Water Conservation Plan Guidelines

Part One – General City Requirements

The City of Chula Vista Growth Management Ordinance, Municipal Code Section 19.09.050C, requires a Water Conservation Plan (WCP) to be submitted with all Sectional Planning Area (SPA) Plans. If a SPA Plan is not required, a WCP is required to be submitted with Tentative Subdivision Maps. The Growth Management Program further requires that a Water Conservation Plan be submitted for major development projects, defined as residential projects consisting of 50 dwelling units or greater, or commercial and industrial projects with 50 Equivalent Dwelling Units (EDU's) of water demand or greater. (See Part Six for an explanation of EDU's.)

The WCP shall provide an analysis of water usage requirements of the proposed project, as well as a detailed plan of proposed measures for water conservation, use of reclaimed water, and other means of reducing per capita water consumption from the proposed project, as well as defining a program to monitor compliance.

Part Two – Water Conservation Plan Outline

Water Conservation Plans shall be consistent with the format and content identified in the Water Conservation Plan Outline, Attachment A.

Part Three – Residential Water Conservation Measures

All residential projects subject to the WCP requirements shall provide the following conservation measures in all dwelling units as more particularly described in Attachment B:

a. Hot-Water Pipe Insulation.
b. Pressure Reducing Valves.
c. Water Efficient Dishwashers.
d. At least one outdoor water conservation measure from the Residential Water Conservation Measures list.
e. At least one additional water conservation measure from either the indoor or outdoor categories identified on the Residential Water Conservation Measures list.
f. Water conservation measures not found on the Residential Water Conservation Measures list may be proposed consistent with the provisions of Part Five below.

Part Four – Non-Residential Water Conservation Measures

All non-residential projects subject to the WCP requirements shall provide the following conservation measures as more particularly described in Attachment C:

a. Hot-Water Pipe Insulation.
b. Pressure Reducing Valves.
c. At least one outdoor water conservation measure from the Non-Residential Water Conservation Measures list.
d. At least one additional water conservation measure from either the indoor or outdoor categories identified on the Non-Residential Water Conservation Measures list.
e. Water conservation measures not found on the Non-Residential Water Conservation Measures list may be proposed consistent with the provisions of Part Five below.

Part Five – Future Water Conservation Technology and/or Measures

The Developer may submit a Water Conservation Plan containing alternate water conservation measures not found on the Residential and Non-Residential Water Conservation Measures list. The alternate water conservation measures must be accompanied by data confirming, to the satisfaction of the City, the water savings achieved by implementing the measures.

The Director of Planning and Building or his/her designee will evaluate in his/her discretion the alternate water conservation measures for consistency with the objectives of the Water Conservation Guidelines. Alternate water conservation measures may be approved through the review and approval process for the Water Conservation Plan.

Part Six – Using Equivalent Dwelling Units (EDU's) to Determine Water Conservation Plan Requirements for Non-Residential and Mixed Use Projects.

The following water demand equivalencies apply to non-residential or mixed use projects:

a. Commercial projects of 12 or more acres.
b. Industrial projects of 24 or more acres.
c. Mixed Use projects with a cumulative estimated water demand of 21,200 gallons per day.

The average daily water consumption per household as estimated by the American Water Works Association Research Foundation is 424 gallons per day (gpd). Major development projects are defined as projects that use the equivalent water demand for 50 residences, or 21,200 gallons per day.

Using an estimated water demand factor of 1785 gallons per day per acre for commercial land, and an estimated water demand factor of 893 gallons per day per acre for industrial land, a commercial site of 12 acres and greater and an industrial site of 24 acres and greater would be required to prepare WCP's.

For projects with more than one use, the threshold for requiring a Water Conservation Plan would be a cumulative estimated project water demand of 21,200 gallons per day, based on these factors as approved by the City.

Infill or redevelopment projects that provide information, to the satisfaction of the City, indicating the net water demand increase resulting from the proposed land use does not exceed 21,200 gallons per day will not be required to prepare a Water Conservation Plan.

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Water Conservation Plan Outline
Attachment A

The following outline sets forth the format and content of the Water Conservation Plan (WCP). The Water Conservation Plan shall provide an analysis of water usage requirements of the proposed project, a detailed plan of proposed measures for water conservation, use of recycled water, and other means of reducing per capita water consumption from the proposed project, as well as defining a program to monitor compliance. All SPA Plans must incorporate the following numbering system consistent with the master planned communities SPA plan outline. For projects that do not require a SPA Plan a comparable numbering sequence is to be used. (e.g. II.8.1, II.8.2 replaced with 1., 2.)

SECTION II.8 WATER CONSERVATION PLAN

Table of Contents

Abbreviations, Terms and Water Equivalencies

II.8.1 Executive Summary

Provide a brief summary of the Water Conservation Plan. Particular emphasis is to be given to the water conservation measures identified for implementation in the project.

