



# 2007 Bay-Friendly Landscaping Rebate Program



## **Specifications for Equipment and Supplies**

### **Rebated Irrigation Equipment**

Updating inefficient irrigation systems and adding water saving devices such as ET controllers, low pressure regulating nozzles, pressure regulating valves, and moisture sensors can potentially save over 25 percent on outdoor watering. Rebates are available for Marin Municipal Water District customers who are upgrading existing irrigation equipment. The following equipment is a sample of items eligible:

**ET or Smart weather-based controllers** can potentially have the greatest water savings. They reduce outdoor water use by automatically adjusting the irrigation runtimes programmed with specific site information and deliver irrigation water most efficiently by matching the plant needs to maintain healthy growing conditions. Smart controllers save potentially 25% of the amount of water used for irrigation by adjusting to current weather and site conditions unless it is installed at a site that is stressing plants due to lack of water. In this case, the irrigation amount will increase to meet the plant's watering needs.

The smart controller is capable of monitoring one or several of the environmental conditions listed:

- Soil moisture;
- Rain;
- Wind;
- Slope;
- Soil;
- Plant type (crop co-efficiency);
- Ambient temperature;
- Solar radiation;


The benefit of installing a smart controller can be appreciated when Evapo-transpiration rate (ET) soars, as plants require more water during those periods. The smart controllers read the ET and adjust the amount of water applied accordingly without the need of outside intervention.

If gardens are planted on a sloped area, the smart controller decreases the minutes of irrigated runtimes, and increases the number of start

times to avoid runoff. Accordingly, rain sensors compensate by interrupting the program from irrigating if there is effective rainfall to sustain the plants.

While shopping for weather based controller, look for the following features:

- Ability to receive data from its own sensor(s) and/or local weather stations;
- Automatically establish daily irrigation runtimes;
- Carry UL approved listing;
- Ability to connect with a rain shut-off device if controller is not equipped with this sensor;
- Ability to receive weather data, or sensors that will adjust runtimes to current weather conditions.



**Central Irrigation Controllers** are recommended for large irrigation systems. It is difficult to manage more than six controllers that support more than 24 valves on each controller. Central controllers can manage individual controllers or “satellite” controllers from a personal computer. While the costs seem high, consider the time, effort and money spent in attempting to manage multiple satellite controllers and individual valves and know that each system is running to its maximum water efficiency. Precise control is the key to operating multiple irrigation systems and a central system provides comfort knowing that all systems are running at peak performance at a glance.

While the features available are too numerous to mention regarding central irrigation controllers, please consider the following before purchasing:

- Able to control each and every valve or head from the computer;
- Able to turn on any program from any controller at any time;
- Able to have simultaneous programs running automatically;
- Report on the status and operation of individual controllers such as: data logging, a record-keeping function that gives you daily, weekly, monthly and yearly data year after year;
- Valuable information such as number of gallons used, number of faulty heads, pipe breaks, etc., high or low flows, etc.;
- Radio-control interface, which is an incredible maintenance tool. When you investigate control systems inquire about the availability/compatibility for radio control.
- Automatic shut-down capabilities, alarm conditions, and the ability to accept data from a free-standing weather station, on or off site.

- Windows-based and up-gradable. Investigate technical support and software upgrades policy.
- Hire a qualified irrigation consultant to organize the programming for computerized central control systems;
  - Either one-way or two-way communication between master controller and satellite controllers;
  - Multiple or large single site capable;
  - Flow sensor emergency shut down capable;
  - Automatically establishes daily irrigation runtimes;
  - Alert system capable;
  - Automatically shuts a valve off if problems occur during irrigation

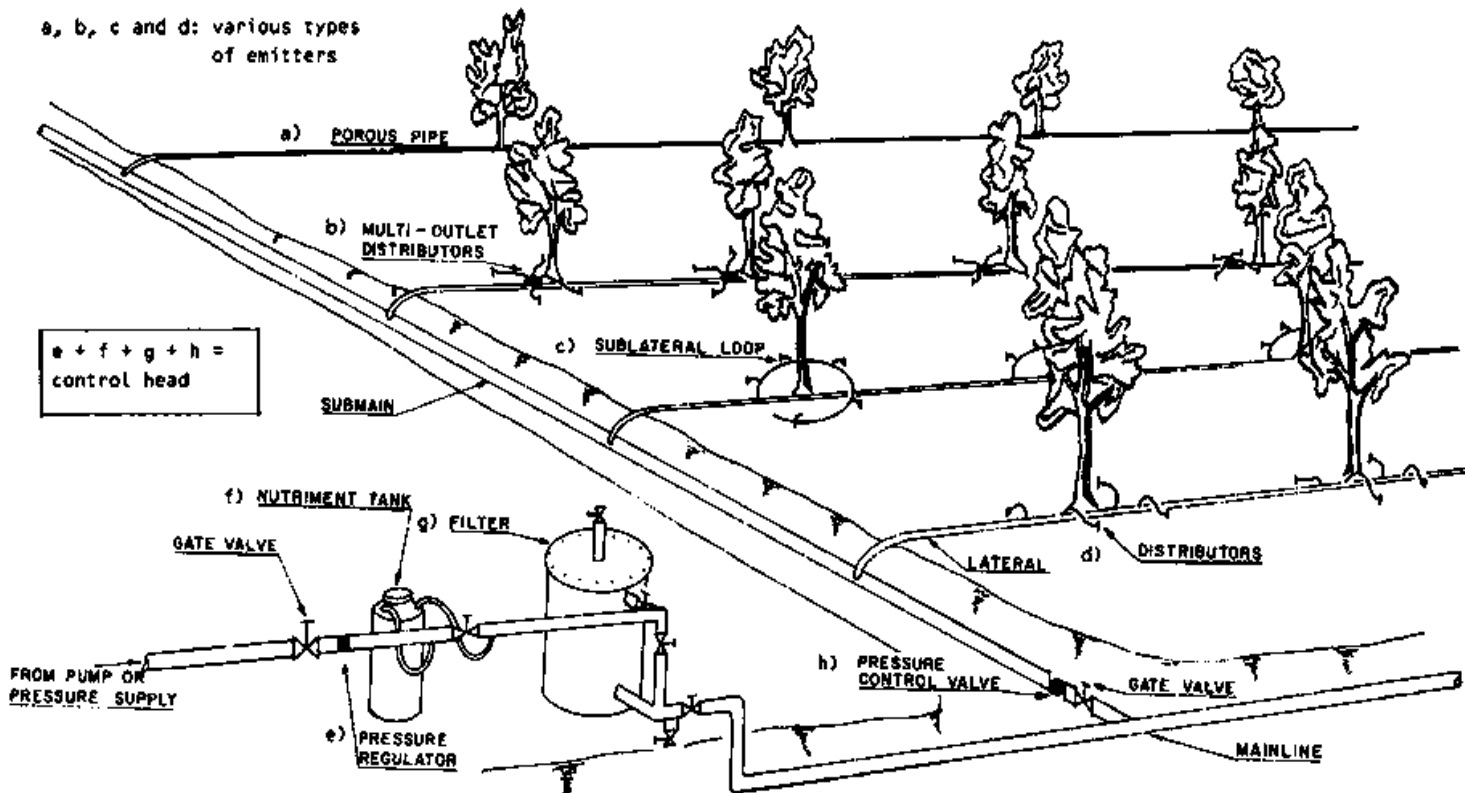
**Pressure Regulating Devices** reduce the amount of water pressure delivered to an area and prevent misting, water hammer and protects plumbing. These devices include the following:



Mainline pressure regulator

- Pressure regulating valves for individual irrigation zones.
- Pressure regulating heads on the sprinkler head.
- Mainline pressure regulators at the point of connection to the irrigation system.

**Point application** is commonly thought of as a drip system. Point application typically has emitters applying water directly to the root area of the plant via **drip emitters**. These emitters are placed around the plant, on top of the ground, or in a grid fashion underground. The underground method is better known as **subsurface irrigation**. **Micro spray irrigation** is a series of mini nozzles that are installed on pencil size risers and emit a small spray of water to a small area. All types of drip systems apply the water directly to the root zone and thereby eliminate wasted water. **Bubblers** flood a small area where small basins can be constructed to contain the water and where the soil surface is level.



Drip Irrigation Layout

**Spray heads with Check Valves** Check valves prevent drainage from spray heads at lower elevations, which conserves water by holding water in the pipe instead of emptying out at the lowest point of the irrigation system. Check valves can be used:

- a. In drip emitters
- b. At the base of rotors
- c. In spray heads



Check Valve

**Rotating Multi-Stream or Single stream Nozzles for Retrofit** are designed to irrigate sloped areas due to their low precipitation rates and can correct for poor installation design. These nozzles include the following features:



Rotating Multi Stream Nozzle

- Retrofit to existing spray heads
- Matched precipitation rate across all arc patterns
- Precipitation rate not to exceed .5 inches
- Pressure regulating
- Interchangeable

**Rain Shut off Devices** will interrupt the scheduled watering times on your controller in the event of rain, and thus spare irrigating unnecessarily. This device will work on any existing irrigation controller. There are two types of rain shut off devices:



**1. Electrical conductivity of water** -- A set of electrodes is used to detect the water level in a small collection dish. The distance between the bottom of the collection dish and the electrodes can be adjusted so the irrigation system is not switched off by small rain events. Typically, the sensor is set to detect rain events larger than 1/2 inch. Water may have to be removed from the dish, and debris may create some problems.



**2. Expansion disks** -- This device is the most popular rain sensor due to high reliability and low maintenance. Expanding cork disks trigger a pressure switch. The expansion space can be easily adjusted by rotation of the disk cover to a predetermined amount of rain required to trigger the switch. The amount of rain that will interrupt the irrigation system is marked on the adjustment cap.

**Organic mulch, soil conditioner and compost** have many useful properties to aid in water conservation:

- a. Reduces evaporation from the soil surface;
- b. Keeps the roots cool in warm weather and blankets the roots from freezing during cold weather;
- c. Organic mulch will break down in time and add nutrients to the soil. The decomposing mulch will also absorb the irrigation water and aid in slower delivery of water to the root zone;

- d. Soil conditioners add nutrients to existing soil, provides for aeration, which allows water to move through the soil.

**Flow Sensors** read the amount of water being applied by the irrigation system and can turn the system off if there is a spike or low flow of water detected while irrigating. These sensors are typically used for large commercial irrigation systems. Some of the more expensive irrigation controllers can use a flow sensor in combination with a master valve to detect leaks and shut off the entire irrigation system. The controller memorizes how much water is used by each valve zone. If the flow sensor shows that the water use is higher than expected, indicating a leak, the controller detects the change in flow and closes the master valve.

**Master valves** may minimize water loss and damage by acting as a back-up to shut off the water if:

- a. A station valve develops a leak, or doesn't close
- b. The mainline pipe (the pipe from the water source to the station valves) breaks.



**Sub meters** are installed at each point of connection that separates the main water line from the irrigation water line. This useful tool can help determine if leaks are occurring in the irrigation system and assists with managing water use.