFICIENT LANDSCAPING; AMENDING SECTION 9-4.54.2(a) OF ARTICLE 54 OF CHAPTER 4 OF TITLE 9 CONCERNING WATER CONSERVATION; ADDING CHAPTER 36 TO TITLE 5 OF TITLE 9 PROHIBITING WATER WASTE; AMENDING SECTION 1-1.03 OF CHAPTER 1 OF TITLE 1 AND SECTION 1-2.01 OF CHAPTER 2 OF TITLE 1 REGARDING PENALTIES; AND RECOMMENDING ADOPTION BY THE EMERYVILLE CITY COUNCIL

WHEREAS, California Government Code Sections 65591 et. seq, the Water Conservation Landscaping Act of 2006, requires cities to adopt a state model Water Efficient Landscape Ordinance; and

WHEREAS, the waters of the state are of limited supply and are subject to ever increasing demands; and

WHEREAS, the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses; and

WHEREAS, it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource; and

WHEREAS, landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development; and

WHEREAS, landscape design, installation, maintenance and management can and should be water efficient; and

WHEREAS, Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use; and

WHEREAS, on December 8, 2011, the Planning Commission held a duly and properly noticed public hearing to solicit public comments and consider the proposed amendments to the Emeryville Municipal Code; and

WHEREAS, the Planning Commission has reviewed and considered the staff report and attachments thereto, all public comments, and the proposed amendments to Titles 9, 5

and 1 of the Emeryville Municipal Code, as set forth below, and the applicable provisions of the Emeryville Municipal Code (“the Record”);

NOW, THEREFORE, BE IT RESOLVED, that the Planning Commission finds, pursuant to Title 14 of the California Administrative Code, Section 15061(b)(3) that this Ordinance is exempt from the requirements of the California Environmental Quality Act (CEQA) under the “General Rule” at Section 15061(b)(3), of the State CEQA Guidelines, because it can be seen with certainty that there is no possibility that the Ordinance may have a significant effect on the environment, and under CEQA Guidelines section 15307, which applies to actions by Regulatory Agencies for Protection of Natural Resources; and

BE IT FURTHER RESOLVED, that the Planning Commission hereby initiates and recommends that the City Council adopt the following amendments to Title 9, 5 and 1 of the Emeryville Municipal Code to read as follows.

SECTION ONE. PURPOSE AND INTENT

The purpose and intent of this Ordinance is to

- (a) comply with the State requirement for a Water Efficient Landscape Ordinance;
- (b) promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;
- (c) establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects;
- (d) establish provisions for water management practices and water waste prevention for existing landscapes;
- (e) use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount;
- (f) utilize Bay Friendly Landscaping, a whole systems approach to the design, construction and maintenance of the landscape, to conserve water.

SECTION TWO. ADDING ARTICLE 70 TO CHAPTER 4 OF TITLE 9 OF THE EMERYVILLE MUNICIPAL CODE

Article 70 is hereby added to Chapter 4 of Title 9 of the Emeryville Municipal Code to read as follows:

ARTICLE 70. WATER EFFICIENT LANDSCAPING

Sections.

- 9-4.70.1.** Purpose
- 9-4.70.2.** Applicability
- 9-4.70.3.** Requirements for Smaller Landscapes

- 9-4.70.4.** Requirements for Larger Landscapes
- 9-4.70.5.** Stormwater and Recycled Water Requirements
- 9-4.70.6.** Exceptions

9-4.70.1. Purpose.

Article 70 establishes water efficient landscaping requirements for new and rehabilitated landscapes. The purpose of the requirements is to foster efficient water use and prevent water waste while ensuring high quality landscapes.

9-4.70.2. Applicability

This article shall apply to new construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 1,000 square feet.

9-4.70.3. Requirements for Smaller Landscapes

New or rehabilitated landscaping between 1,000 square feet and 2,499 square feet of landscaped area are subject to this section and shall comply with landscape requirements for smaller landscapes for planting, mulch, grading, and irrigation, as specified by the Director of Planning and Building.

9-4.70.4. Requirements for Larger Landscapes.

New and rehabilitated landscapes with a landscape area equal to or greater than 2,500 square feet are subject to this section and shall comply with landscape requirements for larger landscapes for planting, mulch, grading, and irrigation, as specified by the Director of Planning and Building.

9-4.70.5. Stormwater and Recycled Water Requirements.

All projects subject to this article shall comply with all other requirements of the Emeryville Municipal Code, including Chapter 13 of Title 6 regarding stormwater treatment, and Article 63 of this chapter regarding water reuse.

9-4.70.6. Exceptions.

This article shall not apply to the following:

- (a) registered historical sites;
- (b) ecological restoration projects that do not require a permanent irrigation system;
- (c) plant collections, as part of botanical gardens and arboretums open to the public;
- (d) cemeteries;
- (e) projects with a landscape area less than 1,000 square feet.

SECTION THREE. AMENDING SECTION 9-4.54.2(a) OF ARTICLE 54 OF CHAPTER 4 OF TITLE 9 OF THE EMERYVILLE MUNICIPAL CODE

Section 9-4.54.2(a) Water Conservation of Article 54 of Chapter 4 of Title 9 of the Emeryville Municipal Code is hereby amended in its entirety to read as follows.

(a) Water Conservation. All new or rehabilitated landscape projects of 1000 feet or more, except those using recycled water for all irrigation from time of occupancy, shall comply with Article 70, Water Efficient Landscaping, of this chapter.

SECTION FOUR. ADDING CHAPTER 36 TO TITLE 5 OF THE EMERYVILLE MUNICIPAL CODE

Chapter 36 is hereby added to Title 5 of the Emeryville Municipal Code to read as follows:

**Chapter 36
Irrigation Water Waste Prohibition**

Sections:

- 5-36.01 Purpose
- 5-36.02 Definitions
- 5-36.03 Applicability
- 5-36.04 Irrigation Water Waste Prohibited
- 5-36.05 Irrigation Efficiency Requirement
- 5-36.06 Enforcement, Notices of Violations, Administrative Hearing, Penalties

5-36.1. Purpose

This chapter seeks to prevent water waste in irrigation.

5-36.2. Definitions

As used in this article:

- a. "City Manager" means the City Manager of the City of Emeryville or his/her designee.
- b. "irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. The minimum average irrigation efficiency for purposes of this chapter is 0.71.
- c. "irrigation runoff" means water that is not absorbed by the soil or landscape to which it is applied and flows from the landscape area.
- d. "overspray" means the irrigation water that is delivered beyond the target area.

