Urban Drought Guidebook
Appendices

APPENDIX A Declaring a Water Shortage Emergency

Water Code Section 350-359

350. The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, may declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

351. Excepting in event of a breakage or failure of a dam, pump, pipe line or conduit causing an immediate emergency, the declaration shall be made only after a public hearing at which consumers of such water supply shall have an opportunity to be heard to protest against the declaration and to present their respective needs to said governing board.

352. Notice of the time and place of hearing shall be published pursuant to Section 6061 of the Government Code at least seven days prior to the date of hearing in a newspaper printed, published, and circulated within the area in which the water supply is distributed, or if there is no such newspaper, in any newspaper printed, published, and circulated in the county in which the area is located.

353. When the governing body has so determined and declared the existence of an emergency condition of water shortage within its service area, it shall thereupon adopt such regulations and restrictions on the delivery of water and the consumption within said area of water supplied for public use as will in the sound discretion of such governing body conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

354. After allocating and setting aside the amount of water which in the opinion of the governing body will be necessary to supply water needed for domestic use, sanitation, and fire protection, the regulations may establish priorities in the use of water for other purposes and provide for the allocation, distribution, and delivery of water for such other purposes, without discrimination between consumers using water for the same purpose or purposes.

355. The regulations and restrictions shall thereafter be and remain in full force and effect during the period of the emergency and until the supply of water available for distribution within such area has been replenished or augmented.

356. The regulations and restrictions may include the right to deny applications for new or additional service connections, and provision for their enforcement by discontinuing service to consumers willfully violating the regulations and restrictions.

357. If the regulations and restrictions on delivery and consumption of water adopted pursuant to this chapter conflict with any law establishing the rights of individual consumers to receive either specific or proportionate amounts of the water supply available for distribution within such service area, the regulations and restrictions adopted

pursuant to this chapter shall prevail over the provisions of such laws relating to water rights for the duration of the period of emergency; provided, however, that any distributor of water which is subject to regulation by the State Public Utilities Commission shall before making such regulations and restrictions effective secure the approval thereof by the Public Utilities Commission.

358. Nothing in this chapter shall be construed to prohibit or prevent review by any court of competent jurisdiction of any finding or determination by a governing board of the existence of an emergency or of regulations or restrictions adopted by such board, pursuant to this chapter, on the ground that any such action is fraudulent, arbitrary, or capricious.

359. (a) Notwithstanding any other provision of law that requires an election for the purpose of authorizing a contract with the United States, or for incurring the obligation to repay loans from the United States, and except as otherwise limited or prohibited by the California Constitution, a public water agency, as an alternative procedure to submitting the proposal to an election, upon affirmative vote of four-fifths of the members of the governing body thereof, may apply for, accept, provide for the repayment together with interest thereon, and use funds made available by the federal government pursuant to Public Law 95-18, pursuant to any other federal act subsequently enacted during 1977 that specifically provides emergency drought relief financing, or pursuant to existing federal relief programs receiving budget augmentations in 1977 for drought assistance, and may enter into contracts that are required to obtain those federal funds pursuant to the provisions of those federal acts if the following conditions exist:

(1) The project is undertaken by a state, regional, or local governmental agency.

(2) As a result of the severe drought now existing in many parts of the state, the agency has insufficient water supply needed to meet necessary agricultural, domestic, industrial, recreational, and fish and wildlife needs within the service area or area of jurisdiction of the agency.

(3) The project will develop or conserve water before October 31, 1978, and will assist in mitigating the impacts of the drought.

(4) The agency affirms that it will comply, if applicable, with Sections 1602, 1603, and 1605 of the Fish and Game Code.

(5) The project will be completed on or before the completion date, if any, required under the federal act providing the funding, but not later than March 1, 1978.

(b) Any obligation to repay loans shall be expressly limited to revenues of the system improved by the proceeds of the contract.

(c) No application for federal funds pursuant to this section shall be made on or after March 1, 1978.

(d) Notwithstanding the provisions of this section, a public agency shall not be exempt from any provision of law that requires the submission of a proposal to an

election if a petition requesting such an election signed by 10 percent of the registered voters within the public agency is presented to the governing board within 30 days following the submission of an application for federal funds.

(e) Notwithstanding the provisions of this section, a public water agency that applied for federal funds for a project before January 1, 1978, may make application to the Director of the Drought Emergency Task Force for extension of the required completion date specified in paragraph (5) of subdivision (b). Following receipt of an application for extension, the Director of the Drought Emergency Task Force may extend the required completion date specified in paragraph (5) of subdivision (b) to a date not later than September 30, 1978, if the director finds that the project has been delayed by factors not controllable by the public water agency. If the Drought Emergency Task Force is dissolved, the Director of Water Resources shall exercise the authority vested in the Director of the Drought Emergency Task Force pursuant to this section.

(f) For the purposes of this section, "public water agency" means a city, district, agency, authority, or any other political subdivision of the state, except the state, that distributes water to the inhabitants thereof, is otherwise authorized by law to enter into contracts or agreements with the federal government for a water supply or for financing facilities for a water supply, and is otherwise required by law to submit those agreements or contracts or any other project involving long-term debt to an election within that public water agency.

Water Code Section 10630-10634

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.
(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(h) A draft water shortage contingency resolution or ordinance.
(i) A mechanism for determining actual reductions in water use pursuant to the urban water Shortage Contingency Analysis.

Government Code Section 8550-8551

8550. The state has long recognized its responsibility to mitigate the effects of natural, manmade, or war-caused emergencies which result in conditions of disaster or in extreme peril to life, property, and the resources of the state, and generally to protect the health and safety and preserve the lives and property of the people of the state. To insure that preparations within the state will be adequate to deal with such emergencies, it is hereby found and declared to be necessary:

(a) To confer upon the Governor and upon the chief executives and governing bodies of political subdivisions of this state the emergency powers provided herein; and to provide for state assistance in the organization and maintenance of the emergency programs of such political subdivisions;
(b) To provide for a state agency to be known and referred to as the Office of Emergency Services, within the Governor's office; and to prescribe the powers and duties of the director of that office;
(c) To provide for the assignment of functions to state agencies to be performed during an emergency and for the coordination and direction of the emergency actions of such agencies;
(d) To provide for the rendering of mutual aid by the state government and all its departments and agencies and by the political subdivisions of this state in carrying out the purposes of this chapter;
(e) To authorize the establishment of such organizations and the taking of such actions as are necessary and proper to carry out the provisions of this chapter.

It is further declared to be the purpose of this chapter and the policy of this state that all emergency services functions of this state be coordinated as far as possible with the comparable functions of its political subdivisions, of the federal government including its various departments and agencies, of other states, and of private agencies of every type, to the end that the most effective use may be made of all manpower, resources, and facilities for dealing with any emergency that may occur.

8551. This chapter may be cited as the "California Emergency Services Act."

APPENDIX B PUC Water Rationing Moratoria

CALIFORNIA PUBLIC UTILITIES COMMISSION

Water Division

INSTRUCTIONS FOR WATER CONSERVATION,

RATIONING AND SERVICE CONNECTION MORATORIA

Standard Practice U-40-W

SAN FRANCISCO, CALIFORNIA

July 2004

INSTRUCTIONS FOR WATER CONSERVATION,

RATIONING AND SERVICE CONNECTION MORATORIA

A-PURPOSE AND SCOPE

1. The purpose of this standard practice is to provide guidance to Water Division staff, to the public and to utilities as to steps to be taken when the utility suffers from a water shortage. The three levels of action are voluntary rationing, mandatory rationing and a service connection moratorium.

B-BACKGROUND

2. General Order 103, Chart 1, and Standard Practice U-22-W, Determination of Water Supply Requirements of Water Systems, address water supply requirements, but supply can be affected temporarily due to drought or decreased production of a utility's wells. When this happens, utilities may have to resort to mandatory conservation or may have to institute a service connection moratorium.

3. Parties may also protest service area extensions (see Standard Practice U-14-W) over concern that the available supplies may be inadequate to serve the new customers, which would be the equivalent of a service connection moratorium (see Section F)1.

4. The position of the Commission in overall water supply planning was set forth in Decision 99-04-061, April 22, 1999 (see Appendix A to this Standard Practice).

C-DEVELOPMENT OF CONSERVATION AND RATIONING

5. In mid-1976, due to a drought, the Commission opened an Order Instituting Investigation (OII, Case No. 10114, June 8, 1976) to determine what actions to take. In early 1977, the Commission issued an emergency decision that allowed water utilities to distribute water conservation kits and to implement cost effective water conservation programs.

6. The Commission was once again faced with drought conditions in mid-1988. The Commission opened OII 89-03-005 that allowed all classes of water utilities to file a water conservation and rationing plan consisting of two distinct parts: Rule 14.1 (a "voluntary conservation" program which allowed mandatory rationing to be triggered) and Schedule 14.1 (the mandatory rationing and penalty part). This plan was based primarily upon the Department of Water Resources and Metropolitan Water District's model plans, but also incorporated aspects of the North Marin Water District, East Bay Municipal Utility District, and California Water Service Company's existing conservation and rationing plans. The main objective of Rule 14.1 and Schedule 14.1 was to have a plan readily available for any utility that needed conservation and/or rationing methods. This plan allowed regulated utilities to achieve conservation of 17.5% to 26%.

7. The drought was officially declared over in February 1993 and the OII was closed. Because history shows that drought occurs in California about once every ten years, Rule 14.1 has remained in place. When conditions become severe, the utility may file an advice letter to institute Schedule 14.1. The Commission must approve implementation of this schedule by resolution.

D-VOLUNTARY RATIONING

8. Voluntary rationing consists of the step described in Rule 14.1 (Appendix B). This Tariff Rule should be in the tariff book of every utility that might suffer from a water shortage.

E-MANDATORY RATIONING

9. Mandatory rationing consists of the steps described in Schedule 14.1. The utility adds schedule 14.1 to its tariff book by filing an advice letter with full justification. Staff will prepare a resolution for consideration by the Commission. The Commission must approve the imposition of mandatory conservation.

10. Schedule 14.1 may be modified to fit the needs of the utility and its particular water shortage situation. The following provisions are examples of what might be included in a typical Schedule 14.1:

A. Prohibit nonessential and unauthorized water use, including:

i. use for more than minimal landscaping in connection with new construction;

ii. use through any meter when the company has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to effect such repairs within five days;

iii. use of water which results in flooding or runoff in gutters or streets;

iv. use of water through a hose for washing cars, buses, boats, trailers or other vehicles without a positive automatic shut-off valve on the outlet end of the hose;

v. use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas;

vi. use of water to clean, fill or maintain levels in decorative fountains;

vii. use of water for construction purposes unless no other source of water or other method can be used;

viii. service of water by any restaurant except upon the request of a patron; and

ix. use of water to flush hydrants, except where required for public health or safety.

B. Establish customer water allocations at a percentage of historical usage with the corresponding billing periods of a non-drought year being the base.

C. Establish an allocation of a percentage of historical usage with the corresponding billing periods of a non-drought year being the base for consumption for users of process water (water used to manufacture, alter, convert, clean, grow, heat or cool a product, including water used in laundries and car wash facilities that recycle the water used).

D. Establish a minimum allocation of a number of Ccf per month (one Ccf is one hundred cubic feet) for any customer regardless of historical usage.

E. Establish an exceptions procedure for customers with no prior billing period record or where unusual circumstances dictate a change in allocation.

F. Establish a penalty ("conservation fee") of $2.00 per Ccf for usage over allocated amounts, provided, however, that banking of under usage from month to month is allowed.

G. Provide that penalty funds are not to be accounted for as income, but are to be kept in a separate reserve account for disposition as directed by the Commission.

H. Provide that, after written warning for nonessential or unauthorized water use, for subsequent violations the utility may install a flow restrictor to be left in a minimum of three days. The second time a flow restrictor is installed it may be left in until rationing ends.

I. Establish charges of $25, $50, or actual cost depending on meter size for removing restrictors, and provide that continuing nonessential or unauthorized use may result in disconnection.

J. Establish an appeal procedure first through the utility, then to the Commission staff through the Executive Director, then to the Commission via a formal complaint.

F-SERVICE CONNECTION MORATORIUM

11. A service connection moratorium is sometimes imposed by the California Department of Health Services. The California Water Code, Section 350 et seq., provides that any public water supplier may, after public notice and hearing, declare a water shortage emergency within its service area whenever it determines that the ordinary demands and requirements of its consumers cannot be satisfied without depleting the water supply to the extent that there would be insufficient water for human consumption, sanitation, and fire protection. After it has declared a water shortage emergency, it must adopt such regulations and restrictions on water delivery and consumption as it finds will conserve its water supply for the greatest public benefit. Section 357 requires that suppliers which are subject to regulation by the CPUC shall secure its approval before making such regulations and restrictions effective.

12. Section 2708 of the Public Utilities Code states:

2708. Whenever the commission, after a hearing had upon its own motion or upon complaint, finds that any water company which is a public utility operating within this State has reached the limit of its capacity to supply water and that no further consumers of water can be supplied from the system of such utility without injuriously withdrawing the supply wholly or in part from those who have theretofore been supplied by the corporation, the commission may order and require that no such corporation shall furnish water to any new or additional consumers until the order is vacated or modified by the commission. The commission, after hearing upon its own motion or upon complaint, may

also require any such water company to allow additional consumers to be served when it appears that service to additional consumers will not injuriously withdraw the supply wholly or in part from those who theretofore had been supplied by such public utility.

13. To establish a service connection moratorium the utility must:

a. Hold a public meeting under Section 350 and 351 of the Water Code

b. Add the following language to each service schedule:

Moratorium

No service shall be provided to any premises not previously served within the _____ Service Area as defined on the Service Area Map filed as a part of these tariffs."

G-Exemptions

14. Some decisions to impose a moratorium contain exceptions. For example in Citizen's Utilities (CUCC) Montara District:

"The moratorium shall not apply to owners of real property who are customers of CUCC on or before the date of this order, or their successors in interest, if any change in the use of their property will not increase their demand upon the system." (D.86-05-078, Ordering Paragraph 3.)

15. D.86-05-078 also provided that prospective customers could seek an exemption from the moratorium by filing an application with the Commission showing that extraordinary circumstances required an exemption.

16. In D.00-06-020, June 8, 2000 the Commission granted an application and authorized Citizens Utilities to install a water service connection to applicant's property at APN 037-278-090 following cessation of service at applicant's property at 888 Ocean Boulevard in Montara. Costs were to be borne by applicant. The order made it clear that water service could not be reinstated at 888 Ocean Boulevard absent a lifting or easing of the moratorium. Such determinations were also delegated to staff2.

The Commission's Role in Water Planning

The two state agencies primarily responsible for overseeing water planning are the California Department of Water Resources, which is manages the State Water Project and produces the California Water Plan, and the State Water Quality Control Board and Regional Water Quality Control Boards which have authority over water allocation and water quality protection.

In addition to the state agencies which have broad planning and management powers, local government also has a part in water use decisions. For example, county boards of supervisors, county water agencies, land use planning agencies, city governments, municipal water districts and many special districts all have a role in the use of water in California.

In this context, the Commission has recognized the futility of one party taking unilateral action to protect a groundwater basin:

Rehabilitation of the Santa Maria Groundwater Basin is not the responsibility of, and is beyond the physical and financial resources of any single individual, company, or agency. Even if [Southern California Water Company] were to stop drawing from the basin entirely and injected into the basin the entire 7,900 AFY it desires to obtain from the [Central Coast Water Authority], the basin's fundamental problems of declining quantity and water quality would not be solved. Most simply put, the basin's salvation as a water resource requires the immediate, undivided, sincere and selfless attention of all its users.

(Re Southern California Water Company, 48 CPUC2d 511, 519 (D.93-03-066) (emphasis in original).)

The Commission's role is limited to ensuring that each jurisdictional water utility provides its customers with "just and reasonable service, . . . and facilities as are necessary to promote the safety, health, comfort and convenience of its patrons, employees, and the public." (§ 451.) The Commission has further delineated the service standard in its General Order 103 where it proscribes Standards of Service including water quality, water supply, and water pressure, as well as many other details of service.

The Commission has not, however, dictated to investor-owned utilities what method of obtaining water must be used to meet its present and future responsibility of providing safe and adequate supply of water at reasonable rates. (Southern California Water, 48 CPUC2d at 517.)

Which is not to suggest that the Commission ignores issues of water availability in its regulation of water utilities. The Commission requires that all water utilities prepare, file,

and update a water management plan which includes identification of water sources as well as consumption projections over 15 years. These plans are updated by the utility as part of its general rate case.

Rule N0. 14.1 Water Conservation and Rationing Plan

General Information

If water supplies are projected to be insufficient to meet normal customer demand, and are beyond the control of the utility, the utility may elect to implement voluntary conservation using the portion of this plan set forth in Section A of this Rule after notifying the Commission's Water Division of its intent. If, in the opinion of the utility, more stringent water measures are required, the utility shall request Commission authorization to implement the mandatory conservation and rationing measures set forth in Section B.

The Commission shall authorize mandatory conservation and rationing by approving Schedule No. 14.1, Mandatory Water Conservation and Rationing. When Schedule No. 14.1 has expired, or is not in effect, mandatory conservation and rationing measures will not be in force. Schedule No. 14.1 will set forth water use violation fines, charges for removal of flow restrictors, and the period during which mandatory conservation and rationing measures will be in effect.

When Schedule No. 14.1 is in effect and the utility determines that water supplies are again sufficient to meet normal demands, and mandatory conservation and rationing measures are no longer necessary, the utility shall seek Commission approval to rescind Schedule No. 14.1 to discontinue rationing.

In the event of a water supply shortage requiring a voluntary or mandatory program, the utility shall make available to its customers water conservation kits as required by Rule 20. The utility shall notify all customers of the availability of conservation kits.

APPENDIX C Guidelines for Implementing the California Environmental Quality Act

Excerpts from:

http://ceres.ca.gov/topic/env_law/ceqa/guidelines/art18.html Page 1 of 15

Title 14. *California Code of Regulations*

Chapter 3. Guidelines for Implementation of the California Environmental Quality Act

Article 18. Statutory Exemptions

Sections 15260 to 15285

15260. General

This article describes the exemptions from CEQA granted by the Legislature. The exemptions take several forms. Some exemptions are complete exemptions from CEQA. Other exemptions apply to only part of the requirements of CEQA, and still other exemptions apply only to the timing of CEQA compliance.

