National Decentralized Water Resources Capacity Development Project

Onsite Sewage Treatment in California and the Progression Toward Statewide Standards

California Wastewater Training and Research Center at California State University, Chico Research Foundation

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Onsite Sewage Treatment in California and the Progression Toward Statewide Standards

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ABSTRACT

One of the more difficult tasks that a state government faces is to develop statewide regulations. This task is even more difficult when regulations, in this case onsite sewage treatment, are being developed for an activity that had previously been, for all intents and purposes, relegated to local government. In many cases, these local regulations have a long-standing history and are tailored to meet local practices, attitudes, and needs. These local determinations may prove to be in conflict to those determined necessary at the statewide level. Statewide regulations can result in uniformity and consistency that is beneficial for many sectors of the onsite community. The difficulty arises in reaching agreement on what is necessary to achieve the consistency and, at the same time, allowing flexibility to enable local government to implement the regulations.

The regulation of onsite sewage treatment systems will undergo significant changes in California in the coming years. Currently, regulations are locally established with some broad oversight provided by the state. Recent legislation passed in 2000 mandated that the California State Water Resources Control Board (SWRCB), the state agency with overall responsibility to protect California's ground and surface water, develop and adopt statewide regulations. These will be the first statewide regulations governing the use of onsite wastewater treatment in California.

The regulation development process began in January 2002 with a series of stakeholder meetings initiated by the SWRCB. The "Stakeholder Project" brought together a wide spectrum of interest groups that had expressed their desire to be involved in the regulation development process. The project, as well as subsequent efforts, failed to reach a satisfactory compromise even though a number of issues were resolved. As of June 2004, the SWRCB had not yet released draft regulations for public comment. While it is a foregone conclusion that regulations will be developed and adopted, the content and timeframe are not clear. The regulations will result in significant change in the way in which onsite systems are regulated and managed and how they are integrated into the infrastructure used to support continued growth and development in the state.

The purpose of this report is to provide some insight into the efforts to develop statewide regulations. A brief history and description of regulation in California is included to put the current efforts into context. The effort to use the stakeholder process is also critiqued.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

One of the more difficult tasks that a state government faces is to develop statewide regulations. This task is even more difficult when regulations, in this case onsite sewage treatment, are being developed for an activity that had previously been, for all intents and purposes, relegated to local government. In many cases, these local regulations have a long-standing history and are tailored to meet local practices, attitudes, and needs. These local determinations may prove to be in conflict to those determined necessary at the statewide level. Statewide regulations can result in uniformity and consistency that is beneficial for many sectors of the onsite community. The difficulty arises in reaching agreement on what is necessary to achieve the consistency and, at the same time, allowing flexibility to enable local government to implement the regulations.

Statewide Onsite Wastewater Treatment Regulations in California

The regulation of onsite sewage treatment systems will undergo significant changes in California in the coming years. Currently, regulations are locally established with some broad oversight provided by the state. Recent legislation passed in 2000 mandated that the California State Water Resources Control Board (SWRCB), the state agency with overall responsibility to protect California's ground and surface water, develop and adopt statewide regulations. These will be the first statewide regulations governing the use of onsite wastewater treatment in California.

This situation poses a significant challenge for state and local regulatory agencies and other interest groups that have a stake in how onsite sewage treatment is conducted and regulated in the state. Critical elements for effective regulations are that they

- Effectively assess and manage risk from onsite sewage treatment systems
- Are able to be effectively implemented
- Protect the consumer and the public
- Encourage or allow the use of appropriate technology

Establishing Performance Standards

The California legislation identifies establishing performance standards as one aspect that may be included in the regulations. There are distinct benefits from developing regulations that encourage performance-based standards. In contrast to prescriptive standards that prescribe a specific solution, performance standards define a desired outcome—in this case a level of treatment needed/desired to produce the desired outcome—to protect public health and the environment. This approach allows for multiple solutions for a given condition and a given

desired outcome. A prescriptive code emphasizes a fixed set of specific solutions to a well-defined set of conditions. Prescriptive codes are therefore rigid and typically result in a "one size fits all" regulation. Adopting this type of regulation is a legitimate concern for local jurisdictions in a state with the size and diversity of California. (See Appendix A for a more thorough discussion on performance standards.)

The process of selecting performance standards is truly a balancing act, and there are consequences to the selections made (Caudill 2004). Exceptionally restrictive standards may appear to be protective, but if standards are not achievable or reasonable the entire effort and purposes can be undermined. In the effort to attain an acceptable level of risk reduction to protect human health and the environment, a case must be made to support the level of regulation necessary to achieve that goal as well as the other purposes of the standards. Key elements of regulations incorporating performance include the following:

- Performance standards/goals must be clearly defined and based on public health and environmental concerns. This element is complicated because there is no clear consensus or complete understanding of what happens to all of the wastewater constituents of concern, how to measure them, and where to measure for them.
- Treatment goals must be realistic and achievable, which means that reliable and affordable systems that can reach established treatment goals must be available.
- The goals should incorporate risk-based assessment tools that provide for flexibility in order to take into account important factors such as density of development, and specific site conditions such as depth to groundwater, and depth and type of soil.
- Treatment goals must be measurable in some practical way.

Most people who work in the wastewater treatment field agree that onsite regulations/codes should be based on performance. Defining exactly how to accomplish this objective is still unclear. It is clear that requiring a certain level of system performance best attains treatment goals. Treatment technology can achieve the treatment goals, but only ongoing system management can ensure ongoing system performance.

The Regulation Development Process

The regulation development process began in earnest in January 2002 with a series of stakeholder meetings initiated by the SWRCB. These meetings (known collectively as the "Stakeholder Project") brought together a wide spectrum of interest groups that had expressed the desire to be involved in the regulation development process. The stakeholder meetings were held until October 2002 at which time the project was terminated. Unfortunately, the project did not develop draft regulations acceptable to a number of the interest groups.

A second effort was initiated to develop mutually agreeable regulations between the SWRCB and representatives from several key stakeholder groups. This effort was unsuccessful in producing a satisfactory compromise, although a number of issues were resolved. The SWRCB has not yet released draft regulations for public comment.

Regulations will eventually be developed and adopted. The content and timeframe is not clear at this time, but the regulations will result in significant change in the way in which onsite systems are regulated and managed.

The purpose of this report is to provide some insight into the efforts to develop statewide regulations. A brief history and description of regulation in California is included to put the current efforts into context. The effort to use the stakeholder process is also critiqued.

Background

More than 1.2 million onsite wastewater treatment systems are estimated to be in use in California, serving more than 3.5 million people, or ten percent of the state's population. Since 1990, ten percent of new housing starts use onsite systems, and this trend should continue for the foreseeable future (CWTRC 2003a). Onsite/decentralized systems are an integral part of the infrastructure used to support continued growth and development in the state. In April 1997, US EPA published its *Response to Congress on Use of Decentralized Wastewater Treatment Systems*, which concluded that, overall, "adequately managed decentralized (onsite) wastewater treatment systems can be a cost-effective and long-term option for meeting public health and water quality goals, particularly for small, suburban, and rural areas." Our dependence on onsite technologies has led to renewed interest in how they work and how they should be regulated. The performance of these systems is an important consideration in protecting the public health and water quality in the state.

Onsite sewage treatment is a complex issue, where environmental and public health policy must meet the limits and potential of commercially available technologies. Sewage has to be managed to protect the public from disease and to protect ground and surface water resources. Onsite sewage treatment systems must fulfill a primary function, that of treating, reducing, or eliminating constituents/contaminants of concern to levels at which they no longer pose a threat to public health or the environment. Appropriate regulation and infrastructure can be developed to manage the systems, and technologies are available or can be developed that provide the necessary treatment. Regulations, training and certification programs, technology verification, and a clear environmental objective are elements of a successful onsite management program.

2 A HISTORY OF ONSITE REGULATION

Interest in developing a statewide and comprehensive approach to onsite sewage treatment systems and in developing regulations has waxed and waned in California over the past 35 years. A brief history of some of the notable efforts made in this regard over this time frame is presented in this chapter. Interestingly, many of the issues raised in the various initiatives are remarkably similar to what is occurring today. The recommendations from the previous initiatives were in large part never implemented. The same issues recurred often with similar recommendations. Typically, and understandably, the interest was often triggered by local or regional needs and the efforts to deal with these needs. Once the immediate issue was addressed, interest turned elsewhere. There was no ongoing commitment or focus at the state level.

During the 1980s and 1990s California faced and addressed a number of pressing water quality issues, such as underground storage tanks, solid waste facilities, hazardous waste facilities, sewage treatment facilities, military base closures, and others. These efforts utilized most of the resources available to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs). Additionally, funding the activities of these agencies is generated in part by revenues/fees derived from these activities. There is no comparable revenue source available to the state agencies from the oversight of onsite sewage treatment systems. Therefore, while still a concern, addressing onsite issues receives minimal fiscal support.

Current Regulation of Onsite Systems in California

California has a tiered structure for regulation of onsite sewage treatment systems. Federal, state, and local government are all involved with actual implementation occurring at the local level. Breakdown of the specific roles follows.

Federal Government

The federal government assumes no direct role in regulation of single-family onsite wastewater treatment systems, but is involved based on its responsibility to protect underground sources of drinking water through provisions of the Safe Drinking Water Act, and water quality in general through the Clean Water Act. Sewage treatment systems receiving less than 2,000 gallons per day of solely sanitary waste are generally included in the “nonpoint source” category of potential polluting activities. The United States Environmental Protection Agency (US EPA) and the United States Department of Agriculture work to promote best management practices by providing and funding technical assistance. The actual regulation of onsite systems is delegated to state and local government.

State Government

The Porter-Cologne Water Quality Control Act (CA Water Code Section 13000 et seq.) establishes the SWRCB and the nine RWQCBs as the principal state agencies having primary responsibility for coordinating and controlling the quality of surface and groundwater in California. The regional boards are guided in their activities by the preparation and adoption of water quality control plans, known as basin plans, which designate the beneficial water uses to be protected, establish the water quality objectives to protect those uses, and provide a program of implementation needed for achieving those objectives. The basin plan also fulfills the state's obligations under section 303 of the Federal Clean Water Act with regard to navigable waterways. The concern of the regional boards with onsite wastewater treatment systems, however, is primarily based on their role in protecting the quality of the state's underground water supply. Each basin plan must meet the approval of the SWRCB.

An important development in the State of California's regulatory role in onsite systems resulted from the passage of Assembly Bill 885 authored by assembly member Hanna-Beth Jackson. The bill was sponsored by a coalition of environmental and regulatory groups that recognized the need for statewide regulations to address water quality concerns. Assembly Bill 885 added sections 13290 to 13291.5 to the California Water Code (September 2000) that requires the SWRCB set minimum state standards for onsite sewage treatment systems by January 1, 2004. The text of the legislation can be found in Appendix B. This action will require codification of the standards as regulations or implementation as statewide policy as well as an environmental review of the regulations as required by the California Environmental Quality Act. The SWRCB elected to develop regulations to be added to the California Administrative Code.

State Water Resources Control Board (SWRCB)

The California SWRCB has the statewide responsibility for protecting water quality, setting broad policies to achieve this objective. The SWRCB offers competitive opportunities for financial support of onsite sewage research, training, and infrastructure needs through several funding mechanisms, particularly the Clean Water Act State Revolving Fund and the nonpoint source, Clean Water Act Section 319 grant program. The SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the RWQCBs located in the major watersheds of the state.

Regional Water Quality Control Board (RWQCB)

The state is divided into nine water quality regions, corresponding to the nine major watershed areas or basins, with each basin regulated by a RWQCB. The boards set policy to reflect the hydrologic concerns, precipitation, topography, and population, as well as recreational, agricultural, and industrial development of that basin. The regional boards establish basin plans that include general guidelines for onsite sewage treatment systems, provide technical support to local agencies, and issue Waste Discharge Requirements (WDRs) for large and some specialized systems.

Generally, the regional boards delegate direct regulatory authority for individual onsite sewage treatment systems to local agencies. Delegation is through a waiver process, which waives the requirement for WDRs for onsite systems. Each of the nine boards has their own set of onsite guidelines and these vary in comprehensiveness and minimum standards. A matrix that summarizes the basic guidelines from the RWQCBs is included in Appendix C. The pending statewide regulations will result in the basin plans having more uniform guidelines for onsite treatment systems. A map of the counties and the regional boards is shown in Figure 2-1.

Source: State Water Resources Control Board

Figure 2-1 Map of California Counties and RWQCBs

Local Government

The functional regulatory tier is at the local level, usually with a county agency such as the environmental health department, public health department, or building department. Actual regulation and oversight of onsite systems occurs at this level. Regulation includes approval, permitting, and inspection of systems. There are 58 counties and a number of other local agencies and special districts involved in this process. Each of these entities has a set of regulations and policies that govern onsite systems and this results in local regulations that reflect local practices, needs, and politics. The implementation of statewide regulations will likely result in more uniform local regulations. This uniformity should remove many of the inconsistencies that currently exist between jurisdictions for the types of systems approved, system design criteria, installation practices, maintenance, and monitoring requirements. Increased uniformity should ease the burden on the private sector that often works across jurisdictional boundaries. Uniformity should also make introduction and adoption of innovative technologies and alternative systems more feasible. Many emerging technologies offer improvements in wastewater treatment that, in turn, offer better public health and environmental protection.

It is hoped that statewide regulations will offer enough flexibility to accommodate the variations in soils, system density, local resources, and sensitivity of the receiving environment; California is a large state with diverse climates and topography. In addition to flexibility, a critical element of the new regulations is recognition of the considerable differences between jurisdictions in terms of existing resources and the ability to generate revenues to fund a more comprehensive onsite program. This concern has been expressed by several rural jurisdictions due to their limited ability to fund and carry out any new mandates. Local jurisdictions rely on permit fees to fund their activities, and there must be a connection between the ability to fund and the mandated activities.

Local jurisdictions have been active in promoting uniformity and best management practices for many years. The California Conference of Directors of Environmental Health (CCDEH) has a technical advisory committee that meets routinely to discuss and review onsite issues. Their 1998 draft publication entitled *California State Water Resources Control Board Guidelines for the Design, Installation, and Operation of Mound Sewage Disposal Systems* was developed to update the existing guidelines (developed in 1980 by the SWRCB) to reflect changes in mound system technology. The document is currently out for review by the nine RWQCBs. CCDEH was also one of the primary sponsors of Assembly Bill (AB) 885, a further example of their involvement and concern.

The current regulatory structure is a complicated one with significant variation between jurisdictions. There are individual onsite regulations/ordinances governing each of the more than 65 local jurisdictions, and there are unique onsite guidelines written into the basin plans for each of the nine RWQCBs. Additionally, a number of local jurisdictions/counties have more than one basin plan guideline that applies. Modoc County with a population of less than 10,000 has three basin plan guidelines within its borders. Developing statewide regulations that can accommodate this variation is a challenging task.

Table 2-1 helps to demonstrate the variation of practices found between local jurisdictions. An illustrative example is the practice used for leach area sizing where size varies from sidewall area only, bottom area only, or both sidewall and bottom areas. The apparent discrepancy in totals for the sizing based on both sidewall and bottom areas is due to four jurisdictions that allow for consideration of sidewall credit only under special circumstances—their normal practice is to allow bottom area credit only.

Table 2-1 Variation in Local Practices

Of 39 Counties Responding		**YES**	**NO**
Absorption Area/Leach Area Sizing Practices	100% Expansion Area	36	3
	Sizing Trench Bottom Only	8	31
	Sizing Trench Sidewall Only	12	27
	Sizing Both Trench Bottom and Sidewall	23	16
	Reduction for Chambers	14	25
Site Testing—Evaluation Required	Percolation Test Required	30	9
	Soil Profile Required	34	5
Design Manual—Guidelines Used	Manual of Septic Tank Practice	22	17
	Uniform Plumbing Code	28	11
	EPA Design Manual	21	18
	RWQCB Basin Plan Guidelines	26	13
	Local Ordinance/Guidelines	35	4

Source: Status Report: Onsite Wastewater Systems in California (CWTRC 2003a)

The variations shown in Table 2-1 demonstrate that developing statewide regulations poses a challenge.

Evolution of Local Programs

Local jurisdictions developed regulations because they recognized the need to regulate onsite systems, and there are no state regulations governing onsite systems. As discussed previously, regulations vary from jurisdiction to jurisdiction. Some jurisdictions have very basic regulations, for example referencing provisions of the Uniform Plumbing Code, while others have developed their own complete regulations for a comprehensive program with management, operations, maintenance, and monitoring requirements.

A number of factors trigger development of comprehensive local programs or changes in local regulations. Frequently economic, political, and public health and/or environmental factors (such as finding elevated nitrate levels in drinking water) combine to force change. These findings may eventually result in a prohibition/moratorium on further development imposed by a state oversight regulatory agency (typically the RWQCB and in some cases the State Department of Health). This action triggers a local response that requires "a new way of doing business." The onsite sewage treatment programs in Santa Cruz County and Sonoma County are evidence of how communities can effectively respond to crisis situations that affect the environment or public health (see Appendix D).

Common factors that contribute to the need or motivation for adopting or changing local ordinances for onsite treatment systems include:

- Growth/development pressures result in development in areas that are unsuitable for standard onsite treatment systems—this incompatibility may be realized after the fact, that is, after a number of standard systems begin to fail.
- Conversion of existing rural homes and "summer" homes into full-time residences (expansion of bedroom communities). These homes may lack adequate onsite treatment capability for the upgrade.
- Findings of contamination in groundwater.
- Findings of contamination in surface water.
- Turf wars among local agencies or a lack of effective coordination between local agencies resulting in incomplete assessment/planning.
- Lack of understanding of cumulative effects results in public health or environmental concerns.

Whatever the motivating factor, many local jurisdictions have developed regulations that recognize onsite systems as an integral part of the community infrastructure. These are tailored to address the local situation and reflect local economic and political realities. As such, these jurisdictions have a sense of ownership for their regulations and expect that statewide regulations should accommodate what has been established in their own community. There is a sense that their regulations are well-based, represent sound practice, and result from a history of considered deliberations and decisions.

