

**Table 10-1  
Agricultural Efficient Water Management Practices (EWMPs)  
Valley Center MWD and Authority Service Area**

	<b>EWMP</b>	<b>Implemented</b>	<b>Demonstrably Inappropriate</b>
<b>List A: Generally Applicable</b>	1. Adopt a Water Management Plan	<b>X</b>	
	2. Designate a Water Conservation Coordinator	<b>X</b>	
	3. Provide Water Management Services	<b>X</b>	
	4. Improve Communication	<b>X</b>	
	5. Evaluate the Need for Changes in Policies	<b>X</b>	
	6. Improve Pump Efficiency	<b>X</b>	
<b>List B: Conditionally Applicable</b>	1. Facilitate Alternate Land Use		<b>X</b>
	2. Facilitate Recycled Water Use	<b>X</b>	
	3. Facilitate Financial Assistance	<b>X</b>	
	4. Facilitate Voluntary Water Transfers	<b>X</b>	
	5. Line or Pipe Canals	<b>X</b>	
	6. Increase Water Ordering and Delivery Flexibility	<b>X</b>	
	7. Construct, Operate Tail-Water/Spill Recovery Systems		<b>X</b>
	8. Optimize Conjunctive Use	<b>X</b>	
	9. Automate Canal Structures		<b>X</b>
<b>List C: Other Practices</b>	1. Water Measurement, Water Use Update	<b>X</b>	
	2. Pricing and Incentives	<b>X</b>	
	3. Facilitate Agricultural Water Conservation Research	<b>X</b>	

## 10. Agricultural Efficient Water Management Practices

The AB 3616 Advisory Committee was charged with developing a list of efficient water management practices (EWMPs). Agricultural water suppliers will advance efficient water management by voluntarily planning, implementing, and evaluating the EWMPs. EWMPs are divided into three categories.

- List A consists of six practices that will be implemented by all signatories, such as appointing a conservation coordinator. An agency may not exempt itself from these practices.
- List B consists of nine practices that must be analyzed in accordance with the Net Benefit Analysis in Exhibit E of the MOU. List B practices must have net benefits to the water supplier before implementing unless the practice is demonstrably inappropriate. An example of a demonstrably inappropriate practice in the San Diego area is automating canals, as there are no canals in the region.
- List C consists of three practices that have been implemented at some level by all agencies yet must be evaluated by the Net Benefit Analysis. Two examples are water measurement and pricing both longstanding practices in the San Diego area.

No Net Benefit Analysis was performed for any of the List B or List C EWMPs as all practices have been fully implemented with the exception of those that are demonstrably inappropriate. Sections 10.1, 10.2 and 10.3 describe the implementation of EWMPs by the Valley Center MWD, the Authority and its other member agencies.

## **10.1 List A - Generally Applicable Agricultural Efficient Water Management Practices**

### **10.1.1 Adopt a Water Management Plan**

#### **Definition**

Implementation shall be the development of a guideline of agricultural water management practices for the Authority and its member agencies to follow by:

1. Establishing a list of EWMPs;
2. Establishing a criteria to evaluate the appropriateness of EWMPs;
3. Implementing appropriate EWMPs;
4. Avoiding unnecessary or unreasonable planning, paperwork or expense for water suppliers;
5. Voluntarily achieving more efficient water management than currently exists or may be required.

#### **Agency Reporting and Record Keeping Requirements**

1. Notification of interested parties of EWMP plan and its relevance;
2. Allowance for interested party's input.

#### **Implementation Evaluation Criteria**

Compliance with this EWMP requires:

1. Creation and implementation of an EWMP plan;
2. An agency may not exempt itself from this EWMP.

#### **Current Status: IMPLEMENTED**

Authority staff produced a DRAFT Agricultural Water Management Plan for the Authority and its member agencies. The plan was presented to the Authority Board of Directors and member agencies for approval at the December 2001 Board meeting. Previously, the Plan was circulated to contributors for review.