Note: Authority cited: Section 21083, Public Resources Code; Reference: Section 21080(b), Public Resources Code.

Discussion: This section serves as an introduction to this article on statutory exemptions. The section notes that the exemptions take basically three forms, being either complete exemptions, partial exemptions, or special timing requirements. The court in *Western Municipal Water District of Riverside County v. Superior Court of San Bernardino County* (1986) 187 Cal. App. 3d 1104, pointed out that "the self-evident purpose of a [statutory] exemption is to provide an escape from the EIR requirement despite a project's clear, significant impact." This is in contrast to categorical exemptions which are disallowed if the project would otherwise have an environmental impact.

By way of example, the Supreme Court held in *Napa Valley Wine Train, Inc. v. Public Utilities*

Commission (1990) 50 Cal 3d 370, that CEQA is a legislative act subject to legislative limitations and legislative amendment. Through that premise, the court held that statutory exemptions were enacted to avoid the environmental review process for an entire class of projects. In the specific case, an excursion train proposed for operation within an existing railroad right-of-way fell within the exemption language in Public Resources Code Section 21080(b)(11), even though the use might have potential environmental consequences. Subsequent legislation enacted Public Resources Code Section 21080.04 making the wine train project subject to CEQA.

15261. Ongoing Project

(a) If a project being carried out by a public agency was approved prior to November 23, 1970, the project shall be exempt from CEQA unless either of the following conditions exist:

(1) A substantial portion of public funds allocated for the project have not been spent, and it is still feasible to modify the project to mitigate potentially adverse environmental effects, or to choose feasible alternatives to the project, including the alternative of "no project" or halting the project; provided that a project subject to the National Environmental Policy Act (NEPA) shall be exempt from CEQA as an ongoing project if, under regulations promulgated under NEPA, the project would be too far advanced as of January 1, 1970, to require preparation of an EIS.

(2) A public agency proposes to modify the project in such a way that the project might have a new significant effect on the environment.

(b) A private project shall be exempt from CEQA if the project received approval of a lease, license, certificate, permit, or other entitlement for use from a public agency prior to April 5, 1973, subject to the following provisions:

(1) CEQA does not prohibit a public agency from considering environmental factors in connection with the approval or disapproval of a project, or from imposing reasonable fees on the appropriate private person or entity for preparing an environmental report under authority other than CEQA. Local agencies may require environmental reports for projects covered by this paragraph pursuant to local ordinances during this interim period.

(2) Where a project was approved prior to December 5, 1972, and prior to that date the project was legally challenged for noncompliance with CEQA, the project shall be bound by special rules set forth in Section 21170 of CEQA.

(3) Where a private project has been granted a discretionary governmental approval for part of the project before April 5, 1973, and another or additional discretionary governmental approvals after April 5, 1973, the project shall be subject to CEQA only if the approval or approvals after April 5, 1973, involve a greater degree of responsibility or control over the project as a whole than did the approval or approvals prior to that date.

Note: Authority cited: Section 21083, Public Resources Code; Reference: Sections 21169, 21170, and 21171, Public Resources Code; *County of Inyo v. Yorty*, 32 Cal. App. 3d 795.

Discussion: While not specifically mentioned among the statutory exemptions contained in CEQA, the ongoing project exemption is a result of the prospective application of statutes when they are enacted. Accordingly, CEQA clearly applies to governmental projects approved after November 23, 1970, the effective date of CEQA. This section seeks to codify case law interpreting the application of CEQA to projects which were in process at the time of CEQA's effective date but not yet finally approved or still capable of being changed to avoid environmental damage. This section is also complicated by the

special rules that apply to private projects approved after the *Friends of Mammoth* decision in 1972 and before April 5, 1973, the end of the statutory moratorium on the application of CEQA to private projects. The special rules are included here with some administrative interpretation in the interest of completeness of the ongoing project exception.

15262. Feasibility and Planning Studies

A project involving only feasibility or planning studies for possible future actions which the agency, board, or commission has not approved, adopted, or funded does not require the preparation of an EIR or Negative Declaration but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legally binding effect on later activities.

Note: Authority cited: Section 21083, Public Resources Code; Reference: Sections 21102 and 21150, Public Resources Code.

Discussion: This section provides an interpretation of the exception in CEQA for feasibility and planning studies. This section provides an interpretation holding clearly that feasibility and planning studies are exempt from the requirements to prepare EIRs or Negative Declarations. These studies must still include consideration of environmental factors. This interpretation is consistent with the intent of the Legislature as reflected in Sections 21102 and 21150. The section also adds a necessary limitation on this exemption to show that if the adoption of a plan will have a legally binding effect on later activities, the adoption will be subject to CEQA. This clarification is necessary to avoid a conflict with Section 15378(a)(1) that the adoption of a local general plan is a project subject to CEQA.

15268. Ministerial Projects

(a) Ministerial projects are exempt from the requirements of CEQA. The determination of what is "ministerial" can most appropriately be made by the particular public agency involved based upon its analysis of its own laws, and each public agency should make such determination either as a part of its implementing regulations or on a case-by-case basis.

(b) In the absence of any discretionary provision contained in the local ordinance or other law establishing the requirements for the permit, license, or other entitlement for use, the following actions establishing the requirements for the permit, license, or other entitlement for use, the following actions shall be presumed to be ministerial:

(1) Issuance of building permits.

(2) Issuance of business licenses.

(3) Approval of final subdivision maps.

(4) Approval of individual utility service connections and disconnections.

(c) Each public agency should, in its implementing regulations or ordinances, provide an identification or itemization of its projects and actions which are deemed ministerial under the applicable laws and ordinances.

(d) Where a project involves an approval that contains elements of both a ministerial action and a discretionary action, the project will be deemed to be discretionary and will be subject to the requirements of CEQA.

Note: Authority cited: Section 21083, Public Resources Code; Reference: Section 21080(b)(1), Public Resources Code; *Day v. City of Glendale*, 51 Cal. App. 3d 817.

Discussion: This section provides an interpretation of the exemption for ministerial projects. The term "ministerial" is defined in Section 15369. This section provides additional explanation. The key point is that the determination of whether a particular project is ministerial must be based on an examination of the law or ordinance authorizing the particular permit. The problem is that ordinances vary. Ordinances in adjacent counties requiring permits for the same kind of activity may provide different kinds of controls over the activity. In one county, the ordinance may be ministerial, and in the other the permit may be discretionary and therefore subject to CEQA. The section identifies four types of permits or licenses which are normally ministerial in most jurisdictions. The section creates a presumption that these activities are ministerial unless evidence is presented showing that there are discretionary provisions in the relevant local ordinance. The section encourages public agencies to identify their ministerial permits in their implementing procedures. This approach will simplify the administration of the process in the individual agency. This section also codifies the ruling in *Day v. City of Glendale* cited in the note and other court decisions which have held that where a project approval involves elements of both ministerial action and discretionary action, the project will be deemed to be discretionary and therefore subject to CEQA. The court in Friends of Westwood, Inc. v. Los Angeles (1986) 191 Cal. App. 3d 259, provided guidance, and held that the legislative history of CEQA indicates that the term 'Ministerial' is limited to those approvals which can be legally compelled without substantial modification or change. "It is enough that the [agency] possesses discretion to require changes which would mitigate in whole or part one or more of the [significant or potentially significant] environmental consequences an EIR might conceivably uncover."

15269. Emergency Projects

The following emergency projects are exempt from the requirements of CEQA.

(a) Projects to maintain, repair, restore, demolish, or replace property or facilities damaged or destroyed as a result of a disaster in a disaster stricken area in which a state of emergency has been proclaimed by the Governor pursuant to the California Emergency Services Act, commencing with Section 8550 of the Government Code. This includes projects that will remove, destroy, or significantly alter an historical resource when that resource represents an imminent threat to the public of bodily harm or of damage to adjacent property or when the project has received a determination by the State Office of Historic adjacent property or when the project has received a

determination by the State Office of Historic Preservation pursuant to Section 5028(b) of Public Resources Code.

(b) Emergency repairs to publicly or privately owned service facilities necessary to maintain service essential to the public health, safety or welfare.

(c) Specific actions necessary to prevent or mitigate an emergency. This does not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term.

(d) Projects undertaken, carried out, or approved by a public agency to maintain, repair, or restore an existing highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide, provided that the project is within the existing right of way of that highway and is initiated within one year of the damage occurring. This exemption does not apply to highways designated as official state scenic highways, nor any project undertaken, carried out, or approved by a public agency to expand or widen a highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide.

(e) Seismic work on highways and bridges pursuant to Section 180.2 of the Streets and Highways Code, Section 180 et seq.

Note: Authority: Section 21083, Public Resources Code. Reference: Sections 21080(b)(2), (3), and (4), 21080.33 and 21172, Public Resources Code; Castaic Lake Water Agency v. City of Santa Clarita (1995) 41 Cal.App.4th 1257; and Western Municipal Water District of Riverside County v. Superior Court of San Bernardino County (1987) 187 Cal.App.3d 1104.

Discussion: This section identifies the emergency exemptions from CEQA. The exemptions for emergency repairs to existing highways and for emergency projects involving historical resources that are an imminent threat to the public reflect statutory provisions. Highway repairs are limited to those which do not expand or widen the highway.

In Western Municipal Water District of Riverside County v. Superior Court of San Bernardino County (1987) 187 Cal. App. 3d 1104, the court held that an emergency is an occurrence, not a condition, and that the occurrence must involve a clear and imminent danger, demanding immediate attention. In this case, the water district proposed to dewater areas that could potentially be subject to liquefaction in the event of an earthquake. The excess water was to be pumped out to reduce the hazard as an emergency project. The court, however, ruled that this was not the proper use of this exemption. The imminence of an earthquake is not a condition but a potential event and no real change had yet occurred or could be incontestably foreseen as being mitigated by the proposed actions. The standard of review is there must be substantial evidence in the record to support the agency findings of an emergency, in this case, the Court found inadequate evidence of imminent danger and the subsequent need for immediate action. This holding is now codified in subsection (c).

15273. Rates, Tolls, Fares, and Charges

(a) CEQA does not apply to the establishment, modification, structuring, restructuring, or approval of rates, tolls, fares, or other charges by public agencies which the public agency finds are for the purpose of:

(1) Meeting operating expenses, including employee wage rates and fringe benefits,

(2) Purchasing or leasing supplies, equipment, or materials,

(3) Meeting financial reserve needs and requirements,

(4) Obtaining funds for capital projects, necessary to maintain service within existing service areas, or

(5) Obtaining funds necessary to maintain such intra-city transfers as are authorized by city charter.

(b) Rate increases to fund capital projects for the expansion of a system remain subject to CEQA. The agency granting the rate increase shall act either as the Lead Agency if no other agency has prepared environmental documents for the capital project or as a Responsible Agency if another agency has already complied with CEQA as the Lead Agency.

(c) The public agency shall incorporate written findings in the record of any proceeding in which an exemption under this section is claimed setting forth with specificity the basis for the claim of exemption.

Note: Authority cited: Section 21083, Public Resources Code; Reference: Section 21080(b)(8), Public Resources Code.

Discussion: This section identifies and interprets the exemption that applies to the adoption of rates, tolls, fares, and other charges. The section spells out the provisions of the statutory exemption for these charges and in summary form provides an interpretation of the kinds of rate increases that still remain subject to CEQA. The section also identifies the requirement to make written findings to support the claim that the rate change falls within the specific exemptions provided in this section. These findings are an unusual requirement with an exemption and need to be highlighted. Granted by the Legislature, they were also subject to constraints enacted by the Legislature.

15282. Other Statutory Exemptions

The following is a list of existing statutory exemptions. Each subdivision summarizes statutory exemptions found in the California Code. Lead agencies are not to rely on the language contained in the summaries below but must rely on the actual statutory language that creates the exemption. This list is intended to assist lead agencies in finding them, but not as a substitute for them. This section is merely a reference tool.

15284. Pipelines.

(a) CEQA does not apply to any project consisting of the inspection, maintenance, repair, restoration, reconditioning, relocation, replacement, or removal of an existing hazardous or volatile liquid pipeline or any valve, flange, meter, or other piece of equipment that is directly attached to the pipeline.

(b) To qualify for this exemption, the diameter of the affected pipeline must not be increased and the project must be located outside the boundaries of an oil refinery. The project must also meet all of the following criteria:

(1) The affected section of pipeline is less than eight miles in length and actual construction and excavation activities are not undertaken over a length of more than one-half mile at a time.

(2) The affected section of pipeline is not less than eight miles distance from any section of pipeline that had been subject to this exemption in the previous 12 months.

(3) The project is not solely for the purpose of excavating soil that is contaminated by hazardous materials.

(4) To the extent not otherwise required by law, the person undertaking the project has, in advance of undertaking the project, prepared a plan that will result in notification of the appropriate agencies so that they may take action, if necessary, to provide for the emergency evacuation of members of the public who may be located in close proximity to the project, and those agencies, including but not limited to the local fire department, police, sheriff, and California Highway Patrol as appropriate, have reviewed and agreed to that plan.

(5) Project activities take place within an existing right-of-way and that right-of-way will be restored to its pre-project condition upon completion of the project.

(6) The project applicant will comply with all conditions otherwise authorized by law, imposed by the city or county as part of any local agency permit process, and to comply with the Keene-Nejedly California Wetlands Preservation Act (Public Resources Code Section 5810, et seq.), the California Endangered Species Act (Fish and Game Code Section 2050, et seq.), other applicable state laws, and all applicable federal laws.

(c) When the lead agency determines that a project meets all of the criteria of subdivisions (a) and (b),the party undertaking the project shall do all of the following:

(1) Notify in writing all responsible and trustee agencies, as well as any public agency with environmental, public health protection, or emergency response authority, of the lead agency's invocation of this exemption.

(2) Mail notice of the project to the last known name and address of all organizations and individuals who have previously requested such notice and notify the public in the affected area by at least one of the following procedures:

(A) Publication at least one time in a newspaper of general circulation in the area affected by the proposed project. If more than one area is affected, the notice shall be published in the newspaper of largest circulation from among the newspapers of general circulation in those areas.

(B) Posting of notice on and off site in the area where the project is to be located.

(C) Direct mailing to the owners and occupants of contiguous property shown on the latest equalized assessment roll.

The notice shall include a brief description of the proposed project and its location, and the date, time, and place of any public meetings or hearings on the proposed project. This notice may be combined with the public notice required under other law, as applicable, but shall meet the preceding minimum requirements.

(3) In the case of private rights-of-way over private property, receive from the underlying property owner permission for access to the property.

(4) Immediately inform the lead agency if any soil contaminated with hazardous materials is discovered.

(5) Comply with all conditions otherwise authorized by law, imposed by the city or county as part of any local agency permit process, and to comply with the Keene-Nejedly California Wetlands Preservation Act (Public Resources Code Section 5810, et seq.), the California Endangered Species Act (Fish and Game Code Section 2050, et seq.), other applicable state laws, and all applicable federal laws.

(d) For purposes of this section, "pipeline" is used as defined in subdivision (a) of Government Code Section 51010.5. This definition includes every intrastate pipeline used for the transportation of hazardous liquid substances or highly volatile liquid substances, including a common carrier pipeline, and all piping containing those substances located within a refined products bulk loading facility which is owned by a common carrier and is served by a pipeline of that common carrier, and the common carrier owns and serves by pipeline at least five such facilities in California.

Note: Authority cited: Section 21083, Public Resources Code. Reference: Section 21080.23, Public Resources Code.

Discussion: This section describes the statutory exemption for the inspection, maintenance, repair, restoration, reconditioning, relocation, replacement, or removal of existing hazardous or volatile liquid pipelines. The Legislature’s purpose in creating this exemption was to encourage the upkeep of existing pipelines by limiting the review required of particular activities.

Subsection (b) establishes the criteria under which a pipeline project qualifies for this exemption. These include a prohibition on increasing the diameter of the existing pipeline, limitations on the length of pipeline which may be worked on at any one time, provision of an emergency notification plan to local safety agencies and the California Highway Patrol for their review and agreement, site restoration, and compliance with local, state, and federal environmental laws. Subsection (c) clarifies that the lead agency is responsible for determining that the criteria described in subsection (b) have been met. This exemption is to be invoked by the lead agency, not the project applicant. The project applicant is responsible for providing public notice, obtaining property owner‘s permission where the pipeline crosses private property, and complying with all regulatory requirements.

APPENDIX D Supplemental Information on Supply Augmentation Measures

A brief overview of supply augmentation techniques is provided to explain how such measures fit into the overall picture of required water shortage response actions. After a basic understanding of the supply situation is agreed upon, selection of appropriate supply augmentation methods can be made.

Reliable Supply

When a water year (or years) turns out to be very dry, a water supplier needs to make decisions on how much of the available supply to use and how much to carry over into the next year as insurance against possible subsequent dry years. Water demand is often greater during dry years because of the lack of rainfall, higher temperatures, and consequent increased irrigation use.

Urban water suppliers generally can achieve 35 percent reductions with only moderate economic impact and may base carryover levels on the ability to provide 65 percent of normal demand for several years. At a minimum, urban systems should always keep enough reserves to handle residential health and safety needs and potential fire suppression requirements.

In assessing reliable supplies, a water supplier starts with current usable water storage and adds the amount of additional supply expected in the worst year(s) of record (for some watersheds this was 1977 but in much of Southern California is it now 2006-07). This provides a total supply with 95 percent reliability. The amount to be carried over into the next year(s) would then be deducted from the total to yield the reliable supply for the current year. Allowance for evaporation and other losses should be deducted. This quantity would then be the amount available without special action. Because the risk of the next year being the driest on record is small (at least until the season is well underway), most water suppliers choose to define a reliable yield as that which can be obtained in about 90 percent of the years. However, it is useful to be able to make a simple assessment of the water supply situation periodically throughout the rainy season. A so-called "rule curve" is a good tool for this purpose.

A simple graph that a water manager can use to estimate system water delivery capability as a function of runoff (or, in some cases, accumulated reservoir storage levels). There are many potential kinds of such graphs but the simplest relates water year runoff (or projected remaining water year runoff) with project deliveries.

A simple single stream-single reservoir graph would be constructed by adding expected storable and divertible inflow to current starting storage, then subtracting the storage reserve needed at the end of the water year to yield the total amount deliverable. The storable inflow for more complicated systems may need to be determined from operation studies that simulate monthly operation over a long period of historical record. The resulting annual supply available is plotted on a chart with runoff. Runoff forecasts are

updated as the season progresses and the manager has an immediate estimate of water supply from the graph.