3 CHRONOLOGY OF ONSITE REGULATION IN CALIFORNIA

The initiative to develop regulation is often triggered by local events, which is exemplified even in legislation passed at the state level. Often legislation in large part targets resolving local issues that are not statewide in scope. The following examples of legislative actions illustrate situations where community interest and need were the driving forces.

Senate Bill 1902

Senate Bill 1902, which was passed by the legislature on September 13, 1976, made it possible to form a management district for the operation and maintenance of onsite wastewater disposal systems. The legislation was passed primarily to resolve issues in Santa Cruz, El Dorado, and Marin Counties where management entities were needed but were not specifically authorized by state law. This authority is codified in the California Water Code Sections 31145-31149.

Onsite Wastewater Disposal Zone Law

In 1978, the state legislature adopted SB 430, the "onsite wastewater disposal zone law." This law modified the powers of existing entities already authorized to establish central treatment programs, enabling them to establish special districts (called zones) for onsite management programs. The zones provide for the collection, treatment, reclamation, or disposal of wastewater without the use of community-wide sanitary sewers or sewage systems. The purpose, according to the State Water Resources Control Board (SWRCB), was: "to provide the means and effective controls to allow small rural communities, where centralized treatment systems are very expensive to build, to maintain and employ less costly onsite wastewater treatment systems where technically appropriate." SWRCB considered zone formation an alternative to establishment of septic prohibition areas, which would leave lots unbuildable.

The Bane Bill

Special legislation in 1980 called the Bane Bill (AB 2076) directed that efforts be implemented regarding septic system construction, operation, and monitoring within The Sea Ranch to ensure protection of coastal zone resources. The legislation did not specify *what efforts*; however, the protection efforts adopted required North Coast Regional Water Quality Control Board approval.

Comprehensive local programs with strong management components evolved from recognized problems that this special legislative action addressed.

Chronology of Onsite Initiatives in California

In the 1960s Timothy Winneberger and others conducted research at the University of California Sanitary Research Laboratory. This work dealt with septic tank practices and soil treatment and effluent acceptance rates. The research suggested that system management by someone other than the homeowner was a viable method to reduce system malfunction. Unfortunately much of this work was not embraced by local or state policy makers and was not used to advance the development of regulations or onsite policy.

Most local jurisdictions had established environmental health programs beginning in the 1950s (and before in some jurisdictions). These programs employed professional staff with some knowledge of onsite system design and installation. Most jurisdictions followed or adopted standards for onsite system design and installation such as described in the United States Public Health Service (US PHS) *Manual of Septic Tank Practice* or the Uniform Plumbing Code. Both of these guidelines present fairly conservative design practices for conventional systems. This approach resulted in the majority of systems that have been installed since then to meet minimum design standards. Several jurisdictions have developed comprehensive ordinances and programs as described previously; however, there is inconsistency between jurisdictions, which has been the impetus for efforts to reform. The following descriptions represent the major efforts to develop or incorporate advances in the use and understanding of onsite systems in California. As noted earlier, most of the work and recommendations from these efforts was not adopted into regulation or policy.

Rural Wastewater Disposal Alternatives—Final Report—Phase 1

In September 1977 the SWRCB released *Rural Wastewater Disposal Alternatives—Final Report—Phase 1*. The Governor's Office of Planning and Research, Office of Appropriate Technology prepared the report for the SWRCB. The impetus for the study was an interest by some communities to develop alternative onsite wastewater handling procedures, especially graywater systems, pit privies, and waterless toilets. These efforts were part of considerations for Class K housing. Class K housing is an attempt to minimize building and other standards in remote areas where enforcement of traditional building codes was deemed too difficult and ineffective. Alternative standards to deal with these situations were being considered. There was also interest in looking at the new alternative onsite systems such as aerobic treatment units and other proprietary devices that were being introduced into the state.

A major concern for the SWRCB was the prohibitive cost of sewering small towns—primarily in the costal and foothill regions of the state—where onsite subsurface disposal failed to meet water quality standards. Sixty-seven communities in California were involved in planning sewers due to malfunctioning onsite systems. The cost of proceeding with the projects was deemed to be economically and politically unfeasible for some of these communities.

The report was to look at three major issues:

1. Find acceptable onsite alternatives through the identification and evaluation of new technology

2. Improve understanding of the behavior and performance of traditional onsite systems

3. Develop better public management tools to insure proper operation of onsite systems

The study was to consist of three phases:

1. Phase I—Assess the status of onsite disposal methods

2. Phase II—Field evaluation of particular systems in terms of their treatment effectiveness

3. Phase III—Development of final criteria for the use of alternative systems

The Office of Appropriate Technology was eliminated shortly after the Phase I report was finished. Therefore, unfortunately only Phase I of the study was completed. The completion of Phases II and III might have led to statewide regulations, or at least more consistency between the basin plan guidelines and/or local regulations.

The report includes interesting observations that portend the difficulty in developing new statewide regulations to overlay existing local regulations. Particularly prophetic observations are highlighted in bold in the following paragraph.

> Onsite practices do not lend themselves to close governmental regulation. Guidelines can be provided, but what occurs in the field is elusive. A realistic impression of the array of onsite practices in the country and the disparities between regulations and onsite realities is difficult to convey. ….**Most regulations describe construction capabilities of the local industries rather than dictating technological specifications, which local industries cannot meet. Occasionally, guidelines are set by someone other than local authorities and do not apply to the local situation. Sometimes a guideline contradicts personal beliefs of the local authority and that guidance is not enforced. The consequence is non-conformance**, more with onsite devices buried or otherwise out of sight. (California State Water Resources Control Board 1977–p. 107)

The regulatory structure has not changed significantly since that report and is described as follows:

> In California there is no public agency responsible for the overall management of individual wastewater disposal systems. The Porter-Cologne Water Quality Control Act authorizes the state to regulate wastewater discharges through the actions of the Regional Water Quality Control Boards (WQCBs). However the regional boards have designated regulatory duties for individual disposal systems to the counties. Local county health departments are the public agency most responsible for the administration and regulation of individual wastewater disposal units in California. (California State Water Resources Control Board 1977 p. 114)

> The Porter-Cologne Act prohibits Regional Boards from specifying the hardware necessary for achieving discharge standards (Article 6 133360). Thus the WQCBs have provided guidelines for onsite wastewater disposal, but more of the "where to put it" variety. Counties have retained more of the "how to build it" guidelines. (California State Water Resources Control Board 1977 p. 115)

The Phase I report contains a strong endorsement for managing onsite systems. Again, the authors showed insight into what is needed to make onsite systems an integral part of the community infrastructure.

> It is the major recommendation of this study that public management of onsite systems be provided where needed. Public management provides responsible control of decentralized facilities. The services provided by Onsite Wastewater Management Districts is comparable in all respects to the services offered by a sanitary district which operates a central treatment facility. The difference between the two is the choice of technology used to meet the same end: adequate treatment and disposal of wastewater. Given the correct public control of individual disposal systems, control over the design, installation, maintenance, and problem solving, the agencies responsible the management of the systems should be eligible to receive public monies for the upgrading of the treatment facilities for which they are responsible. (California State Water Resources Control Board 1977 p. 55)

The report outlined a process that should be followed to establish prohibition of onsite systems. The recommendation places significant responsibility on the RWQCB to provide sufficient evidence to demonstrate the nexus between onsite systems and public health or water quality problems.

Following are recommendations on the proper procedure to be taken by a RWQCB when assessing whether or not an area could continue to depend on subsurface discharge of domestic wastewaters or whether such discharge should be halted (California State Water Resources Control Board 1977):

- In a case where it is alleged that onsite wastewater treatment systems are contributing to receiving water pollution, water samples and explicit discharge data must be provided which clearly support such allegations and which pinpoint the source on the basis of this data.
- In a case where it is alleged that onsite wastewater treatment systems are causing a health hazard, documentation which clearly supports such allegation must be submitted, pinpointing specific hazards in the community and weighing their risk.
- If in either or both cases, documentation cannot be provided to clearly and explicitly support the allegation of the receiving water pollution or actual health hazard, then the prohibition should not be declared.
- If such allegations are submitted to a responsible public agency, it is assumed that onsite practices are such that the following actions should be undertaken, whether or not actual receiving water pollution or health hazards are clearly documented. (p. 53)

- [Conduct] community survey to evaluate the continued use of onsite systems, assessment if public entity is needed for operation, determination if community system is needed—along with cost effectiveness of options selected.

"…it is our opinion that the available guidance supporting the quality of onsite wastewater treatment necessitates a very cautious approach to declaration of area-wide onsite discharge prohibition. Malfunctioning systems can most often be repaired, and the definition of onsite system failure has never been agreed upon by any administrative, regulatory, academic, or scientific authority known to this study. (p. 54)"

Another interesting observation from the report is the comment concerning the definition of failing system. The report states: "…the definition of onsite system failure has never been agreed upon by any administrative, regulatory, academic, or scientific authority known to this study." Defining failure has proven to be a difficult task during the current efforts to develop statewide regulations.

The Phase I report was used in part to support legislation (SB 430, the "onsite wastewater disposal zone law") that allowed establishing onsite wastewater management districts.

SWRCB Guidelines—Mound and Evapotranspiration

In January 1980, the SWRCB issued two guidelines for alternative wastewater treatment technology:

- Guidelines for Mound Systems
- Guidelines for Evapotranspiration Systems

Both of these guidelines were issued because the SWRCB recognized that alternatives needed to be available for areas previously identified as being unsuitable for conventional onsite systems. The evapotranspiration guidelines were based on a literature review, especially draft design criteria developed by San Diego County and research conducted at the University of Colorado by Bennett and Linstedt.

The Mound Guidelines were adapted from the University of Wisconsin, Small Scale Waste Management Project, the 1979 US EPA Municipal Environmental Research Laboratory, and a workshop conducted by Richard Otis for the SWRCB in 1979.

These two guidelines were the first formal SWRCB effort to provide statewide guidance to both the RWQCBs and local entities for the use on alternative onsite wastewater treatment technologies. The guidelines were developed to provide minimum standards.

California Conference of Directors of Environmental Health Model Onsite Sewage Disposal Code

The California Conference of Directors of Environmental Health (CCDEH) Onsite Sewage Disposal Technical Advisory Committee (TAC) released a proposed model code in 1993. The CCDEH TAC is comprised of local agency representatives and RWQCB representatives that meet quarterly to discuss and study onsite issues. This code effort established recommended statewide minimum standards that local agencies could use to develop local ordinances.

CCDEH was concerned with the lack of consistency between jurisdictions and the lack of guidance for local entities concerning the use of onsite systems, especially the use of alternative systems. The code contains basic site evaluation requirements and minimum standards for installing conventional systems (septic tank and gravity to subsurface soil dispersal). The minimum site requirements specified the type of soil testing and groundwater determinations needed. The code also set minimum design criteria for the most commonly used alternative systems:

- Pressure distribution
- Mound systems
- At-grade
- Seepage pits
- Sand filters
- Evapotranspiration systems
- Aerobic systems

CCDEH urged the RWQCBs and the SWRCB to consider adopting the regulations into statewide minimum standards.

Report of the Technical Advisory Committee For Onsite Sewage Disposal Systems, November 1994

The 1994 Technical Advisory Committee (TAC) for onsite sewage disposal systems (OSDS) report was part of the SWRCB's program to address nonpoint source (NPS) pollution in response to the 1987 Clean Water Act (CWA). A committee of 13 members from the private and public sectors authored the report. The report was one of several TAC reports used to satisfy the CWA requirements by evaluating the assemblage of programs to determine if the programs are comprehensive, effective, and efficient.

The purpose of the SWRCB was to seek recommendations to improve the state's water quality through improved implementation of NPS control measures.

The mission of the TAC was to review the adequacy of NPS pollution management in California, identify where goals are not achieved, and articulate solutions to the management of water quality problems. The TAC recommended a strategy for preventing NPS pollution from each particular land use through the implementation of a set of management measures and identified a process for selecting specific practices to implement the strategy. The committee report,

Management Measures and Implementation for New and Existing Onsite Sewage Disposal Systems, identified 14 issues for concern:

- Degradation of water quality
- Increased number of systems
- Long-term dependence on onsite
- Inconsistent approach statewide
- Inconsistent statewide standards
- Inadequate coordination between agencies
- Limited knowledge of alternative technologies
- Lack of inspection and maintenance
- Need of upgrade and repair of existing systems
- Need for education and training of personnel
- Need of funds for upgrade/repairs
- Lack of guidance for real estate transactions
- Inadequate septage disposal facilities
- Potential problems with gray water use

Report Findings

Findings of the committee report *Management Measures and Implementation for New and Existing Onsite Sewage Disposal Systems* are summarized in this section. Report findings include:

- Evaluation of water quality effects of OSDS
- Identification of a long-term need for OSDS
- Lack of consistent standards and regulatory approach
- Need for consistency and guidance regarding alternative technologies
- Need for inspection and maintenance
- Considerations for upgrading and correction of existing OSDS problems

Evaluation of Water Quality Effects of OSDS

- If improperly used, OSDS pose a serious threat to water quality and/or public health.
- There is a potential for cumulative effects on ground and surface waters from large concentrations of OSDS in a given area or watershed.

Identification of a Long-Term Need for OSDS

- There is widespread and increasing dependence on OSDS for long-term sewage treatment and disposal.
- Increasingly, OSDS must be viewed as a permanent means for waste treatment and disposal.
- OSDS must be capable of functioning properly for the life of the structure(s) served.

Lack of Consistent Standards and Regulatory Approach

- Adoption of unique local and regional policies/regulations is appropriate, given the physical diversity of California.
- Consistency in approach with respect to certain fundamental siting and design criteria is needed at the state/regional level, and currently does not exist. This fact can be a source of regulatory confusion, inequities, and possible water quality impacts in adjoining or overlapping jurisdictions.
- Review of RWQCBs' policies shows differences of opinion on many technical issues and general approaches to OSDS management where there should be consistency or uniformity.
- Lack of consistency and agreement between RWQCBs promotes the impression that OSDS issues are not well understood.
- SRWCB policies that have a bearing on OSDS practices lack guidance regarding application by the RWQCBs.
- Uniform interpretation and application of these policies with respect to OSDS is needed.

Need for Consistency and Guidance Regarding Alternative Technologies

- Many local health departments and RWQCBs are hesitant to accept alternative design concepts for lack of staff time to keep pace with emerging technologies.
- The SWRCB has not taken an active role in the area of innovative/alternative OSDS technologies since the early 1980s.
- A streamlined process is needed to make appropriate SWRCB and RWQCBs expertise routinely available, while transferring the authority and responsibility for permitting alternative system technologies to local jurisdictions.

Need for Inspection and Maintenance

- Need for better and more comprehensive inspection and maintenance work.
- Need for a more active approach to OSDS inspection and maintenance, including education of users, to ensure reliable long-term service and prevention of adverse water quality and public health problems.
- OSDS require increased utilization of private sector resources, such as expanding septic system reporting requirements for septic tank pumpers, and use of private contractors to conduct required inspections and monitoring work.

Considerations for Upgrading and Correction of Existing OSDS Problems

- Adoption of repair standards that are less stringent than new systems standards, but that will provide for significant improvement in system performance and adequate protection of public health and water quality may be appropriate.
- Need to adopt a series of management measures that are in conformity with US EPA guidance, but are more specifically suited to conditions, problems, and practices in California.

Recommended Actions

In order to implement the recommended management measures, the TAC for OSDS recommended that the SWRCB:

1. Clarify and provide formal guidance to the California RWQCBs regarding the applications to OSDS of the SWRCB Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California* and Resolution No. 88-63, *Sources of Drinking Water* policies.

2. Establish a SWRCB staff position and a working committee to review, update, and distribute technical information and memoranda regarding alternative systems and new OSDS technology issues.

3. Provide funding and support for educational and technical OSDS programs serving government regulators, the private sector, and the general public.

4. Support and fund a review and update of policies, literature, and technologies related to cumulative impacts associated with OSDS. Provide technical assistance to RWQCBs and local agencies for the development of regional and local policies and criteria that address cumulative impacts.

5. Provide grant funding to local agencies for the development of OSDS management programs. Direct the RWQCBs to prepare a priority list of problem areas requiring special onsite system management.

6. Make state revolving fund monies available for individual system upgrade through programs administered by local agencies.

7. Provide specific funding for RWCBs to address OSDS issues.

8. Enter into memorandums of understanding with other state agencies that are involved with OSDS to clearly designate RWQCBs as the agencies responsible for the implementation of policies and guidelines for OSDS.

9. Encourage RWQCBs to delegate authority and support the efforts of local jurisdiction for the approval of alternative nonstandard OSDS. The role of the SWRCB should be to provide technical assistance and oversight to ensure proper application of alternative technology for OSDS.

10. Require RWQCBs to work with local agencies to ensure that there are suitable septage disposal facilities available for existing and proposed OSDS. Make grants or loans available for the evaluation and planning of septage disposal facilities.

11. Establish a SWRCB and RWQCB committee to develop a consistent approach to policy interpretation, regulation implementation, and development of standards for OSDS.

12. Support through grants or other programs for the development of improved OSDS inspection and maintenance practices, including, but not limited to:
    a. A uniform standard-of-practice for the routine inspections of OSDS during real estate transfers or refinancing of properties
    b. Inspection and reporting protocols and certification for septic tank pumpers
    c. Innovative local programs that promote greater attention to inspection and maintenance of OSDS by the system users and the OSDS industry in general
    d. Data management systems to provide better tracking of inspection, maintenance, and performance information for OSDS

Action on these issues, for the most part, remains to be taken. The recommendations are similar to those proposed in the 1977 report *Rural Wastewater Disposal Alternatives—Final Report—Phase 1* described previously.

California State Water Resources Control Board Guidelines for the Design, Installation, and Operation of Mound Sewage Disposal Systems—CCDEH Proposed Draft

The final draft of the California SWRCB *Guidelines For The Design, Installation, And Operation Of Mound Sewage Disposal Systems* was released in 1998. The draft document presented the latest guidelines in siting, designing, and constructing mound systems in California. The document was developed and approved by the Land Use Technical Sections Committee of the California Directors of Environmental Health. This document has been circulated for review, and approval for use at the nine RWQCBs in California. To date, this review and approval process has not been completed.

