



**MARIN MUNICIPAL WATER DISTRICT
REQUIREMENTS OF ORDINANCE NO. 385**

**AN ORDINANCE REVISING WATER CONSERVATION
REQUIREMENTS**

Pertaining to the Marin Municipal Water District (MMWD) Code.

Section 1. Section 11.60 of the Marin Municipal Water District (MMWD) Code is revised to read as follows:

11.60.010 Purpose. All applicants for new, increased, or modified water use shall comply with the requirements set forth in this chapter in addition to those set forth in Chapter 11.04 of this Code as a condition of receiving service.

11.60.020 Definitions. Definitions used in this chapter are as follows:

(1) Bubblers: Irrigation heads that produce a large volume of output, measured in gallons per minute (gpm), that flood the soil area surrounding the bubbler head.

(2) Developed landscape area: All outdoor areas under irrigation, swimming pools, and water features, but excluding hardscape areas.

(3) Hardscape: Impermeable areas including patios, decks and paths, driveways and sidewalks.

(4) High-water-use plants: Annuals, plants in containers, and plants not on MMWD's list of low-water-use plants or identified on East Bay Municipal Water District's list of low-water-use plants. High-water-using plants are characterized by high transpiration rates, shallow rooting, the need for frequent watering during summer months or with exposure to hot and drying climatic conditions.

(5) Hydrozones: A distinct grouping of plants with similar water needs and climatic requirements. Hydrozone types include, but are not limited to turf, high-water-use plants, low-water-use plants, microclimates (i.e., sun or shade, southern or northern exposures, surrounded by highly reflective surfaces), and partially landscaped areas with plants, pool areas and water-use features.

(6) Irrigation Design Capacity: The maximum amount of water calculated to flow through an irrigation system, or section of a system, based on pipe size, pipe material, and operating pressure.

(7) Landscape Plans: This includes a planting plan, an irrigation plan, and a grading plan drawn at the same scale and that clearly and accurately identify specified plants, irrigation layout, equipment, finish grades and drainage, specifications and construction details, plan sheet numbers, and drawing date of plans.

(8) Landscape Agent: The consumer's designated representative for interacting with the District on landscape plan reviews.

(9) Low-flow Point Applicators: Irrigation applicators, commonly called drip irrigation, with output measured and expressed in gallons per hour (gph), that apply water directly to soil in the plants root zone.

(10) Low-water-use plants: Plants on the MMWD low-water-use plant list, or East Bay Municipal Water District's list of low-water-use plants (generally, a plant that once established, can survive on two irrigations per month during the summer months).

(11) Microclimate: The climate of a specific area in the landscape that has substantially differing sun exposure, temperature, or wind, than surrounding areas or the area as a whole.

(12) Overhead Irrigation: An irrigation method that delivers water to the landscape in a spray or stream-like manner from above-ground irrigation nozzles with output expressed in gallons per minute (includes micro-misters).

(13) Overspray: Water that would be delivered by irrigation nozzles beyond the targeted landscape area during windless conditions onto any adjacent hardscapes or other non-landscaped areas during an irrigation cycle, and specifically, for purposes of this Code, limited to maximum of 5% of spray radius area for each nozzle.

(14) Point of Connection (POC): The location where an irrigation system is connected to water supply.

(15) Runoff: Irrigation water that is not absorbed by the soil or landscape area to which it is applied and which flows onto other areas.

(16) Turf: A mat layer of monocotyledonous plants with shallow rooting structures requiring frequent watering during the growing season; i.e., cool or warm season grass consisting, but not limited to Blue, Rye, Fescue, Bent, Bermuda, Kikuyu, St. Augustine, Zoysia, and Buffalo.

11.60.030 Requirements For All Services

(1) Pressure Regulation. A pressure-regulating valve shall be installed and maintained by the consumer if static service pressure exceeds 80 pounds per square inch. The pressure-regulating valve shall be located between the meter and the first point of water use, or first point of division in the pipe, and set at not more than 50 pounds per square inch when measured at the most elevated fixture in the structure served. This requirement may be waived if the consumer presents evidence satisfactory to the District that high pressure is necessary in the design and that no water will be wasted as a result of high-pressure operation.

(2) Interior Plumbing Fixtures. All plumbing installed, replaced or moved in any new or existing service must meet the following requirements:

(A) Toilets shall use 1.6 gallons, or less, of water per flush;

(B) Shower heads shall use 2.75 gallons, or less, of water per minute;

(C) Kitchen and lavatory faucets shall use 2.5 gallons, or less, of water per minute;

(D) Non-residential services with more than one showerhead or one sink (lavatory) per bathroom facility shall equip these fixtures with self-closing valves.