5-36.3. Applicability

This chapter shall apply to new, rehabilitated, and existing landscapes of any size. This chapter shall apply to public and private properties.

5-36.4. Irrigation Water Waste Prohibited

- a. Irrigation runoff leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures is prohibited.
- b. This section shall not apply if:
 - i. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
 - ii. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping

5-36.5. Irrigation Efficiency Requirement

Irrigation systems approved after January 1, 2010, shall be maintained and managed to meet or exceed an average irrigation efficiency of 0.71.

5-36.6. Enforcement, Notices of Violations, Administrative Hearing, Penalties.

- a. The City Manager shall enforce this chapter. The City Manager is authorized to promulgate regulations and to take any and all other actions reasonable and necessary to enforce this chapter.
- b. If the City Manager determines that a person is in violation of this chapter, he/she shall issue a written notice warning of the violation. If, after issuance of such notice, the City Manager finds continued violations of the provisions of this chapter, the City Manager may apply for or impose the various sanctions provided in this section.
- c. The City Manager may issue an administrative civil liability citation to anyone violating or failing to comply with any of the requirements of this chapter, in an amount not exceeding one hundred dollars (\$100.00) for the first violation, two hundred dollars (\$200.00) for the second violation in the same year, and four hundred dollars (\$400.00) for each subsequent violation in the same year. In determining administrative civil penalties, the City Manager shall consider the extent of harm caused by the violation, the nature and persistence of the violation, the length of time over which the violation occurs, the frequency of past violations, and any action taken to mitigate the violation.
- d. Any person to whom the City Manger issues a notice of violation or an administrative civil liability citation may request an administrative hearing to appeal such warning or determination of liability by filing a written request with the City Manager. The City Manager will promulgate standards and procedures for requesting and conducting an administrative hearing under this chapter before a hearing officer. Any determination from the administrative hearing officer shall be final.
- e. Anyone violating or failing to comply with any of the requirements of this chapter will be guilty of an infraction pursuant to Section [1-2.01\(f\)](#).

- f. The City Attorney may seek legal, injunctive, or other equitable relief to enforce this chapter.
- g. The remedies and penalties provided in this section are cumulative and not exclusive of one another.

SECTION FIVE. AMENDING SECTION 1-1.03 OF CHAPTER 1 OF TITLE 1 OF THE EMERYVILLE MUNICIPAL CODE.

Section 1-1.03 of Chapter 1 of Title 1 of the Emeryville Municipal Code is amended to read as follows. Additions are noted in underline type. Deletions are noted in ~~strikeout~~ type. Provisions not explicitly listed are unchanged.

1-1.03 Violations and Punishment.

As required by Government Code Section 50022.4 of the State of California, the penalty clauses outlined in Title 1, Chapter 2, of the Emeryville Municipal Code are set forth in full as follows:

1-2.01 Violations Misdemeanors or Infractions.

(a) Any person convicted of a misdemeanor under the provisions of this Code shall be punishable by a fine of one thousand dollars (\$1,000.00), or by imprisonment in the County Jail for a period not exceeding six (6) months, or by both such fine and imprisonment. Each such person shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of this Code, or the provisions of any code adopted by reference by this Code, is committed, continued, maintained, or permitted by such person and shall be punishable accordingly.

(b) Any person convicted of an infraction under the provisions of this Code shall be punishable for a first conviction by a fine of not more than one hundred dollars (\$100.00), for a second conviction within a period of one (1) year by a fine of not more than two hundred dollars (\$200.00), and for a third or any subsequent conviction within a period of one (1) year by a fine of not more than four hundred dollars (\$400.00). After the third conviction, any repeat violation within one (1) year may be charged as a misdemeanor.

(c) In addition to the penalties provided by this section, any condition caused, maintained, or permitted to exist in violation of any of the provisions of this Code, or the provisions of any Code adopted by reference by this code, or any subdivision, building, wiring, plumbing or other similar activity in violation of the provisions of this Code shall be deemed a public nuisance and may be summarily abated by the City in a civil action, and each day such condition continues shall be a new and separate offense.

(d) No person shall violate any provision or fail to comply with any of the requirements of this Code.

(e) Any person violating any of the provisions or failing to comply with any of the mandatory requirements of this Code, except the provisions and requirements set forth in subsection (f) of this section, shall be guilty of a misdemeanor, as designated by, and provided for, in Sections 16, 17, 19c, and 19d of the Penal Code of the State and as expressly specified in Section 4000 of the Vehicle Code of the State. The following provisions on any violation shall be deemed a misdemeanor:

Title	Chapter	Article	Section
4	2	Entire	
	4	Entire	
	7		.09 and .10
	12	Entire	
5	5	Entire	
	6	Entire	
	8	Entire	
	9		.03
	12	Entire	
	14		.05
	16	2	.220 and .221
	25	Entire	
	28	Entire	
6	1	1	1.107
	2		.02 and .03
	7	Entire	
	11	Entire	

	13	Entire	
7	5		.13
8	15	Entire	
	21		.04 and .05
10	1	Entire	Except Secs. .22 and .23

(f) Any person violating any of the following provisions or failing to comply with any of the following provisions of this Code shall be guilty of an infraction:

Title	Chapter	Article	Section
3	1		
4	1, 5, 6, 8, 10, 11	Entire	
	7		Except Secs. .09 and .10
5	1, 2, 3, 4, 7, 11, 13, 15, 18, 19, 20, 21, 23, 24, 27, 29, 30, 34, 35, 36	Entire	
	9		Except Sec. .03
	14		Except Sec. .05
	16		Except Secs. .220 and .221
6	1	1	Except Sec 1.107
	2		Except Secs. .02

			and .03
	3, 4, 5, 6, 9, 10, 12, 14	Entire	
7	2, 3, 4, 6, 7, 8, 10	Entire	
	5		Except Sec. 13
8	1, 2, 3, 4, 5, 7, 8, 9, 11, 19, 20	Entire	
	20		.02, .03, .04, .05, .06, .07, .08, .09, and .10
	21		Except .04 and .05
9	1, 2, 3, 4	Entire	
10	1		.22 and .23
10	2	Entire	

(g) The following officers and their subordinates designated in writing to the City Manager shall have and are hereby invested with the authority to cite and/or arrest any person who violates the provisions of this Code set forth in subsections (e) and (f) of this section:

TITLE OF OFFICERS

Fire Chief

Chief Building Inspector

City Engineer

Police Officers

Community Preservation Officer

(h) The Council shall have the power to designate by written order that particular officers or employees shall be authorized to enforce the provisions of this Code set forth in this section in addition to those officers enumerated in subsection (g) of this section. Officers or employees so designated shall have the authority to cite and/or arrest persons who violate any of said provisions.