The draft document urges all jurisdictions permitting mound sewage disposal systems in California to utilize the minimum guidelines. The document also recommends that, if a permitting agency currently allows a lesser standard, that jurisdiction should modify its regulations to meet the minimum standards.

Several counties (Sonoma, Napa, Marin, Mendocino, and Humboldt) are utilizing the proven design criteria for the permitting and use of mound systems in their jurisdictions. These

jurisdictions have worked effectively with their RWQCB in establishing minimum guidelines, regulations, memoranda of understanding, and written agreements for the use of mound systems as an effective and safe onsite sewage disposal method.

California Onsite Sewage Disposal System Ordinance

The final draft of the *Model Ordinance for Onsite Sewage Disposal Systems* was prepared by the Model Ordinance Committee, College of Computer Science, Engineering, and Technology, California State University, Chico in March 1999 as described in this section.

In 1997 a volunteer committee was formed to discuss and draft a statewide model ordinance for OSDS. The committee was made up of educators, engineers, state and local regulators, installers, pumpers, and manufacturers working in the OSDS industry. The preparation of the draft ordinance was funded by grants from the US EPA and California State University, Chico. The committee met in sessions at California State University, Chico over one and one-half years to discuss the current policies used throughout the state to regulate OSDS.

The committee recognized the great diversity of agencies regulating OSDS. Whereas local ordinances were generally written by local agencies to accommodate the various geographic areas in their jurisdictions, many of the ordinances incorporated portions of other ordinances prepared by other local agencies. Furthermore, some agencies had not revised their ordinances in several decades, but instead added changes by resolution or adopted internal policies, often creating a conflicting and confusing document.

The committee attempted to develop a draft that would provide uniform statewide criteria for the siting, design, installation, and regulation of OSDS in California (California State University, Chico 1999). The committee's intent was not to coalesce existing ordinances. The purpose of the model ordinance was to provide a draft framework for professional, technical, and regulatory requirements for the use and maintenance of OSDS.

California Model Ordinance for Onsite Sewage Treatment and Management

The initial purpose of this project was to develop a model ordinance that could be used by local jurisdictions, thereby moving toward a standardized regulatory approach throughout California. The draft *Model Ordinance for Onsite Sewage Disposal Systems* was used as a starting point in developing the *California Model Ordinance for Onsite Sewage Treatment and Management.* An ordinance design team was established consisting of experts in the field to develop the ordinance language. Project funding was through the National Decentralized Water Resources Capacity Development Project (NDWRCDP).

A copy of the final draft of this model ordinance is provided in Appendix K. The model ordinance attempts to establish criteria that enable system evaluation and approval based on treatment goals and performance standards. The ordinance incorporates the management concepts proposed by US EPA in *Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems* (US EPA 2003a). Supporting rationale and other supporting documents are located in Appendix E. The model was designed to eliminate

inconsistencies that exist between jurisdictions concerning the types of systems approved, system design criteria, installation practices, operation, maintenance, and monitoring requirements.

When the project was initially funded there was no state effort to implement statewide regulations. The intent was that the model ordinance would be developed, put out for review and comment, modified as deemed appropriate, and presented as a model to be considered and adopted. The ordinance design team was envisioned as a group that would go out and "sell" the model ordinance to the interest groups through a series of workshops, thereby educating these groups and demonstrating the need for adopting statewide regulations. An assumption was made that several of the more prominent interest groups would support the ordinance and provide additional momentum to adopt statewide regulations.

With the advent of AB 885 (see Chapter 4, *The Process of Regulations Development—Assembly Bill (AB) 885*) efforts were refocused to ensure that the model ordinance was included as part of the AB 885 deliberations.

4 THE PROCESS OF REGULATIONS DEVELOPMENT—ASSEMBLY BILL 885

Concerns over California coastal resources and the growing awareness that nonpoint sources of pollution posed a threat to these resources again brought focus onto onsite systems in the late 1990s. Beach closures due to high bacterial counts had become a chronic problem in some parts of the state, especially off of Malibu in Los Angeles County and Rincon Bay in Santa Barbara County. A number of environmental groups, including Heal the Bay, Heal the Ocean, Surfriders, and others, sought to eliminate the causes of the pollution that was contaminating the beaches and the watersheds contributing runoff to these areas. These groups cited studies and monitoring programs that indicated contamination of coastal waters was in part due to leaking or poorly functioning onsite systems. The groups asserted that in some areas onsite systems may contribute as much as 30 percent of the total bacteriological loading to coastal waters.

The Legislation

Assembly Member Hannah-Beth Jackson, representing the Santa Barbara area, sought to develop legislation to address this issue. Heal the Bay and the California Association of Environmental Health Administrators worked with the assemblywoman to craft legislation. Initially the legislation was to target only coastal regions and was introduced as AB 885 on February 25, 1999 as legislation to add provisions for coastal sewage treatment systems to the California Health and Safety Code.

The sponsors ascertained that the health and safety code provisions prohibited discharge of onsite systems in a manner that would allow contamination of state waters, particularly drinking water supplies; however, no statewide standards for the proper operation of these systems were in place. The bill proposed that the regulatory process develop the components for a uniform program for onsite systems in the coastal zone and to establish a process to develop performance standards in these areas. Initially the bill did not have opposition, but opposition did emerge and it became clear that several interest groups were concerned about the impact of the bill.

The legislation was withdrawn at the author's request in July 1999 at which point it became a two-year bill with consideration to resume in 2000. A number of interest groups and regulatory agencies worked with the author to amend the bill. As a result, the bill was changed to include developing onsite regulations for all systems in the state along with system performance standards. The bill was re-titled the *Onsite Sewage Treatment Systems Law*.

The author noted that …

> "By establishing state-wide performance standards for septic systems, AB 885 will ensure these sources do not continue to contribute to the chronic beach closure problem nor degradation of other state waters…[s]iting and construction standards by themselves have failed to protect the beneficial uses of our waters. In some cases it is because the systems are extremely old, out-dated or in disrepair. In others, changed land use, with larger families or denser development, has overloaded the 'design capacity' of the septic systems or the soil into which they empty."

The Senate amended the bill to maintain the purpose of the assembly's bill but shifted the responsibility to the SWRCB under the Porter-Cologne Water Quality Control Act and made other substantive changes to integrate the measure with the SWRCB's ongoing development of the state's Nonpoint Source Program. The SWRCB was directed to adopt regulations for permitting and operating certain onsite sewage treatment systems (such as those systems constructed on or after January 1, 2004; systems that will likely impair present or future beneficial uses of water; likely cause pollution, nuisance, or contamination) in consultation with certain entities and interested parties.

The bill was amended several more times and passed the California Senate and Assembly in late August 2000 and was signed by the governor in September.

The legislation added Chapter 4.5 (commencing with Section 13290) to Division 7 of the Water Code, relating to water (see Appendix B for complete text). Key provisions of the act required the development of regulations or standards on or before January 1, 2004 that include:

1. Minimum operating requirements that may include siting, construction, and performance requirements.

2. Requirements for onsite sewage treatment systems adjacent to impaired waters identified pursuant to subdivision (d) of Section 303 of the Clean Water Act (33 U.S.C. Sec. 1313(d)).

3. Requirements authorizing a qualified local agency to implement those requirements adopted under this chapter within its jurisdiction if that local agency requests that authorization.

4. Requirements for corrective action when onsite sewage treatment systems fail to meet the requirements or standards.

5. Minimum requirements for monitoring used to determine system or systems performance, if applicable.

6. Exemption criteria to be established by regional boards.

7. Requirements for determining a system that is subject to a major repair, as provided in paragraph (2) of subdivision (a), as follows.

Subdivision (a):

1. Any system that is constructed or replaced.

2. Any system that is subject to a major repair.

3. Any system that pools or discharges to the surface.

4. Any system that, in the judgment of a regional board or authorized local agency, discharges waste that has the reasonable potential to cause a violation of water quality objectives, or to impair present or future beneficial uses of water, to cause pollution, nuisance, or contamination of the waters of the state.

According to the two principal sponsors of the legislation, Heal the Bay and the California Conference of Directors of Environmental Health, the legislation wording was carefully crafted by the sponsors to provide explicit direction to what was to be included in the regulations (Malan 2004; Gold 2002). The main reasons cited for the bill were to help eliminate water quality problems and to protect public health.

The bill requires the SWRCB, on or before January 1, 2004, and in consultation with the State Department of Health Services, the California Coastal Commission, the California Conference of Directors of Environmental Health, counties, cities, and other interested parties, to adopt specified regulations or standards for the permitting and operation of prescribed onsite sewage treatment systems that meet certain requirements.

The legislation became effective on January 1, 2001 and mandated that the SWRCB either develop guidelines or regulations. SWRCB determined that they would develop regulations and assigned staff to the regulation development process. Steps were initiated to begin the rule-making process. A budget change proposal was approved to provide $1.2 million dollars to the SWRCB to complete the rule making. The SWRCB would take a year to acquire the necessary infrastructure and resources and to develop a plan to accomplish the legislative mandate.

The regulations were to be developed in consultation with certain specified state agencies as well as an unspecified group of other interested parties (stakeholders). SWRCB staff met with a number of the stakeholder groups including the California Wastewater Training and Research Center Advisory Board (CSU Chico), California Conference of Directors of Environmental Health, California Onsite Wastewater Association, California Environmental Health Association, and California Association of Realtors. These meetings helped SWRCB to evaluate the interest and develop a strategy for developing the regulations.

The California Onsite Wastewater Association held an informational workshop in December 2001 at which time a number of stakeholders along with the SWRCB presented their views on what the regulations should contain. The SWRCB described the process that was to be used to develop the regulations including:

1. Initiating a stakeholder project in January of 2002

2. Using a "straw-man"—the model ordinance being developed by the California Wastewater Training and Research Center (see Appendix K for the text of this model ordinance). The stakeholder project was to satisfy the consultation requirement in the legislation.

The General Stakeholder Process

The following description is of a generalized stakeholder process and is presented here to provide some insight and background. The process is a form of participatory decision-making (Kaner *et al*. 1996). The intent is to provide an overview of what is typically involved in the stakeholder process.

The stakeholder process is often used to help formulate policy to address an identified problem or issue. Typically, the process is designed to enlist interested parties in examining and developing solutions to a particular problem or issue. Interest groups' perspectives are real and legitimate and they need the opportunity to express these in a formalized manner, which is provided by the stakeholder process. This process can help develop trust, credibility, and better solutions. Legitimate involvement in decision-making and reaching a solution is important, because one cannot design effectively for someone else (Ackoff 1981). In other words, people fail to use solutions that were conceived somewhere else. The process itself is valuable because it provides necessary participation and ownership.

Participation of All Interested Parties Is Important

The success of the stakeholder process is based on the assumption that participation from all interested parties who have a stake in an outcome is important. The process makes it possible for participants to make contributions to creating a solution—in this case regulation—and enables people to incorporate their individual and collective aspirations and values into the solution. Participation also can generate consensus in the group and will ensure that people will take part more effectively and with a deeper level of commitment to implementation of the solution.

Most stakeholders go into the process with a set of preconceived notions of what the work product should look like; this notion reflects their values, knowledge, and needs (both personal and organizational). Generally, stakeholders want to create the best possible product, initially one that may be idealized but then modified to consider constraints and enabling resources in order to attain a feasible, workable regulation that can be implemented.

The stakeholder process causes participants to learn both as individuals and as organizations. In the minds of the stakeholders, the process involves conceptualizing and testing potential

alternatives and selecting the most desirable alternative. Stakeholders also assume that they will be instrumental in selecting the best alternatives. This determination is often based on the participants' view that the selected alternative is practically and technologically feasible to implement and should reflect common ground among the participants. Furthermore it should be viable in the sense that it is designed to attain the purpose as formulated.

Achieving "Buy-In" from Participants

Often, participants state that it is not necessary to "reinvent the wheel." However, as noted previously, people fail, or at the very least are reluctant, to use solutions that were conceived somewhere else. The stakeholder process is a method to achieve "buy-in" from the affected interests, which does not mean that the process cannot function within a pre-defined framework. Stakeholders need to look at the parts and reassemble them to meet their specific needs (even if the wheel that they invent ends up looking the same). Stakeholders should take some hints and get a partial blueprint of the wheel, but they still need to go through the steps of constructing their own. In this respect, a straw-man—sample/model regulation is often used to initiate and provide some structure to the process.

Developing a Specific Solution

The stakeholder process should be designed to develop a solution specific to the mandate. For example, a freewheeling scoping process may not be appropriate for developing regulations from specific legislation. Scoping may have been appropriate as a planning tool to examine the issues associated with the legislation. The legislation provides specific parameters and the stakeholder process needs to focus on a product that meets the legislation's intent.

The stakeholder process is used for a variety of purposes, and there is no prescribed method or formula. The process should be designed to function within the resource and time limitations imposed and to specifically meet the needs/purposes of any given project. However, the expectations of the participants are generally consistent with those described previously irrespective of the issues or specific goal of a project.

Using stakeholders to help develop onsite regulations or dealing with onsite management issues is not a unique situation and is often cited as an essential element by a number of experts (Otis *et al*. 2001), (Sherman 2004), (US EPA 2003b), (Arenovski and Shephard 1996), and others.

Corry sums up the need for a stakeholder process in developing regulations: "…The key is for each interest group to play a part in the formation of the codes to create a politically sustainable code that will create a sustainable onsite infrastructure. Code writers should bring all interest groups to the table. The groups will cancel out each other's unreasonable tendencies, including the unreasonable tendencies of the regulators themselves." (Corry 2004)

Additional Considerations and Pitfalls

A few additional considerations and pitfalls concerning the generalized stakeholder process as they might pertain to developing regulations include:

- Avoid the temptation to manipulate the parts without focusing on how they affect the performance of the whole. In drafting regulations, there is a tendency to get too caught up in "wordsmithing," trying to create the perfect phrasing while losing sight of what the words need to accomplish. While this approach may work for dealing with local regulations (tinkering with language to deal with a very specific local issue, practice, or concern) it does not work well for the more global reach of regulations designed for a large and diverse state such as California. This concern is especially valid when local or historical practices are at odds with the new direction that legislation that affects an entire state may dictate. The inertia developed from long-standing practices reflected by the "this is the way we have always done it here and it works for us" attitude is difficult to overcome.
- Do not focus so intently on efficiency that failure to correct doing things the wrong way results. In other words, avoid the trap of doing wrong things righter rather than doing the right things. This pitfall is similar to manipulating the parts without focusing on how they affect the performance of the whole, although more subtle. The result is manipulating or incrementally changing a bad practice to make it better and losing sight of the fact that it is a bad practice. Not challenging the practice in total can result in improving a bad practice by tinkering with it, which does not make it the right practice and which may work contrary to the intent of the legislation. The bad practice might be made more efficient or expedient, but making it better does not provide a real solution.
- Simply eliminating what is unwanted does not result in what is wanted. Removing undesirable parameters still leaves the more difficult task of designing those parameters that are desirable. Eliminating a bad practice can create a void that leaves leaving a gap in addressing an important issue or concern. This pitfall reinforces the need to keep the purpose or goal always in the forefront.
- Focus on what is desired and not on what is wrong. When developing regulations the intent/mandate of the enabling legislation should be constantly revisited because it frames the scope of what needs to be done. Typically, legislation is passed because of a recognized need, and the regulations should address the identified need. Of course this focus can become complicated if there is disagreement on what is the need.
- Ensure that there is active representation and participation from all of the key interest groups. Acceptance of the final product depends on all of the groups having an investment in the outcome. There does not have to be agreement on all of the issues, but there does have to be the opportunity to be involved and have positions aired and considered. Active representation and participation results in ownership of the solution.
- Recognize the differing knowledge levels of the participants. Bringing all of the stakeholders to the same level of expertise will not be possible. However, whatever is developed, while possibly technical in nature, must make sense to all of the participants (US EPA 1996). This requirement is predicated on and assumes that all of the stakeholders have legitimate concerns that need to be recognized and addressed by the regulations. For example,

environmental groups were concerned with the impact of onsite systems on impaired surface waters (303(d) waters). The specific technical solution offered in the regulations is not necessarily as important as the assurance that surface water is going to be protected.

This list is not exhaustive, but it does point out some of the considerations that are associated with using the stakeholder process to help develop regulations. Recognizing these considerations and making the stakeholders aware of them can help avoid inefficient use of time and resources.

Challenges of the Participatory Process

Another important feature of the stakeholder process relates to the series of challenges inherent in the participatory process. Difficult problems, such as developing regulations, have high stakes and involve competing interest groups. Working through the issues and building a shared framework that can yield a solution that incorporates everyone's point of view is difficult. The structure should be flexible enough to allow the group to keep working to solve the problem.

The SWRCB Stakeholder Process

The SWRCB explored the various methods to solicit public input and decided on a formal stakeholder process. A request for proposal was issued to illicit response from firms/individuals with experience in facilitating the stakeholder process. A firm was selected and work began on formulating the process with the assistance of the consulting team. The SWRCB with assistance from this team identified likely interested parties/groups. A formal announcement of the process and letters were sent to all of the known interest groups in early December 2000 inviting them to participate as stakeholders.

A formal environmental impact review (EIR) assessing the impact of the regulations was also conducted in compliance with the California Environmental Quality Act (CEQA). The purpose of an EIR is to provide state and local agencies and the general public with detailed information on the potentially significant environmental effects that a proposed project—in this case regulation—is likely to pose. The EIR also identifies ways that the significant environmental effects may be minimized and indicates alternatives to the project. The CEQA review was contracted to an outside firm following a solicitation for proposals. The CEQA considerations were not part of the stakeholder project.

Kickoff Meeting

A kickoff meeting for all the identified stakeholders was conducted on January 3, 2001 in Sacramento. A general overview of the legislation (AB 885) was provided by the SWRCB, and it was explained that regulations would be developed and included in the California Code of Regulations. Seven key elements were identified in the legislation that needed to be addressed by the regulations:

- Minimum operating requirements that may include siting, construction, and performance requirements

- Requirements for onsite sewage treatment systems adjacent to impaired waters
- Requirements authorizing a qualified local agency to implement requirements adopted if that local agency requests that authorization
- Requirements for corrective action when onsite sewage treatment systems fail to meet the requirements or standards
- Minimum requirements for monitoring used to determine system performance, if applicable
- Exemption criteria to be established by regional boards
- Requirements for determining a system that is subject to a major repair:
  - Any system that is constructed or replaced
  - Any system that is subject to a major repair
  - Any system that pools or discharges to the surface
  - Any system that, in the judgment of a regional board or authorized local agency, discharges waste that has the reasonable potential to cause a violation of water quality objectives, or to impair present or future beneficial uses of water, to cause pollution, nuisance, or contamination of the waters of the state

The stakeholder process was described along with ground rules and expectations. The facilitators were introduced and presented an overview of how the project should proceed. A project timeline was presented along with a projected timeline for adoption of the regulations (see Appendix G for the initial SWRCB timeline).