More sophisticated forecasting models are now including the potential effect of global climate change in their calculations and estimates.

For large complicated systems, the initial estimate may need refinement or confirmation by more detailed water system operation studies. But larger agencies with more complex supply systems generally have the technical staff to update estimates periodically.

One of the virtues of a graph is that it can show water customers at a glance where their supply system stands as a function of runoff. Water users can readily see how their supply of water relates to the wetness or dryness of the year and it drives home the point that water availability depends on the weather or other often uncontrollable factors, and it is not an assured quantity.

If it is necessary to augment available supplies, many possibilities can be considered. Several supply augmentation measures are described below.

Prepare to Switch to Groundwater Where Possible

Groundwater represents a reserve supply source. Water suppliers can increase groundwater extraction by:

1. Withdrawing previously banked groundwater.
2. Drilling new wells.
3. Reactivating abandoned wells.
4. Deepening existing wells.
5. Leasing private wells.

For example, by the end of the severe 1984 Texas drought, the City of Corpus Christi developed an additional 25 million gallons per day (MGD) from groundwater wells. Three new city wells produced 2.7 MGD. Another 18.4 MGD came from reactivated wells that had been drilled for a drought during the 1950s. They also made provisions to lease private wells.

The first step is to gather all the data available on groundwater resources in one's district. Review of local experience during the last several drought years can be revealing. Are water tables higher or lower than those periods? How much did they fall in comparison to the amount pumped and natural recharge? To what extent did groundwater substitute for surface supply deficiencies? How much new demand has been added? Has any groundwater overdraft or contamination occurred? Are there unused wells of marginal water quality that can be used temporarily or by blending with better quality supplies? What kind of problems, if any, developed in previous droughts and what was done to alleviate the problems? For example, added extractions from deeper wells may cause some shallower wells to go dry.

The second step is to ensure that all potentially usable wells are in good working order. Where it can be determined from the data review that groundwater levels will decline so that the well would run dry, consider deepening prior to the months of high demand.

For wells that have not been in use, inspect and prepare them for use. Such preparation might include surging and cleaning the wells as well as pumping to insure the well is capable of producing water. Rehabilitation of large capacity wells may cost $25,000 each, so purveyors may wish to check what is needed and where services can be obtained but hold back until the water supply is needed. However, be aware that during droughts the demand for new wells and rebuilding old wells exceeds the capacity of well drillers.

The third step is to arrange for power hookups. If many abandoned wells are put back into service, the number of pumps, pump motors, and electrical transformers available for use might be insufficient. In 1977, the lack of transformers was a limiting factor. This may limit the amount of groundwater available for use. An early assessment of the need for groundwater pumping equipment improves the chance of adequate water supply. Also, consider the power needs of the pump motor , including the time needed to provide power hookups. Power could be limited because of reduced hydroelectric power generation. In some cases, diesel or natural gas power may be used to power the pumps.

Another early action that may be available is the relaxation of limits on groundwater pumping in adjudicated basins. There are inherent problems to such action as adjudicated basins are the result of judicial decisions. The procedure for modifying such a decision has to be worked out by the court and the involved parties. Relaxation of controls requiring court approval may not be practicable during dry years. Some decrees, however, include useful mechanisms for responding to dry years. Examples include use of temporary surplus water and the transfer of right to use decreed water.

Water masters usually manage adjudicated basins. The manager of the basin will determine what options are available for responding to dry year conditions. Finally, the accelerated use of imported water stored in an adjudicated basin may be possible. The use of such water will probably be subject to regulation by a water district.

Decrees determine the relative rights to the use of the "safe yield" of an adjudicated basin. Some basins add "temporary surplus" to the amount that may be pumped. “Safe yield” means the average amount of water that may be taken from a basin without damaging that basin.

In most areas of the state, additional groundwater use during a drought is only a temporary source of water supply. Eventually the underground supply must be replenished or the basin may be damaged. Water levels in some basins will recover as surface supplies replace pumping but others will require recharge programs to restore water levels.

Interconnections and Transfers

The California Water Code governs the transfer of water from one water user to another. Below are listed the most significant sections of the Water Code a potential water transfer participant should know.

1. Conditional Temporary Urgency Changes (WC 1435)
2. Conventional "Changes in Place of Use" (WC 1700)
3. Notice of Temporary Change (WC 1725)
4. Trial Transfers of Water (WC 1735)
5. Long Term Transfer of Water (WC 1737)
6. Use of State Facilities (WC 1810)

Simply stated, a water transfer, in this context, is an agreement between a supplier that has excess water and makes water available to a water short entity (a willing seller and willing buyer). Normally the infrastructure to move water directly from the seller to the buyer is not available. Usually the infrastructure of the State Water Project (SWP) or the Central Valley Project (CVP) is needed to “wheel” (move) the water. Various circumstances can exist that require an intermediary to be involved in the water transfer. In this case the seller’s water is delivered to the intermediary and the intermediary provides water to the buyer. This situation usually exists when the water sold is moving to an area that does not have a “place of use” permit, from the State Water Resources Control Board, or both SWP and CVP facilities are required to move the water.

Specific requirements of any water transfer are dependent on the water rights the water is under. Approvals may be required from the State Water Resources Control Board (SWRCB), California Department of Water Resources (DWR), and United States Bureau of Reclamation (Reclamation); or all of the above agencies. In addition to requirements in the Water Code CVP contractors are subject to provisions of the Central Valley Improvement Act.

Agencies or individuals interested in water transfer should check the following for additional information:

Department of Water Resources: www.watertransfers.water.ca.gov

Dean Reynolds, Water Transfer DWR, 916-651-7055

State Water Resources Control Board: www.waterrights.ca.gov/watertransfer/default.htm

United States Bureau of Reclamation: www.usbr.gov/mp/cvpia/3405a/index.html

Interested parties are encouraged to contact the above agencies for more information. Although the water transfer concept is simple, the details can become quite complex.

Fallow Croplands Temporarily for Added Water Supply

In some areas, farmers are willing to sell water normally used for crops. This would only provide transferable supply in surface water delivery areas where the reduction in use would add to surface water supply. Generally, the amount made available would be the evapotranspiration of the crop (the difference between diversion and return flow and deep percolation).

In 1977, under the Federal Emergency Drought Act (the Act), Reclamation purchased 46,440 AF of water at prices ranging from $15 to $87 per AF. The average was about $53/AF. Some 3900 AF was deducted as an allowance for lost reuse of return flow and wheeling losses. Thus about 42,500 AF was sold to 26 different contractors at an average price of $61 per AF. About 25,500 AF was used to maintain high-value perennial crops and the remaining 21,000 AF was used to support foundation dairy and beef cattle herds, breeding stock and other approved uses.

Most of the supply for the federal programs was from Sacramento Valley irrigators who left rice acreage unplanted; although about 8000 AF came from the State Water Project out of the water relinquished by SWP Southern California Contractors as part of State system exchanges. Most of the water sold was for use on the west side of the San Joaquin Valley by federal contractors.

The program was entirely voluntary. Reclamation, as a water broker, bought water from growers and districts that did not need it and sold it to other consumers who faced severe economic losses due to the drought. Little adverse public reaction was noted. The Act allowed Reclamation to negotiate water prices but required that there be no undue benefit or profit to the seller. In addition to paying a price sufficient to compensate growers for not growing a crop, (or reducing acreage), an additional sum was paid to compensate other landowners in the service area for added costs incurred because their customary supply from return flow was cut off.

Financial assistance was available for purchase of water through interest-free loans with up to five years to repay. Eighteen of the 26 California Central Valley Project contractors who purchased water under the program opted for the interest-free emergency loans. The loans totaled approximately $2.0 million out of $2.6 million total sales.

In 1991 the Department of Water Resources established a water bank to provide water to meet critical needs (e.g. health and safety, fire fighting, maintaining baseline populations of fish, carry over storage for next year). Water was purchased from willing sellers.

Reduce Nonessential Uses

Using water in ways it is most needed represents an effective form of supply augmentation. The following lists possible sources of diverted water.

Reduce Power Generation

During the 1987 dry year, the San Francisco Water Department maximized reservoir levels by cutting back on hydroelectric power production. Although it cost $30 million in

lost power revenues, this action saved the department 360,000 acre-feet of water (at $83.33/acre-feet).

Limit Aquifer Recharge Programs

During dry periods, aquifer recharge programs (or "groundwater banking") should be suspended and previously "banked" groundwater withdrawn to augment the system's supplies.

Eliminate Recreational Boating

Reservoirs used for recreational boating can be emptied to water levels below boat ramps. Boating should be curtailed until the reservoir refills to an adequate level.

Exploit Unused Surface Water Supplies

These supplies are generally used only in more extreme drought stages because of aesthetic or economic criteria. Sources to consider include large recreational and golf course ponds. Also, dead reservoir storage (water below the out-take) level can be used. This water can be obtained by installing alternate piping and pumping facilities.

Increase Use of Recycled Water

Recycled water is used to irrigate farms, golf courses and other large turf areas; to recharge groundwater; for industrial cooling and processing, toilet flushing, and a variety of environmental purposes. With the uncertainties of drought, examination of opportunities for new recycled water projects and the extension of existing projects is an appropriate part of drought contingency planning.

In order to facilitate future use of recycled water, agencies may consider requiring new construction to be double plumbed to use recycled water.

For more information about recycled water, go to the following Web sites:

http://www.dhs.ca.gov/ps/ddwem/waterrecycling/default.htm

http://www.owue.water.ca.gov/

Use of Gray Water

In a severe water shortage graywater use allows residential customers to save millions of dollars worth of mature trees and shrubs. The California Department of Water Resources has a Graywater Guidebook available on-line at www.owue.water.ca.gov.

During 1989 Santa Barbara County amended the Building Code Ordinance to allow the use of graywater and the Uniform Plumbing Code has allowed graywater use since 1992. For graywater systems that require modifications to the drain pipe a Building Permit is required.

Graywater can be used for landscape irrigation and includes drainwater from residential showers, bathtubs, bathroom sinks and clothes washers. Plumbed graywater systems use a small surge tank and piping to provide subsurface irrigation water to trees and shrubs. There are no restrictions on the use of graywater for irrigation if it is carried in a bucket.

Graywater does not include water that has come in contact with toilet waste, water from kitchen sinks and dishwashers, and laundry water from soiled diapers.

Investigate Blending Poor Quality Water with Good Quality to Stretch Supplies

In some cases blending in marginal quality groundwater can stretch municipal supply.

Weather Modification

Weather modification is widely practiced in California's mountain watersheds, especially in the southern Sierra. Many of the best prospects are in the Sacramento River basin, in watersheds that are not seeded now. The Lahontan regions are already well covered by cloud seeding projects, except for the Susan River. With the exception of the upper Trinity River watershed, and perhaps the Russian River, there is little new potential in the North Coast region because not much extra rainfall could be captured due to limited storage capacity. There is also potential to increase water production by more effective seeding operations in existing projects. Precipitation enhancement should not be viewed as a remedy for drought. Cloud seeding opportunities are generally fewer in dry years. It works better in combination with surface or groundwater storage to increase average supplies. In the very wet years, when sponsors already have enough water, cloud seeding operations are usually suspended.

Some benefits could be achieved from a crash program of cloud seeding in unseeded watersheds. However, amounts would likely be considerably less than from a well designed program of aerial and ground seeding. Water managers who have storage facilities on mountain watersheds probably should give weather modification serious consideration and carry out some advance planning for future years. Where potential cloud seeding projects have had considerable past study or have operated in the past a properly directed aerial cloud seeding program may be able to quickly augment precipitation and runoff to some extent. However, the number of commercial cloud seeding firms is small and the resources might not be available if there are high demands for new projects in a drought year.

Desalination

Seawater desalting creates a new water supply by tapping the significant supply from the Pacific Ocean. There is additional new water supply possible from desalting oil field production water in the San Joaquin and Salinas valleys and brackish agricultural drainage water in the San Joaquin and Imperial valleys. Desalting wastewater increases the range of beneficial uses for which recycled municipal wastewater can be used. Desalting groundwater allows groundwater of impaired quality to be adequately treated for potable use.

For more information about recycled water, go to the following Web site:

www.owue.water.ca.gov

Emergency Supplies

For those communities that are very short of water, emergency supplies may be needed. Although inconvenient, hauling water is a simple expedient for individual residences or small communities. Hauling costs are nominal if distances are short, but can be high if long distances and large quantities of water are involved. Hauling facilities can vary from small containers in the family car to large tank trucks or railroad tank cars. Public health considerations require care in selection of hauling vessels. Tank trucks or containers that have been used for toxic materials must not be used, since it is almost impossible to remove all traces of these materials from containers.

It is interesting to note that, during 1977, several communities with severe water rationing were able to get by with 35 to 50 gallons per capita per day of average residential supply. Goleta's 1989-90 water use averaged 67 gpcd at single family accounts and 49 gpcd at multi-family accounts.

Larger communities may find temporary pipelines practical. Even irrigation sprinkler pipe may work if a suitable source can be found. The State Office of Emergency Services (OES) can provide some assistance. Go to their Web site at http://www.oes.ca.gov for information about their services and regional offices.

APPENDIX E Drought Reference Materials

This is a list of drought-related publications that provide background information as well as helpful drought management strategies and regulatory requirements related to water shortage contingency programs and water rationing. The publications are arranged in date order with the most recently published documents listed first.

Resource	Author/ Publisher	Publication Year	Description
Water Resources Planning, Manual of Water Supply Practices, M50	American Water Works Association	2007	A brief section entitled Drought Management and Water Resources Planning provides a definition of drought and information about interagency coordination, plan development and implementation.
Urban Drought Guidebook	California Department of Water Resources	2007	This guidebook, presently being updated from the 1991 edition, provides a step-by-step approach to developing and implementing drought plans.
Drought and Water Crises: Science Technology and Management Issues	Edited by Donald A. Wilhite	2005	A look at innovative strategies for managing droughts in an international context. Articles in this volume look at case studies from the U.S., Spain, Canada, and China, and attempts to draw lessons for future drought management policy.
Water 2025: Preventing Crises and Conflict in the West	US Bureau of Reclamation, www.doi.gov/initiatives/water2025.html	2005	Water 2025 focuses on stretching existing water supplies through collaboration, technology and innovative, market-based solutions. It is designed to produce results and demonstrate investments that can help in preventing crises and conflict in the West.
Emergency Management in California	Governor's Office of Emergency Services, www.oes.ca.gov/Operational/OESHome.nsf/PDF/EMGuide/$file/EMGuide.pdf	2003	This guide describes California's emergency management system and outlines the roles of the public and private entities that contribute to the State's ongoing preparedness, response, recover, and mitigation efforts.
Economic Impacts of the Florida Environmental Horticulture Industry, Apr. 2000	Institute of Food and Agricultural Sciences, University of Florida	2002	This article reports the findings of an economic impact study of Florida's environmental horticulture industry in 2000. Included in the study is an evaluation of how drought and water restrictions affected the industry.

Resource	Author/ Publisher	Publication Year	Description
Paving Our Way to Water Shortages: How Sprawl Aggravates the Effects of Drought	American Rivers, Natural Resources Defense Council, Smart Growth America; by Betsy Otto, Katherine Ransel, Jason Todd, Deron Lovaas, Hannah Stutzman, and John Bailey.	2002	This study investigates what happens to water supplies when natural areas are replaced with roads, parking lots, and buildings.
Drought Management Handbook	American Water Works Association	2002	This handbook provides water utility managers with a practical guide to the formulation and implementation of drought management plans. It describes proven tools, programs, and activities that utilities can use to deal with drought today and in the future.
Working Toward an Active National Drought Policy, Mar. 2001	Ane D. Deister	2001	This article from the Journal of the AWWA chronicles the creation and later actions of the National Drought Policy Commission.
California Emergency Services Act, 2001	Department of Water Resources	2001	CA Government Code Sections 8550 and CA Water Sections 350 covering Emergency Services and Water Shortage Emergencies in case of natural, manmade, or war-caused emergencies. Covers disaster conditions and insures that preparations within the state will be adequate to deal with such emergencies.
California Landscaping - Nov/Dec 2001 "Trophy Awards 2001: A Celebration of Excellence in Landscaping"	California Landscape Contractors Association	2001	Article in this issue:- "Are You Ready for the Coming Drought?" Is California teetering on the edge of profound water shortfall that could rival this year's power shortages for economic and social disruption?
Preparing for California's Next Drought: Changes Since 1987-92	California Department of Water Resources	2000	This report reviews items that DWR should consider in near-term drought planning. The report gives an overview of California hydrology and water supply, describes conditions encountered in the 1987-92 drought, summarizes changed conditions since that drought, and recommends actions that the department could take to respond to future drought conditions.

Resource	Author/ Publisher	Publication Year	Description
Critical Water Shortage Contingency Plan	Governor's Advisory Drought Planning Panel. Department of Water Resources	2000	This contingency plan was prepared in response to the commitment in the CALFED Bay-Delta Program's Record of Decision that the Governor would convene a panel to develop a "contingency plan to reduce the impacts of critical water shortages primarily for agricultural and urban water users." The report provides background on water supply conditions in California, discusses changes in water management conditions since the 1987-1992 drought, outlines water shortage management challenges, and gives recommendations for action.
Drought Management Planning in Water Supply Systems: Proceedings from UIMP International Course held in Valencia	Enrique Cabrera and Jorge Garcia-Serra, eds. Kluwer Academic Publishers	1999	This book is mainly aimed at water supply engineers, working in utilities and consultancies. The topics covered include Water Supply Systems Modernization, Drought Management in an Urban Context, and Practical Cases (Israel, USA, Italy, Spain).
Drought Management Policies and Economic Effects in Urban Areas of California, 1987-1992	Lloyd S. Dixon, Nancy Y. Moore, Ellen M. Pint. RAND	1996	This report provides the definition and measurement of the effects of the 1987-1992 drought in urban areas, an analysis of data collected from 85 urban water agencies on drought management strategies and customer responses during the drought, and an analysis of household water demand and consumer surplus losses due to the drought in Alameda County Water District.
The Value of Water Supply Reliability, Aug. 1994	Barakat and Chamberlin, Inc. -- California Urban Water Agencies	1994	This report summarizes the results of a survey conducted to study residential water shortage economic losses. The report discusses what California residents are willing to pay per household on their water bills to avoid water shortages of varying magnitude and frequency.
Long-Term Water Conservation and Shortage Management Practices: Planning that Includes Demand Hardening	Tabers, Caramanis & Associates for California Urban Water Agencies	1994	"Demand Hardening" reflects the concept that it is harder to obtain demand reductions during water shortages from customers who have already conserved. This publication develops a definition of Demand Hardening and identifies the impacts of Demand Hardening and the other interactions of Long-Term Conservation and Shortage Demand Management measures.