(i) An officer or employee designated pursuant to subsection (g) or subsection (h) of this section shall be determinative of the enforcement powers of such officer or employee, notwithstanding a designation of a different officer or employee within the particular provision of this Code referred to in subsection (g) of this section.

SECTION SIX. AMENDING SECTION 1-2.01 OF CHAPTER 2 OF TITLE 1 OF THE EMERYVILLE MUNICIPAL CODE.

Section 1-2.01 of Chapter 2 of Title 1 of the Emeryville Municipal Code is amended to read as follows. Additions are noted in underline type. Deletions are noted in ~~strikeout~~ type. Provisions not explicitly listed are unchanged.

(a) Any person convicted of a misdemeanor under the provisions of this Code shall be punishable by a fine of one thousand dollars (\$1,000.00), or by imprisonment in the County Jail for a period not exceeding six (6) months, or by both such fine and imprisonment. Each such person shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of this Code, or the provisions of any code adopted by reference by this Code, is committed, continued, maintained, or permitted by such person and shall be punishable accordingly.

(b) Any person convicted of an infraction under the provisions of this Code shall be punishable for a first conviction by a fine of not more than one hundred dollars (\$100.00), for a second conviction within a period of one (1) year by a fine of not more than two hundred dollars (\$200.00), and for a third or any subsequent conviction within a period of one (1) year by a fine of not more than four hundred dollars (\$400.00). After the third conviction, any repeat violation within one (1) year may be charged as a misdemeanor.

(c) In addition to the penalties provided by this section, any condition caused, maintained, or permitted to exist in violation of any of the provisions of this Code, or the provisions of any Code adopted by reference by this code, or any subdivision, building, wiring, plumbing or other similar activity in violation of the provisions of this Code shall be deemed a public nuisance and may be summarily abated by the City in a civil action, and each day such condition continues shall be a new and separate offense.

(d) No person shall violate any provision or fail to comply with any of the requirements of this Code.

(e) Any person violating any of the provisions or failing to comply with any of the mandatory requirements of this Code, except the provisions and requirements set forth in subsection (f) of this section, shall be guilty of a misdemeanor, as designated by, and provided for, in Sections 16, 17, 19c, and 19d of the Penal Code of the State and as expressly specified in Section 4000 of the Vehicle Code of the State. The following provisions on any violation shall be deemed a misdemeanor:

Title	Chapter	Article	Section
4	2	Entire	
	4	Entire	
	7		.09 and .10
	12	Entire	
5	5	Entire	
	6	Entire	
	8	Entire	
	9		.03
	12	Entire	
	14		.05
	16	2	.220 and .221
	25	Entire	
	28	Entire	
6	1	1	1.107
	2		.02 and .03
	7	Entire	
	11	Entire	
	13	Entire	

7	5		.13
8	15	Entire	
	21		.04 and .05
10	1	Entire	Except Secs. .22 and .23

(f) Any person violating any of the following provisions or failing to comply with any of the following provisions of this Code shall be guilty of an infraction:

Title	Chapter	Article	Section
3	1		
4	1, 5, 6, 8, 10, 11	Entire	
	7		Except Secs. .09 and .10
5	1, 2, 3, 4, 7, 11, 13, 15, 18, 19, 20, 21, 23, 24, 27, 29, 30, 34, 35, <u>36</u>	Entire	
	9		Except Sec. .03
	14		Except Sec. .05
	16		Except Secs. .220 and .221
6	1	1	Except Sec 1.107
	2		Except Secs. .02 and .03

	3, 4, 5, 6, 9, 10, 12, 14	Entire	
7	2, 3, 4, 6, 7, 8, 10	Entire	
	5		Except Sec. 13
8	1, 2, 3, 4, 5, 7, 8, 9, 11, 19, 20	Entire	
	20		.02, .03, .04, .05, .06, .07, .08, .09, and .10
	21		Except .04 and .05
9	1, 2, 3, 4	Entire	
10	1		.22 and .23
10	2	Entire	

(g) The following officers and their subordinates designated in writing to the City Manager shall have and are hereby invested with the authority to cite and/or arrest any person who violates the provisions of this Code set forth in subsections (e) and (f) of this section:

TITLE OF OFFICERS

Fire Chief

Chief Building Inspector

City Engineer

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Community Preservation Officer

(h) The Council shall have the power to designate by written order that particular officers or employees shall be authorized to enforce the provisions of this Code set forth in this section in addition to those officers enumerated in subsection (g) of this section. Officers or employees so designated shall have the authority to cite and/or arrest persons who violate any of said provisions.

(i) An officer or employee designated pursuant to subsection (g) or subsection (h) of this section shall be determinative of the enforcement powers of such officer or employee, notwithstanding a designation of a different officer or employee within the particular provision of this Code referred to in subsection (g) of this section.

SECTION SEVEN. CEQA DETERMINATION

This Ordinance is exempt from the California Environmental Quality Act, under the "General Rule" at Section 15061(b)(3), of the State CEQA Guidelines, because it can be seen with certainty that there is no possibility that the Ordinance may have a significant effect on the environment, and under CEQA Guidelines section 15307, which applies to actions by Regulatory Agencies for Protection of Natural Resources.

APPROVED by the Planning Commission of the City of Emeryville at a regular meeting held on Thursday, December 8, 2011, by the following votes:

AYES: _____

NOES: _____ **ABSTAINED:** _____

EXCUSED: _____ **ABSENT:** _____

CHAIRPERSON

APPROVED AS TO FORM:

RECORDING SECRETARY

ASSISTANT CITY ATTORNEY

Emeryville Water Efficient Landscape Requirements – Smaller Landscapes

New or rehabilitated landscaping from 1,000 square feet and up to, but not including, 2,500 square feet of landscape area shall comply with the following requirements, as referred to in Section 9-4.70.3 of the Emeryville Municipal Code.

A. Plants

1. At least 80% of the total number of plants in non-turf areas shall require occasional, little or no summer water. All species should be adapted to the climate in which they will be planted.
2. Total irrigated areas specified as turf shall be limited to a maximum of 25% with recreational areas exempted. Exceptions may be granted when using drought-tolerant grasses requiring limited irrigation and mowing or for grassy swales designed and maintained to treat stormwater runoff.
3. Those species identified by the California Invasive Plant Council's "Don't Plant a Pest! San Francisco Bay Area" and "Don't Plant a Pest! Trees in California" brochures shall not be used.
4. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the site.
5. Plants shall be grouped by water use level.