Attendees were then broken up into small groups and asked to consider two topics:

1. Examination of the overall project and identification of the important issues to resolve

2. Identification of important elements that should be included for consideration when developing regulations to meet the seven requirements of AB 885

The stated goal for this project was to bring together people of different views and experiences to provide information, input, and new thinking toward the development of onsite regulations.

A working agreement was presented that outlined how the process was designed to work. The working agreement is summarized in Table 4-1.

Table 4-1
Stakeholder Working Agreement

Working Agreement	
Workshop Facilitators	**Project Participants**
• Manage time and explain tasks • Facilitate large group discussions • Keep meeting purpose front and center • Maintain focus on entire project	• Provide information, analysis, input ideas, options • Manage own small groups • Stay open to and engage in new thinking
Ground Rules	
• Everything is written on flip charts • Listen to each other • Observe time frames • Differences and problems are acknowledged—not "worked" • Say only what you need to say	

The project design established the stakeholders into three primary advisory groups that represented a cross-section of the interest groups:

- **Stakeholder Advisory Team**—Consisted of the broadest representation with members from all of the identified interest groups
- **State Discussion Group**—Members from state government agencies that had an interest in the regulations
- **Technical Advisory Committee**—Representatives from the interest groups that possessed technical expertise in the onsite industry

Three other committees were also formed:

- **Project Support Team**—SWRCB staff responsible for developing the regulations and the outside project facilitators
- **Consulting Team**—Advised the project support team and was made up a select group of individuals from state agencies, industry, and local regulators
- **Writers of the Regulations**—SWRCB staff who were charged with developing the regulations from the work products of the other groups

Detailed information about the members, purposes, and roles and responsibilities of each advisory group and committee formed are as follows.

Stakeholder Advisory Team

Members: Septic Tank Pumpers, League of Cities, California Conference of Directors of Environmental Health (CCDEH), Bay Conservation and Development Commission (BCDC), California Coastal Commission (CCC), California Department of Health Services (DHS), Building Industry Association, RWQCBs, California Farm Bureau, California State Association of Counties (CSAC), California Association of Realtors, California Onsite Wastewater Association (COWA), Manufacturers, Regional Council of Rural Counties (RCRC), Planning & Conservation League, National Resource Defense Council (NRDC), Heal the Bay, Bay Keeper, The Ocean Conservancy, Surfriders, US EPA, Educational Institutions, City of Malibu

Charter: Provide comprehensive consideration for development of regulations of onsite sewage treatment systems (OSTS)

Roles and Responsibilities:

- Identify social, economic, and environmental issues associated with OSTS
- Provide diverse perspectives
- Share expertise and learn from one another
- Generate multiple solutions/ideas
- Research and share existing models from state, local, and municipalities
- Communicate to constituents and report back with comments, suggestions, and feedback on developing regulations
- Make final recommendations and comments on draft regulations
- Participate in the kickoff and six 6-hour meetings

State Discussion Group

Members: Representatives from RWQCB, SWRCB, CCC, DHS, Building Standards Commission, CCDEH, California EPA

Charter: Sort, prioritize, and refine ideas generated by the stakeholders advisory committee

Roles and Responsibilities:

- Provide parameters for the direction of the current rule-making process
- Seek legal and policy counsel as needed
- Guide and refine ideas

- Sort, prioritize, and refine the ideas generated by the stakeholders advisory committee based on criteria developed by the group such as statutes, inherent design considerations, feasibility, viable methodologies, and available resources
- Handoff input (next level of thinking) to technical advisory committee for their review, recommendation, and resolution of technology issues
- Participate in kickoff meeting and six 6-hour meetings
- Participate in final wrap-up meeting

Technical Advisory Committee

Members: Two California Environmental Health Association (CEHA) Representatives, Four CCDEH Members, RCRC, RWQCB, California Onsite Wastewater Association (COWA), Two Educational Institution Representatives, DHS, CCC, Heal the Bay

Charter: Provide technical expertise and final recommendations of the state discussion group while further defining and resolving technical issues.

Roles and Responsibilities:

- Review recommendations of the state discussion group while further defining and resolving technical issues
- Fill-in technological necessities and loopholes
- Generate final draft rule/regulation to present to the stakeholder advisory committee for final comments
- Participate in the kickoff meeting
- Participate in six 6-hour meetings over eight months
- Participate in the final wrap-up meeting

Project Support Team

Members: SWRCB Staff and Outside Project Facilitators

Charter: To support the work of project participants through solid planning, facilitation, coordination, and communication throughout the project

Roles and Responsibilities:

- Provide agendas and work process notes
- Coordinate logistics and inform people on meeting times and locations
- Meeting facilitation and graphic recording
- Copy and distribute meeting materials

- Receive counsel from consulting team
- Develop document of recommendations of state discussion group and technical advisory committee for presentation to appropriate groups
- Keep an eye on the big picture
- Send out final draft regulations to all participants
- Summarize meeting notes and distribute prior to the next meeting
  - Meet before, during, and after each meeting
  - Distribute minutes within one week

Consulting Team

Members: Private Sector, SWRCB, RWQCB, RCRC, CCDEH, and Academia

Charter: Consult with the project support team and share responsibility for achieving desired meeting results

Roles and Responsibilities:

- Serve as consultants to the project support team
- Offer input as to who, how, and what
- Develop criteria for group membership
- Identify possible members
- Review meeting agendas
- Provide feedback to project support team
- Act as the project champions
  - Initial meeting

Writers of the Regulations

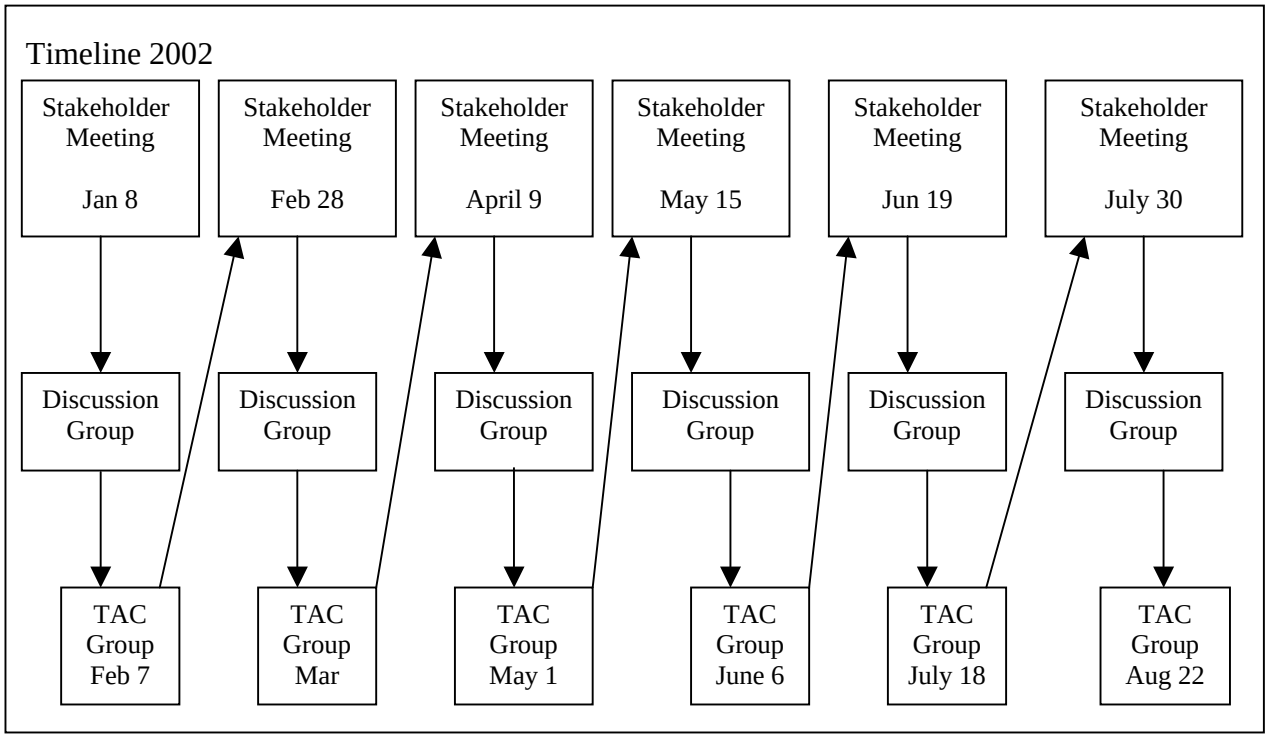
Members: SWRCB Staff

Roles and Responsibilities:

- Review recommendations and comments from all groups
- Use products coming out of the process to write draft regulations to be presented to the board

The project was designed to take the work product from the first group (stakeholder advisory team) and have it reviewed and considered by the next group (state discussion group) and then the next (technical advisory committee) and then back to the first group. This cycle was repeated six times. Additionally, the seven requirements of AB 885 were also scheduled for consideration during specific meeting dates. Figure 4-1 shows a diagram of how the process was designed to operate, which represents an ambitious timeline.

Figure 4-1
SWRCB Regulation Timeline



Stakeholder Group Meetings

A stakeholder group was provided an agenda prior to each meeting, which included desired outcomes, that is, what was to be accomplished during the meeting. For example, for the January 8, 2002 Stakeholder Advisory Team meeting, desired outcomes were listed as:

1. Closure regarding scope of work and how we will approach it

2. Input on approach to siting and selection of OSTS based on an understanding of soil characteristics and other site conditions

Members were provided with summary reports from previous meetings and information/work product from the other advisory groups. A “parking lot” was set up to place issues that were not directly identified as mandated by the legislation and, therefore, determined by the SWRCB as not required to be in regulation. Additional items deemed outside the scope of discussion were also put into the parking lot for possible future consideration.

A clarification was later added to the desired outcomes instructions that read: "Remember, your role is to provide input, not necessarily reach agreement." There had been extended discussions trying to resolve and reach consensus on several issues, which tended to bog down the process. These issues were put into the parking lot for later consideration.

Format for Meetings

The project began in earnest on January 8, 2002 with the first Stakeholder Advisory Team meeting. The concept of using a "straw-man" (example regulation as a model) was discarded as a format. Instead, the first of the seven requirements (Minimum Operating Requirements—Siting, Construction, Performance) was taken under consideration. The small group comments from the kickoff meeting were used as the basis for the discussion. The group was tasked with determining what is important for siting systems and what should be included in regulation. This format—discussing an issue (one of the seven requirements of AB 885) and deciding what was necessary in regulation—was used for the balance of the stakeholder meetings.

The State Discussion Group met on January 22, 2002 and discussed the same issue (siting), and reviewed the work of the Stakeholder Advisory Team. They condensed and revised this work to what they felt were the critical elements. The Technical Advisory Committee (TAC) then considered this critique on February 7. The TAC considered the requirements and discussed the technical components involved in any proposed regulation. This information then was passed to the Writers of the Regulations Group. The TAC comments and suggestions were also provided to the Stakeholders Advisory Team for review at their next meeting. This methodology was used to consider all seven of the AB 885 requirements.

Outside reference materials and information were also brought into the process for consideration. These included portions of regulations from other states such as Arizona and North Carolina. In some cases portions of these regulations were modified and placed into the draft regulations in an effort to address specific issues.

For example, the Arizona method (formula) to determine sizing of soil dispersal as a function of effluent quality was inserted into the draft regulation language by the Writers of the Regulations. The stakeholder groups generally had not reviewed this material and were surprised to see it appear in the draft, as it was not a result of their deliberations. While these insertions were an attempt to resolve issues and may have had merit, the manner in which it was introduced tended to undermine acceptance.

Concerns and Issues

Approximately three months into the project a number of the participants expressed concern that the process was losing direction due to several factors including:

- Insufficient SWRCB staff resources dedicated to the project (SWRCB was attempting to fill a staff vacancy dedicated to the project)
- The need to provide a large context (big picture) framework for the regulations
- Concerns over what were the source(s) of the regulatory language being developed
- Concerns over finishing the project within the allotted timeframe

Also, it became evident that the Project Support Group was having difficulty keeping up with processing and producing the group summaries in a timely manner. Proposed draft regulatory language from the Writers of the Regulations suffered from the same problem. These delays became more severe as the project proceeded.

Electronic communication (e-mail) was used throughout the project. E-mail proved valuable in disseminating information and especially in sharing comments on the proposed draft regulation. Considerable time was devoted to refining the language of the draft proposals by a number of the participants. Alternative language was offered to specific parts of the draft, often in an effort to address a particular group's concern. This effort can often provide insight into what is important to any particular group.

By the mid-summer 2002 it became clear that meeting the timeline to complete the project was problematic. A "loose ends" meeting was held in early September to resolve some of the outstanding issues. These included exemption criteria, determining cumulative impacts, depth-to-groundwater requirements, management approaches, and the need for a technology certification program. These represented some major concerns for some of the stakeholders.

Wrap-Up Meetings

On September 12 and 13 the wrap-up meeting was held with all of the stakeholder groups in attendance. The most recent version of the draft regulation (Round VI) was discussed. Work on the draft was not complete and further illustrated the difficulty that SWRCB was having in keeping up with the process. Concern was expressed that a number of important issues remained outstanding and were not addressed in the latest draft regulation language.

Small-group and whole-group discussions took place over the course of these two days. Several key stakeholder group representatives including CCDEH, COWA, RCRC, and Heal the Bay expressed that the regulations did not address all of the seven points required in the legislation and that the structure of the regulation was confusing and in many instances too prescriptive. Each of these groups also expressed unique concerns. The group as a whole voiced the need to extend the process and resolve some of the remaining issues. SWRCB staff took this under advisement.

Over the next several weeks a number of stakeholders worked with the SWRCB to resolve the concerns. The groups sent written communications to the SWRCB summarizing their impression of the wrap-up meeting and detailing their concerns. Several had more global concerns—that the proposed regulation did not address important parts of the legislation. Other comments outlined where specific provisions of the draft regulation did not meet their expectation. The SWRCB scheduled a final wrap-up meeting for October.

The final wrap-up meeting was held on October 23, 2002. Approximately 40 stakeholders attended. The format was similar to the September meeting with small-group and whole-group discussions focusing on the unresolved issues. Several fundamental issues remained, including technical concerns such as separation to groundwater, and administrative issues such as exemption criteria, definitions of major and minor repair, and the memorandum of understanding language (the formal document between the local implementing agency and the RWQCB). More critical was general dissatisfaction with the structure of the regulations and performance requirements for areas adjacent to impaired surface water (303(d)). Participants also expressed that the proposed draft document was in rough form and still not complete. The SWRCB advised that the timeline for completing and releasing the draft regulation was set back by one month.

The October meeting ended the SWRCB stakeholder project. A summary report of the meeting was provided to all of the stakeholders. Following the meeting, key stakeholders including CCDEH, COWA, RCRC, CAR, Heal the Bay, and others expressed that the draft regulations were not satisfactory. Several of the groups provided the SWRCB with comments and suggested changes to the proposed regulations.

The next section describes the alternative regulation effort that was initiated by several interest groups and the SWRCB to continue working towards producing draft regulations.

The Alternative Regulation Development Effort

In early December 2002 COWA held a conference to review the status of the proposed regulations. This conference had been scheduled with the anticipation that the final draft regulations would be available for review by attendees. The draft was not available. At this conference COWA, CCDEH, and several other stakeholders agreed to form a coalition to initiate a joint effort to write alternative regulations. The alternative would be presented as a counter to the SWRCB version and introduced as part of the formal CEQA process. The CEQA review had as of that date not been initiated, because no proposed regulations were available for the review.

The coalition (AB 885 Regulations Ad Hoc Drafting Group) began meeting in late December 2002 and in January, February, and March 2003. Principals in this effort were representatives from COWA, CCDEH, and CWTRC. The group spent considerable time reviewing and commenting on the November 2002 version of the SWRCB AB 885 draft regulations. The process resulted in an exceptionally thorough evaluation and a reformatting of the entire draft. The work product was shared with other interest groups including Heal the Bay, CAR, and RCRC, and comments were solicited and received.

A workshop sponsored by CCDEH and CWTRC was held in Sacramento on February 24, 2003 to review the draft alternative. The SWRCB was invited along with all of the stakeholders from the SWRCB stakeholder project. As a result, the SWRCB agreed to a series of meetings with the ad hoc drafting group to develop "compromise" regulations.

Meetings were held between the SWRCB and a small group representing CCDEH, COWA, CWTRC, and RCRC through April 2003 and progress was made in resolving some of the outstanding issues previously identified during the formal stakeholder project. Additional meetings were planned but never took place, because they were dependent on SWRCB rewrites. These rewrites were continuously delayed by the SWRCB and there was no reason to meet until proposed regulations were available for review and comment. As a result, the ad hoc effort to develop compromise regulations came to a halt.

By this time it was evident that the regulations would not be ready to implement by the January 2004 deadline mandated by the legislation. Any regulations would still need to be reviewed by the Office of Administrative Law as well as go through the formal public comment periods required by law. Additionally, the regulations would need to be reviewed through the CEQA process.

Statewide Regulators Conference—December 3 and 4, 2003

CCDEH and CWTRC proceeded to plan and schedule a statewide conference in December 2003 to review the final draft regulations, focusing on implementation issues. Specifically, these issues concerned how the local implementing agencies and the RWQCBs were to work together to develop the required local program to implement the regulations. The event was scheduled for December 3 and 4 with assurances from SWRCB that the draft regulations would be released in time for the conference. As the conference date approached it became clear that draft regulations would not be available. The SWRCB did commit to providing an update of their progress.