Valley Center MWD was instrumental in the development of the Plan by providing information about their operations and by critically reviewing the Plan. The Draft Plan was presented to the Valley Center MWD Board at their December 2001 Board meeting. A copy was placed in their office and the community library for public review and comment.

## 10.1.2 Designate a Water Conservation Coordinator

### Definition

Implementation shall be the designation of a water conservation coordinator and support staff (if necessary) whose duties shall include the following:

1. Coordination and oversight of EWMP implementation;
2. Preparation and submittal of the EWMP implementation report;
3. Other duties include:
  - communication and promotion of water conservation issues to agency senior management;
  - coordination of agency conservation programs with operations and planning staff;
  - preparation of annual conservation budget;
  - participation in the related meetings; and
  - preparation of the conservation elements of the agency's Agricultural Water Management Plan.

### Agency Reporting and Record Keeping Requirements

1. Conservation Coordinator name, staff position, and years on the job;
2. Date Conservation Coordinator position was created by agency;
3. Number of Conservation Coordinator staff;
4. Duties of Conservation Coordinator and staff.

### Implementation Evaluation Criteria

1. Creating and staffing a Water Conservation Coordinator position within the agency;
2. Providing the Conservation Coordinator with the necessary resources to implement cost-effective EWMPs; and
3. An agency may not exempt itself from this EWMP.

### Current Status: Implemented

Although few water districts within the Authority's service area have personnel with the title of Water Conservation Coordinator, all districts have designated employees who are assigned water conservation responsibilities. These employees provide a focal point through which all district water users and staff can consult on conservation issues. Water conservation responsibilities have developed differently in San Diego County and most are focused on the urban nature of the districts. As a consequence, a majority of agricultural water management educational and informational duties have been provided through local government agencies, such as Mission Resource Conservation District, the Natural Resources Conservation Service, the University of California Cooperative Extension and

Farm Advisors Office and the County of San Diego, Department of Agriculture, Weights and Measures.

Water conservation representatives for the Authority and its member agencies are:

Carlsbad MWD – Joni German  
City of Del Mar Water Utilities – Adele Crawford  
City of Escondido Water Utilities – Cynthia Ferguson-Salvati  
Fallbrook Public Utility District – Keith Lewinger  
Helix Water District – Lynn Young  
City of Oceanside – Judith Ludlow  
Olivenhain MWD – Teresa Chase  
Otay Water District – Terry McComas  
Padre Dam MWD – Lesley Robin  
Marine Corps Base Camp Pendleton – Edmund L. Rodgers  
City of Poway Water Utilities – Scott Nespor  
Rainbow MWD – Gerrie DeBie  
Ramona MWD – Patty Bevers  
Rincon del Diablo MWD – Julia Escamillia  
City of San Diego Water Department – Luis Generoso  
San Dieguito Water District – Bill O’Donnell  
Santa Fe Irrigation District – Michael Banks  
Sweetwater Authority – Sandra Lozano  
Vallecitos Water District – Paul Freestone  
Valley Center MWD – Kathy Stetson  
Vista Irrigation District – Donna Aguirre  
Yuima MWD – Susan Collins  
San Diego County Water Authority – Bill Jacoby

### **10.1.3 Provide Water Management Services**

#### **Definition**

Implementation shall be funding contractors to provide agricultural water management services to San Diego County growers. These services shall include:

1. On farm irrigation and drainage system evaluation;
2. Normal year and real-time irrigation scheduling and crop evapotranspiration;
3. Surface water; groundwater, and drainage water quality data;
4. Educational programs and material for farmers, staff and the public;
5. Water user pump testing and evaluation.

## **Agency Reporting and Record Keeping Requirements**

1. Name and company contracted to provide services, years of contract;
2. Date Conservation Coordinator position was created by agency;
3. Number of conservation coordinator staff;
4. Duties of conservation coordinator and staff.

## **Implementation Evaluation Criteria**

Compliance with this EWMP requires:

1. Providing water management services through a contracted agency or through agency staff;
2. Providing the contractor with the necessary resources to implement EWMP cost effectively.