B. Amendments and Mulch

1. A minimum of 6 cubic yards of compost, with a composition according to City standards or a City-approved soil report recommendation, per 1,000 square feet shall be incorporated into the top 6 inches of soil.
2. A minimum 3-inch layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas or direct seeding applications where mulch is contraindicated. Nonporous material shall not be placed under the mulch.
3. Required trees shall have adequate rootable soil volume (600 cubic feet for small trees, 900 cubic feet for medium-size trees, and 1200 cubic feet for large trees) and good drainage. Tree sizes refer to sizes of trees at maturity.

C. Grading

1. Grading shall be designed to minimize erosion, runoff and water waste.

D. Irrigation

1. A separate dedicated landscape water meter shall be installed separate from indoor water use.
2. All automatic irrigation systems shall include automatic controllers using reference evapotranspiration data (such as from the California Irrigation Management Information System), or soil moisture sensor data.
3. All automatic irrigation systems shall include rain shutoff devices.
4. All irrigation systems shall be designed to prevent irrigation runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
5. If there are plant groupings with different water use levels, and an automated irrigation system, then valves and circuits shall be separated based on water use.
6. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
7. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
8. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
9. Check valves are required in irrigation systems where elevation differences may cause low head drainage.
10. Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour.

Definitions

automatic controller An automatic timing device used to remotely control valves that operate an irrigation system, using either evapotranspiration (weather-based) or soil moisture data.

check valve A valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

compost The product of controlled biological decomposition of organic materials, often including urban plant debris and food waste. It is an organic matter resource that has the unique ability to improve the chemical, physical and biological characteristics of soils or growing media. It contains plant nutrients but is typically not characterized as a fertilizer.

hardscape Any durable material (pervious and non-pervious).

irrigation runoff Applied water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or where there is a slope.

mulch Any organic material such as leaves, arbor or wood chips, recycled wood waste, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

overspray Irrigation water which is delivered beyond the target area.

precipitation rate The rate of application of water measured in inches per hour.

rain shutoff device A component which automatically suspends irrigation when it rains.

recreational area Areas dedicated to active play such as parks, sports fields, or informal play areas where turf provides a playing surface.

reference evapotranspiration An estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered, expressed in inches per year. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance.

rehabilitated landscape Any re-landscaping project in which more than 50 percent of the existing landscape material is replaced or modified within a 12-month period in more than 50 percent of the planting area.

rootable soil volume The volume of soil in and around tree wells and planting islands that tree roots can easily utilize.

soil moisture sensor A device that measures the amount of water in the soil. The device may also suspend or initiate irrigation.

sprinkler head A device which delivers water through a nozzle.

turf A ground cover surface of mowed grass. Annual bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

valve A device used to control the flow of water in the irrigation system.

City of Emeryville

Water Efficient Landscape Requirements

Larger Landscapes

This document defines the water efficient landscape design, construction and documentation standards referred to in Section 9-4.70.4 of the Emeryville Municipal Code.

Applicability and Exceptions 2

Landscape Design Package

Submitted as Part of the Design Review Application: 2

- I. Project information form 2
- II. Soil management report 2
- III. Landscape design plan 3
- IV. Water efficient landscape worksheet 5
- V. Grading design plan 8
- VI. Bay-Friendly Landscape Scorecard 8
- VII. Copies of transmittals 8

Irrigation Design Package

Submitted as Part of the Grading or Building Permit Application 8

- I. Updated landscape design package 8
- II. Irrigation design plan 9
- III. Irrigation schedule 11
- IV. Copies of transmittals 11

Project Completion Package

Submitted Prior to Issuance of Certificate of Occupancy 11

- I. Final landscape inspection 11
- II. Certificate of completion 12
- III. As-built drawings 12
- IV. Landscape and irrigation maintenance schedule 12
- V. Irrigation audit report and implementation 13
- VI. Copies of transmittals 13

FORMS 14

Water Efficient Landscape Project Information Form 14

Water Efficient Landscape Worksheet 15

Water Efficient Landscape Certificate of Completion 16

DEFINITIONS 17

Applicability and Exceptions

New and rehabilitated landscapes with a landscape area equal to or greater than 2,500 square feet are subject to this section.

These requirements do not apply to the following:

- registered historical sites;
- ecological restoration projects that do not require a permanent irrigation system;
- plant collections, as part of botanical gardens and arboretums open to the public; or
- cemeteries.

For projects subject to these requirements, planting and irrigation shall be designed, installed, maintained, and operated to result in total annual applied water use less than or equal to the maximum applied water allowance calculated as specified in these requirements. These projects are required to obtain Design Review, a Building or Grading Permit, and a Certificate of Occupancy, and to meet the design, construction and documentation standards described in this document. Projects must also comply with stormwater and recycled water provisions of the Emeryville Municipal Code and Stopwaste.org's Bay-Friendly Landscape Guidelines.

Landscape Design Package

Submitted as Part of the Design Review Application

The Landscape Design Package shall include project information, a soil management report, a landscape design plan, a water efficient landscape worksheet, a grading design plan, and a copy of a letter or e-mail sending documents to the water purveyor. This package shall be submitted as part of the Design Review Application for the project.

I. Project Information Form

Use the Water Efficient Landscaping Project Information Form on Page 14 to provide contact and project information.

II. Soil Management Report

In order to create drought resistant soil, reduce runoff and encourage healthy plant growth, submit a soil management report addressing soil attributes of the project site, including the following elements:

A. Soil Areas. Identify areas of quality topsoil to be protected during construction, and critical soil limitations such as compaction, water logged soils or wetlands, and thin, eroded or erosion prone soils.

B. Soil Analysis. Sample and analyze the soil(s) into which plantings are to be made. If all plantings will be in new imported soil, City staff may waive this requirement.

1. The soil analysis must be performed by a laboratory certified by the United States Composting Council (USCC) under the Seal of Testing Assurance (STA) Program.
2. Sample soils in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

3. Provide the soil laboratory with information about the types of plantings intended (such as turf, perennial bed, annual bed, swale, etc.).
4. At a minimum the soil analysis shall include:
 - a. soil texture;
 - b. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 - c. pH;
 - d. total soluble salts;
 - e. sodium;
 - f. essential nutrients
 - g. percent organic matter; and
 - h. recommendations for soil amendments or nutrient applications to ameliorate the soil limitations identified by the analysis and the amount of compost required to bring the soil organic matter content to a minimum of 3.5% by dry weight or a minimum application of at least 1 inch . The required practice of adding compost is waived if the plant palette primarily includes California native species that are adapted to soils with little or no organic matter as documented by a published plant reference.
5. The soil report shall include the following types of recommendations:
 - a. recommendations based on an ‘organic’ approach to soil and landscape management that specifies natural and non-synthetic fertilizers to rectify any soil deficiencies.
 - b. if the soils are to be irrigated with recycled water, recommendations tailored to recycled water.
 - c. management actions to remediate limiting soil characteristics, such as ripping the soil to alleviate compaction.