The conference purpose was to provide a forum for local, regional, and state agencies to develop a consistent plan for the effective and efficient implementation of AB 885 and the pending regulations with the following objectives:

- Provide a thorough analysis of the key elements of AB 885 and the proposed regulations
- Seek agreement on the best approach to resolving areas of concern
- Enhance communication and collaboration among implementing agencies
- Propose ways to address issues not adequately covered in AB 885 or the proposed regulations

Workshop Sponsors

Workshop sponsors included:

- CCDEH
- California State University, Chico
- CWTRC
- SWRCB
- RCRC
- US EPA

Funding was provided by CCDEH through a grant from US EPA Region IX, and by CWTRC by a grant from the NDWRCDP through a cooperative agreement with the US EPA.

Approximately 140 people attended the conference including:

- Federal, state, and local regulatory personnel
- County administrators and elected officials
- Private sector practitioners
- Other interested parties

Many local government representatives expressed disappointment that the RWQCBs were not well represented. RWQCB staff members are the state regulators that have oversight over the local programs.

This conference was the first statewide conference for onsite system regulators in California. Similar conferences are currently held for most of the other environmental health programs and have proven invaluable in providing opportunities for the information. Representatives from throughout the state are able to discuss common issues and learn from each other's experiences. A summary of the workshop's evaluation scores is shown in Table 4-2.

Table 4-2
Regulator's Conference Evaluation

Onsite Wastewater Treatment Regulators' Conference **December 3 and 4, 2003** **Feedback and Evaluation Summary**	
Evaluation Question	**Summary of Responses**
How helpful was the workshop to you and/or your organization in understanding the SWRCB's proposed regulations?	Very helpful 33 Somewhat helpful 34 Not helpful 0
How helpful was this workshop to you and /or your organization in networking with other regulators?	Very helpful 54 Somewhat helpful 15 Not helpful 0

SWRCB Revised Approach

The SWRCB presented a revised approach to the regulations, from prescriptive standards to increased reliance on performance standards for protection of groundwater quality. The concept was based on a staff briefing presented to the SWRCB entitled *AB 885 Onsite Wastewater Treatment Systems—Issue Paper on Proposed Regulations* (see Appendix I). The briefing paper proposed to shift from the previous prescriptive approach to a performance approach based on numerical standards for key constituents of concern. The proposal would require all systems installed or repaired by 2009 to have additional pretreatment and disinfection to meet the numerical standards. In effect the proposal established the point of compliance to be the water table below the dispersal component with effluent at this point to meet drinking water standards.

A number of groups, including CCDEH, COWA, and RCRC questioned the basis and practicality of the proposal. In a letter to the Chair of the SWRCB, CCDEH summarized their position as follows:

> "While CCDEH supports the principle of performance standards, we believe that one set cannot be reasonably applied to every condition around the entire state and that any such standard needs to be linked to water quality objectives defined in the basin plans. Any performance standard must be described in the context of the point of compliance and a clear distinction between the use of the performance standard as a "treatment standard" versus a "water quality objective" must be made. We do concur with setting a more protective standard for 303(d) waters that have been impaired by onsite systems or by effluents that are associated with onsite systems."

As noted previously, the regulation development process was put on hold. This postponement was a result of a governor's executive order that was issued in November 2003. There have not been any revised versions of the regulations offered by either the SWRCB or any of the other interest groups as of the publication of this report.

5 SWRCB STAKEHOLDER PROJECT CRITIQUE

The SWRCB stakeholder project was a form of the participatory decision-making model often used to find solutions to difficult problems by enlisting participation from all of the interest groups. This model has proven to be effective in many situations. In this case it was used to satisfy a provision in the legislation that called for formulating regulations: "…in consultation…with interested parties." Consultation was not defined, but it was widely taken to mean working with the various government agencies and interest groups involved with onsite sewage treatment to develop the regulations. Producing regulations from a consultative process is complex and time consuming. Some of the potential difficulties that are or can be encountered were described previously.

Distinguishing Features of the SWRCB Stakeholder Project

The project design had several features that distinguish it from some of the more traditional stakeholder models. One noteworthy difference was to identify and separate the stakeholders into semi-autonomous groups/teams. These groups meet separately and on different days with coordination provided by the Project Support Team. This schedule was implemented to provide a time interval between meetings to enable the Project Support Team to compile and summarize information that could then be transferred to the other teams prior to their respective meetings. Work from each team was passed on to the others for review and comment. The teams did not meet together as a whole until the loose ends and wrap-up meetings at the end of the project.

The broadest cross-section of interest groups was represented on the Stakeholder Advisory Team and the Technical Advisory Committee. The narrowest representation was the State Discussion Group, which consisted of state staff from the RWQCBs, the SWRCB, and DHS.

Another distinguishing feature of this project was that there were two additional teams involved that were not identified as a formal part of the stakeholder process. One of these, the Consulting Team, functioned to coordinate and guide the process during the planning stages. The other, Writers of the Regulations, was the in-house regulation writing team of the SWRCB. Several members of this team participated as observers, and also participated to some extent during the stakeholder meetings.

Once the project was underway, the Project Support Team, which consisted of the facilitators and SWRCB staff, coordinated, defined the scope, and guided the process. The Project Support Team is a necessary component for most stakeholder projects. In this project they synthesized the information from each of the groups for transfer to the other groups, formulated the agenda, and facilitated the meetings.

This structure is a variation on most traditional stakeholder processes. Typically, all the interests meet as one group, whereas in this project, stakeholders were divided into three primary groups. This variation is important relative to how the process was eventually perceived by a number of the participants.

The Purpose of This Critique

The stakeholder project was initiated to enlist assistance from interested parties in developing draft regulations in a form that could be advanced to the formal rule-making process. Once the stakeholder project was completed the formal rule-making process was to be initiated, eventually resulting in minimum statewide standards for onsite sewage treatment systems. The stakeholder project was initially designed to be completed in about six months, but was adjusted to span nearly eleven months. This time extension was agreed to in an effort to complete the work of the groups.

The project did not result in producing draft regulations. Understanding why agreement was not reached and what can be learned from this experience is important. The purpose of this critique is to help provide some of those answers. This portion of the critique addresses only the stakeholder project as it relates to the rule-making process. There is a distinction between the two—the stakeholder project and the rule-making process—although the distinction is subtle in the minds of many of the participants. A general critique of the rule-making process will be discussed later in this report as part of the conclusions.

Note: The author of this report participated in both the Stakeholder Advisory Group and the Technical Advisory Committee during this project.

Survey of Participants

As part of this critique it was necessary to determine how the participants perceived the stakeholder project and its effectiveness. There was general dissatisfaction expressed by a number of key interest groups over the inability to produce draft language following the final wrap-up meeting in October 2002. This dissatisfaction was evidenced by written communication (see Appendix H) to the SWRCB, notably from CCDEH, Heal the Bay, California Association of Realtors, COWA, and the Regional Council of Rural Counties. While the particulars of the expressed concerns may have varied, the consensus was general dissatisfaction with the lack of outcome from the stakeholder project.

The organizations had clearly expressed their position, but feedback was not provided from the individual participants about how they felt about the process. To help obtain this information, a questionnaire/survey was developed. The questionnaire/survey was sent to all of the stakeholder project participants. Each participant was sent an e-mail with an explanation of the purpose and a survey form (see Appendix F). Participants were asked to answer a series of yes and no questions along with several questions requiring written responses. Participants were also encouraged to add written comments to their yes and no answers.

The survey request was distributed on two separate occasions. The instructions included the statement: "…This is not a critique of the overall regulation development process but just of the facilitated stakeholder project." Separation of the stakeholder project from the total rule-making process was necessary. The stakeholder project was intended to support the rule-making process by helping in developing draft regulations. The stakeholder project was not designed to produce the final draft regulation, which was delegated to the SWRCB Writers of the Regulations team. This distinction was probably lost on some of the participants.

Table 5-1 summarizes the results of the questionnaire/survey. A total of 19 responses were received. As noted previously, all of the participants were sent questionnaires. One important caveat is that those responding should not be construed as representing a random sample. Those who chose to respond did so for their own reasons. These reasons were not explored, but one can expect that each responder felt strongly enough to take the time to answer the questionnaire. Therefore, any conclusions drawn need to be viewed in this context, and the limits on what can be interpreted/determined from the responses considered.

Notes on the Survey Results and Information Presented Table 5-1

Any question that was unanswered (no response) was excluded from calculating the percentages. The "undecided" responses were included in the calculation and in some cases "undecided" was assigned to a response based on the totality of the answer (neither clearly yes or no, but with qualifying language that implied that the responder was undecided). Questions that required verbal answers, that is, could not be answered by simply yes or no, are not summarized in Table 5-1. A few of those responses are addresses later in this report as they add a qualitative component that enhances the discussion.

Table 5-1
Questionnaire Results

Summary Table—Questionnaire Responses			
Question	**Yes**	**No**	**Und**
Was the process explained well?	100%	0%	0%
Was the process clearly defined?	100%	0%	0%
Did the instructions/direction make it clear what the product of the process was to be?	93%	7%	0%
Did the instructions/direction make it clear how the work product was to be achieved?	69%	31%	0%
Was the process explained well in terms of defining the roles and responsibilities?	92%	8%	0%
Were the roles and responsibilities adhered to?	54%	38%	8%
Was the format conducive to open dialogue?	100%	0%	0%
Was the format conducive to open transfer of accurate information?	93%	0%	7%
Was the process consistent?	82%	18%	0%
Were adjustments/changes made in the process in response to feedback from the group?	54%	38%	8%
Were adjustments made in the process to reflect the stakeholder group desires?	75%	17%	8%
Were you able to participate to your satisfaction?	85%	15%	0%
Were you given the opportunity to present your views adequately?	100%	0%	0%
Were the views of the stakeholders you represented adequately presented?	100%	0%	0%
Were your views adequately presented/transferred to the rest of the group?	92%	8%	0%
Were you generally satisfied with the process?	43%	50%	7%
Did the process result in the desired/expected outcome as described at the beginning?	15%	62%	23%
Did the process meet your expectations and achieve your desired/expected outcome?	23%	54%	23%
Did SWRCB staff and the facilitators/consultants adequately support the process?	92%	8%	0%

Analysis of the Results

This analysis is based on the questionnaire responses and to some extent on personal observation of the project. Also, the analysis is partially based on the expanded written responses to the questions and personal communication with stakeholders. These will be cited by example whenever appropriate.

The questions with a greater than two-thirds approval (yes responses) are listed in Table 5-2.

Table 5-2
All Responses With Greater Than Two-Thirds Approval

Question	Yes	No	Und
Was the process explained well?	100%	0%	0%
Was the process clearly defined?	100%	0%	0%
Was the format conducive to open dialogue?	100%	0%	0%
Were your given the opportunity to present your views adequately?	100%	0%	0%
Were the views of the stakeholders you represented adequately presented?	100%	0%	0%
Did the instructions/direction make it clear what the product of the process was to be?	93%	7%	0%
Was the format conducive to open transfer of accurate information?	93%	0%	7%
Were your views adequately presented/transferred to the rest of the group?	92%	8%	0%
Was the process explained well in terms of defining the roles and responsibilities	92%	8%	0%
Were you able to participate to your satisfaction?	85%	15%	0%
Was the process consistent?	82%	18%	0%
Were adjustments made in the process to reflect the stakeholder group desires?	75%	17%	8%
Did the instructions/direction make it clear how the work product was to be achieved?	69%	31%	0%

The questions listed in Table 5-2 deal with the how effectively the structure of the project supported the purpose. In other words, the questions help measure how well the design was understood and implemented.

The Design Was Capable of Producing the Desired Outcome

The results indicate that the design was capable of producing the desired outcome. Most participants felt that communication and exchange of information was satisfactory. This aspect is extremely important in a stakeholder process, as it is the basis for reaching informed decisions and promotes active participation. Therefore, the interchange between the participants and the facilitation in this respect worked well. The responses reflect how stakeholders felt about the process and how it functioned relative to their own group.

Almost one-third of the respondents were not clear about what work product was to be achieved. This probably represents a disconnect between the perception that the draft rule was to be a consensus document generated by the stakeholders and the reality that the draft rule was the responsibility of the Writers of the Regulations group. On a number of occasions the project team reminded the participants that the purpose of the discussions was not to reach consensus, but to explore the alternatives and to get the issues on the table. Those items that were outside the scope of the prescribed discussion were put into a "parking lot" for possible future consideration.

The Results Were Overall Dissatisfaction With the Outcome

Table 5-3 demonstrates that, while there was mixed approval of how the project functioned (the process), there was overall dissatisfaction with the outcome.

Table 5-3
Project Outcome Approval Rating

Question	Yes	No	Und
Were you generally satisfied with the process?	43%	50%	7%
Did the process result in the desired/expected outcome as described at the beginning?	15%	62%	23%
Did the process meet your expectations and achieve your desired/expected outcome?	23%	54%	23%

The responses in Table 5-3 all relate to the outcome of the project from the stakeholder perspective. Members of several stakeholder groups had expressed concern several months into the project that progress was not going according to plan and these responses are reflective of that sentiment.

The SWRCB did attempt to reach a satisfactory end point by extending the timeline for the project. However, during the two wrap-up sessions it was clear that several fundamental differences remained between some of the key stakeholder groups and the SWRCB. If extending the stakeholder project further would have resulted in the expected draft regulations is an unknown. The SWRCB was facing the mandated completion dates for the regulations.

The respondents were nearly split in their responses to the two questions in Table 5-4.

Table 5-4
Roles and Responsibilities and Responses to Feedback

Question	Yes	No	Und
Were the roles and responsibilities adhered to?	54%	38%	8%
Were adjustments/changes made in the process in response to feedback from the group?	54%	38%	8%

The roles and responsibilities were defined at the start of the project; however, based on this response, uncertainty developed. This uncertainty also may reflect that the role/function of the Technical Advisory Committee and the Stakeholder Advisory Team were perceived by a number of participants as overlapping, and it became unclear why there were two groups. There was little differentiation between what the two groups were discussing after several months into the project. Two separate stakeholder groups, each processing and acting on essentially the same information, begin to merge their functions and may slow down the process.

Two groups also required that the Project Support Team to support the efforts of both groups, which resulted in the summary reports moving from one group to the next in a less timely manner, that is, on several occasions they were made available just days before a scheduled meeting. Time became a critical element for this project.

Additionally, on a number of occasions the draft language proposed by the Writers of the Regulations did not, in the opinion of many stakeholders, derive from what was discussed at the stakeholder meetings. This divergence left stakeholders with the sense of not knowing what their roles were in helping to draft the regulations—there was a disconnect between what they thought they were developing and what was being produced by the Writers of the Regulations team. One stakeholder commented these were "…undirected SWRCB regulation 'rewrites'." This digression also brings into question how the participants viewed their value and contribution to the project. Many of these reactions were perceptions and, even if not based in fact, became a reality and could have led to a sense of futility.

The Writers of the Regulations had a difficult time assimilating and translating the stakeholder input into draft regulations. This difficulty was due to inadequate staff resources to do the work, as well as unresolved issues among the stakeholders and/or between the groups. Proposed draft language in response to input from one group may not have corresponded to the issues raised by another group.

The inadequate staff resources issue became evident towards the end of the project when the SWRCB released the wrap-up draft regulations a few days prior to the September 6, 2002 wrap-up meeting. Similarly, the draft revisions from the wrap-up meeting were made available less than a week before the final wrap-up meeting, which left little time for the stakeholders to review, prepare, and respond.

While there was a general sense that the Project Support Team was supporting the process, many of the responses included qualifying language. This qualifying language is best illustrated by these two comments that sum up the general sentiment: "They tried to…" and "To the best of their ability…". The implication is that the Project Support Team did the best that could be expected under the circumstances, as shown in Table 5-5.

Table 5-5
Support of the Process

Question	Yes	No	Und
Did SWRCB staff and the facilitators/consultants adequately support the process?	43%	50%	7%

There were also reservations concerning whether the process was adjusted in response to group feedback (see Table 5-4). These reservations related primarily to recognition by the groups that there were serious outstanding issues—especially when it came to meeting the intent of the legislation—that were not being resolved before progressing further. Several key stakeholders felt that agreement on the scope of the regulations was fundamental to proceeding, but the process continued incrementally dealing with specific issues of a less global nature, such as some of the proposed prescriptive requirements and specific wording.

Along this same premise, several respondents voiced concern that the work being produced did not reflect consideration of some fundamental implementation issues. As one respondent put it: "… that the process seemed to preclude any discussion about the implications of what was being discussed and how any regulatory proposals would be actually implemented." Consideration of fundamental implementation issues is critical for local implementing agencies, and a number of stakeholders expressed the wish to ground the discussions with practical considerations.

Summary of the Survey Critique

The questionnaire results indicate that a majority of stakeholders were generally satisfied with the design of the stakeholder project, but were disappointed with the results. Participants understood and approved of the design as presented and felt that the process itself worked well within their own group. These results appear to be contradictory—stakeholders were satisfied with the process, but were dissatisfied with the outcome.

Stakeholder satisfaction can be attributed to the fact that participants felt that the process design enabled open dialogue and opportunity for sharing information, so the opportunity for productive group dynamics within each group was provided and considered satisfactory. Each group felt that they were doing a credible job and producing what was expected.

Taken as a whole, however, the project did not produce the desired outcome. There are several possible explanations for this, including that the project design was:

- Satisfactory and would have worked given sufficient resources and time
- Flawed, making achieving the goal especially difficult
- Flawed but still workable and could have achieved the goal given more resources and time

Examination of the Design

Examining the design more critically reveals several features that inherently could be predictors of the inability to produce satisfactory results.

Sufficient time to complete the task is critical. There are potential problems that may be insurmountable unless ample time is allowed for the process to run its course. The process will not reach a satisfactory outcome unless the group can collectively go through all of steps necessary to resolve issues. Shortcuts are not productive. Soliciting the time and resources of interest groups also requires that sufficient consideration be given to both the resources necessary to see the process through, as well as understanding the potential complexity of attaining viable solutions.

One feature of this project was to utilize several groups operating concurrently to help draft the regulations. The two primary public groups were the Stakeholder Advisory Team and the Technical Advisory Committee. This arrangement separated the two public groups and created what could be viewed as duplicative or overlapping efforts as each group was considering essentially the same material, but from ostensibly different perspectives.