## **Current Status: Implemented**

The Authority, the DWR and USBR are currently providing a total of \$100,000 to the Mission RCD to provide agricultural water management services to San Diego County growers. As an Authority member agency, Valley Center MWD contributes to the Mission RCD program via their representative on the Authority's Board and cooperative efforts with Mission RCD. Valley Center customers constitute the majority of program participants.

These services include:

1. On-Farm Irrigation System Evaluations – Since 1983, Mission RCD has completed over 1000 irrigation evaluations on over 20,000 acres of San Diego County Farmland.
2. Evapotranspiration Assistance – Since 1990, San Diego County growers have had access to data from six CIMIS stations in San Diego County and one in Riverside County via a toll free phone line operated by Mission RCD with funding from the Authority. Mission RCD staff provides educational assistance to growers who want to learn how to use evapotranspiration information for irrigation scheduling. As of July 1, 2001, the phone line was discontinued as calls have decreased as a result of easy access to CIMIS information via computer. Funds to operate the phone line will be used for additional education.
3. Low Cost Water Testing – This service allows growers to make better use of local ground and surface water supplies.
4. Irrigation Training – Mission RCD, in cooperation with local water districts, provides "Protector del Agua" bilingual, micro-irrigation training free of charge to growers and irrigators.
5. Community Outreach – Mission RCD participates with local water districts, government agencies, community and agricultural groups in community events to educate the community about the need for resource conservation.

#### **10.1.4 Improve Communication**

##### **Definition**

Where appropriate, improve communication and cooperation among water suppliers, water users and other agencies. This shall include:

1. Newsletters, workgroups and community outreach.

##### **Agency Reporting and Record Keeping Requirements**

1. Documentation of activities.

##### **Implementation of Evaluation Criteria**

Compliance with this EWMP requires:

1. Designating staff to coordinate communication media.

##### **Current Status: Implemented**

The Authority, Valley Center MWD and other member agencies utilize billings, newsletters and educational and informational programs to communicate among suppliers, customers and other agencies.

#### **10.1.5 Evaluate the Need for Changes in Policies**

##### **Definition**

Implementation shall be the evaluation of agencies that supply the water to identify the potential for institutional changes to allow more flexible water delivery and storage. Initiate necessary modifications as practicable.

##### **Current Status: Implemented**

Water supplies in the Authority's and Valley Center MWD's service areas are available on demand. This allows for optimum flexibility in water delivery and storage. No changes in policies are needed at this time.

#### **10.1.6 Improve Pump Efficiency**

##### **Definition**

Many water suppliers operate booster pumps or groundwater pumps as part of the delivery facilities. Where water measurement is based on electrical meter

observations, pumps should be tested regularly for accuracy of flows. Implementation shall include the following:

1. Evaluation of the efficiencies of such pumps.

### **Implementation Evaluation Criteria**

Compliance with this EWMP requires:

1. Testing all pumps every two years.

### **Current Status: Implemented**

The Authority has no electrical pumps at this time, as the delivery system is gravity fed. Meters that are independent of electrical pumps determine water volume delivered.

Unlike most areas in the region, 90 percent of all water delivered by Valley Center MWD must be pumped to higher elevations. Valley Center's 100 horsepower electrical pumps are tested annually and smaller pumps are tested at least once every three years to assure maximum efficiency. Similar to the Authority, meters not dependent upon the electrical pump measure water volume.

Before 1997, some districts and private well users in the region used a pump-testing program provided free of charge by San Diego Gas and Electric Company. Since the deregulation of the electric utility that resulted in the discontinuation of the Pump Testing Program, well users have either not tested their pumps or have contracted with private providers to conduct the tests. At this writing, discussions are under way with the California Energy Commission (CEC) via the Center for Irrigation Technology (CIT) at California State University, Fresno and the Irrigation Training and Research Center (ITRC) at California Polytechnic State University, San Luis Obispo to enable growers to access low-cost pump testing. Pump testing must be performed in accordance with standards developed by CIT and ITRC. Grants are available from CEC to retrofit and repair pumps as well as other energy efficiency improvements.