C. Soil Specifications. Submit specifications for protecting topsoil, ameliorating soil limitations, and incorporating compost and/or amendments as per recommendations in the soil analysis report. If all planting soil is to be imported, submit information on the composition of the new soil and any amendments. If the imported soil does not contain adequate compost, then a minimum of 6 cubic yards of compost, with a composition according to City standards, per 1,000 square feet of landscape area shall be incorporated into the top 6 inches of soil.

D. Use in Design. Provide the soil management report to the landscape and irrigation designers in time to be used in the design.

III. Landscape Design Plan

Submit a landscape design plan meeting the following criteria as part of the Design Review Application. For the efficient use of water, carefully design the landscape for the intended function of the project.

A. Plants. Use the following criteria in plant selection.

1. The Estimated Total Water Use (ETWU) of the plant material selected must not exceed the Maximum Applied Water Allowance (MAWA).
2. Generally, each hydrozone shall have plant materials with similar water use. Hydrozones may include a mix of plants of moderate and low water use, or moderate and high water use.
3. At least 80% of the total number of plants in non-turf areas shall require occasional, little or no summer water. All species should be adapted to the climate in which they will be planted, as documented by a published plant reference. If plants are given a range of water needs from “occasional to moderate” for example, the landscape designer must determine if the plant will require either occasional or moderate watering based on site, soil, and climate conditions and

categorize the plant appropriately. Sources used to determine climate adaptation and watering requirements may include:

- a. Bornstein, Carol, David Fross and Bart O'Brien, *California Native Plants for the Garden*.
Qualifying irrigation designation: "occasional", "infrequent", or "drought tolerant"
 - b. East Bay Municipal Utility District, *Plants and Landscapes for Summer Dry Climates*.
Qualifying irrigation designation: "occasional", "infrequent" or "no summer water"
 - c. Sunset, *Western Garden Book*.
Qualifying irrigation designation: "little or no water"
 - d. University of California Cooperative Extension and Department of Water Resources, *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III- the Water Use Classification of Landscape Species* Qualifying irrigation designation: "Low" or "Very Low"
4. Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape; 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
 5. Limit total irrigated areas specified as turf to a maximum of 25% with recreational areas exempted. Exceptions may be granted when using drought-tolerant grasses requiring limited irrigation and mowing or for grassy swales designed and maintained to treat stormwater runoff.
 6. Do not use species identified by the California Invasive Plant Council's "Don't Plant a Pest! San Francisco Bay Area" and "Don't Plant a Pest! Trees in California" brochures.
 7. The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives per Civil Code Section 1351, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.
 8. Select and plant plants appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water and other resources, the following are highly recommended:
 - a. protect and preserve native species and natural vegetation;
 - b. select plants based on disease and pest resistance;
 - c. select California native plants;
 - d. use the Sunset *Western Garden Book's* Climate Zone System, which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
 - e. select and locate plants considering invasive surface roots, to minimize damage to buildings, pavement, utility lines, and other property and infrastructure;
 - f. consider the solar orientation for plant placement to maximize summer shade and winter solar gain;
 - g. avoid specifying turf in street medians, traffic islands or bulb-outs of any size unless irrigated with subsurface or low volume irrigation; and
 - h. avoid installing turf on slopes exceeding 10:1 (horizontal to vertical) or 10%.
 9. Select and space plants based on mature plant size, so they can grow to mature size within the space allotted to them, to avoid shearing and topping.

B. Water Features. Features such as pools, fountains and spas have two criteria:

1. Use re-circulating water systems for water features.
2. Design water features to minimize water loss. Outdoor swimming pools and spas (hot tubs) must have covers.

C. Amendments and Mulch. Include the use of mulch to retain moisture and minimize runoff.

1. Incorporate compost and soil amendments according to recommendations of the soil report and what is appropriate for the plants selected, or incorporate 6 cubic yards per 1,000 square feet of compost, with a composition according to City standards, into the top 6 inches of soil.
2. Apply a minimum 3-inch layer of mulch on all exposed soil surfaces of planting areas except in turf areas, or direct seeding applications where mulch is contraindicated. Do not place nonporous material under the mulch.
3. Use stabilizing mulching products on slopes. It is highly recommended that bio-based products are used and petroleum-based products are avoided.
4. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
5. It is highly recommended that:
 - a. compost and mulch is recycled from local organic materials such as plant or wood waste,
 - b. compost is purchased from processors who participate in the US Composting Council's Standard Testing Assurance Program, and
 - c. Ongoing maintenance includes regular reapplication of mulch to 3 inches.
6. Required trees shall have adequate rootable soil volume (600 cubic feet for small trees, 900 cubic feet for medium-size trees, and 1200 cubic feet for large trees) and good drainage. Tree sizes refer to sizes of trees at maturity.

D. The Landscape Design Plan Document. Draw the landscape design plan clearly on project base sheets, to a scale that is adequate to identify each component of the plan, at least 1 inch equals 20 feet. The plan shall include the following elements:

1. Project base sheet including dimensioned property lines, building footprints, and pervious and non-pervious hardscape areas including parking, paving and sidewalks;
2. Existing trees and shrubs and whether each will be kept or removed;
3. Hydrozone delineation and water use as low, moderate, high water, or mixed water use;
3. Recreational areas (turf used as a play surface);
4. Edible plant areas that are permanently and solely dedicated to edible plants;
5. Recycled-water irrigated areas, indicating whether recycled water is available now or not;
6. Soil amendments, type, and quantity;
7. Mulch type and application depth;
8. Water features, indicating type and surface area;
9. Stormwater retention and infiltration facilities, with location and depth;
10. Rain harvesting facilities;
11. Location of plants indicating each species of tree, shrub, groundcover, turf and vine using a unique symbol for each;
12. Table of plants including botanical name, common name, container size, spacing, quantity and water use level for each species of plant;
13. Tree staking and soil preparation details including planting specifications;
14. Statement: "I have complied with the criteria of the Water Efficient Landscape Ordinance and applied them for the efficient use of water in the Landscape Design Plan"; and
15. Signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape.