(3) Pool Covers. Pool covers are required for all new outdoor swimming pools.

11.60.040 Landscape Requirements For Single-Family Residences and Two Unit Residential Services with Less Than One-Half Acre Irrigated Area (New and Modified Landscapes).

The combined size of turf areas and swimming pools for new single-family residences shall be limited to not more than 25% of the total developed landscape area. When existing landscape areas are modified by the addition of turf and/or a pool, the total combined area of the turf and pool shall be no more than 25% of the total developed landscape area. The 25% turf and pool limit does not apply to developed landscape areas with less than 1,000 square feet in the irrigated area. When an automatic irrigation controller is used, a rain shut-off device or soil moisture sensors are required. A plan review shall not be required by the District but will be performed when requested by local jurisdictions. The irrigation efficiency requirements in Section 11.60.050 are recommended as a guide for irrigation-system design and operation, but not required.

11.60.050 Landscape Requirements For Single-Family and Two Unit Residences

with One-Half Acre or More of Irrigated Area and All Services Other Than Single-Family and Two Unit Residences (New and Modified Landscapes).

Note 1: All landscapes in this category are required to submit and receive approval for landscape plans prior to installation of new landscape or landscape improvements to existing landscape.

Note 2: Newly planted irrigated areas, newly installed irrigation circuits in existing plantings, and modified irrigation circuits in existing irrigation systems must meet the following requirements. If no new plantings are occurring, the modification of irrigation circuits will require submittal of irrigation plans and specifications for only the modified circuits.

(1) Turf and Swimming Pools. The combined size of turf areas and swimming pools shall be limited to not more than 25% of the total developed landscape area in services irrigated with potable water. In landscapes irrigated with recycled water, the combined size of turf areas and swimming pools shall be limited to not more than 40% of the total developed landscape area. The turf and pool limit does not apply to developed landscape areas with less than 1,000 square feet in irrigated area, or sites requiring large turf areas for their primary functions, e.g., ballfields and playgrounds.

(2) High-Water-Use Plants and Features. High-water-use plants, decorative pools (non-swimming), fountains, and water features shall be limited to not more than 10% of the total developed landscape area. This limit does not apply to developed landscapes with less than 1,000 square feet in the irrigated area.

(3) Low-Water-Use Plants. All other plantings shall be composed of low-water-use plant materials. The District may waive this requirement if compelling evidence is presented that the site is not suitable for such plants.

(4) Landscape Plans. Landscape plans shall include the following:

(A) Planting Plan: Planting plans must accurately identify and locate, but are not limited to the following:

(i) New and existing trees, shrubs, ground covers and turf areas within the developed landscape area;

(ii) Plants by Latin name, common name, spacing, and quantities of each type of plant by container size;

(iii) Property lines, streets and street names;

(iv) Driveway(s), sidewalk(s) and other hardscape features as necessary;

(v) Pool(s), fountain(s), fence(s) and retaining wall(s);

(vi) Existing and proposed buildings;

(vii) Indicate in a table the total square footage(s) of the various landscape hydrozones on the plan. If more than one water meter serves the site, the total hydrozone square footages of the various hydrozones must be identified with each POC and meter providing water service.

(B) Irrigation Plan: The irrigation plan shall be drawn at the same scale as the planting plan. The irrigation plan shall be separate from but in the same format as the planting plan. Performance specifications meeting the requirements of this Ordinance will be acceptable for single-family and two-unit services if irrigation plan drawings are not available. The irrigation plan shall show but not be limited to the following:

(i) Irrigation point of connection and design capacity;

(ii) Water service pressure at irrigation POC;

(iii) Water meter size;

(iv) Reduced-pressure-principle backflow-prevention devices for each irrigation POC;

(v) Major components of the irrigation system;

(vi) Precipitation rate expressed in inches per hour for each overhead spray, bubbler (calculated by dividing gallons per minute output of valve circuit by irrigation area square footage), and low-flow point irrigation circuit (calculated by dividing gallons per minute output of valve circuit by hydrozone square footage for ground covers, or 65% of hydrozone area for station plantings). The landscape agent must attach to the Project Data Sheet the calculations for deriving precipitation rates for each irrigation valve circuit;