Resource	Author/ Publisher	Publication Year	Description
The Impact of Customer Attitude and Physical Variable on Water Use Before, During and After a Drought	Santa Barbara County Water Agency	1993	A Research Proposal for a residential water demand forecasting research project.
Bay-Delta Hearings - The Economic Cost of Drought-Induced Urban Greenery Losses	Sycamore Associates and Spectrum Economics	1992	This report from the CALFED Bay-Delta Hearings discusses the one economic impact Santa Barbara's local water authorities could not avoid during the 1980's drought: the effect of the water shortages on Santa Barbara County landscapes.
Drought Management Planning	American Water Works Association	1992	This publication provides water utility managers with a practical guide to the formulation and implementation of drought management plans. The emphasis of this book is on demand-side responses to drought-relate water supply emergencies.
Journal - American Water Works Association - "Conservation," Oct. 1992, Vol. 84, No. 10	American Water Works Association	1992	Articles include:-"Urban Drought Response in Southern California 1990-91"-"Creating Economic Incentives for Conservation"-"Developing a Long-Term Drought Plan for Phoenix"-"Water Demand Monitoring in Austin, Texas"-"Water Audit Encourages Residents to Reduce Consumption"-"Nonresidential Water Conservation: A Good Investment"-"Potential Impact of Water-Efficient Plumbing Fixtures on Office Water Consumption."
The Costs of Water Shortages: Case Study of Santa Barbara	Spectrum Economics and Sycamore Associates. Metropolitan Water District of Southern California	1992	This report outlines some of the ways in which the customers and staff of two water utilities in Santa Barbara County dealt with the immediate problems arising from the 1990 drought. The report also discusses solutions that were found to reduce the water shortage impacts.
Bay Delta Hearings - Economic Impacts of Urban Water Shortages: Summary of Recent Studies	State Water Contractors	1992	This exhibit from Phase II of the Bay-Delta Hearings provides an update regarding the possible economic consequences of decisions by the State Board that would reduce available water supplies to the urban economy of California.

Resource	Author/ Publisher	Publication Year	Description
California's Continuing Drought 1987-1991	CA Dept. of Water Resources	1991	This report summarizes the status of the continuing drought as of December 1, 1991 and gives an accounting of actions taken to date. Fish and wildlife were cited as most damaged. After four years of consecutive drought, the State Water Project made no deliveries to agricultural contractors and only 30 percent to urban customers. Federal agricultural contractors received 25 percent and urban contractors 75 percent of deliveries.
Cost of Industrial Water Shortages	William Wade, Julie Hewitt, and Matthew Nussbaum. Spectrum Economics, Inc.	1991	This report discusses the issue of economic impacts of water shortages on the industrial sector. This analysis is based on a survey of industrial plants in California to determine industrial water use patterns, the extent of adopted conservation and the potential for plant production losses and employment reductions associated with reductions in water supplies.
Industrial/Commercial Drought Guidebook for Water Utilities	California Department of Water Resources	1991	This guide will assist water utility conservation coordinators help their industrial and commercial customers initiate immediate responses to a drought. The guide outlines effective programs to improve water use efficiency by large nonresidential water users.
Journal - American Water Works Association - 1990 May "Conservation," Vol. 82, No. 5	American Water Works Association	1990	Articles include:-"Reducing Water Demand During Drought Years" and -"Operating the Seattle Water System During the 1987 Drought."
Managing Limited Urban Water Supplies: Conference for California Water Agencies	California Dept. of Water Resources	1989	Booklet to accompany the 1989 Conference for California Water Agencies. Topics covered include: Landscape Water Audits, Residentail Water Surveys, Public Information & Water Education, Commercial & Industrial Conservation, Water Rates & Pricing and Preparing for Drought.
Consumer Response to the Drought Media Campaign in Southern California	Planning and Management Consultants, Ltd.	1989	This report describes the results of two telephone surveys of residential water users in Southern California that were designed to measure the impact of Metropolitan Water District's 1988 drought media campaign. The results of a pre-campaign survey can be found in the report "Drought Media Campaign: Analysis of the Pre-Campaign Survey" (PMCL 1988).

Resource	Author/ Publisher	Publication Year	Description
Compendium on Water Supply, Drought, and Conservation	Janice A. Beecher, Ann P. Laubach. The National Regulatory Research Institute	1989	A comprehensive and interdisciplinary approach to the consideration of water resource issues and policies.
Consumer Response to Drought	Planning and Management Consultants, Ltd. Metropolitan Water District of Southern California	1988	This report summarizes the findings of a study of factors which govern the consumer adoption of water conservation during drought. The report identifies practical approaches to encourage conservation behavior, evaluates written materials used by water agencies in promoting conservation, reviews drought response plans of U.S. water agencies and recommends specific Drought Plan actions.
Drought Media Campaign: Analysis of the Pre-Campaign Survey	Planning and Management Consultants, Ltd.	1988	This report describes the results of a survey of residential water users that was conducted prior to the implementation of Metropolitan Water District's 1988 drought media campaign. The results of this survey are used as "baseline" conditions against which the post-campaign survey results are gauged against. These post-campaign survey results can be found in the report "Consumer Response to the Drought Media Campaign in Southern California" (PMCL 1989).
Economic Value of Reliable Water Supplies for Residential Water Users in the State Water Project Service Area, Jun. 9, 1987	Richard Carson and Robert Mitchell. Metropolitan Water District of Southern California	1987	This paper reports economic values for changes in the reliability of water supply. From the perspective of the residential water user, these values reflect the cost of damages expected from a period of water shortage.
Before the Well Runs Dry Volume II: A Handbook on Drought Management	American Water Works Association	1984	This handbook describes a five-step process designed to provide water suppliers and local government officials from small- and medium-sized communities with guidelines on how to develop a contingency plan for coping with drought.
The 1976-1977 California Drought: A Review	CA Dept. of Water Resources	1978	This fifth and final report on the 1976-1977 California drought. Urges Californians not to let up on water conservation efforts, even though the rains have returned.

Resource	Author/ Publisher	Publication Year	Description
The Continuing California Drought	CA Dept. of Water Resources	1977	This is the third in a series of reports on the worst California drought in history.

APPENDIX F Drought –related Web Sites

This is a list of drought-related Web sites that provide a wealth of information from current water supply outlooks to fire conditions and information regarding planning, monitoring, and implementing water shortage programs. Web sites addresses change periodically, so please note the date of this list and look for updates as appropriate.

Web site	Source	Description
U.S. Government Web sites		
http://www.drought.unl.edu/dm/monitor.html	US Drought Monitor, National Drought Mitigation Center, University of Nebraska, Lincoln	Updated weekly, the US Drought Monitor provides a map of the US with a graphic display of the intensity of drought in various regions as well as a summary of conditions throughout the country.
http://drought.unl.edu/	National Drought Mitigation Center, University of Nebraska, Lincoln	NDMC helps people and institutions develop and implement measures to reduce societal vulnerability to drought. The Web site provides a wealth of information, including a definition of drought and climate change, how to plan for drought, monitor it, assess risks and impacts, and mitigate it. Also provides links to state drought plans (http://drought.unl.edu/plan/stateplans.htm).
http://www.drought.noaa.gov/	US Dept. of Commerce, National Oceanic and Atmospheric Administration	NOAA's Drought Information Center provides a wealth of information about drought and climate conditions as well as links to other sites, including state and regional climate centers. Their Drought Calculator shows the amount of rainfall needed to end droughts around the country. The US and Global Climate Perspective section provides up-to-date information.
http://www.weather.gov/oh/hic/current/drought/	National Weather Service Hydrological Information Center	NWS, a unit of NOAA, provides drought statements issued by NEW Forecast Offices and links to state, local, and regional weather and hydrologic sources of information.
http://www.weather.gov/view/states.php?state=CA	National Weather Service: California Data	NWS provides current weather data including forecasts, weather summaries, climate and hydrological data, warnings and advisories, and fire weather.
http://www.wrcc.dri.edu/	Western Regional Climate Center (NOAA & Desert Research Institute)	Provides climate and weather information for western US, including climate extremes and major storm events on a state-by-state basis.
http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us	US Geological Survey	Provides US and state maps showing normal 7-day average streamflow compared to historic streamflow for the current day of the year.
http://ca.water.usgs.gov/	US Geological Survey, California Science Center	Provides information on California's rivers and streams. You'll also find information about ground water, water quality, and many other topics.
http://www.usbr.gov/drought/	US Bureau of Reclamation's Drought Program	Provides information about the assistance and planning based upon the Drought Relief Act of 1991 and Reclamation drought program contacts.

Web site	Source	Description
www.usbr.gov/lc/region/scao	US Bureau of Reclamation's Southern California Area Office	Reclamation encourages and facilitates water use efficiency and assists agencies in meeting the demand for limited water resources.
www.usbr.gov/mp/watershare	US Bureau of Reclamation's Mid-Pacific Region	Reclamation's Mid-Pacific Region's Web site includes information on Federal reservoir conditions, water releases, recreational area conditions.
http://www.epa.gov/owm/water-efficiency/index.htm	US Environmental Protection Agency	The mission of EPA's WaterSense program is to protect the future of the country's water supply by promoting and enhancing the market for water-efficient products and services.
http://www.usace.army.mil/	US Army Corp of Engineers	This Web site stores technical information on the role of the Corp during declared drought emergencies and disasters.
http://fire.boi.noaa.gov/	US Forest Service	USFS provides fire weather reports and water conditions in national forests.
State of California Web sites		
http://watersupplyconditions.water.ca.gov/	CA Dept. of Water Resources, Drought Preparedness page	DWR's web page provides links to the state's hydrologic and water supply conditions, information for private well owners, links to local water shortage contingency plans and other drought sites.
http://cdec.water.ca.gov	CA Dept. of Water Resources, California Data Exchange Center	DWR's operational hydrologic data including current river conditions, snowpack status, river stages/flows, reservoir data/reports, satellite images, precipitation/snow, river/tide forecasts, water supply, weather forecast, and statewide water conditions.
www.owue.ca.gov/urbanplan/index.cfm	CA Dept. of Water Resources	DWR provides access to copies of final Urban Water Management Plans, including local agencies' Water Shortage Contingency Plans.
http://listhost1.water.ca.gov/mailman/listinfo/water_news	CA Dept. of Water Resources	DWR provides a daily compilation of news clips through *California Water News,* including drought and water supply conditions.
www.watertransfers.water.ca.gov	CA Dept. of Water Resources	This web site provides access to information related to water transfers in the CALFED solution area in which the CALFED agencies are involved.
http://www.climatechange.water.ca.gov/	CA Dept. of Water Resources	DWR provides information about the potential and actual impacts of climate change on California's water resources and links to related Web sites pertaining to the issue.
www.owue.water.ca.gov	CA Dept. of Water Resources' Office of Water Use Efficiency	OWUE offers technical and financial assistance to agencies and the general public.

Web site	Source	Description
http://www.oes.ca.gov	CA Office of Emergency Services	OES coordinates the response efforts of state and local agencies in times of emergencies and disasters. Additionally, OES coordinates the integration of federal resources into state and local response and recovery operations. Their Web site provides information about OES regions and divisions and describes the Standardized Emergency Management System.
http://www.fire.ca.gov	CA Dept. of Forestry and Fire Protection	Provides information about fire conditions, including current major incidents.
http://www.cdph.ca.gov/certlic/drinkingwater/Pages/default.aspx	CA Dept. of Public Health	Regulates drinking water quality safety.
http://www.cpuc.ca.gov/PUBLISHED/REPORT/40495.htm	CA Public Utilities Commission	Provides information about water rationing for PUC regulated investor owned utilities.
http://www.waterrights.ca.gov/watertransfer/default.htm	CA State Water Resources Control Board	Rules for obtaining emergency water appropriations.
Other Web sites		
www.calwarn.org	Water/Wastewater Agency Response Network (WARN)	Supports and promotes statewide emergency preparedness, disaster response, and mutual assistance matters for public and private water and wastewater utilities. The core of the WARN Web site is its emergency equipment database that matches utility resources to a member's needs during an emergency. A member can locate emergency equipment (pumps, generators, chlorinators, evacuators, etc.) and trained personnel (e.g. treatment plant operators) that they may need in an emergency.
www.cuwcc.org	California Urban Water Conservation Council	The Council offers a wide array of information and services including product news, publications, and technical resources to foster implementation of water management practices.
http://www.smartcommunities.ncat.org/management/drought.shtml	Smart Communities Network	This page offers a portal to current news items and events relevant to how communities deal with drought.
http://www.awwa.org/waterwiser/	American Water Works Association/ Alliance for Water Efficiency (AWE)	A shared, web-based clearinghouse of information regarding drought and water efficiency throughout the US.

Web site	Source	Description
http://www.cadroughtprep.net/	California Drought Preparedness	CA Rural Water Association's Web site offers water shortage information specific to small water systems, including links to potential funding sources.
http://www.WaterSavingHero.com	Bay Area water suppliers	This Web site links Bay Area residents to their local water agency's conservation tips and cash rebate information. The campaign is a partnership among Bay Area water suppliers and organizations including the San Francisco Public Utilities Commission, Bay Area Water Supply and Conservation Agency, Santa Clara Valley Water District, Contra Costa Water District, Zone 7 Water District, Bay Area Clean Water Agencies and others.
http://www.sdcwa.org/manage/20GallonChallenge.phtml	San Diego County Water Authority	SDCWA's 20 Gallon Challenge offers a list of conservation tips, from "no cost- easy to do" to "low cost- more effort required" and "higher cost- most effort required.," and provide an estimate of how much water each action can save.
http://www.scwa.ca.gov/water_conservation/tips.php	Sonoma County Water Agency	In cooperation with Marin and Mendocino county water suppliers, Sonoma County Water Agency offers customers the "Top 10 Water Conservation Tips."
http://www.wmwd.com/enough	Corona Dept. of Water & Power, Eastern Municipal Water District, Elsinore Valley Municipal Water District, Rancho California Water District, Riverside Public Utilities and Western Municipal Water District	This program is similar to the City of Denver's "Use Only What You Need" friendly pledge and "FRE Bs" program that offers their customers free "stuff", like a rubber duckie, t-shirt, shower head, and even a skate board to promote the program: http://useonlywhatyouneed.org/

APPENDIX G Emergency Drought Funding

This is a list of potential sources of financial assistance for drought programs from State and Federal agencies. Funding sources and amounts vary significantly based on water supply conditions and agency budget processes. Generally, the U. S. Bureau of Reclamation and the California Department of Water Resources are the main sources of Federal and State drought funding for local water suppliers.

This list provides a starting point for the exploration of those major funding sources as well as some other possible drought funding sources for local water suppliers. Some funding programs that focus on water use efficiency may be redirected during times of drought. The forms of financial assistance vary by program and include loans, loan guarantees, grants, cost sharing, seed money for projects, subsidized purchases, and direct construction

Grant Program	Funding Entity	Web site Address	Contact Person	E-mail	Telephone	Eligible Entities	Eligible Projects	Funding-Total	Funding-per Project	Cost Share
FEDERAL										
Reclamation States Drought Emergency Act	Reclamation	www.usbr.gov/drought/	Reclamation staff at Regional and Area Offices	listed on Reclamation Web site: www.usbr.gov/main/regions.html	listed on Reclamation Web site	Water suppliers in states where the Governor or Tribal Governing Body has declared a drought.	financial and technical assistance to drought plagued areas of the west	$12 million for Fiscal Year 2007	varies	varies
Water 2025 Challenge Grant Program	Reclamation	www.grants.gov	Miguel Rocha	Water2025RFP@do.usbr.gov	303.445.2841	irrigation and/or water districts, State agencies with water management authority, other water deliverers in western US	physical improvement projects that will conserve water and improve water management	Varies by year based upon annual appropriation approved by Congress	$300,000	50%

Grant Program	Funding Entity	Web site Address	Contact Person	E-mail	Telephone	Eligible Entities	Eligible Projects	Funding-Total	Funding-per Project	Cost Share
Water 2025 System Optimization Review Program	Reclamation	www.grants.gov	Miguel Rocha	Water2025RFP@do.usbr.gov	303.445.2481	irrigation and/or water districts, State agencies with water management authority, other water deliverers in western US	reviews of water delivery systems, districts, or basins resulting in a plan of action to improve efficiency and operations	Varies by year based upon annual appropriation approved by Congress	$300,000	50%
Water Conservation Field Services Program	Reclamation Area Offices	www.grants.gov	Area Office staff	listed on Reclamation Web site: www.usbr.gov/main/regions.html	listed on Reclamation Web site	water purveyors that receive water from Reclamation, tribes, universities, states, local governments and non-profit organizations	water management, conservation planning, implement., demonstration of innovative technologies, public education, research	Varies by year based upon annual appropriation approved by Congress	$100K	50%
Water Reclamation and Reuse (Title XVI) Program	Reclamation Area Offices	www.grants.gov	Area Office staff	www.usbr.gov/main/regions.html- see Title XVI Guidelines	listed on Reclamation Web site	Agencies designated by Congress	water reclamation and reuse: feasibility and construction projects	Varies by year based upon annual appropriation approved by Congress	varies	varies
CALIFORNIA STATE PROGRAMS										
Special California State Drought Funding	DWR	www.owue.water.ca.gov/finance/index.cfm	Manucher Alemi	malemi@water.ca.gov	916.651.9662	yet to be determined: if special drought funding becomes available, it will be posted on this DWR Web site	yet to be determined	yet to be determined	yet to be determined	TBD

Grant Program	Funding Entity	Web site Address	Contact Person	E-mail	Telephone	Eligible Entities	Eligible Projects	Funding-Total	Funding-per Project	Cost Share
Proposition 50, Chapter 7g: Water Use Efficiency Program	DWR	www.owue.water.ca.gov/finance/index.cfm	Manucher Alemi	malemi@water.ca.gov	916.651.9662	public water districts, local agencies, tribes, non-profit organizations, universities, State & Federal agencies	water use efficiency projects that will provide benefits to the Bay-Delta	$15 million urban, $20 million agric.	varies	varies
Consolidated Grants: multiple state funding programs	SWRCB/ DWR	faast.swrcb.ca.gov/index.html	Erin Ragazzi	enragazzi@waterboards.ca.gov	916.341.5733	varies, public agencies and non-profit organizations eligible for most programs	non-point source pollution control, urban stormwater, integrated watershed management projects, clean beaches initiative	varies	varies	20-25%
Proposition 50, Chapter 8: Integrated Regional Water Management Program	DWR/ SWRCB	www.swrcb.ca.gov/funding/irwmgp/index.html	Tracie Billington	tracieb@water.ca.gov	916.651.9226	public agencies, non-profit organizations	projects to protect communities from drought, protect & improve water quality, reduce dependence on imported water	$380 million	$50k planning, $25 million implement	25% plan, 10% implement
Proposition 50, So. Cal. Projs. to reduce demand on the Colorado River	DHS	dhs.ca.gov/ps/ddwem/Prop50/default.htm					Projects to meet drinking water standards, reduce Colorado River water use	$260 million	$50k - $20 million	

Grant Program	Funding Entity	Web site Address	Contact Person	E-mail	Telephone	Eligible Entities	Eligible Projects	Funding-Total	Funding-per Project	Cost Share
Proposition 84	DWR, SWRCB, DHS	www.waterboards.ca.gov/funding/index.html	pending		pending	pending	sustainable communities, statewide planning, IRWM, etc.	$5.4 billion	pending	pending

APPENDIX H Water Efficient Landscape Web Sites

This is a list of landscape-related Web sites that provide information for improving landscape water use efficiency and reducing demand. Web site addresses change periodically, so please note the date of this list and look for updates as appropriate.