## **10.2 List B - Conditionally Applicable Efficient Water Management Practices**

### **10.2.1 Facilitate Alternate Land Use**

#### **Definition**

Implementation shall be the facilitation of alternative land use to assist in the control of problem drainage.

#### **Current Status: Demonstrably Inappropriate**

Due to the county-wide use of efficient and manageable micro-sprinkler and drip irrigation systems and the topography and soils within San Diego County, facilitating alternative land use to assist in the control of problem drainage is inappropriate for implementation within the Authority's service area including Valley Center MWD.

### **10.2.2 Facilitate Recycled Water Use**

#### **Definition**

Implementation shall be facilitating the use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria and does not cause harm to crops or soils.

#### **Agency Reporting and Record Keeping Requirements**

1. Amount of water recycled; and purpose for which it is used;
2. Quality of recycled water.

#### **Implementation Evaluation Criteria**

Compliance with this EWMP requires:

1. Providing financial assistance programs for the development of recycled water supplies;
2. Making water quality data accessible to agricultural water users through the Water Conservation Coordinator.

#### **Current Status: Implemented**

Currently in the Authority's service area, six out of the 17 districts surveyed use recycled water and one more has facilities planned for the future. Current progress in recycled water development includes: the completion of the Padre Dam Municipal Water District's Water Reclamation Facility Expansion and accompanying distribution system and commencement of recycled water deliveries; completion of the City of San Diego's North

City Water Reclamation Plant and Optimized Recycled Water Distribution System (RWDS); completion of the City of San Diego's South Bay Reclamation Plant; on-going construction of the San Elijo Joint Powers Authority Water Reclamation Plant and accompanying distribution system; and the City of San Escondido Regional Water Reclamation and Disposal Program pre-construction activities.

Although the use of recycled water for the citrus and cut flower industry seems promising, the vegetable, specialty crop and nursery industries in San Diego County have mixed opinions on recycled water and its effect on their produce. One study conducted in San Diego's North County showed recycled water had detrimental effects on avocado trees while a Christmas tree farm, a citrus grove and a number of nurseries have successfully used recycled water. Recycled water in San Diego County used for landscape and commercial purposes frees potable water for agricultural use. At this time, the primary focus for recycled water is to provide it to landscape and industrial users close to the treatment plants and recycled water pipelines.

Programs assisting in the development of San Diego County's groundwater and recycled water supply are described below. Financial assistance programs play a critical role in the development of recycled water and groundwater supplies. There are a number of financial assistance programs available to San Diego County agencies that include:

- the Authority's Financial Assistance Program (FAP) and Recycled Water Development Fund (RWDF);
- Metropolitan's Local Resources Program (LRP);
- the U. S. Bureau of Reclamation's Title XVI Funding Program; and
- the State Water Resources Control Board (SWRCB) Low-Interest Loan Programs.

Together, these programs offer funding assistance for all project phases from initial planning and design to construction and operation. Financial assistance programs administered by the Authority, Metropolitan, and the Bureau provided \$13,931,762 to San Diego in the fiscal year ending June 30, 1998.

Authority staff provides technical assistance to member and non-member agencies pursuing these moneys and is responsible for administering Authority and Metropolitan funding programs, as well as coordinating efforts to secure and allocate funds from State and Federal agencies.

Valley Center MWD participates in all applicable water recycling efforts managed by the Authority. Furthermore, because the Valley Center region does not have access to an ocean outfall, their Board adopted Ordinance No. 201 for making use of recycled water mandatory wherever feasible. Use of recycled water in landscape, on agricultural crops able to tolerate the relatively high TDS of local recycled water and to indirect reuse via percolation basins, frees potable water for use on crops that are unable to tolerate recycled water.

### **10.2.3 Financial Assistance**

#### **Definition**

Implementation shall be the development of a resource list for the financing of capital improvements for on-farm irrigation systems.