(vii) Total flow rate in gallons per minute (gpm) and operating pressure (psi) for each individual overhead and bubbler circuit, and gallons per hour (gph) and operating pressure for low-flow point irrigation circuit;

(viii) Irrigation legend will have the following elements: Separate symbols for all irrigation equipment with different spray patterns, precipitation rates, and pressure compensating devices; general description of equipment; manufacturer's name and model number for all specified equipment; operating pressure per nozzle, bubbler and low-flow emitter; manufacturer's overhead and bubbler irrigation nozzle rating in gallons per minute (gpm), or gallons per hour (gph) for low-flow point applicators; minimum (no less than 75% of maximum spray radius) and maximum spray radius per nozzle; and manufacturer's rated precipitation rate per nozzle at specified psi;

(ix) Recycled-water piping and guidelines as required;

(x) Annual water-use table (provided by the District based on hydrozone areas submitted by the Landscape Agent).

(C) Grading Plan: The grading plan shall be drawn at the same scale as the planting and irrigation plans. The grading plan must show all finish grades, spot elevations as necessary, drainage, and existing and new contours within the developed landscape area. The requirement for a grading plan will be waived if a signed written statement is submitted indicating that no slopes for the site exceed 15%; or the requirement may be waived for single-family and two-unit residential sites if a written statement is submitted describing the site, why a grading plan is not necessary, and how the irrigation system takes any existing slopes over 15% into account.

(5) Irrigation Systems. All landscaped areas under irrigation will use an automatic irrigation system which meets these requirements:

(A) Electronic controller with display, independent programs with repeat start time potential, system water budgeting ranging from 10% to 200% with 10% increments for systems with more than 9 valve circuits, station timing in one-minute increments, programmable 7-day water schedules, and scheduled for irrigation between the hours of 6 pm and 11 am for potable water and 10 pm and 7 am for recycled water;

(B) Automatic rain shut-off unit or soil-moisture sensors for each controller;

(C) In areas with slopes of 25% to 45%, valve circuit precipitation rates shall not exceed 0.33 inches per hour;

(D) Check valves must be installed at irrigation heads as needed to prevent low head drainage and puddling;

(E) Separate irrigation circuit(s) must be provided for each of the following: turf, high-water-use plants, low-water-use plants, plants on spray, plants on bubblers and plants on low-flow point irrigation, planting areas with different microclimate exposures (e.g., sun or shade, southern or northern exposures, surrounded by heat-reflective surfaces), all slopes above with more than a 10% variation in slope;

(F) Use a low-flow point applicator or subsurface irrigation system where overspray, angle of slope (exceeds 45%), soil infiltration rate, or widely spaced plants (less than 80% of overhead spray will land on root zones of targeted mature plants) make overhead irrigation wasteful due to overspray, runoff, or inefficiency.

(G) Overhead irrigation must meet the following additional requirements:

(i) Distance between spray heads on turf shall be between 50% and 55% of the spray diameter; i.e., spray heads on turf are placed for spray radius to achieve head to head coverage;

(ii) Distance between spray heads for non-turf areas shall not exceed 70% of the spray diameter;

(iii) Spray heads must be adjusted so spray radius is within the range of 75% to 100% of the manufacturer's rating for that nozzle and the specified operating pressure shown in the irrigation plans;

(iv) Spray heads must be located to prevent overspray.

(v) Overhead irrigation is prohibited in median strips and parking islands less than five feet wide from curb to curb (bubblers are allowed);

(vi) Nozzle precipitation rates for all heads within each valve circuit must be matched to within 20% of one another;

(6) Soil Preparation. Soil amendment requirements will be waived for landscape areas amended to District landscape ordinance requirements within the most recent five years. Soil preparation must otherwise meet the following conditions:

(A) For overhead irrigation, provide a report from a soils laboratory indicating 15% or greater organic material content for soil samples taken from representative areas in the landscape area, or otherwise meet the following minimum requirements:

(i) Areas with slope ratios greater than 3:1 must be amended with

organic material as recommended by a landscape architect, soils engineer or soil laboratory report;

(ii) Areas with slope ratios of 3:1 or less must meet the following soil preparation requirements:

(a) Rip or rotary cultivate existing soil to a depth of six (6) inches;

(b) Incorporate an organic amendment at the rate of 5 cubic yards per 1000 square feet into the top six (6) inches of soil.

(B) For low-flow point application with station plantings, soils must be amended to achieve a minimum 25% organic material content for an area twice the diameter and to the depth of the root ball for new plants.