Web site	Description
www.amwua.org	Arizona Municipal Water Users Association's Water Conservation page includes information about Smartscape, a training program for landscape professionals and other landscape info including plant selection lists, installation tips, demo gardens, watering schedules, and drip irrigation guidelines.
www.anla.org	American Nursery & Landscape Association represents members who grow, distribute and retail plants, providing education, research and public relations services.
www.bewaterwise.com	Sponsored by the Family of Southern California Water Agencies, provides a So. Ca. Heritage Gardening Guide, a Native Knowledge Hotline, Garden Profiles, Watering Index information, and incentive programs for businesses.
www.cabq.gov/waterconservation/	City of Albuquerque's Water Conservation page offers xeriscape rebates, services, and information about restrictions and enforcement in their community. Six free xeric design templates produced by local landscape professionals are free to homeowners and businesses. They provide blueprints in creating spectacular landscapes with color, logic, beauty and purpose.
www.californiaoaks.org	California Oak Foundation is a non-profit educational organization committed to preserving the state's oak forest ecosystem and its rural landscapes.
www.cangc.org	California Association of Nurseries and Garden Centers is a professional organization dedicated to the promotion and advancement of the nursery industry.
www.cbia.org	California Building Industry Association, an association of more than 6,000 companies in the homebuilding industry, is working to build a wide variety of new homes up and down the state to house our growing population.
www.ciwmb.ca.gov	California Integrated Waste Management Board offers information about composting, mulch, organic materials and grass cycling.
www.clca.org	California Landscape Contractors Association provides a list of licensed landscape contractors, training and certification programs, and water management information. Includes resource links for installing and caring for California-friendly plants.
www.cnps.org	California Native Plant Society's mission is to increase understanding and appreciation of California's native plants and to conserve them and their natural habitats. Includes an on-line Manual of California Vegetation, local chapters and plant sales, and lists of botanic gardens and native plant nurseries.

Web site	Description
www.cufr.ucdavis.edu	Center for Urban Forest Research, a research station of the USDA Forest Service and The UC Department of Environmental Horticulture demonstrates ways that trees add value to communities, converting results into financial terms to stimulate more investment in trees.
www.cuwa.org/	California Urban Water Agencies offers a set of publications focusing on water conservation and demand management, focusing on the potential and costs of urban water management practices.
www.cuwcc.org	California Urban Water Conservation Council offers a wide array of information and services including a Virtual Home Tour of the Water Saver Home, product news, publications, and technical resources.
www.ebmud.com/conserving_&_recycling/	East Bay Municipal Utilities District offers customers a WaterSmart Residential Landscape Rebate of up to $1,000 for those who convert high-water-using gardens into water conserving landscapes. They also offer landscape irrigation audits and rebates for irrigation equipment upgrades.
www.epa.gov/owm/water-efficiency/index.htm	An overview of U.S. Environmental Protection Agency's Water Efficiency Program, including 'Water-Efficient Landscaping: Preventing Pollution & Using Resources Wisely.'
www.epa.gov/win	U.S Environmental Protection Agency's Watershed Information Network: a roadmap to information services for protecting and restoring water resources.
www.greengardener.org	Santa Barbara's Green Gardener Certification Program educates and certifies local gardeners in resource efficient and pollution prevention landscape management practices. They provide training classes and a list of certified green gardeners.
www.irrigation.org/	Irrigation Association supports the irrigation industry in their efforts to pursue water conservation through efficient irrigation. They provide training and certification to irrigation professionals and foster a communication network among irrigation manufacturers, designers, distributors, contractors, educators, and technicians.
www.irwd.com	Irvine Ranch Water District provides landscape customers with support to stay within their water allocations, based upon current weather data. They offer free irrigation water management software to compare weekly water usage to allocations.
www.isa-arbor.com	International Society of Arboriculture fosters a greater appreciation for trees and promotes research, technology and the practice of arboriculture, including certification credentials.
www.itrc.org	Irrigation Training and Research Center at California Polytechnic State University- San Luis Obispo provides irrigation training and research services. They offer Landscape Irrigation Auditor and Landscape Water Budget classes.

Web site	Description
www.snwa.com	The Southern Nevada Water Authority, with its seven member agencies including the Las Vegas Valley Water District now offers two programs: Water Smart Landscapes and Water Smart Homes, with the Southern Nevada Home Builders Association as a sponsor. Water Smart Homes includes water-efficient landscaping and irrigation systems as well as hot water recirculation systems and water efficient appliances. During the past five years, the Water Smart Landscapes Program has replaced over 32 million square-feet of turf with xeriscape.
www.marinwater.org/waterconservation.html	Marin Municipal Water District offers their customers weekly watering schedules, landscape irrigation site surveys, and a list of water efficient landscapers.
www.mwdh2o.com	Metropolitan Water District of Southern California provides conservation tips and information, rebates and incentives including the Protector del Agua training program, a watering calculator, the So. Ca. Heritage Landscape program, a synthetic turf program and home gardeners water conservation workshops.
www.mwdoc.com	Municipal Water District of Orange County's Web site offers residential landscape seminars, professional landscape training and certification programs, and a Smart Timer weather based irrigation controller rebate program.
www.nctlc.com/	Northern California Turf and Landscape Council and Green Industry Council's Web site.
www.owue.water.ca.gov	California Department of Water Resources' Office of Water Use Efficiency offers financial and technical assistance to agencies involved in water conservation. They host CIMIS, the California Irrigation Management Information System, a network of 120 automated weather stations to provide evapotranspiration information to help irrigation scheduling. Information about water recycling and desalination is also available through the office.
www.pacinst.org/	Pacific Institute is an independent think-tank studying issues of development, environment and security. They have produced numerous studies related to water use efficiency potential.
www.sdcwa.org	San Diego County Water Authority provides a landscape calculator, information about xeriscape principles, a water conservation garden and a Smart Landscape (weather based controllers) program to their customers.
www.stopwaste.org/	Alameda County Waste Management Authority provides information about waste and water efficient landscaping practices through two publications, Bay Friendly Landscaping and Bay Friendly Gardening, and local seminars.
www.swfwmd.state.fl.us/	Southwest Florida Water Management District's extensive source of info on conserving water. Includes on-line library of water conservation research and program model for estimating savings and costs of various water conservation programs.

Web site	Description
www.treepeople.org/	Tree People helps restore watersheds and fragile habitats, heals inner-city communities, brings neighbors together, cools and greens campuses and addresses water and energy conservation in the Los Angeles region.
www.turfcouncil.org	Southern California Turfgrass Council promotes education and research for the turfgrass and landscape industries.
www.usbr.gov/lc/region/scao/	U.S. Bureau of Reclamation Lower Colorado Regional Office encourages and facilitates water conservation and assists agencies in meeting their demand for limited water resources.
www.usbr.gov/mp/watershare/	U.S. Bureau of Reclamation Mid-Pacific Region's Water Share Web site features Water Wise Gardens of California, information about demonstration gardens throughout the State.
www.water.denver.co.gov/conservation/conservframe.html	Denver Water offers a wide variety of information and assistance for landscape water conservation including tips on tree care in dry climates, residential outdoor self audit of sprinkler systems, and before and after photos of xeriscape conversions.
www.water-ed.org/	Water Education Foundation provides information, publications, tours and briefings about California water including landscape water use.
www.watereuse.org/	WateReuse Association advocates for the beneficial and efficient use of water resources through education, science and technology using recycling, reuse and desalination for the benefit of the public and the environment.
www.waterplan.water.ca.gov	California Department of Water Resources Statewide Water Planning projects future statewide water supply and demand, including landscape water use.
www.waterright.org	Center for Irrigation Technology at California State University, Fresno developed Waterright as a multi-functional, educational resource for irrigation water management. The homeowners and commercial turf growers sections provide tutorials and irrigation scheduling programs.
www.waterwiser.org	American Water Works Association clearinghouse for water conservation research, calendar of conservation events, links to other water conservation info, product info, etc.

APPENDIX I Example Forms and Calculations

This appendix provides a collection of example forms and calculations that a water supplier can use as ideas when developing their own drought program. Each supplier has a distinct set of conditions to consider when facing dry conditions. These forms and calculations are intended only as examples that can be tailored to the particular needs of the water supplier. Any numbers or quantities contained in these forms reflect only sample data.

Appendix I includes:

- Sample Supply Projections
- Essential Health and Safety Calculations
- Sample Reductions by Customer Type and Priority
- Water Rationing Stages and Triggering Mechanisms
- Allotment Methods
- Example - Calculating Hybrid Allotment for Stage 2
- Example - Calculating Hybrid Allotment for Stage 3
- Example – Calculating Hybrid Allotment for Stage 4
- Hybrid Allotment Calculation Method
- Calculations for Determining Seasonal Adjustments
- Effects of hybrid allotments on conserving and non-conserving households
- Effects of hybrid allotments on households with varying number of residents
- Effects of seasonal distribution of allotments on conserving and non-conserving households
- Effects of seasonal distribution of allotments on households with varying numbers of residents
- Sample Bill Calculations – uniform rates and tiered rates
- Sample Customer Assistance Computer Screen - Commercial
- Sample Customer Assistance Computer Screen – Residential
- Residential Water Use Efficiency Audit
- Residential Water Use Efficiency Audit Recommendations

Sample Supply Projections

PROJECTED SUPPLY INFORMATION - without supplemental water (AF)

Source	normal	2008	2009	2010	2011
Local Surface	10,000	8,000	6,000	4,000	2,000
Groundwater	2,200	2,600	2,600	2,200	2,000
Imported	2,100	630	420	420	420
Recycled Water			500	1,000	1,500
TOTAL	14,300	11,230	9,520	7,620	5,920
% shortage		21%	33%	47%	59%
average demand	14,000				
			needed additional supply	3,000	3,000
			potential carry-over		1,100
			NEW TOTAL	10,620	10,020
			% supply shortage	26%	30%

PROJECTED SUPPLY INFORMATION - with supplemental water (AF)

Source	normal	2008	2009	2010	2011
Local Surface	10,000	8,000	6,000	4,000	2,000
Groundwater	2,200	2,600	2,600	2,200	2,000
Imported	2,100	630	420	420	420
Recycled Water			500	1,000	1,500
Water Transfer			1900	3800	5500
TOTAL	14300	11230	11420	11420	11420
% shortage		21%	20%	20%	20%

Essential Health and Safety Calculations

with graywater contribution to landscape irrigation water availability

Stage allocated water use is 68 gallons per capita per day

	Non-conserving fixtures		Conserving fixtures		
Toilets	5 flushes x 3.5 gpf =	17.5	5 flushes x 1.6 gpf =	8.0	
Shower / bath	8 min x 3.0 gpm =	24.0	5 min x 2.5 gpm =	12.5	
Clothes washer	1/3 load	11.5	1/3 load	6.0	
Kitchen / dishwasher	5 gpcd	5.0	4 gpcd	4.0	
Bathroom sinks	4 gpcd	4.0	4 gpcd	4.0	
Inside TOTAL (gpcd)		62.0		34.5	
Landscape use		6.0		33.5	
TOTAL purchased (gpcd)		68.0	gpcd	68.0	gpcd
available graywater		39.5		22.5	
total landscape water from each resident		45.5		56.0	
total landscape water for four residents		182	gpd	224	gpd

Stage 4 allocated water use is 50 gallons per capita per day

	Non-conserving fixtures		Conserving fixtures		
Toilets	4 flushes x 3.5 gpf =	14.0	5 flushes x 1.6 gpf =	8.0	
Shower / bath	5 min x 3.0 gpm =	15.0	5 min x 2.5 gpm =	12.5	
Clothes washer	1/3 load	11.0	1/3 load	6.0	
Kitchen / dishwasher	5 gpcd	5.0	4 gpcd	4.0	
Bathroom sinks	4 gpcd	4.0	4 gpcd	4.0	
Inside TOTAL (gpcd)		49.0		34.5	
Landscape use		1.0		15.5	
TOTAL purchased (gpcd)		50.0	gpcd	50.0	gpcd
available graywater		30.0		22.5	
total landscape water from each resident		31.0		38.0	
total landscape water for four residents		124	gpd	152	gpd

Sample Reductions by Customer Type and Priority

	Customer type - AF						
Priority	Residential	Comm/Indust	Ag - Perm	Recreation	Ag - Annuals	TOTAL	
"average use"	8,400	1,800	2,600	600	600	14,000	
Health & Safety (68 gpcd)	5,700	100	0	0	0	5,800	
Commercial	0	1,250	0	0	0	1,250	
Ag - Perm	0	0	2,100	0	0	2,100	
Landscape/Ag	1,100	100	0	390	390	1,980	STAGE II
New Connections	0	0	0	0	0	0	Available Supply
TOTAL (AF)	6,800	1,450	2,100	390	390	11,130	11,500 AF
% reduction	19%	19%	19%	35%	35%	21%	

Priority	Residential	Comm/Indust	Ag - Perm	Recreation	Ag - Annuals	TOTAL	
"average use"	8,400	1,800	2,600	600	600	14,000	
Health & Safety (68 gpcd)	5,700	100	0	0	0	5,800	
Commercial	0	1,200	0	0	0	1,200	
Agric - Perm	0	0	2,030	0	0	2,030	
Landscape/Ag	450	20	0	150	150	770	STAGE III
New Connections	0	0	0	0	0	0	Available Supply
TOTAL (AF)	6,150	1,320	2,030	150	150	9,800	9,800 AF
% reduction	27%	27%	22%	75%	75%	30%	

Priority	Residential	Comm/Indust	Ag - Perm	Recreation	Ag - Annuals	TOTAL	
"average use"	8,400	1,800	2,600	600	600	14,000	
Health & Safety (50 gpcd)	4,200	100	0	0	0	4,300	
Commercial	0	1,160	0	0	0	1,160	
Agric - Perm	0	0	1,810	0	0	1,810	
Landscape/Ag	0	0	0	0	0	0	STAGE IV
New Connections	0	0	0	0	0	0	Available Supply
TOTAL (AF)	4,200	1,260	1,810	0	0	7,270	7,500 AF
% reduction	50%	30%	30%	100%	100%	48%	

SAMPLE

Water Rationing Stages and Triggering Mechanisms

include surface, groundwater and imported supplies

Supply Shortage	Demand Reduction Goal	Triggering Mechanisms
10%	Stage I - 10% reduction Can be achieved through a Voluntary Program	* Dry year (based on local, regional or state standard) * Supply is 90-99% of "normal" * Ground water overdraft exists
10% - 20%	Stage II – 10% - 20% reduction Usually achieved through a Mandatory Program	* Dry or critically dry year * Supply is 80-90% of "normal" * 1 year change in ground water storage exceeds 5 year average annual decline by more than 20% * Contamination of 10% of ground water supply (exceeds primary drinking water standards)
20% - 35%	Stage III - 20% - 35% reduction Always a Mandatory Program	* Second dry or critically dry year * Supply is 65-80% of "normal" * 1 year change in ground water storage exceeds 5 year average annual decline by more than 40% * Contamination of 20% of ground water supply (exceeds primary drinking water standards) * Disaster loss of 20-35% of supply
35% - 50%+	Stage IV – 35% - 50%+ Always a Mandatory Program (common with natural disaster and/or system failures	* Third (or more) dry or critically dry year * Supply is 65% or less of "normal" * 1 year change in ground water storage exceeds 5 year average annual decline by more than 60%; * Contamination of 30% of ground water supply (exceeds primary drinking water standards) * Disaster loss of 35-50% of supply

Allotment Methods (all can be seasonal)

1. Percent Reduction Allotment (all account types)
   - positives
     - useful for non-residential - vary reductions based on efficiency
     - easy to determine and administer
     - establish minimum/maximum amounts to limit extremes
   - negatives
     - penalizes conservers
     - rewards "above average" users
     - promotes water use during non-shortage periods

2. Financial Rationing (all account types)
   - positives
     - market determines water uses, avoids allotments
   - negatives
     - relates water use to income
     - residential tiers are based on average number of occupants
     - large number of appeals
     - difficult to set non-residential tiers

3. Per Connection Allotment (residential only)
   - positives
     - easy to establish allotments
   - negatives
     - no relationship between customer characteristics and water use
     - not equitable
     - doesn't recognize historic use

4. Per Capita Allotment (residential only)
   - positives
     - suitable for extreme shortages
     - equitable, can base allotment and sewer charges on number of residents
   - negatives
     - doesn't recognize historic use
     - must determine and update per account occupancy
     - water for essential inside use only

5. Hybrid Per Capita/Percentage Allotment (residential only)
   - positives
     - equitable - recognizes variety of uses
     - flexibility - suitable to all stages
     - provides customers greatest control
     - recognizes water use factors like climate, lot size and economics
   - negatives
     - additional staff/computer work to determine allotments
     - requires more public education
6. Specific Use Restrictions - unmetered areas (Guidebook appendices)

EXAMPLE - Calculating Hybrid Allotment for Stage 2

Sample Priority Allotment for Residential – STAGE II

The Water Supplier has 80% of average supply available and is in a Stage II Shortage.