IV. Water Efficient Landscape Worksheet

The Water Efficient Landscape Worksheet shows the Maximum Applied Water Allowance and the Estimated Total Water Use for the proposed landscape project. The Water Efficient

Landscape Worksheet form is on page 15 of this document. Instructions for completing the worksheet are shown below.

A. Hydrozone Information Table. A hydrozone is a portion of the landscape area having plants with similar water needs.

1. For hydrozones that include a mix of plants of moderate and low water use, or moderate and high water use, the plant factor calculation is based on the proportions of the respective plant water uses or the highest water using plant.

Water Needs of Plants in Hydrozone	Plant Factor Range	Plant Factor Average
Low Water Use	0 to 0.3	0.2
Medium Water Use	0.4 to 0.6	0.5
High Water Use	0.7 to 1.0	0.8
Special Landscape Area	Up to 1.0	Varies

2. To determine if a plant’s water use is low, medium or high, refer to *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III- the Water Use Classification of Landscape Species* (WUCOLS) published by the University of California Cooperative Extension and the Department of Water Resources in 2000, or a more recent version. This publication is available at <http://water.ca.gov/wateruseefficiency/publications/> or by writing to:

California Department of Water Resources, Bulletins and Reports
 P.O. Box 942836, Sacramento CA 94236-0001

3. Include all water features in the high water use hydrozone, and temporarily irrigated areas in the low water use hydrozone. Exclude non-irrigated rain gardens from the hydrozone table.

4. Special Landscape Areas (SLA) are areas of the landscape dedicated solely to edible plants, areas or water features using recycled water, or active play (such as parks, sports fields and informal play areas) where turf provides a playing surface.

5. Enter the Plant Water Use Factor for each hydrozone. If you are not sure which Plant Water Use Factor number to cite within a range, use the average number.

6. Enter the method of irrigation, such as spray, rotor, bubbler or drip, for each hydrozone.

B. Maximum Applied Water Allowance

The Maximum Applied Water Allowance is calculated using the following equation, which assumes average irrigation efficiency of 0.71:

$$MAWA = (41.8) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$$

Where:

- MAWA = Maximum Applied Water Allowance (gallons per year)
- 41.8 = Emeryville’s Reference Evapotranspiration (inches per year)
- 0.62 = Conversion Factor (to gallons)
- 0.7 = Evapotranspiration Adjustment Factor (ETAF)
- LA = Landscape Area including SLA (square feet of landscape project)

0.3 = Additional Water Allowance for Special Landscape Areas

SLA = Special Landscape Area (square feet)

Example MAWA calculation: a hypothetical landscape project with landscape area of 15,000 square feet with a 1,000 square foot Special Landscape Area (edible plants, recreational areas, or use of recycled water).

$$MAWA = (41.8)(0.62) [(0.7 \times 15,000) + (0.3 \times 1,000)]$$

$$MAWA = 279,893 \text{ gallons per year}$$

C. Estimated Total Water Use

The Estimated Total Water Use is calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed the MAWA.

$$ETWU = (41.8)(0.62) \left(\frac{\sum (PF \times HA)}{IE} + SLA \right)$$

Where:

ETWU = Estimated Total Water Use per year (gallons)

41.8 = Emeryville’s Reference Evapotranspiration (inches)

PF = Plant Factor based on WUCOLS

HA = Hydrozone Area (square feet of landscape project)

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor (to gallons)

IE = Irrigation Efficiency (minimum 0.71)

Example ETWU calculation: landscape area is 15,000 square feet; with a 1,000 square foot Special Landscape Areas (recreational area, edible plants, or use of recycled water).

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Hydrozone Area (HA) (square feet)	PF x HA (square feet)
1	High	0.8	1,000	800
2	High	0.7	2,000	1,400
3	Medium	0.5	3,000	1,500
4	Low	0.3	4,000	1,200
5	Low	0.2	4,000	1,000
			Sum	5,900
6	SLA	1.0	1,000	1,000

$$ETWU = (41.8)(0.62) \left(\frac{5,900}{0.71} + 1,000 \right)$$

$$ETWU = 241,125 \text{ gallons per year.}$$

D. Comparison. Compare MAWA and ETWU. ETWU must be less than MAWA.

V. Grading Design Plan

Submit a grading plan as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement, but is not necessary for all projects. For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste.

A. Preventing Erosion and Runoff. To prevent excessive erosion and runoff, it is highly recommended that project applicants:

1. Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
2. Avoid disruption of natural drainage patterns and undisturbed soil; and
3. Avoid soil compaction in landscape areas.

B. The Grading Design Plan Document. Draw the grading design plan clearly on project base sheets, to a scale that is adequate to identify each component of the plan, at least 1 inch equals 20 feet. The plan shall indicate finished configurations and elevations of the landscape, and shall include the following elements:

1. Height of graded slopes;
2. Contour elevations with spacing shown at no greater than 5 feet;
3. Drainage patterns;
4. Pad elevations;
5. Finish grade;
6. Stormwater retention improvements, if applicable;
7. Statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan;" and
8. Signature of a licensed professional as authorized by law.

VI. Bay-Friendly Landscape Scorecard

Include a filled-in copy of the attached Bay-Friendly Landscape Scorecard.

VII. Copies of Transmittals

Include copies of a letters or emails sending the Landscape Design Package to the East Bay Municipal Utility District and the property owner or developer.

Irrigation Design Package**Submitted as Part of the Grading or Building Permit Application**

The Irrigation Design Package shall include an updated Landscape Design Package, an irrigation design plan, an irrigation schedule, and a copy of a letter or e-mail sending documents to the water purveyor. This package shall be submitted as part of the Building Permit or Grading Permit application for the project.

I. Updated Landscape Design Package

During and after the design review process, the project information, water efficient landscape worksheet, soil management report, landscape design plan and/or grading design plan may be

revised. Submit the final versions of these documents, or resubmit the design review documents if they have not been changed.

II. Irrigation Design Plan

Submit an irrigation design plan meeting the irrigation design criteria as part of the application for a Building Permit or a Grading Permit. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. Design the irrigation system and its related components to allow for proper installation, management, and maintenance.