(7) Mulching. All exposed soil surfaces of non-turf areas within the developed landscape area must be mulched with a minimum two (2) inch layer of organic material.

(8) Separate Water Meter Requirement. Separate landscape water service meters will be required for all new landscapes other than single-family and two-unit residential landscapes that the District has estimated an annual landscape water use of one-quarter acre-foot (81,463 gallons) or more of water. Renovated landscapes requiring new landscape water use of one-quarter acre-foot or more will be required to install a separate irrigation meter. Irrigation sub-meters located in convenient-to-read locations are recommended for non-residential landscapes not required to have a separate irrigation meter. A sub-meter, located in a convenient-to-read location, will be required for all points of connection on single-family and two-unit residential sites with landscaped areas of one-half acre or more.

(9) Water Management Requirement. The following water management tasks are incorporated into the project's installation and warranty maintenance period and shown in project specifications. If the warranty maintenance period is less than 60 days, the following water management tasks will be performed for a minimum of 60 days from the completion of the installation period:

(A) Develop an irrigation valve site map detailing valve locations, gallons per minute demands, precipitation rates, plant types within valve circuits, and operating pressure requirements for each valve. This map is to be attached inside each irrigation controller.

(B) Reschedule the irrigation controller run times for valves at least every two weeks based upon current, local California Irrigation Management

Information System ETo reference data provided by the District.

(i) Before scheduling the irrigation valve run times, contractor will walk and inspect all planting areas to observe plant stress and adjust irrigation valve run-times accordingly;

(ii) Inspect soil moisture levels throughout planting areas and adjust irrigation scheduling accordingly.

(C) Every two weeks activate all irrigation valves to inspect and correct:

(i) Misaligned, clogged, or obstructed irrigation heads;

(ii) Missing or broken heads and risers (replacement heads will match the precipitation rate and radius of the existing heads/nozzles in that valve circuit);

(iii) Low head drainage conditions;

(iv) Adjust spray patterns to eliminate over-spray and under-spray conditions;

(v) Stuck valves.

(vi) Leaks and/or breaks in main lines or lateral lines.

(D) Reading of irrigation meter(s) at least every two weeks to determine:

(i) Irrigation run time water demand is consistent with projected demand.

(ii) Unusual consumption which could indicate stuck valves or other leaks.

(E) Develop and maintain a site log at least every two weeks detailing:

(i) Landscape water consumption data;

(ii) Soil moisture data;

(iii) Weekly local ETo replacement data;

- (iv) Plant health and vigor;
- (v) Areas of vandalism.

(10) Plan Review, Fees, and Inspections.

(A) Plan Review and Fees.

(i) For single-family and two-unit services with new or remodeled landscaping of one-half acre or more and all other services with new or remodeled landscapes, applicants shall obtain approval for final landscape plans from MMWD before installation of landscape improvements begins. Approved reproducibles of the landscape plans will have each page stamped and signed by the District indicating approval.

(ii) The District will not assess an administrative charge for the initial plan check by the District. If the plans are determined not to be in compliance with this Ordinance with the initial plan check, a \$50-per-hour administrative fee, charged in one-half hour increments, will be assessed for each subsequent plan check requiring more than one-half hour of District staff time.

(B) Site Inspections. It shall be the responsibility of the owner or the owner's landscape agent to:

(i) Ensure that District-approved plans are used in the installation of the landscape improvements, and that the installation of the landscape improvements comply with the requirements of this Ordinance;

(ii) Submit to the District within 30 days of completion of installation the District Completion Form indicating the project is complete and the landscape improvements comply with the requirements of this Ordinance. Water budgets will be set for non-residential water meter(s) serving the landscape improvements when the District Installation Completion Form is received by the District verifying the landscape improvements were installed as per the District approved plans and are in compliance with this Ordinance.

(iii) Once the completion form is received, the District will conduct an inspection to check for installation of PRVs, rain shut-off devices, proper labeling of irrigation controllers, and mulch; however, the District reserves the right to perform site inspections at any time before, during, or after irrigation system and landscape installation

and to require corrective measures if requirements of this Ordinance are not satisfied. If corrective measures are necessary, the District will set the water budget to zero until corrective measures are complete.

11.60.060 Other Provisions.

The District will consider and may allow the substitution of well designed conservation alternatives or innovations which may equally reduce water consumption for any of the previous requirements of this chapter.