Average year residential account water demand = 8,400 AF

Water available for residential accounts in Stage II = 7,100 AF

1. Residential accounts "health & safety" allotment

$$(68\ \text{gpcd}) * (75000\ \text{people}) * (365\ \text{days}) = \left(\frac{1861500000\ \text{gallons}}{325851\ \text{gallons}}\right) \approx 5700\ \text{AFY}$$

"Health & safety" allotment per single family account (assumes four residents)

$$(68\ \text{gpcd}) * (4\ \text{people}) = (272\ \text{gpd}) * (365\ \text{days}) = \left(\frac{99280}{748}\right) \approx 132\ \text{HCF/ year}$$

"Health & safety" allotment per multi-family account (assumes three residents)

$$(68\ \text{gpcd}) * (3\ \text{people}) = (204\ \text{gpd}) * (365\ \text{days}) = \left(\frac{74460}{748}\right) \approx 102\ \text{HCF/ year}$$

2. Additional water available for residential add-on

Available res. water – "health & safety" res. allotment = non-essential add-on

7100 AF – 5700 AF = 1400 AF

Normal use – "health & safety" = normal non-essential water use

8400 AF – 5700 AF = 2700 AF

$$\left(\frac{\text{Residential add-on}}{\text{normal non-essential water use}}\right) = \text{percentage non-essential add-on}$$

$$\Rightarrow \left(\frac{1400\ \text{AF}}{2700\ \text{AF}}\right) \approx 50\%\ \text{of normal non-essential use available}$$

EXAMPLE - Calculating Hybrid Allotment for Stage 3

Sample Priority Allotment for Residential – STAGE III

The Water Supplier has 70% of average supply available and is in a Stage III Shortage.

Average year residential account water demand = 8,400 AF

Water available for residential accounts in Stage III = 6,200 AF

1. Residential accounts "health & safety" allotment

$$(68\ \text{gpcd}) * (75000\ \text{people}) * (365\ \text{days}) = \left(\frac{1861500000\ \text{gallons}}{325851\ \text{gallons}}\right) \approx 5700\ \text{AFY}$$

"Health & safety" allotment per single family account (assumes four residents)

$$(68\ \text{gpcd}) * (4\ \text{people}) = (272\ \text{gpd}) * (365\ \text{days}) = \left(\frac{99280}{748}\right) \approx 132\ \text{HCF/ year}$$

"Health & safety" allotment per multi-family account (assumes three residents)

$$(68\ \text{gpcd}) * (3\ \text{people}) = (204\ \text{gpd}) * (365\ \text{days}) = \left(\frac{74460}{748}\right) \approx 102\ \text{HCF/ year}$$

2. Additional water available for residential add-on

Available res. water – "health & safety" res. allotment = non-essential add-on

6200 AF – 5700 AF = 500 AF

Normal use – "health & safety" = normal non-essential water use

8400 AF – 5700 AF = 2700 AF

$$\left(\frac{\text{Residential add-on}}{\text{normal non-essential water use}}\right) = \text{percentage non-essential add-on}$$

$$\Rightarrow \left(\frac{500\ \text{AF}}{2700\ \text{AF}}\right) \approx 20\%\ \text{of normal non-essential use available}$$

EXAMPLE - Calculating Hybrid Allotment for Stage 4

Sample Priority Allotment for Residential – STAGE IV

The Water Purveyor has 50% of average supply available and is in a Stage IV Shortage.

Average year residential account water demand = 8,400 AF

Water available for residential accounts in Stage IV = 4,500 AF

1. Residential accounts "health & safety" allotment

$$(50\ \text{gpcd}) * (75000\ \text{people}) * (365\ \text{days}) = \left(\frac{1368750000\ \text{gallons}}{325851\ \text{gallons}}\right) \approx 4200\ \text{AFY}$$

"Health & safety" allotment per single family account (assumes four residents)

$$(50\ \text{gpcd}) * (4\ \text{people}) = (200\ \text{gpd}) * (365\ \text{days}) = \left(\frac{73000}{748}\right) \approx 98\ \text{HCF/ year}$$

"Health & safety" allotment per multi-family account (assumes three residents)

$$(50\ \text{gpcd}) * (3\ \text{people}) = (150\ \text{gpd}) * (365\ \text{days}) = \left(\frac{54750}{748}\right) \approx 72\ \text{HCF/ year}$$

2. Additional water available for residential add-on

Available res. water – "health & safety" res. allotment = non-essential add-on

4200 AF – 4200 AF = 0 AF

Normal use – "health & safety" = normal non-essential water use

8400 AF – 4200 AF = 4200 AF

$$\left(\frac{\text{Residential add-on}}{\text{normal non-essential water use}}\right) = \text{percentage non-essential add-on}$$

$$\Rightarrow \left(\frac{0\ \text{AF}}{4200\ \text{AF}}\right) = 0\%\ \text{of normal non-essential use available}$$

Hybrid Allotment Calculation Method

Historical Water Use for one single family account

Year	1986	1987	1988	1989	1990	Average
Water Use (HCF)	332	353	340	325	310	**332**

Example - Non-conserving household, Stage II

1. Difference between Five Year Average Water Use and "health & safety" SF allotment

   332 HCF – 132 HCF = 200 HCF

2. Non-essential add-on available to this single family account

   50% * (200 HCF) = 100 HCF

3. Yearly Allotment = "health & safety" SF allotment plus the non-essential add-on

   132 HCF + 100 HCF = 232 HCF

4. Percentage Reduction for this Household

$\left(\frac{\text{This Year's Water Allotment}}{\text{Average Water use}}\right)$ = % reduction $\left(\frac{232\ \text{HCF}}{332\ \text{HCF}}\right)$ = 30% reduction from avg use

Example - Non-conserving household, Stage III

1. Difference between Five Year Average Water Use and "health & safety" SF allotment

   332 HCF – 132 HCF = 200 HCF

2. Non-essential add-on available to this single family account

   20% * (200 HCF) = 40 HCF

3. Yearly Allotment = "health & safety" SF allotment plus the non-essential add-on

   132 HCF + 40 HCF = 172 HCF

4. Percentage Reduction for this Household

$\left(\frac{\text{This Year's Water Allotment}}{\text{Average Water use}}\right)$ = % Reduction $\left(\frac{172\ \text{HCF}}{332\ \text{HCF}}\right)$ = 48% reduction from avg use

Example - Non-conserving household, Stage IV

1. Difference between Five Year Average Water Use and "health & safety" SF allotment

   332 HCF – 108 HCF = 224 HCF

2. Non-essential add-on available to this single family account

   0% * (224 HCF) = 0 HCF

3. Yearly Allotment = "health & safety" SF allotment plus the non-essential add-on

   108 HCF + 0 HCF = 108 HCF

4. Percentage Reduction for this Household

$\left(\frac{\text{This Year's Water Allotment}}{\text{Average Water use}}\right)$ = % reduction $\left(\frac{108\ \text{HCF}}{332\ \text{HCF}}\right)$ = 67% reduction from avg use

Calculations for Determining Seasonal Adjustments

CONSERVING HOUSEHOLD - Single Family with four residents

2006-07 average yearly water use = 182 HCF

	Stage II	**Stage III**	**Stage IV**	(50%)
Basic Single Family allot. (68 gpcd)	132	132	108	(54 gpcd)
Available Add-on	25 (50%)	10 (20%)	0	
Yearly Allotment	157 HCF	142	108	
Reduction	**14%**	**22%**	**40%**	

Specific Example – conserving household

Bi-monthly Billing Period	2003	2004	2005	2006	2007	**Average**
Nov-Dec	22	25	26	24	23	**24**
Jan-Feb	19	20	22	21	18	**20**
Mar-Apr	22	28	32	30	23	**27**
May-Jun	34	36	40	36	34	**36**
Jul-Aug	36	40	42	38	34	**38**
Sep-Oct	34	37	40	38	36	**37**
Annual use	**167**	**186**	**202**	**187**	**168**	**182 HCF**

1. Winter billing period average use

May-Jun + Jul-Aug + Sep-Oct = Winter Avg; Winter Avg − Minimum Allotment = Difference

$(24) + (20) + (27) = \left(\frac{71}{3}\right) \approx 24$ HCF $\quad (24) - (22) = (2$ HCF$)$

2. Summer billing period average use

May-Jun + Jul-Aug + Sep-Oct = Summer Avg; Summer Avg − Minimum Allotment = Difference

$(36) + (38) + (37) = \left(\frac{111}{3}\right) \approx 37$ HCF $\quad (37) - (22) = (15$ HCF$)$

3. Seasonal Adjustment factor

$\frac{\text{Winter difference}}{\text{Summer difference}}$ = percentage of winter use versus summer use

$\left(\frac{2}{15}\right) \approx 11\%$ Summer = 90% Winter = 10%

Non-essential add-on is divided 90% to summer billing periods and 10% to winter periods.

Effects of Seasonal Distribution of Allotments on Conserving and Non-conserving Households

NON-CONSERVING HOUSEHOLD - Single Family with four residents

2006-07 average yearly water use = 332 HCF

	Stage II	*Stage III*	*Stage IV (50%)*
Yearly Allotment	**232 HCF**	**172**	**108**
Adjusted Summer Months	25	17	9
Adjusted Winter Months	14	12	9
Monthly Minimum (HCF)	11	11	9

MEDIUM-CONSERVING HOUSEHOLD - Single Family with four residents

2006-07 average yearly water use = 232 HCF

	Stage II	*Stage III*	*Stage IV (50%)*
Yearly Allotment	**182 HCF**	**152**	**108**
Adjusted Summer Months	18	14	9
Adjusted Winter Months	12	11	9
Monthly Minimum (HCF)	11	11	9

CONSERVING HOUSEHOLD - Single Family with four residents

2006-07 average yearly water use = 182 HCF

	Stage II	*Stage III*	*Stage IV (50%)*
Yearly Allotment	**157 HCF**	**142**	**108**
Adjusted Summer Months	15	13	9
Adjusted Winter Months	11	11	9
Monthly Minimum (HCF)	11	11	9

Effects of Seasonal Distribution of Allotments on Households with Varying Numbers of Residents

Single Family with four residents

	Stage II		*Stage III*		*Stage IV*	
2006-07 average use	Sum	Winter	Sum	Winter	Sum	Winter
182 HCF	15	11	13	11	9	9
232 HCF	18	12	14	11	9	9
332 HCF	25	14	17	12	9	9

Single Family with eight residents

	Stage II		*Stage III*		*Stage IV*	
2006-07 average use	Sum	Winter	Sum	Winter	Sum	Winter
182 HCF	19	19	19	19	17	17
232 HCF	19	19	19	19	17	17
332 HCF	28	19	22	19	17	17

Multiple Residential - Ten units assuming three residents in each unit

	Stage II		*Stage III*		*Stage IV*	
2006-07 average use	Sum	Winter	Sum	Winter	Sum	Winter
820 HCF	70	70	70	70	60	60
1020 HCF	100	70	82	70	60	60
1220 HCF	133	70	95	70	60	60

SAMPLE BILL CALCULATIONS SHOWING EXCESS WATER USE CHARGES

Agency with a uniform rate structure

Customer's allotment is 22 HCF for this bi-monthly billing period

Tier	Rate	HCF	Amount Billed
normal	$1.39	22	$30.58
Excess 1	$8.00	2	$16.00
Excess 2	$20.00	0	$0.00
	Water use	24	$48.58

Excess Tier 1 (101-140%) applies to water use from 23 to 31 HCF
Excess Tier 2 (141% +) applies to all water use from 32 HCF on up
Excess Tiers 1 & 2 apply to excess use during rationing periods.

Agency with a four tier rate structure

Customer's allotment is 22 HCF for this bi-monthly billing period

Tier	Rate	HCF	Amount Billed
Essential	$0.90	9	$8.10
Tier 2	$1.35	9	$12.15
Tier 3	$1.80	4	$7.20
Tier 4	$2.25	0	$0.00
Excess 1	$9.00	2	$18.00
Excess 2	$22.50	0	0
	Water use	24	$45.45

Essential tier applies only to residential accounts
Single family account receives nine HCF per tier per bi-monthly bill
Multi-residential unit receives seven HCF per tier per bi-monthly bill
Excess 1 tier applies to excess use during rationing.

Providing Customer Allotment and Billing Information

Sample Commercial Computer Screen

RATIONING INQUIRY

Active
172-058-0
(office building)

Commercial
5000 Rhoads Ave.

Periods	HCF used	ALLOT	5-Year Average	$ Amount Billed	$ Amount Normal
Apr-May	43	40	49	$96.75	$76.50
Jun-Jul	40	48	58	$69.75	$69.75
Aug-Sep	37	48	57	$63.00	$63.00
Oct-Nov	39	48	54	$67.50	$67.50
Dec-Jan	28	40	48	$42.75	$42.75
Feb-Mar	26	40	45	$38.70	$38.70
TOTALS	213	264	311	$378.45	$358.20

Inspection Date
Potential Flow Restrictor? NO
Exceeded Allotment 1 Time(s) Command 3 = 2006-2007

Actual yearly use was less than yearly allotment so excess charges were refunded.
Agency sent customer refund check for $20.25 at the end of rationing year.

Calculations for April/May Bill as shown above

Agency has a four tier rate structure
Essential tier applies only to residential accounts
Excess 1 tier applies to excess use during rationing periods.
Excess 2 tier applies to third consecutive excess use period during rationing.

	Rate	HCF	Amount Billed	Amount Normal	
Essential	$0.90	-			
Tier 2	$1.35	18	$24.30	18	$24.30
Tier 3	$1.80	9	$16.20	9	$16.20
Tier 4	$2.25	13	$29.25	16	$36.00
Excess 1	$9.00	3	$27.00	0	$0.00
Excess 2	$22.50	0	----	0	----
		43	$96.75	43	$76.50

Providing Customer Allotment and Billing Information

Sample Residential Computer Screen

RATIONING INQUIRY

Active
172-712-6 Single Family
Susan Smith 264 Puente Ave.

Periods	HCF used	ALLOT	5-Year Average	$ Amount Billed	$ Amount Normal
Apr-May	24	22	23	$45.45	$31.05
Jun-Jul	32	30	36	$61.20	$47.70
Aug-Sep	34	30	38	$133.20	$52.50
Oct-Nov	24	30	35	$31.05	$31.05
Dec-Jan	20	22	27	$23.85	$23.85
Feb-Mar	18	22	21	$20.25	$20.25
TOTALS	152	156	180	$315.00	$206.40

Inspection Date
Potential Flow Restrictor? Yes
Exceeded Allotment 3 Time(s) Command 3 = 2006-2007

Actual yearly use was less than yearly allotment so excess charges were refunded.
Agency sent customer refund check for $108.60 at the end of rationing year.

Calculations for April/May Bill as shown above

Agency has a four tier rate structure

Essential tier applies only to residential accounts

Excess 1 tier applies to excess use during rationing periods.

Excess 2 tier applies to third consecutive excess use period during rationing.

	Rate	HCF	Amount Billed	HCF	Amount Normal
Essential	$0.90	9	$8.10	9	$8.10
Tier 2	$1.35	9	$12.15	9	$12.15
Tier 3	$1.80	4	$7.20	6	$10.80
Tier 4	$2.25	0	$0.00	0	$0.00
Excess 1	$9.00	2	$18.00	0	$0.00
Excess 2	$22.50	0	----	0	----
		24	$45.45	24	$31.05

Residential Water Use Efficiency Audit

Date _____ Account # _____ Meter # _____

Name _____ Address _____ Zip Code _____

Daytime Phone # _____ Evening Phone # _____

BILLING INFORMATION

Bill Date	HCF	Reasonable Use
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Current Meter Reading _____ HCF Date _____

Last Meter Reading _____ HCF Date _____

Amount Used _____ HCF Days _____

Average Daily Use _____ HCF

ESSENTIAL DOMESTIC WATER USE INFORMATION

Inside Water Pressure _____ psi Outside Water Pressure _____ psi

Number of full-time residents _____ Fruit Trees _____ Horses _____

	Number				Leaks Detected
Toilets	1.6 gpf	_____	3.5 gpf	_____	5-7 gpf _____
Showerheads	2.5 gpm	_____	> 2.5 gpm	_____	
Faucets	Aerated	_____	Non-aerated	_____	

NON-ESSENTIAL DOMESTIC WATER USE INFORMATION

Water Softener o Yes o No o Exchange

Cycles per week _____ Brand _____ Model No. _____

RO Unit o Yes o No Automatic shut-off o Yes o No o Not working

Pool/Spa o Yes o No Pool Cover o Yes o No o Not used

How often is water added to the pool? _____

Irrigation Water Use Information

Automatic No. of Stations _____ Cycles per week _____ Length of cycle _____

Manual Times per week _____ Length of Cycle _____ Shut-off reminder _____

Turf Area _____ ft^2 Condition _____ Soil Moisture _____

Comments & Recommendations _____

_____

_____

_____

Minimal changes are required to convert this form to Commercial and Institutional

Residential Water Use Efficiency Audit Recommendations

For questions or help, call **(hotline)**

INDOOR WATER USE INFORMATION

Install:	❑ Efficient Toilets	❑ Efficient Showerheads	❑ Faucet Aerators
Repair Leaks:	❑ Toilets	❑ Showerheads	❑ Faucets
Change:	❑ R.O. Unit Call Dealer to install automatic shut-off valve		❑ Water Softener Call Dealer to reset timer

OUTDOOR WATER USE INFORMATION

Irrigation:	❑ Repair system	❑ Reset timer	❑ Allow lawn to brown
Fruit Trees:	❑ Mulch	❑ Install drip irrigation	❑ Contact Farm Advisor
Pool/Spa:	❑ Cover pool	❑ Repair	

Comments _____

_____

Inspector _____ Date _____

Water Meter Information

Read water meter(s) at the same time each day. Numbers to the right of the decimal point on the dial of the water meter(s) are in Hundred Cubic Feet (HCF). 1 HCF = 748 gallons.