A. System. The system shall meet the criteria described below.

1. Provide a dedicated landscape water meter separate from indoor water.
2. Automatic irrigation controllers are required, and shall utilize soil moisture sensor data or current reference evapotranspiration data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data.
3. Design the irrigation system to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
 - a. During design, measure static water pressure, dynamic or operating pressure, and flow of the water supply at the point of connection. If the measurements are not available at the design stage, conduct the measurements prior to installation.
 - b. If the static pressure is above or below the required dynamic pressure of the irrigation system, install pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices to meet the required dynamic pressure of the irrigation system.
4. Use rain, freeze and wind sensors, either integral or auxiliary, that suspend or alter irrigation operation during rain or windy or freezing weather.
5. Install a manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
6. Install a backflow prevention device to protect the potable water supply from contamination by the irrigation system.
7. Flow meters that detect and report high flow conditions created by system damage or malfunction are recommended.
8. Design the irrigation system to prevent irrigation runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
9. Use information from the soil management plan, such as soil type and infiltration rate, when designing the irrigation system.
10. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
11. Design and install the irrigation system to meet or exceed an average irrigation efficiency of 0.71.
12. In mulched planting areas, use low volume irrigation to maximize water infiltration into the root zone.
13. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
14. Head to head coverage is recommended. In any case, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
15. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.

16. Check valves or anti-drain valves are required for all irrigation systems.
17. Do not use overhead spray to irrigate narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction.
18. Overhead irrigation is not permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
 - a. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
 - b. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
 - c. the irrigation designer specifies an alternative design or technology and clearly demonstrates strict adherence to irrigation system design criteria. Prevention of overspray and runoff must be confirmed during the irrigation audit.
19. Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology and clearly demonstrates that no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

B. Hydrozones.

1. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
2. Select sprinkler heads and other emission devices based on what is appropriate for the plant types within that hydrozone.
3. Where feasible, place trees on separate valves from shrubs, groundcovers, and turf.
4. Designate hydrozone areas by number, letter, or other designation. Designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table. This table can also assist with the irrigation audit and programming the controller.

C. The Irrigation Design Plan Document. Draw the irrigation design plan clearly on project base sheets, to a scale that is adequate to identify each component of the plan, at least 1 inch equals 20 feet. The plan shall include the following elements:

1. Designated hydrozones and area irrigated by each valve;
2. Location and size of the water meter for the landscape area;
3. Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
4. Static water pressure at the point of connection to the public water supply;
5. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
6. Recycled water irrigation systems if recycled water is available or projected to be available in the foreseeable future, as specified in Article 9-4.68, Water Reuse;
7. Statement: “I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan”; and
8. Signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system.

III. Irrigation Schedule

For the efficient use of water, develop the irrigation schedules to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

A. Controllers. Irrigation scheduling shall be regulated by automatic irrigation controllers.

B. Overhead Hours. Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

C. Meeting MAWA. Specify run times, emission devices, and flow rates so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.

D. Parameters. Parameters used to set the automatic controller shall be developed and submitted for each of the following:

1. The plant establishment period;
2. The established landscape; and
3. Temporarily irrigated areas.

E. Factors. Each irrigation schedule shall consider for each station all of the following that apply:

1. Irrigation interval (days between irrigation);
2. Irrigation run times (hours or minutes per irrigation event to avoid runoff);
3. Number of cycle starts required for each irrigation event to avoid runoff;
4. Amount of applied water scheduled to be applied on a monthly basis;
5. Application rate setting;
6. Root depth setting;
7. Plant type setting;
8. Soil type and mulch depth;
9. Slope factor setting;
10. Shade factor setting; and
11. Irrigation uniformity or efficiency setting.

IV. Copies of Transmittals

Include copies of letters or emails sending the Irrigation Design Package to the East Bay Municipal Utility District and the property owner.

Project Completion Package Submitted Prior to Issuance of Certificate of Occupancy

I. Final Landscape Inspection

Call the project planner and the Public Works Environmental Analyst to arrange for a final landscape inspection. They will check to see that the plants and irrigation system have been

installed as specified and there is no or minimal irrigation runoff or overspray. Submit a record of an approved final inspection.

II. Certificate of Completion

Use the form on page 16 to provide contact information and certification that the landscape project for the property has been installed according to the approved Landscape Design Plan and the Irrigation Design Plan.

III. As-Built Drawings

Where any changes have been made in the field during construction, these “as-built” or record drawings shall be submitted.

IV. Landscape and Irrigation Maintenance Schedule

Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted prior to issuance of Certificate of Occupancy.

A. Schedule elements. The regular maintenance schedule shall include:

1. Routine inspection,
2. Adjustment and repair of the irrigation system and its components,
3. Aerating and dethatching turf areas,
4. Replenishing mulch,
5. Fertilizing,
6. Pruning,
7. Weeding in all landscape areas,
8. Replacing failed plants with the same or equivalent plants,
9. Removing and obstruction to emission devices, and
10. Annual transmittal of total annual irrigation water use to the City Environmental Coordinator.

B. Auditing and Maintenance. Operation of the irrigation system outside the normal watering hours is allowed for auditing and system maintenance.

C. Replacement Parts. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.

D. Environmentally Friendly Practices. The project applicant is encouraged to implement sustainable or environmentally friendly practices for overall landscape maintenance. The following is highly recommended:

1. use the “Bay-Friendly Landscape Model Maintenance Specifications” and the most recent “Bay-Friendly Landscape Guidelines” as official reference documents in the landscape maintenance contract and/or with on-site landscape staff ;
2. at least one landscaping staff member or contractor to be trained in the use of Integrated Pest Management (IPM) or is a “Bay-Friendly Qualified Landscape Professional;”
3. irrigation audit report by a certified landscape irrigation auditor, including inspection, system tune-up, system test with distribution uniformity, reporting overspray or irrigation runoff that causes overland flow, and an irrigation schedule; and
4. documentation verifying implementation of soil report recommendations.

E. Model Homes. In projects with private yards that will be maintained by individual home owners, landscaped model homes shall use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.

1. Use signs to identify the model as an example of water efficient landscape featuring elements such as hydrozones, irrigation equipment and others that contribute to the water efficient theme.
2. Provide information about designing, installing, managing and maintaining water efficient landscapes.

V. Irrigation Audit Report and Implementation

The irrigation audit report shall be prepared by a certified landscape irrigation auditor, and shall include inspection, system tune-up, system test with distribution uniformity, reporting overspray or irrigation runoff that causes overland flow, evaluation of Irrigation Efficiency, and comments on the irrigation schedule. The applicant shall also submit information on how any overspray and irrigation runoff have been eliminated, how Irrigation Efficiency has been improved to at least 0.71 if necessary, and where the irrigation schedule will be kept on site and who will implement it.

VI. Copies of Transmittals

Include copies of letters or emails sending the Completion Package to the East Bay Municipal Utility District and the property owner.