#### **Agency Reporting and Record Keeping Requirements**

1. Name, number and address of possible funding agencies;
2. Criteria for the possibility of funding;
3. To avoid unnecessary paperwork, resources may include the referral to a Resource Conservation District.

#### **Implementation Evaluation Criteria**

Compliance with this EWMP requires:

1. Creating and making accessible through the Water Conservation Coordinator a list of resources for the financing of capital improvements for on-farm irrigation systems.

#### **Current Status: Implemented**

The Authority currently facilitates the financing of capital improvements for on-farm irrigation systems by contracting with Mission Resource Conservation District to provide agricultural water management services free of charge to the customer. Through this agency, information is distributed on resources, funding and cost share programs available through the United States Department of Agriculture, Farm Services Agency. Valley Center supports this effort via its representation on the Authority's Board.

### **10.2.4 Facilitate Voluntary Water Transfers**

#### **Definition**

Implementation shall be the commitment to researching the possibility of water transfers and the development of their use.

#### **Agency Reporting and Record Keeping Requirements**

1. Keep records of type and amount of water transfer.

#### **Implementation Evaluation Criteria**

Compliance with this EWMP requires:

1. Creating standard practices for water transfers;
2. Promoting the use of water transfers as a water conservation practice.

**Current Status: Implemented**

Within the Authority’s service area, member agencies exchange about 16,000 AF of imported and local water for geographic and operational reasons.

Because 77% of water used in San Diego comes through the Authority on an “on demand” basis, a majority of water transfers will occur on the Authority’s level of water supply. Water transfers are one of the Authority’s greatest potential resources. The Authority and the Imperial Irrigation District agreed to terms that would transfer water conserved by growers in the Imperial Valley to the Authority. The agreement would span at least 75 years and transfer a minimum of 130,000 AF with a goal of 200,000 AF per year. Valley Center MWD supports transfer via vigorous discussions by its representatives on the Authority’s Board and various committees.

**10.2.5 Line or Pipe Ditches and Canals**

**Definition**

Implementation shall be the lining or piping of open ditches and canals to prohibit the evaporation, spillage or seepage of water.

**Agency Reporting and Record Keeping Requirements**

1. Report the percentage of water delivery systems that are lined or piped.
2. Approximate the amount of water loss to evaporation, spillage or seepage.

**Implementation Evaluation Criteria**

Compliance with this EWMP Requires:

1. The use of lined or piped water distribution systems to the greatest extent possible, while avoiding unreasonable planning or expenses to the water supplier.

**Current Status: Implemented**

Currently, pipelines transport all water within the Authority’s service area, including Valley Center MWD. The Authority takes delivery of water from Metropolitan approximately six miles south of the Riverside – San Diego County line and transports it through five large-diameter pipelines to 23 retail agencies in San Diego County. These agencies in turn deliver water directly to homes, businesses, agriculture and other users via 8,000 plus miles of pipeline.

## **10.2.6 Increase Water Ordering and Delivery Flexibility**

### **Definition**

Implementation shall be to provide water users with flexibility to:

1. Receive water deliveries when it is time to irrigate;
2. Apply the approximate volume at the appropriate flow rate;
3. Terminate water delivery when the irrigation is complete.

### **Current Status: Implemented**

All districts within the Authority's service area, including Valley Center MWD, receive water on demand. This allows maximum flexibility in water ordering and delivery.

## **10.2.7 Construct and Operate Tailwater and Spill Recovery Systems**

Implementation shall be the construction of water suppliers' and farm spill recovery systems to increase efficiency and reduce losses.

### **Current Status: Demonstrably Inappropriate**

Because of the use of pipelines and micro-irrigation, spills are not relevant within most of the Authority's service area. However, nurseries and dairies in the area do use tail water recovery to eliminate off-site runoff and for water reuse purposes. The recovery systems were built with technical assistance and some funding from EQIP, Environmental Quality Incentive Program. At this time, none of the recovery systems are in the Valley Center area.