The problem with this arrangement is that each group had a different makeup. Issues were considered from each group's own dynamic and perspective, and within each group there were divergent opinions on issues. As a group worked through an issue they may have developed a common understanding and possibly a convergent position, which were then transferred to the other group through a summary report. The content of the report presented the findings, but could not fully reflect the deliberative process and context used to develop the findings—something became lost in the translation. The second group would then take the information and go through a similar process, again with divergent views, possibly developing a common understanding and convergent view on an issue. This design did not allow the two groups to develop a common understanding and convergent view as a total group.

A number of participants expressed concern that this process resulted in filtering by the Project Support Team, which resulted in a loss of qualitative content. Therefore, each group's work product reflected the makeup of the group and the group's own participatory decision-making, but not necessarily that of the other stakeholder groups involved in the project.

Separating into groups also assigns roles to the participants with the intent of narrowing their consideration to their assigned roles. In practice, however, each group ended up grappling with

and working through the same issues, whether technical or otherwise. The result was a parallel, but not necessarily a coordinated, process.

Initially participants took on their assigned roles, such as technical expert, environmentalist, regulator, or other roles. For example, the Technical Advisory Committee focused on the technical issues and on determining precise language—even if they did not necessarily agree with what was being proposed. They were challenged to do the wrong things better. The other groups did the same thing, which resulted in several versions of solutions to the technical issues. No group was completely comfortable in accepting the expertise/work of the others and the structure did not allow for a final arbiter or joint process to resolve any discrepancies. This final arbitration was assumed by the Writers of the Regulations, and perceived by stakeholders as being outside the process itself.

Splitting into groups may also have inadvertently set up a subtle hierarchy:

- **Stakeholder Advisory Team**—the most broad-based
- **Technical Advisory Committee**—technical experts with more knowledge
- **State Discussion Group**—with both expertise and an understanding of political and administrative structure
- **Writers of the Regulations**—put all of the pieces together to create the draft language

Each group was tasked with providing input into a work product for which they did not have the benefit of appreciating the full context in which it was developed. This situation left some participants wondering which groups and which participants really were influential. This attitude is exemplified by participants who questioned who was making the decisions on behalf of the group because the work product (the regulatory language presented to the groups) did not necessarily reflect what participants felt was the intent/content of their input.

Participatory Decision-Making as Designed and as Perceived

Figure 5-1 illustrates the intended flow of information (the design) and Figure 5-2 illustrates what was generally perceived as what actually occurred. The arrows indicate the flow of information. The major difference between these two figures is that one implies a group decision-making process and the other implies that the process proceeds through a chain or hierarchy.

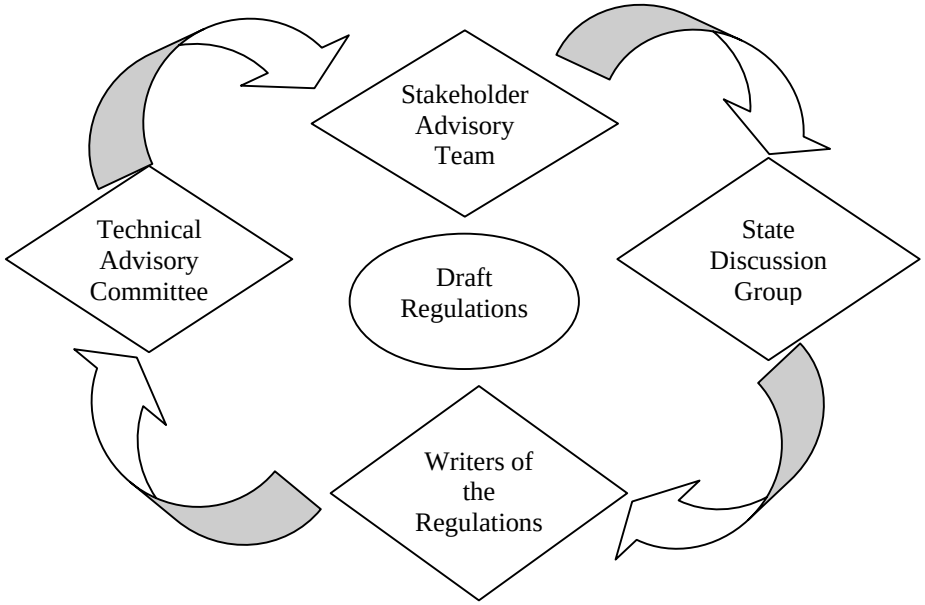


Figure 5-1
Stakeholder Project: Participatory Decision-Making as Designed

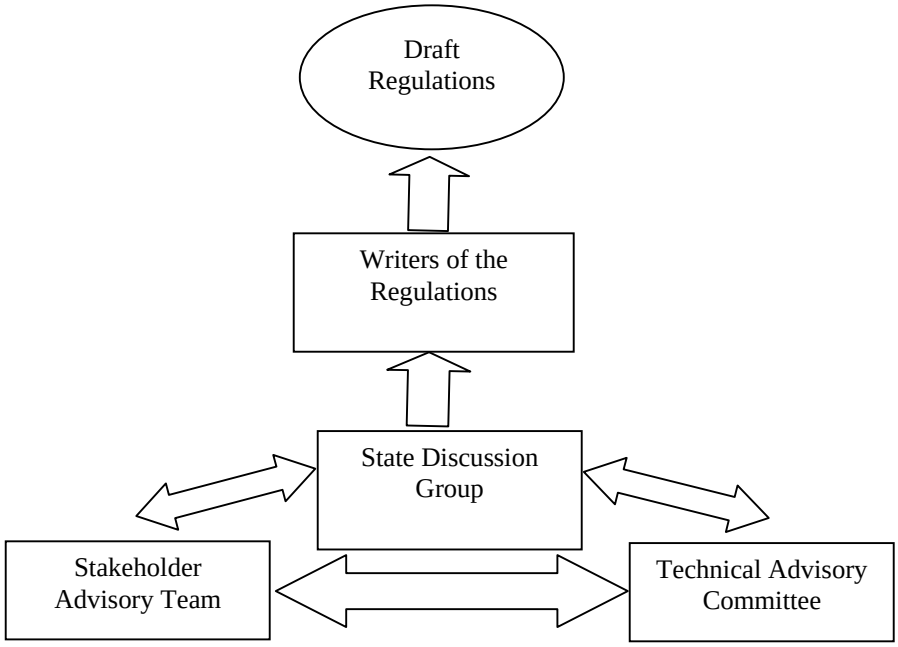


Figure 5-2
Stakeholder Project: Participatory Decision-Making as Perceived

Note that while Figure 5-1 implies a group process, the process is in fact a series of separate processes where the groups pass information to each other but do not truly function as a group. While each group has an internal group-decision making process, the aggregate does not make decisions as a group.

The second diagram represents how the project was perceived by a number of the stakeholders. While there was exchange of information between the groups via the summaries developed by the Project Support Team, the product (the draft regulation language) was viewed by many as not reflecting their views and in effect outside of the group process. This perception demonstrates that, unless the work product reflects what individuals believe is their input, the design, regardless of how well intentioned, becomes irrelevant. The output must parallel the input to retain credibility.

This observation was expressed by all of the groups that sent written comments to the SWRCB (see Appendix H) following the final wrap-up meeting. The disconnect between what the group believed to be the direction and the form of the proposed draft regulation language was pointed out on a number of occasions. The idealized flow of information envisioned at the start of the project was never fully realized.

Lessons Learned

Participatory decision-making (the stakeholder process) is a tool that can be effectively used to find solutions for difficult issues that involve public policy. Developing statewide regulations unquestionably fits into the realm of difficult issues. The process must be carefully planned, follow recognized methodology, and be given adequate time to enable participants to work through the issues. The process must also have sufficient resources to administratively manage the project and to adhere to the timelines in order to keep stakeholders engaged and maintain their sense of purpose.

Most importantly, if a government agency starts a stakeholder process, it must be willing and able to see the process through to some satisfactory conclusion. Failing to do so results in alienating groups and individuals, and can result in the interest groups retrenching to their initial positions. In fact, the interest group might be less inclined to participate in future collaborative efforts. As a result, a consensus solution will be more difficult to reach, with each group compelled to act unilaterally. The failure of the stakeholder project described in this report was a lost opportunity.

As noted earlier, the SWRCB is proposing to place strict treatment goals on all onsite systems constructed or repaired after 2009. This proposal (see Appendix I) was advanced after the stakeholder project was completed and, as such, was not a direct result of the stakeholder project and the group discussions. Many interest groups have reacted negatively regardless of merits the SWRCB proposal may contain, which is no surprise. The new proposal will go through the mandated public comment and review periods, allowing for public and interest group input; however, many stakeholder project participants continue to question the value of their time and effort. The SWRCB will need to reengage these groups into a productive relationship.

Assess the Scope and Impact of the Project

The complexity and potential impact of this type of project should not be underestimated. This project involved crafting regulations onto an existing system that currently uses more than 60 individual local regulations, that reflect local needs and practices developed over many years,

and nine different regional guidelines. Negotiating acceptable statewide regulations in this set of circumstances requires bringing all of the interests together and working towards overcoming the institutional inertia and bias.

Reaching agreement among the various interests on these rules is a challenge that requires a serious commitment on the part of the organization overseeing the process. This commitment also involves providing the technical support necessary to understand and resolve potential technical issues. The SWRCB had not been involved to any significant extent with onsite sewage treatment for more than 10 years. As a result, the SWRCB did not have adequate staff technical resources or experience in onsite issues. While SWRCB staff quickly became familiar with the technical aspects, they had neither the benefit of understanding how the technical aspects fit into the broader context of implementation, nor the institutional memory or history to have a working understanding of the issues.

The SWRCB was allocated funding to develop the regulations. The allocation was to cover costs of the stakeholder project (facilitation), the CEQA process, several studies to further the understanding and status of onsite treatment, and SWRCB staff. Staff funding was sufficient to cover two employees, though only one dedicated staff member was in place for most of the project. In hindsight, this level of staffing was not enough.

The role of the facilitators must be clearly defined. Typically, they are not technically versed in the issue. Their function is to help guide the group through the project, and they are not expected to act as arbiters. Technical support and defining the project must come from the organization conducting the project.

Define the Purpose and Understand Expectations

Clearly defining the purpose of the project is critical. Participants have a number of expectations from the process—some realistic and some unrealistic. They expect that their contribution will be considered in developing the solution. Regardless of how carefully the purpose is defined, participants will work from within their own framework of values and expectations. Keeping everyone focused on the purpose can develop a shared vision of the solution.

The purpose of the project must continuously be revisited to maintain the direction and focus. Groups will find their own direction and get caught up in unproductive activity or get sidetracked trying to finesse a minor point, which can lead to frustration. There is a fine line between getting bogged down in side issues and recognizing when an issue has emerged that needs to be moved up in consideration.

Unanticipated issues or concerns whose importance was overlooked justify discussion and resolution. If the issue has a direct bearing on the perceived purpose, attention to the issue is essential. Using the jargon of several stakeholders, these unresolved issues could be “deal breakers” and therefore need to be addressed and resolved.

Plan and Design Carefully

Stakeholder projects require careful planning and should adhere to recognized methodologies in order to be successful. While projects can be modified and remain dynamic, they should utilize proven methods in order to best use the talents and contributions of the participants. Diverging from proven methods needs to be carefully planned and considered in order to avoid unintended consequences.

Conceptually, dividing the stakeholders into groups may appear to be an efficient use of time and resources. As this particular project progressed, however, the quality and context of communication suffered between the groups, even though communication within the groups worked well. Because each of the groups was not necessarily considering issues concurrently, a broad sense of the direction that the overall project was moving toward is difficult to establish. On several occasions groups were asked to revisit issues that they had felt had been satisfactorily resolved. Overall direction and focus of the project can get lost in an attempt to keep up with the individual parts. Keeping all of the stakeholders meeting together, while logistically more difficult, results in all participants going through the same process and experience. This approach is important when recognizing the typical group dynamic of progressing from a divergent to a convergent view.

Project design must recognize and accommodate the potential pitfalls of the stakeholder process described previously (see Chapter 4, *The Process of Regulations Development—AB 885*, The General Stakeholder Process section). Important considerations are:

- Recognize the global reach of regulations designed for a large and diverse state. This statement is especially true when local or historical practices are at odds with the new direction that legislation that affects an entire state may dictate. Overcoming the inertia developed from long standing practices reflected by the “this is the way we have always done it here and it works for us” attitude is difficult.
- Avoid manipulating or incrementally changing a bad practice to make it better and losing sight of the fact that it is a bad practice. This process takes considerable experience and understanding that goes beyond technical knowledge. The sweep of statewide regulations should avoid getting bogged down in sorting out merits of questionable practices and should focus on regulation that produces the desired result.
- Reinforce that the task is to design what is wanted and getting rid of what is not wanted. Eliminating what is not wanted may leave a gap in addressing an important issue or concern. This consideration again points to the need to keep the purpose/goal always forefront.
- Constantly revisit the intent/mandate of the enabling legislation when developing regulations. The intent/mandate of the enabling legislation frames the scope of what needs to be done. Most importantly, agreement on the intent/mandate must be established. This agreement has to be the first issue that must be resolved so that the purpose can be clearly defined.
- Proactively ensure that there is active representation and participation from all of the key interest groups. Ongoing feedback that evaluates the effectiveness of the process and makes necessary adjustments must be solicited. Acceptance of the final product depends on all of the groups having an investment in the outcome. This acceptance does not mean that there is

agreement on all of the issues but that there was the opportunity to be involved and have positions aired and considered.

- Ensure that regulations that are developed, while possibly technical in nature, make sense to all of the participants. The specific technical solution offered in the regulations is not necessarily as important as the assurance that the intent is met. The "wordsmithing" exercises that were frequently encountered exemplify this point. While getting the exact language is important for the actual rule, it is not as important as relaying what the rule is designed to accomplish. In other words, the rule must cause something or some action that meets the intent.

Plan on Flexibility—the Project Is Dynamic

Stakeholder projects need to be dynamic to enable necessary adjustments as events unfold. In this case, the need for basic agreement on the mandate and what actually was required should have been recognized early on in the process. If this basic agreement could have been reached, drafting the exact language to meet those needs possibly might have been accomplished. Defining and then meeting the intent of the legislation was not kept as the focal point. Clearly, this divergence is more apparent in hindsight, because participants get caught up in the process itself and do not necessarily have an appreciation for what needs to be accomplished.

On a number of occasions stakeholders requested that specific fundamental issues be addressed and resolved. Many of these items were put into a "parking lot" for future resolution. The project team needs to determine when items are of enough significance and concern to elevate them for immediate consideration. The parking lot concept should be relegated to minor issues that fall outside major concerns of the group. Anticipating what the group feels is important is difficult, so the process must be able to adjust to include significant items of concern for resolution.

Recognize and Anticipate Group Behavior/Dynamics

Recognition of common and expected group behavior is essential. Typically, groups involved in participatory decision-making go through a progression (stages in the process). The progression at first identifies divergent views that then are discussed until there is an understanding of the various positions. The progression then slowly evolves to formulate convergent views that can result in a mutually agreeable decision. This progression is the ideal, and each process varies relative to the time needed to work through the stages.

The more complex the issue, the more time is needed to work through the issue. Moving from divergent positions to a group decision means that the totality of interests meets together. While some tasks can be delegated out to committees, for example gathering specific information to bring back to the whole, a group decision and all of the inherent benefits can only be attained if the group considers and struggles with the problem together. Project design needs to be carefully considered to recognize and accommodate common features of group dynamics.

The participants in this project consisted primarily of leaders in organizations, agencies, and private sector entrepreneurs. All of these types of people are accustomed to finding solutions,

formulating policy, and implementing programs. The process must value their contribution and use their talents to help formulate a common solution. Their expectation was to formulate draft regulation and when this did not occur many became disillusioned with the process. The alternative regulation development effort was a direct result.

One of the ground rules for the project (see Table 4-1) included: *differences and problems are acknowledged—not "worked."* A normal ingredient in participatory decision-making is to work through problems toward a common understanding (not necessarily agreement) moving from a divergent to a convergent view. This process may take considerable time—time that was unavailable due to the time constraints of this particular project. There are no shortcuts to circumvent normal group behavior.

Use a Model to Provide Initial Structure

Initially the project was described as using a "straw-man" or model to provide a framework for the discussion. Using this technique provides organization to the deliberations. Regulations typically have an organization that incorporates the administrative and technical issues into a logical structure.

The straw-man technique, however, was not followed. Instead the seven points of the legislation were substituted as the discussion points. This approach required organization built around the seven points, which failed to build the internal relationships needed to develop regulations that were well organized.

An effort was made to develop technical and administrative language for each point, but organizationally tying the pieces together was difficult. Using a model and incorporate the seven points into the model would have been more productive. As noted previously, groups do not accept solutions from others, but need to develop them on their own. This concept, however, should not be confused with providing a structure and organization that can be disassembled and reassembled to reflect the group decision-making.

Recognize Who Is Not Represented

This stakeholder project had one important element that could not be evaluated—the reaction by the general public (the consumer) to any proposed rule. The largest group not at the table during this project was the users of onsite systems. The full impact of any proposed rule was not assessed relative to this important constituency even though they represent 10 percent of the residents in the state. These particular interests are not organized and their interests are often assumed by regulators and/or members of the onsite industry (the private sector practitioners). Rule makers need to be aware that the true test of any rule is acceptance by the general public, as well as those charged with implementation and enforcement. How public reaction plays out is still to be determined.

6 SUMMARY

California has a long history of dealing with the regulation of onsite systems, albeit left up to local jurisdictions to develop and implement. A number of progressive statewide initiatives go back over a period of nearly thirty years. The recommendations from these initiatives were never brought to fruition, even though they would have resulted in some level of statewide standardization of onsite practice. If California had followed through with the 1977 study *Rural Wastewater Disposal Alternatives—Final Report—Phase 1*, the state would possibly have one of the most comprehensive and effective programs in the US.