**WATER EFFICIENT LANDSCAPE
PROJECT INFORMATION FORM**

Project Name _____ Planning Project Number _____

Project Address _____ APN _____

Applicant's Name and Affiliation _____

Applicant's Address _____

Applicant's City/State/Zip _____

Applicant's Phone _____ E-Mail _____

Landscape Architect or Designer's Name _____

Landscape Architecture or Design Firm _____

Designer's Address _____

Designer's Phone _____ E-Mail _____

Property Owner's Name _____

Owner's Address _____

Owner's Phone _____ E-Mail _____

Total Landscape Area (Sq. Ft.) _____ Irrigated Landscape Area (Sq. Ft) _____

Landscape Type (check one): New Rehabilitated

Land Use Type (check one):
 Multi-Family Single-Family Commercial Other (specify) _____

Irrigation Water Supply (check one):
 Potable Recycled (Reclaimed) Gray Water Other (specify) _____

Documents Included:
 Worksheet Soil Report Landscape Plan Grading Plan Letter to EBMUD

I agree to comply with the requirements of the Water Efficient Landscape Ordinance.

Applicant Signature Date

WATER EFFICIENT LANDSCAPE WORKSHEET

Project Address _____ Date _____

Hydrozone Information Table

Hydrozone	Hydrozone or Valve Number	Irrigation Method**	Hydrozone Area (Sq. Ft.)	Percent of Landscape Area
1				
2				
3				
4				
5				
6				
Total				100%

* Indicate the method of irrigation such as spray, rotor, bubbler, drip, etc.

If project has more than 6 hydrozones, duplicate this table on a separate sheet.

Maximum Applied Water Allowance Calculation

$$MAWA = 41.8 \times 0.62 \times [(0.7 \times LA) + (0.3 \times SLA)]$$

Insert your MAWA calculation in the space below:

Maximum Applied Water Allowance: _____ gallons per year.

Estimated Total Water Use Calculation

Hydrozone Number	Plant Water Use Type	Plant Factor (PF)	Hydrozone Area (HA) (Sq. Ft.)	PF x HA (Sq. Ft)
1				
2				
3				
4				
5				
			Sum of PF x HA:	
6	SLA (if applicable)			

$$ETWU = 41.8 \times 0.62 \times [(\text{Sum of (PF x HA)} / \text{IE}) + \text{SLA}]$$

Insert your ETWU calculation in the space below:

Estimated Total Water Use: _____ gallons per year.

Comparison Between MAWA and ETWU

Difference between Maximum Applied Water Allowance and

Estimated Total Water Use (MAWA – ETWU): _____ gallons per year.

DEFINITIONS

as-built drawings A set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

automatic controller An automatic timing device used to remotely control valves that operate an irrigation system, using either evapotranspiration (weather-based) or soil moisture data.

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.

certified irrigation designer A person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

certified landscape irrigation auditor A person certified to perform landscape irrigation audits by an accredited academic institution, professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program or Irrigation Association's Certified Landscape Irrigation Auditor program.

check valve A valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

compost The product of controlled biological decomposition of organic materials, often including urban plant debris and food waste. It is an organic matter resource that has the unique ability to improve the chemical, physical and biological characteristics of soils or growing media. It contains plant nutrients but is typically not characterized as a fertilizer.

drip irrigation Any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

drought resistant soil Soil that has been managed, by amending with compost and covering with mulch, for example, to maximize rainfall infiltration, increase the soil's capacity to hold water, and allow for plant roots to penetrate and proliferate such that the landscape can survive with less than optimal water (i.e. less than the Maximum Applied Water Allowance).

ecological restoration project A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

emitter A drip irrigation emission device that delivers water slowly from the system to the soil.

established landscape The point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

Estimated Total Water Use (ETWU) The total water used for the landscape as described in Section 9-4.70.7.

Evapotranspiration Adjustment factor (ETAF) A factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

evapotranspiration rate The quantity of water evaporated from soil and other surfaces and transpired by plants during a specified time.

hardscape Any durable material (pervious and non-pervious).

hydrozone A portion of the landscaped area having plants and/or water with similar water needs, classified as high, medium, low or very low water use. 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 (e.g., inches per hour).

Irrigation Efficiency (IE) The amount of water beneficially used divided by the amount of water applied. Not all water applied to landscapes is used by plants. Some water is lost due to runoff, wind spray, or deep percolation. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

irrigation runoff Applied water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or where there is a slope.

landscape architect A person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

landscape area All 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, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, or other non-planted areas.

landscape contractor A person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

lateral line The water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

low volume irrigation The application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

main line the pressurized pipeline that delivers water from the water source to the valve or outlet.

Maximum Applied Water Allowance (MAWA) The upper limit of annual applied water for the established landscaped area. It is based upon Emeryville's Evapotranspiration Adjustment Factor and the size of the landscape area, including the Special Landscape Area.

mulch Any organic material such as leaves, arbor or wood chips, recycled wood waste, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

operating pressure The pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

overhead sprinkler irrigation system A system that delivers water through the air (e.g., spray heads and rotors).

overspray Irrigation water which is delivered beyond the target area.

plant factor A factor that, when multiplied by an evapotranspiration rate, estimates the amount of water needed by plants. For purposes of this ordinance the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from WUCOLS.

precipitation rate The rate of application of water measured in inches per hour.

rain shutoff device A component which automatically suspends irrigation when it rains.

recreational area Areas dedicated to active play such as parks, sports fields, or informal play areas where turf provides a playing surface.

recycled water Reclaimed, treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

reference evapotranspiration An estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered, expressed in inches per year. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance.

rehabilitated landscape Any re-landscaping project in which more than 50 percent of the existing landscape material is replaced or modified within a 12-month period in more than 50 percent of the planting area.

rootable soil volume The volume of soil in and around tree wells and planting islands that tree roots can easily utilize.

soil moisture sensor A device that measures the amount of water in the soil. The device may also suspend or initiate irrigation.

soil texture The classification of soil based on its percentage of sand, silt, and clay.

Special Landscape Area (SLA) An area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water, and areas dedicated to active play such as parks, sports fields, golf courses, and informal play areas 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.

station An area served by one valve or by a set of valves that operate simultaneously.

swing joint an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

turf A ground cover surface of mowed grass. Annual bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

valve A device used to control the flow of water in the irrigation system.

water feature A design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used solely for on-site wastewater treatment or stormwater best management practices that are not irrigated are not water features and, therefore, are not subject to the water budget calculation.

WUCOLS *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III- the Water Use Classification of Landscape Species* published by the University of California Cooperative Extension and the Department of Water Resources in 2000, or a more recent version.