## **10.2.8 Optimize Conjunctive Use**

### **Definition**

Conjunctive use programs, widely practiced throughout California, make use of the storage capacity of groundwater aquifers to allow the redistribution of water when and where it is available to when and where it is needed. Water suppliers will investigate and implement possible improvements in conjunctive use programs. Whenever possible during wet years, conjunctive use programs should attempt to use surplus water from within or outside the basin for the recharge of groundwater supplies.

### **Current Status: Implemented**

In the Authority's service area, a number of conjunctive use projects are under development or under study at this time. The City of San Diego's proposed San Pasqual groundwater project and the proposed Fallbrook Public Utility District/Camp Pendleton

conjunctive use project are examples of local recharge efforts. The unit costs of groundwater recharge and extraction in the region ranges from \$730 to \$1,200/AF.

In the Valley Center MWD service area, conjunctive use occurs via indirect reuse of recycled water to ponds percolating to the San Luis Rey River basin.

### **10.2.9 Automate Canal Structures**

Implementation shall be the automation of canal structures to increase the flexibility of water deliveries and to increase the water supplier's control over water suppliers.

#### **Current Status: Demonstrably Inappropriate**

Pipelines within the Authority and Valley Center MWD service areas are automated.

## **10.3 List C – Other Efficient Water Management Practices**

### **10.3.1 Water Measurement and Water Use Update Definition**

Implementation shall be to measure or calculate the volume of water delivered within a reasonable range of accuracy.

#### **Agency Reporting and Record Keeping Requirements**

1. Calculation by individual water user or other reasonable measurement or calculation options;
2. Provide timely water use reports to water users through billings or advisories.

#### **Current Status: Implemented**

To allow the tracking of water deliveries to individual users, all Authority member agencies deliver water through metered pressurized pipelines. Water delivery to individual customers is determined through water meter readings that are conducted every one to two months depending on the water district and meter size. Meters are considered “accurate” if they read between 98% and 102% of actual flow. This allows the district to have a billing system based on deliveries, to assemble information needed for a detailed water budget, and to identify areas where additional efficiency can be achieved. When required by Title 17, meters must have back flow prevention devices installed.

### **10.3.2 Pricing and Incentives**

#### **Definition**

Implementation shall be the use of rate structures as financial incentives that promote efficient water management. This may include:

1. Volumetric water rates;
2. Tiered volumetric water rates;
3. Financial incentives to improve conjunctive use;
4. Facilitation of low-interest loans to water users for the purpose of improving on-farm irrigation efficiencies;
5. Facilitation of water transfers;
6. Providing cooperative funding for on-farm technical irrigation management assistance.

#### **Current Status: Implemented**

All Authority member agencies including Valley Center MWD have per unit rate structures based on the metered volume of water used in units of one hundred cubic feet

(hcf) or one thousand gallons depending on the district. Prices per hcf range from \$1.06 to \$2.21 per unit depending on the district, type of water (treated or untreated) and pump zone charges. As a consequence of high per unit rates and the choice of crops adaptable to efficient irrigation technology, irrigation efficiency in the region is high in comparison to other agricultural regions in the State. Additionally, due to high water cost, crops grown in the Authority's service area are generally not able to be in direct market competition with other areas operating with lower water costs.

The agricultural industry served by the Authority pays some of the highest water rates in the state. Agricultural water prices per acre-foot range from \$461 to \$962.76 depending on the district and treated or untreated water and any additional zone charges.

### **10.3.3 Facilitate Agricultural Water Conservation Research**

#### **Definition**

Implementation shall be the funding of research that increases information regarding irrigation management and water conservation to the agricultural sector. This may include:

1. Recycled water use on crops;
2. Optimum water use for avocados;
3. Salt-tolerant avocado root-stock; and
4. Polymers to enhance water use efficiency.

#### **Current Status: Implemented**

The Authority is currently exploring potential studies in partnership with the University of California Cooperative Extension. If the Authority provides funding for agricultural research, Valley Center MWD will consider providing additional funding.