Determine Water use Goal: (reasonable use may be a rationing allotment or individual goal)

Current Water Meter Reading		1075.23	HCF
Reasonable Use for 61 days	+	24.00	HCF
Target Water Meter Reading	=	1099.23	HCF

$$\text{Water Use per Day} = \left(\frac{24\ \text{HCF}}{61\ \text{days}}\right) = .39\ \text{HCF}\left(\frac{748\ \text{gallons}}{1\ \text{HCF}}\right) = 292\ \text{gallons per day (gpd)}$$

Determination of Actual Use: (make these calculations as often as necessary)

Your Present Water Meter Reading		1075.23	HCF	Date	7/13/07
Your Last Water Meter Reading	–	1058.59	HCF	Date	6/11/07
Amount of Water Used	=	16.64	HCF	Days	32 days

Current Water Use per Day: $\left(\frac{16.64\ \text{HCF}}{32\ \text{days}}\right) = .52\ \text{HCF}\left(\frac{748\ \text{gallons}}{1\ \text{HCF}}\right) = 387\ \text{gpd}$

Current Water Use per Week: 7 days X 387 gpd = 2,709 gallon per week

Projected Water Use in 61 days at Present Rate: 31.72 HCF

Excessive Water use Per Day 387 gpd (actual use) – 292 gpd (target use) = 95 gpd

Minimal changes are required to convert this form to Commercial and Institutional

APPENDIX J Emergency Water Shortage Ordinance

ORDINANCE NO. XXX

AN ORDINANCE ENACTED AS AN EMERGENCY MEASURE ESTABLISHING RULES AND REGULATIONS FOR RATIONING WATER DURING A WATER SHORTAGE EMERGENCY AND ESTABLISHING PENALTIES FOR VIOLATIONS THEREOF

THE CITY COUNCIL OF THE CITY OF HAYWARD DOES ORDAIN AS FOLLOWS:

SECTION 1. FINDINGS AND DETERMINATIONS

(a) A water shortage emergency condition prevails within the area served by the Hayward Water System.

(b) The San Francisco Water Department, at the direction of the San Francisco Public Utilities Commission, has requested that all resale customers, including the Hayward Water System, immediately institute a water conservation program designed to effect a [TBD] percent reduction in water usage.

(c) The rules, regulations and restrictions set forth in this ordinance are intended to conserve the water supply of the Hayward Water System for the greatest public benefit with particular regard to domestic use, sanitation and fire protection.

(d) The specific uses prohibited or restricted by this ordinance are nonessential, if allowed, would constitute wastage of Hayward Water System water, and should be prohibited pursuant to the City of Hayward's general authority under its charter as well as the authority granted by State Water Code Section 350 et seq. and the common law.

(e) The actions taken hereinafter are exempt from the provisions of Sections 21000 et seq. of the Public Resources Code as a project undertaken as immediate action necessary to prevent or mitigate an emergency pursuant to Title 14, California Code of Regulations Section 15269 (State CEQA Guidelines).

(f) The following measures are therefore found to be necessary as an emergency measure for preserving the public peace, health or safety.

SECTION 2. DEFINITIONS

(a) The "Hayward Water System" is the Hayward Municipal Water System operated under Divisions of the City of Hayward Public Works Department.

(b) "Director" is Director of Public Works of the City of Hayward.

(c) "Person" means any person, firm, partnership association, corporation, company, organization or governmental entity.

(d) "Customer" means any person, whether within or without the geographic boundaries of the City of Hayward, who uses water supplied by the Hayward Water System.

(e) "Process Water" means water used to manufacture, alter, convert, clean, heat or cool a product, including water used in laundries and recycled car wash facilities.

(f) "Unit of Water" is 100 cubic feet of water.

(g) "Water" is water from the Hayward Water System.

SECTION 3. PROHIBITION OF NONESSENTIAL WATER USE

It shall be unlawful for any person to use water obtained from the Hayward Water System for nonessential uses as hereinafter defined.

SECTION 4. NONESSENTIAL USES DEFINED

The following uses of water are hereby determined to be nonessential, except as further provided herein:

(a) Use of water in excess of those certain allotments set forth in Schedule A entitled "Allotment System For Water Use During Water Shortage Emergency" attached hereto and hereby made a part hereof. Allotments as established herein shall be based on [Year TBD] use with adjustments for unusual conditions. New services or services without [Year TBD] history shall be allotted on comparable customer usage. The City Council is hereby authorized from time to time to establish by resolution allotments different from the allotments set forth in said Schedule A due to changes in circumstances.

(b) Use of water through any meter when the customer has been given 10 days written notice to repair broken or defective plumbing, sprinkler, watering or irrigation systems and has failed to effect such repairs.

(c) Use of water that results in flooding or runoff in gutters or streets.

(d) Use of water through a hand-held hose for washing cars, buses, boats, trailers or other vehicles, unless the hose is equipped with a positive shutoff nozzle.

(e) Use of water through a hand-held hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas.

(f) Use of water for filling any existing or new swimming pool or hot tub.

(g) Use of water to clean, fill or maintain levels in decorative fountains.

(h) Use of water for construction purposes such as consolidation of backfill unless no other source of water or other method can be used.

(i) Service of water by restaurants except upon the request of a customer.

SECTION 5. EXCEPTIONS

Written application for an exception or adjustment may be made to:

Hayward Water System
777 B Street
Hayward, California 94541-5007

The Director may

(a) Grant permits for the uses of water otherwise prohibited or

(b) Adjust the established allotments if it is found that:

(1) To fail to do so would cause an emergency condition adversely affecting the health, sanitation, fire protection, or safety of the customer or the public, or adverse impacts such as loss of production or jobs; or

(2) The customer has demonstrated to the Director's satisfaction that circumstances have changed warranting a change in the customer's allotment.

No permit shall be granted or allotment adjusted unless the customer has adopted all practicable water conservation measures and has demonstrated to the Director's satisfaction that there are no alternatives to the use of water from the Hayward Water System and that Hayward's water will be used efficiently and without waste. The Director's denial of application for an exception or adjustments is final.

SECTION 6. EXCESS WATER USE CHARGE

(a) In addition to regular metered service charges under Section 11-2.38 of the Hayward Municipal Code, every consumer shall pay for each billing period an excess use charge for water delivered in excess of established allotments. This excess use charge shall be based upon a rate schedule as specified from time to time by resolution of the City Council.

(b) The excess use charge shall not apply to any residential customer whose consumption is 1000 cubic feet or less per bi-monthly billing period.

SECTION 7. ENFORCEMENT

(a) Installation of Flow-Restricting Devices: In lieu of or in addition to the penalties provided for in Section 356 of the Water Code, the Hayward Water System may, after one written warning, install a flow-restricting device on the service line of any customer violating any of the provisions of this ordinance, including use of water in excess of the established allotments.

(b) Charges for Installation and Removal of Flow-Restricting Devices: Charges for installation and removal of flow-restricting devices shall be based upon a rate schedule as specified from time to time by resolution of the City Council.

(c) Discontinuance of Water Service: Continued water consumption in violation of the provisions of this ordinance may result in the discontinuance of water service by the

Hayward Water System. A charge shall be paid prior to reactivating a service that has been discontinued as provided herein. The charge shall be specified from time to time by resolution of the City Council.

SECTION 8. EFFECTIVE DATE

The findings and determinations set forth in Section 1. hereof constitute the statement of reasons for adopting this ordinance as an emergency measure in the manner provided by Section 617 of the Charger. This ordinance shall be effective immediately.

SECTION 9. OPERATIVE DATE

The requirements of this ordinance shall be operative as of [Date TBD].

INTRODUCED at a regular meeting of the City Council of the City of Hayward, held the [Date TBD], by Councilmember

Sample Escalated Water Rationing Ordinance

ORDINANCE NO. XXX

AN ORDINANCE ENACTED TO ESTABLISH RULES AND REGULATIONS FOR INCREASED WATER RATIONING DURING A WATER SHORTAGE EMERGENCY AND ESTABLISHING PENALTIES FOR VIOLATIONS THEREOF

THE CITY COUNCIL OF THE CITY OF HAYWARD DOES ORDAIN AS FOLLOWS:

SECTION 1. FINDINGS AND DETERMINATIONS

(a) A water shortage emergency condition prevails within the area served by the Hayward Water System.

(b) On [Date TBD), the San Francisco Water Department, at the direction of the San Francisco Public Utilities Commission, requested that all resale customers, including the Hayward Water System, immediately institute a water conservation program designed to effect a [TBD] percent reduction in water usage.

(c) Such action was taken by the City of Hayward's adoption of Ordinance No. [TBD]

(d) On [Date TBD], the San Francisco Water Department, at the direction of the San Francisco Public Utilities Commission, recommended that all resale customers, including the Hayward Water System adopt additional water use restrictions to enhance their water conservation programs.

(e) The rules, regulations and restrictions set forth in this ordinance are intended to conserve the water supply of the Hayward Water System for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

(f) The specific uses prohibited or restricted by this ordinance are nonessential, if allowed, would constitute wastage of Hayward Water System water, and should be prohibited pursuant to the City of Hayward's general authority under its Charter as well as the authority granted by State Water Code sections 350 et seq. and the common law.

(g) The actions taken hereinafter are exempt from the provisions of sections 21000 et seq. of the Public Resources Code as a project undertaken as immediate action necessary to prevent or mitigate an emergency pursuant to Title 14, California Administrative Code section 15071 (State of California Environmental Impact Report Guidelines).

(h) The following measures are therefore found to be necessary as an emergency measure for preserving the public peace, health, and safety.

SECTION 1.5 AMENDED PROGRAM

This ordinance supersedes Ordinance No. [TBD]

SECTION 2. DEFINITIONS

(a) The "Hayward Water System" as operated under divisions of the City of Hayward Public Works Department.

(b) "Director" is Director of Public Works of the City of Hayward.

(c) "Person" means any person, firm, partnership, association, corporation, company, organization, or governmental entity.

(d) "Customer" means any person, whether within or without the geographic boundaries of the City of Hayward, who uses water supplied by the Hayward Water System.

(e) "Process Water" means water used to manufacture, alter, convert, clean, heat, or cool a product, including water used in laundries and recycled car wash facilities.

(f) "Unit of water" is 100 cubic feet of water.

(g) "Water" is water from the Hayward Water System.

SECTION 3. PROHIBITION OF NONESSENTIAL WATER USE

It shall be unlawful for any person to use water obtained from the Hayward Water System for nonessential uses as hereinafter defined.

SECTION 4. NONESSENTIAL USES DEFINED

The following uses of water are hereby determined to be nonessential, except as further provided herein:

(a) Use of water in excess of those certain allotments set forth in Schedule A entitled "Allotment System For Water Use During Water Shortage Emergency" attached hereto and hereby made a part hereof. Allotments as established herein shall be based on [Year TBD] use with adjustments for unusual conditions. New services or services without [Year TBD] history shall be allotted on comparable customer usage. The City Council is hereby authorized from time to time to establish by resolution allotments different from the allotments set forth in said Schedule A due to changes in circumstances.

(b) Use of water through any meter when the person billed for the water service has been given 10 days written notice to repair broken or defective plumbing, sprinkler, watering, or irrigation systems and has failed to affect such repairs.

(c) Use of water that results in flooding or runoff in gutter or streets.

(d) Use of water through a hand-held hose for washing buildings, structures, mobile homes, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas.

(e) Use of water for filling or refilling after draining of any existing or new swimming pool, spa, or hot tub; topping off will be allowed to the extent the designated allocation is not exceeded. Because it is necessary to fill a swimming pool as part of

its construction process, building permits for new pools will not be issued during the current water shortage emergency.

(f) Use of water to clean, fill, or maintain levels in decorative fountains.

(g) Use of water for construction purposes such as consolidation of backfill unless no other source of water or other method can be used.

(h) Service of water by restaurants except upon the request of a customer.

(i) The washing of all vehicles, including but not limited to automobiles, motorcycles, RV's, trucks, transit vehicles, trailers, boats, trains, and airplanes, is prohibited outside of a commercial washing facility. Use of water through a hand-held hose in connection with the exceptions to this use restriction is prohibited unless the hose is equipped with a positive shut-off nozzle.

(j) Verified water waste as determined by the Director will serve as prima facie evidence that the allocation assigned to the water account is excessive; therefore the allocation will be subject to review and possible reduction, including termination of service.

(k) The use of recycled water and for all commercial car washes is strongly recommended.

(l) The use of groundwater and/or reclaimed water for the irrigation of golf courses and similar turf areas is encouraged when approved by the Department of Public Health.

(m) The enforcement of any contractual provision that requires the installation of landscaping requiring irrigation. Nothing in this Section 4 restricts the use of groundwater and/or reclaimed water when otherwise lawful.

SECTION 5. EXCEPTIONS

(a) Written application for an exception or adjustment may be made to:

Hayward Water System

777 B Street

Hayward, California 94541-5007

(b) After written application, the Director may grant permits for the uses of water otherwise prohibited or adjust the established allotments if the Director finds that:

(1) The person billed for the water service has demonstrated that to do otherwise would cause an emergency condition adversely affecting the health, sanitation, fire protection, or safety of the person served or the public, or would result in loss of production or jobs; or

(2) The person billed for the water service has demonstrated to the Director's satisfaction that circumstances have changed, warranting a change in the allotment. No permit shall be granted or allotment adjusted unless the person billed for the service has adopted all practicable water conservation measures and has demonstrated to the Director's satisfaction that there are no alternatives to the

use of water from the Hayward Water System and that Hayward's water will be used efficiently and without waste.

(c) Upon the filing of a written request for an exception, the owner of a multiple residential development or a single-family household shall include a certification that the following water conservation efforts, at a minimum, have been implemented in every toilet and shower in the multiple residential development or single-family household:

(1) All toilet tanks have been tested for leaks with leak detection dye tablets;

(2) A two-quart plastic bag filled with water has been installed in all toilet tanks; and

(3) An approved flow restrictor has been installed in every shower head.

In multiple residential unit developments served by a master meter where the owner does not own the units within the development, the owner shall provide certification under penalty of perjury that a kit containing the equipment for the above described water conservation efforts was delivered to every unit and each unit owner or occupant was urged to install the kits.

(d) The Director's denial of an application for an exception or adjustments is final.

(e) The following service charges or other charges approved from time to time by City Council resolution shall be applied to allotment changes:

(1) Temporary residents – a fee of [Fee TBD] for changing existing allotments;

(2) Adjustments to prior billings – a minimum fee of [Fee TBD] to adjust prior billings.

SECTION 6. EXCESS WATER USE CHARGE

(a) In addition to regular metered service charges under Section 11-2.38 of the Hayward Municipal Code, every person billed for water service shall pay for each billing period an excess use charge for water delivered in excess of established allotments. This excess use charge shall be based upon a rate schedule as specified from time to time by resolution of the City Council.

(b) The excess use charge shall not apply to any residential customer whose consumption is 1000 cubic feet or less per bi-monthly billing period.

(c) In addition to the exception set forth in subsection

(d) and notwithstanding any other provision of law, the Director of Public Works is authorized to adopt rules and regulations providing for waiver of excess use or other charges where their imposition would give rise to a civil right of action against the City by the person billed or would constitute a manifest and gross miscarriage of fairness and equity.

SECTION 7. BANKING OF WATER ALLOCATION

An unused portion of a customer's water allocation during a given billing period may be used in the next billing period to offset excess water usage in that period as provided in rules and regulations promulgated by the Director of Public Works in compliance with direction from the City Council.

SECTION 8. ENFORCEMENT AND PENALTIES

(a) Installation of Flow-Restricting Devices: In lieu of or in addition to the penalties provided for in Section 356 of the Water Code, the Hayward Water System may, after one written warning, install a flow-restricting device on the service line of any customer violating any of the provisions of this ordinance, including use of water in excess of the established allotments.

(b) Charges for Installation and Removal of Flow-Restricting Devices: Charges for installation and removal of flow-restricting devices shall be based upon a rate schedule as specified from time to time by resolution of the City Council.

(c) Reduction or Discontinuance of Water Service: Verified water waste consisting of continued water consumption in violation of the provisions of this ordinance will serve as prima facie evidence that the allotment to the water account is excessive and may result in the reduction or discontinuance of water service by the Hayward Water System. A charge shall be paid prior to reactivating a service which has been discontinued as provided herein. The charge shall be specified from time to time by resolution of the City Council.

(d) Any person or customer violating or failing to comply with the provisions of this ordinance or any code or regulation adopted by reference shall constitute an infraction. Upon conviction of an infraction, a violator shall be subject to payment of a fine, not to exceed the limits set forth in California Government Code section 36900. After a third conviction for a violation of the same provision, subsequent violations within a twelvemonth period may be charges as a misdemeanor. Upon conviction of a misdemeanor, a violator shall be subject to payment of a fine or imprisonment, or both, not to exceed the limits set forth in California Government Code section 36901.

(e) Each violator shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of this ordinance or of any code or regulation adopted by reference is committed, continued, or permitted by such person, and such person shall be punished accordingly.

(f) Whenever this ordinance or any code or regulation adopted by reference makes any act or omission unlawful, it shall include causing, permitted, aiding, abetting, suffering, or concealing the fact of such act or omission.

(g) Any violation of this ordinance or of any code or regulation adopted by reference shall constitute a public nuisance. In addition to any other remedies provided in this

ordinance, the City may summarily abate such nuisance and may bring a civil suit to enjoin or abate the violation.

(h) The remedies provided for herein shall be cumulative and not exclusive.

(i) In addition to the punishment provided by law, a violator convicted of a misdemeanor or an infraction shall be liable for such costs, expenses, or disbursements paid or incurred by the City or any of its contractors in connection with the abatement or prosecution of the violation.

SECTION 9. SEVERABILITY

If any provision of this ordinance is held by any court or by any federal, state, or local agency of competent jurisdiction to be invalid, then said provision shall be considered a separate, distinct, and independent part of this ordinance, and such holding shall not affect the validity and enforceability of all other provisions hereof.

SECTION 10. OPERATIVE DATE

The requirements of this ordinance shall be operative as of xxx, 2005.