II.8.2 Introduction

Identify the project and list goals of the project's Water Conservation Plan.

II.8.3 Purpose

Describe the purpose of providing a Water Conservation Plan. Identify the authority and scope of the City of Chula Vista, State, and Federal regulations, where applicable. A brief explanation of how the project has addressed regulations is to be included.

II.8.4 Project Description

Project description including land use information, acreage, number of housing units, unit types and mixed-use areas. Include the Site Utilization Plan illustration from the Sectional Planning Area (SPA) Plan document.

II.8.5 Water Service and Supply

Identify the local water agency that will supply potable and recycled water to the project site.

II.8.6 Projected Water Use

Potable Water Demand
Summarize the potable water demand in a table based on land use type and projected residential density. Base the unit demand on data provided by the water purveyor.

Recycled Water Demand
Summarize recycled water demand in a table and identify recycled water use areas in the project using an illustration. Use the unit demand factor consistent with the water purveyor. Include land use, acreage, percent to be irrigated, irrigated acreage and gallons per day for all land use types within the project.

II.8.7 State and Federal Water Conservation Requirements

List the Federal and State mandated minimum water conservation standards.

II.8.8 Local Water Conservation Requirements

Description of local water conservation standards including requirements of the water purveyor and the City of Chula Vista Landscape Manual.

Description of indoor water conservation measures as required by the Water Conservation Plan Guidelines and additional indoor and outdoor water conservation measures to be used in the project. (See Attachments B & C)

Any additional water conservation measures to be offered by merchant builders as an option for homebuyers are to be included in this section.

II.8.9 Water Conservation Estimated Savings

Total estimated potable water savings (gallons per day) for the project due to implementation of the additional conservation measures.

II.8.10 Implementation Measures

List the water conservation measures to be implemented in the project and summarize the water conservation program including any efforts involving merchant builders, local water purveyors the City and any other public or private agencies.

II.8.11 Monitoring

Summarize the implementation timing for each water conservation measure including the responsibility for monitoring and reporting on the effectiveness of the measure if applicable.

References
Appendix

Adopted May 27, 2003

Residential Water Conservation Measures
Attachment B

All residential units subject to the Water Conservation Plan requirements shall contain the following three indoor water conservation measures:

Savings & Costs data are estimates based on the Water Use Efficiency, Strategies for Proposed Residential Developments, April 2002 report and are provided for information only.

1. Hot Water Pipe Insulation

Insulation of hot-water pipes, and separation of hot and cold water piping to avoid heat exchange.

Savings & Costs
Water savings - 2,400 gallons per residential unit per year. Estimated cost of insulating hot water pipes during construction - $50.00.

2. Pressure Reducing Valves

Pressure reducing valves maintain the pressure below 60 psi reducing the volume of any leakage present and preventing excessive flow of water from all appliances and fixtures.

Savings & Costs
Water savings - 1,800 gallons per unit per year. Estimated cost of pressure reducing valves - $100.00.

3. Water-Efficient Dishwashers

Dishwashers with water saving features such as water level sensors instead of timed fillers. The website <www.energystar.gov/products/dishwashers/> may be consulted for a current list of Energy Star label dishwashers.

Savings & Costs
Water savings – 650 gallons per unit per year. Estimated cost of water efficient dishwashers $300.00 to $700.00.

All residential units subject to the Water Conservation Plan requirements shall contain at least one outdoor water conservation measure and at least one additional water conservation measure from either the indoor or outdoor categories.

Outdoor Water Conservation Measures

1. Evapotranspiration (ET) Controllers

Timed, fixed irrigation scheduling based on estimates of actual plant evapotranspiration rates. Radio signal from a central control station or satellite transmits information to the controllers to operate the sprinklers for the appropriate length of time.

Savings & Costs
Water savings – 20,000 gallons per single-family unit per year. The cost is estimated to be $175.00 per installed controller and may require a signal and maintenance fee, estimated to be $48.00 per year.

Outdoor Water Conservation Measures (cont.)

2. Water-Efficient Landscaping

Use of drought tolerant plant materials, irrigation systems, and controllers as required by the Chula Vista Landscape Manual. In addition, the use of drip irrigation where possible and restriction of sprinkler irrigation as recommended by the water purveyors.

Savings & Costs

Water savings – Up to 50% of outdoor water use. For a 2,100 sq. ft. landscaped area a water savings of 12,000 gallons per year is estimated. The cost of water efficient landscaping is no different than conventional landscaping, possibly lower.

3. Xeriscape

Xeriscaping is a combination of seven principles, planning and design, practical turf areas, efficient irrigation, soil analysis and improvement, mulching, low water use plants and appropriate maintenance.