Recent legislation has mandated that California develop statewide regulations. The SWRCB initiated a rule-making process that included a stakeholder project to elicit input from interested parties. The project set ambitious timelines for completion that, in retrospect, were not realistic. The project arguably did not have adequate resources to complete the task. As a result, the project did not produce draft regulations that were acceptable to a number of key interest groups. Additional efforts were initiated between the SWRCB and these groups to continue working on the regulations after the stakeholder project was concluded. This effort did not yield acceptable draft regulations either.

Stakeholder projects (participatory decision-making) require careful planning and should adhere to recognized methodologies in order to be successful. Participatory decision-making is a tool that can be effectively used to find solutions for difficult issues that involve public policy. While projects can be modified and remain dynamic, they should utilize proven methods in order to best use the talents and contributions of the participants. Divergence from proven methods needs to be carefully planned and considered in order to avoid unintended consequences. The purpose needs to be clear, because the purpose defines the expectations and must be continuously reinforced to keep the project focused.

Key Points for Stakeholder Projects and Lessons Learned

The key points to consider and lessons learned are summarized as follows:

- When a government agency starts a stakeholder process it must be willing and able to see the process through to some satisfactory conclusion; not doing so can result in alienating the interest groups and making future efforts **more** difficult. The failure of any stakeholder project is a lost opportunity and counterproductive.
- Do not underestimate the complexity and potential impact of this type of project, which requires careful assessment and planning.

- Recognize the expectations of the participants. Project design that limits their role in producing a solution does not necessarily correlate with these expectations and can lead to frustration and alienation.
- Recognize the limitations of your resources—conduct a realistic assessment of institutional history and expertise.
- Carefully plan and consider divergence from proven methods in order to avoid unintended consequences.
- Clearly define the purpose of the project. Keep everyone focused on the purpose to develop a shared vision of the solution.
- Ensure that the project is dynamic to enable necessary adjustments as events unfold.
- Address, discuss, and resolve unanticipated issues or concerns whose importance was overlooked during the planning stage—do not set these issues aside for some future resolution.
- Recognize common and expected group behavior. The more complex the issue, the more time is needed to work through the issue—short cuts will not produce satisfactory results.
- Use a model to provide a framework for the discussion. This technique provides an organization to the deliberations.
- Remember who is not at the table. While well intentioned, a group(s) purporting to represent or fully appreciate someone else's position is not necessarily valid. In this case, users (the public) of onsite systems were not represented at the table.

The SWRCB will soon release proposed draft regulations that include strict treatment standards. The fate of this proposal will depend on how well the implementing agencies, interest groups, and the general public accept these standards. The proposal will be measured relative to the

- Risk onsite systems pose
- Ability and willingness of local agencies to implement the regulations
- Cost/benefit offered
- Public's acceptance of the need and the cost

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8 ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
BCDC	Bay Conservation and Development Commission
CAEHA	California Association of Environmental Health Administrators
CalEPA	California Environmental Protection Agency
CCC	California Coastal Commission
CCDEH	California Conference of Directors of Environmental Health
CCRWQCB	Central Coast Regional Water Quality Control Board
CEHA	California Environmental Health Association
COWA	California Onsite Wastewater Association
CSAC	California State Association of Counties
CWA	Clean Water Act
CWTRC	California Wastewater Training and Research Center
DHS	[California] Department of Health Services
NCRWQCB	North Coast Regional Water Quality Control Board
NPS	Nonpoint Source
NRDC	Natural Resource Defense Council
OSDS	Onsite Sewage Disposal System
OSTS	Onsite Sewage Treatment System
OWTS	Onsite Wastewater Treatment System
RCRC	Regional Council of Rural Counties
RWQCB	Regional Water Quality Control Board
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SOWTS	Standard Onsite Wastewater Treatment System
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee

UPC	Uniform Plumbing Code
US EPA	United States Environmental Protection Agency
WDRs	Waste Discharge Requirements

9 APPENDICES

This report contains the following appendices:

A Performance-Based vs. Prescriptive Codes—A Discussion

B Text of AB 885

C Basin Plan Matrices

D County Management Programs

E Supporting Rationale for Management Levels

F Stakeholder Questionnaire Sample

G SWRCB Regulation Development Timeline

H Stakeholder Written Responses to the SWRCB

- California Conference of Directors of Environmental Health
- Regional Council of Rural Counties
- Heal the Bay
- California Association of Realtors
- California Onsite Wastewater Association
- United States Environmental Protection Agency

I State Water Resources Control Board Issue Paper

J Guiding Principles for a Model Code

K Model Ordinance

A PERFORMANCE-BASED VS. PRESCRIPTIVE CODES—A DISCUSSION

The information that follows was distributed to the stakeholders involved in the SWRCB Stakeholder Project, and was also presented at several workshops. The purpose was to demonstrate the importance of management and also to explain the difference between performance and prescriptive codes.

Performance-Based vs. Prescriptive Codes

This work was supported in part by the National Decentralized Water Resources Capacity Development Project with funding provided by the U.S. Environmental Protection Agency through a Cooperative Agreement (EPA No. CR827881-01-0) with Washington University in St. Louis. This report has not been reviewed by EPA and Washington University. The views expressed in this report are solely those of the California Wastewater Training and Research Center and do not necessarily represent the views of the members of the Center Advisory Board, California State University at Chico, or the University Research Foundation. The Center, EPA and Washington University do not endorse any products or commercial services mentioned in this working draft.

Applying the Risk-Based Management Approach in California

A risk-based watershed approach is the essential ingredient for determining the appropriate management program that needs to be implemented for a given jurisdiction or area within a jurisdiction. The management level needed is determined by several important factors including the site and soil conditions, identified watershed or sub-watershed public health or environmental water quality concerns, the treatment technology being used and the capacity of all of the involved parties to accept and carry out assigned responsibilities.

Performance-Based vs. Prescriptive Codes—A Discussion

An important element in this discussion is the benefit of developing regulations that encourage performance-based standards. Prescriptive and performance regulations share common elements in that they both regulate activity and are intended to protect, but their core emphasis is dramatically different.

A performance code does not prescribe a specific solution but rather defines a desired outcome, in this case a level of treatment needed/desired to produce the desired outcome, protecting public health and the environment. This approach allows for multiple solutions for a given condition and a given desired outcome. In contrast, a prescriptive code emphasizes a fixed set of specific solutions to a well-defined set of conditions. Prescriptive codes are therefore rigid and tend towards a "one size fits all" regulation. These codes provide very little flexibility in siting and design.

Prescriptive standards are appropriate to establish some baseline requirements. For example septic tanks must be watertight, fitted with access risers and effluent filter. Prescriptive standards are also appropriate for the siting, design and installation of standard/conventional systems. This is because in order for the standard system to perform satisfactorily it relies on the soil treatment area for final treatment. It is a passive system and once installed it is difficult to adjust the system to enhance the soil treatment process. It must be designed and installed to maximize the treatment potential in the soil treatment area and prescribing siting and design criteria helps to assure an effective system.

In a performance-based code the range of options and solutions relates directly to the range of system options that meet a specific performance need. In other words the code should identify outcomes that address specific needs/constraints of the site(s). The expected performance of system types/treatment types needs to match the needs of the site and the expected fate of the final effluent. "The standards performance objective is to ensure that sound environmental outcomes are achieved regardless of the design approach selected…"(Gunn 1998).

Therefore, using a performance-based code can allow the use of onsite/decentralized systems in soil/site conditions that fall outside of the desirable soil/site conditions. As Hoover noted "It is clear from many studies of advanced onsite technologies that there is no scientific basis for extreme development limitations imposed due to the "the lands inability to handle septic systems". With proper management, advanced onsite technologies can be used within an extremely broad range of soil conditions in most watersheds without substantial environmental impact." (Hoover 1997)

A performance–based code should not however fall into the trap of defining performance as being tied to specific technologies or treatment standards. Approaching performance from this direction can evolve into prescriptive designs and solutions and inhibits innovation. Nelson, citing findings from the 1994 National Science and Technology Council Report, "Technology for a Sustainable Future," observed "…that standards that are based on the "best available technology" have the effect of technological "lock-in" and inhibition of innovation." (Nelson 2001).

Therefore, a performance-based solution should be defined by the outcome and not by a specific technology or design.

- *System design is dynamic*—The research base of treatment system is a dynamic process that is continually undergoing change as research and applied findings are incorporated. This requires a flexible regulatory system. In Wisconsin, the ability to adjust the depth of soil cover to allow greater aeration of mounds was delayed for years, causing many mounds to be installed with less than optimal depth of cover. (Corry 2001)
- *Discourages innovation*—System design often has more to do with what will be approved than what may work best. Cost considerations cause a default to the 'standard' way of doing things.
- *Discourages implementing better practices*—100-foot leach lines because they are allowed by a number of traditional sources (UPC, MSTP, etc.). Designers/installers meet the letter of the law and regulators are not able to impose 'different' requirements without a great deal of turmoil. Regulators also believe that these 'safeguards' are based on some hard evidence and deviation should not be allowed.
- *False sense of compliance*—If you meet all of the setback/vertical separation requirements then you have a 'proper system'. Ignore a more comprehensive consideration of transport and fate of constituents of concern, hydrogeology of the area, sub-watershed considerations, and sensitive receptor environments. (Much of this can be attributed to the disposal versus treatment mindset). For example the 100 foot setback from a domestic well—do we look at the well (depth, sanitary seal, etc.), groundwater gradient, etc.?
- *False sense of security*—Approving and installing a prescribed system will protect public health and mitigate environmental concerns.
- *Regulatory inertia*—Codes are difficult to change in the face of opposition within or without the regulator's department. Every change causes pain to someone, an installer that has developed a niche in the market, a regulator not willing to learn a new system, a zoning official that does not want construction on land he/she assumed unbuildable because of soil conditions. This inertia caused the 25-year delay in recognizing sand filters in Wisconsin. (Corry 2001)
- *Rigid codes*—Many codes specify in detail the types and designs of permitted onsite systems. Small changes, such as changing the hole spacing in distribution pipes, require formal code changes. In building regulation, codes do not specify design to this extent and approval mechanisms have been developed to allow rapid acceptance of changes in design and the introduction of new products. (Corry 2001)
- *Slow regulatory structure*—The current regulatory structure is slow to adjust and frustrates the deployment of new technology. The single pass sand filter, for example, is old technology that was deployed in the Northwestern states in the 1970s, but remained illegal for use in Wisconsin, a self proclaimed progressive state, until July 1, 2000. (Corry 2001)

- *Perception of failed systems*—Regulators and the general public appear to have a high level of tolerance for onsite surface disposal of sewage from direct discharge or failed systems, perhaps, in part, because there is a very weak link perceived between widely dispersed onsite disposal and public health problems. On the other hand, the existence of many failed existing systems, while tolerated by politicians and regulators, serves as a deterrent to the political approval of "hi-tech" treatment systems. The regulators' apparent inability to enforce regulations on simple designs does not give the politicians confidence that they can manage the new designs that are perceived as more complex and thus more failure-prone. (Corry 2001)
- *Onsite systems wrongly implicated*—The link between water pollution and septic systems is not always clear, causing onsite systems to be blamed for pollution caused by other factors. The result is often an attempt to curtail use of onsite systems rather than to seek the cause of the problem or to apply onsite technology to solve the problem. For example, some communities require large lots to reduce nitrate loading when the use of nitrate reducing systems could solve the problem. (Corry 2001)

Prescriptive	Performance
Rigid specification for regulated object.	No codified specification for regulated object.
No output measure stated.	Output measure stated—major importance.
Purpose statements often omitted.	Purpose statements stated—major importance.
Design options limited to those specified.	Unlimited design options.
New designs need code modification. Variance process needed for minor changes. Difficult to introduce new technology.	New designs and technology accommodated.
Simple for designers, few design options. Less training needed for designer.	Designers need to demonstrate that the design will meet performance objective. Need more professional designers.
Plan reviewers less highly trained.	Plan reviewers need to be highly trained to make professional judgments of proposed design.
Inspectors need less training.	Inspectors need higher levels of training.
Hard on citizens because of limited options. Land often wasted because an approved system design is not available for the lot.	Better for citizens. House construction not blocked because of administrative inflexibility.

Adapted from Corry 2001, NOWRA Model Code

Inherent to any performance-based code is that systems must be operated, maintained and managed to assure continuing performance (systems must continue to treat to the treatment goal). This can only be achieved by having in place a management program that assigns responsibility and accountability.

An effective management program is critical to the implementation of a performance-based code. As Bounds noted "With operation and management programs, the onsite options available for treatment and discharge are as limitless as the site complexity." (Bounds 2001). The treatment technology provides a means to attain the treatment goal but does not provide the means to assure ongoing performance to meet that goal.

References

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Hoover, M. T. 1997. *A Framework for Site Evaluation, Design, and Engineering of Onsite Technologies Within a Management Context*. Marine Studies Consortium, Waquoit Bay National Estuarine Research Reserve and the ad hoc Task Force for Decentralized Wastewater Management. Marine Studies Consortium, Chestnut Hill, MA.

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B TEXT OF AB 885

BILL NUMBER: AB 885 CHAPTERED

BILL TEXT

CHAPTER 781
FILED WITH SECRETARY OF STATE SEPTEMBER 27, 2000
APPROVED BY GOVERNOR SEPTEMBER 27, 2000
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AMENDED IN SENATE AUGUST 8, 2000
AMENDED IN SENATE JUNE 29, 2000
AMENDED IN SENATE APRIL 24, 2000
AMENDED IN ASSEMBLY MAY 13, 1999
AMENDED IN ASSEMBLY APRIL 8, 1999

INTRODUCED BY Assembly Member Jackson

FEBRUARY 25, 1999

An act to add Chapter 4.5 (commencing with Section 13290) to Division 7 of the Water Code, relating to water.

LEGISLATIVE COUNSEL'S DIGEST

AB 885, Jackson. Onsite sewage treatment systems. Existing law authorizes a California regional water quality control board to prohibit, under specified circumstances, the discharge of waste from individual disposal systems or community collection and disposal systems that use subsurface disposal. This bill would require the State Water Resources Control Board, on or before January 1, 2004, and in consultation with the State Department of Health Services, the California Coastal Commission, the California Conference of Directors of Environmental Health, counties, cities, and other interested parties, to adopt, specified regulations or standards for the permitting and operation of prescribed onsite sewage treatment systems that meet certain requirements.

The bill would require each regional board to incorporate the state board's regulations or standards into the appropriate regional water quality control plans.

The bill would make a statement of legislative intent relating to assistance to private property owners with onsite sewage treatment systems.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Chapter 4.5 (commencing with Section 13290) is added to Division 7 of the Water Code, to read:

CHAPTER 4.5. ONSITE SEWAGE TREATMENT SYSTEMS

13290. For the purposes of this chapter:

(a) "Local agency" means any of the following entities:

(1) A city, county, or city and county.

(2) A special district formed pursuant to general law or special act for the local performance of functions regarding onsite sewage treatment systems within limited boundaries.

(b) "Onsite sewage treatment systems" includes individual disposal systems, community collection and disposal systems, and alternative collection and disposal systems that use subsurface disposal. 13291. (a) On or before January 1, 2004, the state board, in consultation with the State Department of Health Services, the California Coastal Commission, the California Conference of Directors of Environmental Health, counties, cities, and other interested parties, shall adopt regulations or standards for the permitting and operation of all of the following onsite sewage treatment systems in the state and shall apply those regulations or standards commencing six months after their adoptions:

(1) Any system that is constructed or replaced.

(2) Any system that is subject to a major repair.

(3) Any system that pools or discharges to the surface.

(4) Any system that, in the judgment of a regional board or authorized local agency, discharges waste that has the reasonable potential to cause a violation of water quality objectives, or to impair present or future beneficial uses of water, to cause pollution, nuisance, or contamination of the waters of the state.

(b) Regulations or standards adopted pursuant to subdivision (a), shall include, but shall not be limited to, all of the following:

(1) Minimum operating requirements that may include siting, construction, and performance requirements.

(2) Requirements for onsite sewage treatment systems adjacent to impaired waters identified pursuant to subdivision (d) of Section 303 of the Clean Water Act (33 U.S.C. Sec. 1313(d)).

(3) Requirements authorizing a qualified local agency to implement those requirements adopted under this chapter within its jurisdiction if that local agency requests that authorization.

(4) Requirements for corrective action when onsite sewage treatment systems fail to meet the requirements or standards.

(5) Minimum requirements for monitoring used to determine system or systems performance, if applicable.

(6) Exemption criteria to be established by regional boards.

(7) Requirements for determining a system that is subject to a major repair, as provided in paragraph (2) of subdivision (a).

(c) This chapter does not diminish or otherwise affect the authority of a local agency to carry out laws, other than this chapter, that relate to onsite sewage treatment systems.

(d) This chapter does not preempt any regional board or local agency from adopting or retaining standards for onsite sewage treatment systems that are more protective of the public health or the environment than this chapter.

(e) Each regional board shall incorporate the regulations or standards adopted pursuant to subdivisions (a) and (b) into the appropriate regional water quality control plans.

13291.5 It is the intent of the Legislature to assist private property owners with existing systems who incur costs as a result of the implementation of the regulations established under this section by encouraging the state board to make loans under Chapter 6.5 (commencing with Section 13475) to local agencies to assist private property owners whose cost of compliance with these regulations exceeds one-half of one percent of the current assessed value of the property on which the onsite sewage system is located. 13291.7. Nothing in this chapter shall be construed to limit the land use authority of any city, county, or city and county.

C BASIN PLAN MATRICES

This appendix provides copies of the Basin Plan Matrices.

SETBACK DISTANCES IDENTIFIED IN REGIONAL BOARD BASIN PLAN GUIDELINES

	Region I			Region II			Region III			Region IV			Region V			Region VI			Region VII			Region VIII			Region IX		
FEATURE	ST	LF	SP[1]	ST	LF	SP[2]	ST[3]	LF	SP	ST	LF	SP	ST	LF	SP	ST	LF	SP	ST	LF	SP	ST	LF	SP	ST	LF	SP
Domestic Well	50	100		50	100			100	100				50	100	150	50	100	150	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Public Well													100	100	150	50	100	150	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Perennial Stream	50	100		50	100			100	100				50	100	100	50	100	100	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Emphemeral Stream	25	50											25	50	50	25	50	50	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Drainage Way				50	50								25	50	50		50	50	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Springs								100	100										DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Ocean/Lake/Waterbodies	50	100		50	100			100	100				50	200	200	50	200	200	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Reservoir	50	100		100	200			200	200				50	200	200	50	200	200	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Fill/Cut Bank	25	25		10	4 X h			100	100				10	4 X h	4 X h	10[6]	4 X h[6]	4 X h[6]	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Cut Bank																25	50	75	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Property Line													25	50	75	25	50	75	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Unstable Land Forms	50	50																	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA
Curtain Drains		15/50[4]						20/50[5]											DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA	DLA

Notes:

No entry indicates that no specific setback value was identified for the Basin Plan.