INTRODUCED at a regular meeting of the City Council of the City of Hayward, held the [Date TBD], by Councilmember

Sample 50% Water Rationing Ordinance

ORDINANCE NO. XXX

AN ORDINANCE ENACTED AS AN EMERGENCY MEASURE TO ESTABLISH RULES AND REGULATIONS FOR INCREASED WATER RATIONING DURING A WATER SHORTAGE EMERGENCY AND ESTABLISHING PENALTIES FOR VIOLATIONS THEREOF

THE CITY COUNCIL OF THE CITY OF HAYWARD DOES ORDAIN AS FOLLOWS:

SECTION 1. FINDINGS AND DETERMINATIONS

(a) A water shortage emergency condition prevails within the area served by the Hayward Water System.

(b) On [Date TBD], the San Francisco Water Department, at the direction of the San Francisco Public Utilities Commission, requested that all resale customers, including the Hayward Water System, immediately institute a water conservation program designed to effect a [TBD] percent reduction in water usage.

(c) Such action was taken by the City of Hayward's adoption of Ordinance No. [TBD]

(d) The severity of the water shortage has prompted the Governor of the State of California to call upon all communities to adopt water rationing plans to effect a 50 percent reduction in water usage.

(e) On [Date TBD], the San Francisco Water Department, at the direction of the San Francisco Public Utilities Commission, requested that all resale customers, including the Hayward Water System, immediately increase water conservation programs to effect a 50 percent reduction in water usage.

(f) The rules, regulations and restrictions set forth in this ordinance are intended to conserve the water supply of the Hayward Water System for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

(g) The specific uses prohibited or restricted by this ordinance are nonessential, if allowed, would constitute wastage of Hayward Water system water, and should be prohibited pursuant to the City of Hayward's general authority under its Charter as well as the authority granted by State Water Code sections 350 et seq. and the common law.

(h) The actions taken hereinafter are exempt from the provisions of sections 21000 et seq. of the Public Resources Code as a project undertaken as immediate action necessary to prevent or mitigate an emergency pursuant to Title 14, California Administrative Code section 15071 (State of California Environmental Impact Report Guidelines).

(i) The following measures are therefore found to be necessary as an emergency measure for preserving the public peace, health, and safety.

SECTION 1.5 AMENDED PROGRAM

This ordinance supersedes Ordinance No. [TBD]

SECTION 2. DEFINITIONS.

(a) The "Hayward Water System" as operated under divisions of the City of Hayward Public Works Department.

(b) "Director" is Director of Public Works of the City of Hayward.

(c) "Person" means any person, firm, partnership, association, corporation, company, organization, or governmental entity.

(d) "Customer" means any person, whether within or without the geographic boundaries of the City of Hayward, who uses water supplied by the Hayward Water System.

(e) "Process Water" means water used to manufacture, alter, convert, clean, heat, or cool a product, including water used in laundries and recycled car wash facilities.

(f) "Unit of Water" is 100 cubic feet of water.

(g) "Water" is water from the Hayward Water System.

SECTION 3. PROHIBITION OF NONESSENTIAL WATER USE

It shall be unlawful for any person to use water obtained from the Hayward Water System for nonessential uses as hereinafter defined.

SECTION 4. NONESSENTIAL USES DEFINED

The following uses of water are hereby determined to be nonessential, except as further provided herein:

(a) Use of water in excess of those certain allotments set forth in Schedule A entitled "Allotment System for Water Use During Water Shortage Emergency" attached hereto and hereby made a part hereof. 3 Allotments as established herein shall be based on [Year TBD] use with adjustments for unusual conditions. New services or services without [Year TBD] history shall be allotted on comparable customer usage. The City Council is hereby authorized from time to time to establish by resolution allotments different from the allotments set forth in said Schedule A due to changes in circumstances.

(b) Use of water through any meter when the person billed for the water service has been given 10 days written notice to repair broken or defective plumbing, sprinkler, watering, or irrigation systems and has failed to affect such repairs.

(c) Use of water that results in flooding or runoff in gutters or streets.

(d) Use of water through a hand-held hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas.

(e) Use of water for filling or refilling after draining or any existing or new swimming pool, spa, or hot tub; topping off will be allowed to the extent the designated

allocation is not exceeded. Because it is necessary to fill a swimming pool as part of its construction process, building permits for new pools will not be issued during the current water shortage emergency.

(f) Use of water to clean, fill, or maintain levels in decorative fountains.

(g) Use of water for construction purposes such as consolidation of backfill unless no other source of water or other method can be used.

(h) Service of water by restaurants except upon the request of a customer.

(i) The washing of all vehicles, including but not limited to automobiles, motorcycles, RV's, trucks, transit vehicles, trailers, boats, trains, and airplanes, is prohibited outside of a commercial washing facility. Notwithstanding the foregoing, the following exceptions apply to this use restriction: washing windows on all vehicles and the use of water to clean commercial or safety vehicles requiring cleaning for health or safety reasons (e.g. garbage trucks, food delivery vehicles, ambulances, etc.). Use of water through a hand-held hose in connection with the exceptions to this use restriction is prohibited unless the hose is equipped with a positive shut-off nozzle.

(j) Water used for all cooling purposes and for commercial car washes unless it is recycled.

(k) The use of potable water on golf courses except for the irrigation of putting greens.

(l) The use of potable water for street sweepers/washers is prohibited.

(m) Notwithstanding contractual or statutory language to the contrary, the use of potable water to irrigate any landscaped areas in developments approved after the effective date of this ordinance. Water meters serving landscaped areas requiring irrigation will not be installed during the current water shortage.

(n) The enforcement of any contractual or statutory provision that requires the installation of landscaping requiring irrigation. Nothing in this Section 4 restricts the use of groundwater and/or reclaimed water when otherwise lawful.

SECTION 5. EXCEPTIONS

Written application for an exception or adjustment may be made to:

Hayward Water System
777 B Street
Hayward, California 94541-5007

After written application, the Director may grant permits for the uses of water otherwise prohibited or adjust the established allotments if the Director finds that:

(a) The person billed for the water service has demonstrated that to do otherwise would cause an emergency condition adversely affecting the health, sanitation, fire protection or safety of the person served or the public, or would result in loss of production or jobs; or

(b) The person billed for the water service has demonstrated to the Director's satisfaction that circumstances have changed, warranting a change in the allotment; or

(c) The person billed for the water service has demonstrated to the Director's satisfaction that an adjustment in the allotment based upon 60 gallons per day per person in a single-family household or 150 gallons per day in a multifamily living unit is warranted. No permit shall be granted or allotment adjusted unless the person billed for the service has adopted all practicable water conservation measures and has demonstrated to the Director's satisfaction that there are no alternatives to the use of water from the Hayward Water System and that Hayward's water will be used efficiently and without waste.

Upon the filing of a written request for an exception, the owner of a multiple residential development or a single-family household shall include a certification that the following water conservation efforts, at a minimum, have been implemented in every toilet and shower in the multiple residential development or single-family household:

1) All toilet tanks have been tested for leaks with leak detection dye tablets;
2) A two-quart plastic bag filled with water has been installed in all toilet tanks; and
3) An approved flow restrictor has been installed in every showerhead.

In multiple residential unit developments served by a master meter where the owner does not own the units within the development, the owner shall provide certification under penalty of perjury that a kit containing the equipment for the above described water conservation efforts was delivered to every unit and each unit owner or occupant was urged to install the kits. The Director's denial of an application for an exception or adjustments is final. The following service charges or other charges approved from time to time by City Council resolution shall be applied to allotment changes:

1) Temporary residents – a fee of [Fee TBD] for changing existing allotments;
2) Adjustments to prior billings – a minimum fee of [Fee TBD] to adjust prior billings.

SECTION 6. EXCESS WATER USE CHARGE

(a) In addition to regular metered service charges under Section 11-2.38 of the Hayward Municipal Code, every person billed for water service shall pay for each billing period an excess use charge for water delivered in excess of established allotments. This excess use charge shall be based upon a rate schedule as specified from time to time by resolution of the City Council.

(b) The excess use charge shall not apply to any residential customer whose consumption is 1000 cubic feet or less per bi-monthly billing period.

SECTION 7. ENFORCEMENT

(a) Installation of Flow-Restricting Devices: In lieu of or in addition to the penalties provided for in Section 356 of the Water Code, the Hayward Water System may, after one written warning, install a flow-restricting device on the service line of any

customer violating any of the provisions of this ordinance, including use of water in excess of the established allotments.

(b) Charges for Installation and Removal of Flow-Restricting Devices: Charges for installation and removal of flow-restricting devices shall be based upon a rate schedule as specified from time to time by resolution of the City Council.

(c) Reduction or Discontinuance of Water Service: Verified water waste consisting of continued water consumption in violation of the provisions of this ordinance will serve as prima facie evidence that the allotment to the water account is excessive and may result in the reduction or discontinuance of water service by the Hayward Water System. A charge shall be paid prior to reactivating a service that has been discontinued as provided herein. The charge shall be specified from time to time by resolution of the City Council.

SECTION 8. EFFECTIVE DATE

The findings and determinations set forth in Section 1 hereof constitute the statement of reasons for adopting this ordinance as an emergency measure in the manner provided by section 617 of the Charter. This ordinance shall be effective immediately.

SECTION 9. OPERATIVE DATE

The requirements of this ordinance shall be operative as of [Date TBD].

INTRODUCED at a regular meeting of the City Council of the City of Hayward, held the [Date TBD], by Councilmember

Sample Excess Water Use Charges Resolution

HAYWARD CITY COUNCIL

RESOLUTION NO. _____

Introduced by Councilmember

RESOLUTION ESTABLISHING EXCESS WATER USE CHARGES AND ENFORCEMENT CHARGES FOR RATIONING WATER DURING A WATER SHORTAGE EMERGENCY

WHEREAS, by Ordinance No. [TBD] the City Council adopted an emergency ordinance establishing rules and regulations operative [Date TBD], for water rationing during the current water emergency; and

WHEREAS, excess water use charges and enforcement charges shall be based upon rate schedules specified from time to time by resolution of the City Council.

NOW, THEREFORE, be it resolved by the City Council of the City of Hayward that said Council does hereby adopt the following charges:

SECTION 1

In addition to regular meter service charges, charges based upon the amount of water supplied and surcharges under Section 11-2.38 of the Hayward Municipal Code, the following amounts will be charged for water delivered in excess of established allotments.

EXCESS USE CHARGES IN ADDITION TO ALL OTHER
WATER CHARGES FOR ALL HAYWARD WATER CUSTOMERS

Excess Use Range	Percent of Water Used In Excess of Allotment	Excess Use Charge per 100 Cubic Feet for all Water Used in Excess of Allotment
A	0% to 10% over allotment	Charges TBD
B	10.01% to 20% over allotment	Charges TBD
C	Over 20.01% over allotment	Charges TBD

SECTION 2.

In accordance with Section 7 of Ordinance No. [TBD] the following charges shall be established for enforcement purposes:

(a) Charges for installation and removal of flow-restricting devices shall be as follows:

Meter Size	Installation Charge	Removal Charge
5/8" to 1"	Charges TBD	
1-1/2" and 2"	Charges TBD	

(b) A charge of [Charge TBD] shall be paid prior to reactivating a service which has been discontinued as provided in Ordinance No. [TBD]

IN COUNCIL HAYWARD, CALIF. ,

ADOPTED BY THE FOLLOWING VOTE:

SCHEDULE A

ALLOTMENT SYSTEM FOR WATER USE DURING
WATER SHORTAGE EMERGENCY

SINGLE FAMILY RESIDENTIAL UNITS:

Allotments to provide for a minimum overall decrease of 50% of [Year TBD] use (Table 1.)

BI-MONTHLY BILLING-in HCF	% REDUCTION
0 to 10	None
11 to 40	Sliding scale from 5% to 50%
All use over 40	90% all over 40

MULTIPLE RESIDENTIAL UNITS:

DESCRIPTION	REDUCTION
Domestic with irrigation water	50%
Domestic without irrigation water	20%
Irrigation Only Services	90%

COMMERCIAL AND INDUSTRIAL:

DESCRIPTION	REDUCTION
Process Water	20%
Domestic Water	50%
Irrigation Only Services	90%

GOVERNMENTAL:

Domestic Water	50%
Irrigation Services	90%

CONSTRUCTION SERVICES:

Allowed by permit only	---

Water from other sources will be used where available

TABLE 1
WATER RATIONING ORDINANCE
RESIDENTIAL SLIDING SCALE

Use in Base Year			Allotment			
Billing (cubic ft)	Gallons	GPD (60 days)	Billing (cubic ft)	Gallons	GPD (60 days	% reduction
100	748	12	100	748	12	0%
200	1496	25	200	1496	25	0%
300	2244	37	300	2244	37	0%
400	2992	50	400	2992	50	0%
500	3740	62	500	3740	62	0%
600	4488	75	600	4488	75	0%
700	5236	87	700	5236	87	0%
800	5984	100	800	5984	100	0%
900	6732	112	900	6732	112	0%
1000	7480	125	1000	7480	125	0%
1100	8228	137	1033	7727	129	6%
1200	8976	150	1066	7974	133	11%
1300	9724	162	1099	8221	137	15%
1400	10472	175	1132	8467	141	19%
1500	11220	187	1165	8714	145	22%
1600	11968	199	1198	8961	149	25%
1700	12716	212	1231	9208	153	28%
1800	13464	224	1264	9455	158	30%
1900	14212	237	1297	9702	162	32%
2000	14960	249	1330	9948	166	34%
2100	15708	262	1363	10195	170	5%
2200	16456	274	1396	10442	174	37%
2300	17204	287	1429	10689	178	38%
2400	17952	299	1462	10936	182	39%
2500	18700	312	1495	11183	186	40%
2600	19448	324	1528	11429	190	41%
2700	20196	337	1561	11676	195	42%
2800	20944	349	1594	11923	199	43%

Use in Base Year			Allotment			
2900	21692	362	1627	12170	203	44%
3000	22440	374	1660	12417	207	45%
3100	23188	386	1693	12664	211	45%
3200	23936	399	1726	12910	215	46%
3300	24684	411	1759	13157	219	47%
3400	25432	424	1792	13404	223	47%
3500	26180	436	1825	13651	228	48%
3600	26928	449	1858	13898	232	48%
3700	27676	461	1891	14145	236	49%
3800	28424	474	1924	14392	240	49%
3900	29172	486	1957	14638	244	50%
4000	29920	499	1990	14885	248	50%

All water use over 40 units will be reduced by 90 percent

1 cubic foot = 7.48 gallons

100 cubic foot (HCF) = 748 gallons

APPENDIX K Water Conservation Programs for Water Suppliers with Unmetered Residential Accounts

Landscape Programs

For Stage 2, restrict landscape irrigation to three times per week; Stage 3 twice per week; Stage 4 once per week or a total ban on sprinkler irrigation, depending on need. Specify which days of the week watering is permitted. Limit irrigation to morning and evening (not between 10 a.m. and 5 p.m.). Drought patrols should be active during these times to detect broken irrigation equipment, runoff, and other signs of waste. A customer call-in number to report illegal irrigation should be advertised.

- Offer landscape water audits programs
- Conduct water audits and offer climate appropriate scheduling information.
- Work with local nurseries, landscape architects and contractors, etc. to educate them and the public.
- Establish appropriate landscape requirements for new development (including residential, commercial and industrial hookups.)
- Review and change existing requirements or practices (ban turf on front yard mounds, turf in median strips, turf required on berms, etc.). DWR has a "Model Water Efficient Landscape Ordinance" available.
- Establish appropriate landscape Guidelines For Existing Landscapes (including residential, commercial and industrial hookups.)
- Establish incentives to convert sprinkler irrigation to low volume irrigation when appropriate
- Promote graywater use
- Sponsor seminars on plant selection (which to convert to drip, which to save, which to let die.)
- Restrict time and/or days of irrigation. (check agency peak water/energy demand data.)
- Prohibit non-recirculating fountains
- Restrict pool, fountain, and spa water use
- Require permits for the draining and refilling of swimming pools.
- Provide information on replacing existing landscapes with low water using plants and appropriate irrigation systems. During water shortage is not the best time to re-landscape.

System Measures

- Reduce system pressures.
- Calibrate all production, commercial, industrial, and zone meters.
- Conduct a Water Audit and Leak Detection Program. This is possible to do without accurate customer usage records by using zone measurements.
- Install meters at key distribution points. This allows subarea flow measurements to be made, and aids in isolating areas of overuse and probable leakage.
- Reduce agency water use. Establish agency policy on water conservation. Demonstrate landscape conservation with water efficient gardens. Reduce employee water use by installing efficient toilets and showerheads, self-closing faucets, on-demand water heaters, and so on.
- Loan or install acoustical meters to help customers understand how they use water.

Commercial/Industrial

- Establish Percent Reduction Goals for all commercial and industrial accounts.
- Restrict landscape water use.
- Provide technical assistance for conversion of cooling towers and other industrial water using processes.
- Establish an industrial and commercial audit program.

Information and Public Relations Programs

- Conduct active public information campaigns - 10 to 20% reductions can be achieved due to consistent and continuous public information campaigns.
- Conduct active in-school education programs.
- Conduct active employee water conservation campaign (ask for suggestions, and offer at home incentives).
- Conduct high visibility toilet replacement programs (Board members' homes, schools, visitor and other public toilet facilities, etc.)

Interior Residential Programs

- Install flow restrictors on water wasting homes.
- Establish an active toilet replacement program.
- Establish a showerhead replacement program. (Coordinate activities with local energy utility and/or wastewater treatment plant.)
- Provide information on average water use and establish guidelines to reduce water use.

- Conduct a residential water survey program. (Include interior leak detection using acoustical devices, showerhead replacement, leak detection dye tablets and exterior water audit.)

Review Building Code Requirements

- Require efficient toilets/low flow showerheads/faucet aerators on resale or remodeling.
- Design homes for water as well as energy efficiency.
- Consider requiring all new construction to be pre-plumbed for future hook-ups to solar water heating and/or gray water.
- Require new construction to be double plumbed. Use recycled water where ever it is currently available or where it will be available in the future.
- Establish recycled and gray water guidelines

Economics and Rates

- Review agency operational costs, and economic value of new water supply. Also evaluate secondary costs and impacts of energy and sewer.
- Evaluate current rate structure, and change rate structure to higher rates for water shortage response. This may also be an appropriate method to encourage water use reductions if initial agency efforts do not succeed.
- Allow customers to change to metered rate for actual usage.
- Base water rates on lot size.
- Charge extra for pools, spas, or fountains.