Savings & Costs

Water savings – 30% reduction in irrigation demand or about 16,000 gallons per year on a typical single-family lot. The cost of xeriscape does not exceed conventional landscape.

4. Soil Moisture Sensors

Soil moisture sensors placed at two or more depths and at several locations in the landscape to help determine when the soil is dry enough to require irrigation.

Savings & Costs

Alone, soil moisture sensors do not achieve water savings. However, in combination with other systems they are important tools for water savings. The cost of each sensor is approximately $235.00 and it is estimated that one or two soil moisture sensors are sufficient for a typical single-family lot (sunny and shady areas of landscape).

Indoor Water Conservation Measures

1. Dual Flush Toilets

Provides option to flush with partial (0.8 gallon) flow of water or with a full (1.6 gallon) flow depending on need.

Savings & Costs

It is estimated that a dual-flush toilet can save 4,000 gallons per year. Estimated cost of dual flush toilet - $200.00.

2. High-efficiency Washing Machines

Front loading and top loading Energy Star qualified clothes washers that use 35% to 50% less water than conventional washing machines. A current list of Energy Star high efficiency clothes washers can be found at <www.energystar.gov/products/clotheswashers/>.

Savings & Costs

Water savings – 7,000 gallons per year. Estimated cost of high-efficiency washing machine $800.00.

3. Point-of-Use, or Tank-less Water Heater

Installation of small water heaters close to the point of use, such as in bathrooms, kitchen and laundry area.

Savings & Costs

Water savings - 5,300 gallons per residential unit, per year. Estimated cost of point-of-use water heaters - $700.00. (The cost is approximately the same whether one large household unit is installed or three smaller ones at each point of use.)

Optional Water Conservation Measures

- Education Program including educational materials and guidance to new homeowners.
- Submeter all individual tenants in multi-family projects.
- Install waterless urinals in intensively used settings such as recreation areas and school sites.

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Non-Residential
Water Conservation Measures
Attachment C

All Non-Residential uses subject to the Water Conservation Plan requirements shall contain the following two indoor water conservation measures:

1. **Hot Water Pipe Insulation**
   Install insulation on all hot water pipes in all common areas and all tenant-developed areas.

2. **Pressure Reducing Valves**
   Provide pressure reducing valves at all meters, set to deliver water at no higher than 60 psi.

All Non-Residential uses subject to the Water Conservation Plan requirements shall contain at least one outdoor water conservation measure and at least one additional water conservation measure from either the indoor or outdoor categories.

Outdoor Water Conservation Measures

1. **Water Efficient Irrigation System**
   Use of rain sensors, and soil moisture measuring devices for scheduling and controlling all landscape irrigation programs in commercial, industrial and business centers including tenant areas.

2. **Evapotranspiration (ET) Controllers**
   Timed, fixed irrigation scheduling based on estimates of actual plant evapotranspiration rates. Radio signal from a central control station or satellite transmits information to the controllers to operate the sprinklers for the appropriate length of time.

3. **Water-Efficient Landscaping**
   Use of native vegetation and drought tolerant plant materials, avoiding grass and turf to the extent practical and use of irrigation systems and controllers as required by the Chula Vista Landscape Manual Use. In addition, the use of drip irrigation where possible and restriction of sprinkler irrigation as recommended by the water purveyors.

4. **Recycled Water**
   Expand use of recycled water beyond areas mandated by the water purveyor to those areas where landscaping is within a reasonable reach of recycled water pipelines, to the extent that such use is acceptable to regulatory authorities.

5. **Outdoor Garden Sales**
   All tenants with outdoor garden sales areas to install micro-irrigation systems (trickle or drip irrigation) and provide water conservation educational materials for customers.

Indoor Water Conservation Measures

1. **Dual-Flush Toilets**
   Install dual-flush (ULFT) toilets in public restrooms including gas station restrooms.

2. **Waterless Urinals**
   Install waterless urinals in public restrooms (men's rooms) including gas station restrooms.

Indoor Water Conservation Measures (Cont.)

3. **Pre-Rinse Sprayer on Sinks**
   Install automatic shut-off sprayer for pre-rinsing dishes with a maximum flow rate of 1.6 gpm in all restaurant and fast-food units.

4. **High-Efficiency Dishwashers**
   Install high-efficiency dishwashers in restaurant buildings.

5. **Air-Cooled Ice Machines**
   Install air-cooled ice machines instead of water-cooled machines in restaurants.

6. **Conductivity Meters**
   Install conductivity meters on cooling towers to regulate cycling of cooling water and chemicals.

Optional Water Conservation Measures

- Submeter all individual tenants in buildings.
- Provide educational materials and guidance to tenants.

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