Features are listed if identified in any of the Basins Plans. Not every feature is listed in each plan.

Values are in feet

ST = Septic Tank

LF = Leach Field

SP = Seepage Pit/Dry well

DLA = Determined by Local Agency/Jurisdiction

4 X h = four times the fill/cut bank height

[1] Region I has no setbacks off of Seepage Pits, implying they are not allowed.

[2] Region II explicitly prohibits use of Seepage Pits/Dry Wells

[3] Region III does not specify setbacks off of Septic Tanks

[4] 15' upslope, 50' laterally, slope≥5% & perched groundwater

[5] 20' upslope, 50' downslope

[6] Region VI differentiates between setback distances for fill & cut

Region I - North Coast

Region II - San Francisco Bay

Region III - Central Coast

Region IV - Los Angeles

Region V - Central Valley

Region VI - Lahontan

Region VII - Colorado River

Region VIII - Santa Ana

Region IX - San Diego

Site suitability criteria are listed if identified in any of the Basin Plans. Not every criteria is listed in each plan. No entry indicates criteria not identified in the Plan.

SITE SUITABILITY CRITERIA IN REGIONAL BOARD BASIN PLAN GUIDELINES

Site Suitability Criteria	Region I	Region II	Region III	Region IV	Region V	Region VI	Region VII	Region VIII	Region IX[6]
Minimum lot/parcel size - existing						15,000 sq.ft.			
Minimum lot/parcel size - new			≥1acre [3]			≤ 2EDU/acre[8]		≥1/2 acre	
Minimum disposal area					based on mpi [5]				
Slope	≤30%	≤20%	≤20%		≤30%	≤30%	≤30%	≤30%	
Soil Depth		3'-5' min.							
Soil depth below soil dispersal component	≥3'				≥ 5'	≥5'			
Soil depth below seepage pit					≥ 10'		≥10'		
Soil Textural Class	4 zones-S/S/C[1]								
Percolation Rate -leachlines			≤120 mpi [4]		≤60 mpi	≤60 mpi	≤60 mpi	≤60 mpi	
Percolation Rate - Seepage pits					≤30 mpi	≤30 mpi	≥1.1g/ft^2/day	≥1.1g/ft^2/day	
Depth to groundwater-below surface							≥10'	≥10'	
Depth to groundwater-below dispersal component	<5% S/C-40'	<1 mpi-Prohib	<1 mpi-50'[7]			≤5mpi, ≤15%	≥10% silt/clay	≥5mpi, ≥ 10%	≤15mpi, 9'
	>8% S/C-20'	1-5 mpi-20'	1-4 mpi-20'[7]			silt/clay - 40'	≥ 5'	silt/clay - 5'	15-40mpi, 12'
	≥15% S/C-5'	>5 mpi -3'	5-29 mpi-8'			≤5mpi, ≥15%	≤ 5mpi - 40'	≤5mpi, ≤ 10%	>40mpi, 14'
	≥15% S/C-2' [2]		≥30 mpi-5'			silt/clay ≥5'		silt/clay - 40'	
Depth to groundwater (unuseable for domestic)							≥4'		
Depth to impervious/bedrock/saturated						≥5' [9]	≥ 10'	≥8'	
Depth to impervious/bedrock/saturated (below trench)	≥3', ≤3' [2]	3'-5'	≥ 10'						

NOTES:
EDU = Equivalent Dwelling Unit
mpi = minutes per inch (percolation rate)
S/S/C = Sand/Silt/Clay
S/C = Silt/Clay
Prohib = explicitly prohibited by Basin Plan

[1] Based on % Sand,Silt & Clay (Textural Triangle)

[2] with alternative system

[3] < 1 acre requires management district. Reservoir watershed areas required to have Wastewater Management Plan for <2.5 acre parcels.

[4] >120 mpi, requires 2 acres

[5] 41-60 mpi, 12,000ft^2; 21-40 mpi, 10,000ft^2; 11-20 mpi, 8,000ft^2; ≤10 mpi, 6,000ft^2

[6] Defer to local jurisdiction citeria for all ≤ 5 EDU or ≤1,200 gpd or for more than 5 EDU or 1,2000 gpd if meets depth to groundwater shown.

[7] Unless a setback of 250' to well or surface water

[8] Secondary treatment required for >2EDU/acre

[9] perc rate > 120 mpi is considered impervious

Region I - North Coast
Region II - San Francisco Bay
Region III - Central Coast
Region IV - Los Angeles
Region V - Central Valley
Region VI - Lahontan
Region VII - Colorado River
Region VIII - Santa Ana
Region IX - San Diego

System criteria are listed if identified in any of the Basin Plans. Not every criteria is listed in each plan. No entry indicates criteria not identified in the Plan.

PRESCRIBED SYSTEM REQUIREMENTS IN REGIONAL BOARD BASIN PLAN GUIDELINES

SYSTEM REQUIREMENTS	Region I	Region II	Region III	Region IV	Region V	Region VI	Region VII	Region VIII	Region IX
Design Flows	150gal/bdm/day	150gal/bdm/day	375 gal/day/EDU		MSTP				
Application Rates Based On	soil texture & perc	perc rate [1]	perc rate[2]		MSTP				
Septic Tank specifications	IAPMO/local reg	UPC, MSTP	riser to surface		MSTP				
Other Individual Treatment Units	NSF/IAPMO				MSTP				
Replacement/Reserve area	100%	if required by HO	dedicated		100%				
Leachfield Design		dual installed &diversion valve	dual installed, 2" coarse sand*		MSTP				
Width - maximum	≤ 36"								
Depth - maximum overall		≤ 8'							
Depth - minimum below pipe	12"								
Depth - maximum below pipe	36"								
Distance between lines		2X depth	2X depth						
Distribution method		Serial-MSTP	D-box & equal						
Chambers	no length reduction								
Alternative/Innovative Systems		H.O. approval & management entity			must comply with conv. system guidelines	alternative other than listed below case-by-case	case-by-case&must comply with conv. system guidelines	must comply with conv. system guidelines	3 yr. monitoring & comply with conv. guidelines
Experimental Systems		requires management entity	1 year trial-approval conditional			1 year trial-approval			
Mound - design guideline	Wisconsin (1990)		SWRCB (1980)			SWRCB (1980)			SWRCB (1980)
Explicit Design Criteria	<12% slope								
Explicit Design Criteria	≥ 24" to gw								
Pressure Distribution - guideline									
Explicit Design Criteria	≤30% slope								
Explicit Design Criteria	1-120 mpi								
Explicit Design Criteria	≥24" gw/imperv.								
At-Grade - design guideline	Wisconsin (1990)								
Explicit Design Criteria	≤25% slope								
Explicit Design Criteria	≤120 mpi								
Explicit Design Criteria	≥36"gw to native								
Sand Filter - guideline	maintenance required					Oregon DEQ(1991)			
Evapo-transpiration - guideline			SWRCB (1980)			SWRCB (1980)			SWRCB (1980)

Notes:
IAPMO = International Association of Plumbing & Mechanical Officials
NSF = National Sanitation Foudation
MSTP = Manual of Septic Tank Practice
EDU = Equivalent Dwelling Unit
UPC = Uniform Plumbing Code

[1] trench bottom and 6" sidewall, specified perc test procedure, 3 tests required

[2] 1-20 mpi = 0.8g/ft^2/day
21-30 mpi = 0.6g/ft^2/day
31-60 mpi = 0.25g/ft^2/day
61-120 mpi = 0.1 g/ft^2/day
3 perc tests required

* Recommended for individual, required for community ≥ Parcels

Region I - North Coast
Region II - San Francisco Bay
Region III - Central Coast
Region IV - Los Angeles
Region V - Central Valley
Region VI - Lahontan
Region VII - Colorado River
Region VIII - Santa Ana
Region IX - San Diego

D COUNTY MANAGEMENT PROGRAMS

Four of the six management programs described in this appendix have been functioning for more than fifteen years. The other two have been fully in place for almost ten.

Santa Cruz County

Santa Cruz County has more than 22,000 septic systems, 13,000 of which are in the San Lorenzo River Watershed. The San Lorenzo Watershed has the highest density of septic systems of any comparable area in the state. The majority of septic systems in the county are more than 25 years old and are located on parcels that do not fully meet today's standards for installation of a new septic system due to: small lot size, close proximity to a stream, high groundwater, steep slope, or clay soil. Many of these systems have already been repaired or replaced at least once. Many of the repairs, however, were done prior to 1980 when there were little or no standards for septic system repairs. There were no minimum size requirements and systems were allowed to go in very deep, with little regard to soil conditions or winter groundwater levels.

During the 1970s and early 1980s the San Lorenzo Valley area experienced a number of onsite system failures, high bacteria levels in the San Lorenzo River, and elevated nitrate levels that threatened the City of Santa Cruz water supply. As a result, in 1982, the Central Coast Regional Water Quality Control Board (CCRWQCB) issued Resolution 82-10, an order prohibiting any new development and prohibiting the continued use of existing septic systems in the San Lorenzo Valley. The CCRWQCB determined that the solution to the water quality problems was to sewer the area. The proposed sewer project failed in 1985 due to high cost, lack of grant funds, and substantial disagreement in the community about whether sewers were really needed.

Santa Cruz County Environmental Health proposed and implemented a compromise solution in 1986 that would allow the continued use of septic systems provided they were upgraded over time to meet a minimum set of standards necessary to improve the water quality in the river. The program included ongoing inspection of systems and water quality monitoring to ensure that immediate problems were found and corrected. In spite of this, the state still felt sewers were needed and the prohibition on septic systems remained in effect.

County Service Area No. 12 (CSA 12) was formed in 1989 to provide services promoting proper septic system function and maintenance. In order to finance these services, property owners with septic systems pay annual service charges on their tax bills.

As a result of these efforts, the CCRWQCB lifted the septic system prohibitions and adopted the San Lorenzo Wastewater Management Plan in May 1995. The regional board has conditionally delegated authority to oversee and regulate the installation of septic systems to the County

Environmental Health Service through a memorandum of understanding. The county must comply with the minimum standards contained in the basin plan in order to keep the authority to permit septic systems.

Since the county began the program in 1986, septic system failure rates have dropped from 15 percent to 5 percent. Some 2,300 systems have been repaired and 85 percent of these have been able to fully meet the repair standards for a standard system. Approximately 5 to 10 percent, however, of the system upgrades present major challenges for the owner, the designer, the contractor, and county staff to design and install a workable system that meets minimum requirements for protection of water quality.

The county program includes a loan program to assist property owners in upgrading/repairing their systems. The County of Santa Cruz Environmental Health Service, working with the California State Water Resources Control Board is accepting loan applications from property owners in the San Lorenzo River Watershed for septic system repairs and upgrades. This program provides loans at an interest rate of 3.5 percent and is designed to particularly assist property owners who need to make repairs using more expensive alternative systems.

Alternative System Use

Type	San Lorenzo Only	Santa Cruz County
Sand Filters	14	21
At-Grade	5	5
Mound	24	51
Advantex	4	4
FAST	66	83
Multiflo	23	29
Clearwater	1	2
Total	**137**	**195**

The county program is funded through a set of fees as follows:

Annual Service Charges on Tax Bills:

$100,000	County Service Area 12 (CSA 12) Countywide Septic Maintenance ($6.90/parcel)
$240,000	CSA 12, Zone A, San Lorenzo Septic Management (+$18.54/parcel)
$30,000	CSA 12N, Nonstandard System Charges Inspection and Monitoring (+$196/parcel for alternative system, or +$98/parcel for nonconforming)
$500,000	Permit Fees for installation permits (countywide)

The program provides the following services:

- Planning, management oversight and reporting to meet regional board requirements
- Parcel specific data management
- Septage receiving facility
- Water quality monitoring
- Parcel inspections for signs of failure (average every six years)
- Public education
- Annual inspection and effluent monitoring of nonstandard systems
- Community sewer feasibility studies
- Evaluation and approval of proposed designs
- Inspection of installations
- Low interest loans for system upgrades

There are 17 staff members working in the program (11 full-time positions) under the direction of the Environmental Health Director and supervised by the Land Use and Water Quality Program Coordinator and Land Use Program Manager. The program consists of two teams:

Land Use Permitting Team—Processes all septic permits and conducts annual inspections of alternative systems. This team consists of three environmental health specialists, three senior environmental health specialists, one land use program manager and one clerk.

Water Quality and Wastewater Management Team—Conducts water quality monitoring, system inspections and investigations, data management and program oversight. This team consists of one senior environmental health specialist, two wastewater disposal technicians, one water quality specialist, two environmental health aides, one resources planner, and one clerk.

Sonoma County

Sonoma County is located north of San Francisco Bay and has a population of more than 450,000. The county experienced significant growth pressures with a result of an increase in the demand for housing over the past 30 years. Much of this demand was in the urban/rural interface that lacked access to or the prospect of centralized sewage treatment facilities. As a result, significant housing has and continues to be developed in areas that rely on onsite/decentralized sewage treatment.

The Sonoma County Permit and Resource Management Department (PRMD) administers the onsite sewage treatment program for Sonoma County. County staff members perform the inspection, approval, and monitoring functions. There are approximately 45,000 onsite systems in the county.

About thirty years ago it became apparent that many areas could not be developed using the standard/conventional onsite system. In response, the county developed a program to use what is termed 'nonstandard' systems to mitigate for the various site constraints encountered. This process involved working with two Regional Water Quality Control Boards and receiving oversight authority for the program from these boards.

Oversight is granted via Joint Innovative Individual Waste Treatment and Disposal System Evaluation Agreements (the Agreement) between the County of Sonoma and the North Coast Regional Water Quality Control Board (NCRWQCB) and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). The Agreements, as well as Sonoma County Code Sections 24-32 to 36, have established the legal authority for the program. The program has evolved over time into one that resembles in many respects program level 3 described in the US EPA *Voluntary Management Guidelines for Onsite/Decentralized Wastewater Treatment*.

The Permit and Resource Management Department (PRMD) is required by the Regional Water Quality Control Boards (RWQCB) to monitor the function and maintenance of all nonstandard septic systems in operation in the county and to evaluate newly proposed and/or experimental methods for onsite sewage disposal. A three-phase program of testing and evaluation is used to determine the suitability of the various proposals and techniques for wastewater treatment. The Agreement with each RWQCB requires the PRMD to submit the results of the monitoring program in the form of an annual report on the performance of the various system types.

Nonstandard system monitoring is now routinely performed by one full-time environmental health specialist and one retired environmental health specialist working a limited work schedule (approximately one day a week). One environmental health specialist III supervises the program. A full-time clerk typist III handles invoicing, permit issuance, mailings to property owners, and file record maintenance.

The monitoring program in Sonoma County has grown from 22 systems in 1983 to 2,204 potential sites through 2000. There were 146 new nonstandard systems added in 2000. The total number of systems requiring annual inspection continues to grow steadily due to the number of new sewage disposal system permits issued each year as well as the ongoing inspection of

existing systems. This growth means that the number of systems requiring annual inspection services will likely exceed 1,250–1,500 in the coming year.

There are two categories with 10 types of nonstandard sewage disposal systems available for use in Sonoma County. These types include:

- Mound-2
- At-grade
- Shallow in-grade
- Sand filters; intermittent and/or recirculating
- Bottomless sand filter
- Evapotranspiration bed
- Aerobic pretreatment
- Peat moss filter
- Mound
- Shallow trench pressure distribution

In 1993, regulation changes to the *Guidelines and Regulations for Nonstandard Sewage Disposal Systems* allowed expanding the use of the program to monitor the performance of standard septic systems. Specific circumstances have involved difficult situations where placing certain standard systems under annual operating permit appeared to provide viable solutions. There were 12 sites with standard septic systems being operated under operating permits in 2000.

The defined performance standards as referenced in Section 209 I of Sonoma County's *Guidelines and Regulations for Nonstandard Sewage Disposal Systems* remain the measure for functional evaluation of all system types. Ninety-eight percent of all systems inspected are performing in an acceptable manner. Nineteen of the systems monitored have had their operating permits suspended or revoked or, have had repair permits issued. Several of these cases have been referred to County Counsel for abatement when efforts by PRMD failed to obtain compliance with earlier notices to repair or renew operational permits.

The overall results of the monitoring program continue to reflect favorably on the entire nonstandard inventory regardless of the age, size, location, and/or type of system as a way to accurately measure true performance.

PRMD conducts a number of educational activities including an annual Homeowner Education Class and mailing information packages to new nonstandard system operators.

PMRD also oversees a contract for the 1,570 properties designated for onsite systems on the Sea Ranch. The Sea Ranch Association operates and maintains the Onsite Wastewater Zone under contract subject to the supervision of and control of the Sonoma County Permit & Resource Department.

Staffing and Budget

Staffing is one environmental health specialist III, 1.4 environmental health specialist II, one clerk typist III and portions of supervisory and management that are allocated as overhead.

The revenue collected in Fiscal Year 2001–2002 (July through June) was $377,397. The annual fee was $246, $123, or $82 depending upon whether the system is inspected annually, every two years, or every three years. The base fee this fiscal year is $260 with similar reductions for reduced inspection frequency.

Stinson Beach

Stinson Beach is a small coastal community located in Marin County north of San Francisco Bay. The issue of a sewer was first raised by a June 1961 directive of the Marin County Board of Supervisors recognizing the potential health hazard of failing septic systems in both Stinson Beach and Bolinas that were contributing to the pollution of Bolinas Lagoon. With the expected build-out projected by the 1961 Bolinas/Stinson Beach Master Plan of 22,000 residents around Bolinas Lagoon, the County Health Department envisioned that the best solution to the problem would be a centrally located and publicly owned sewage collection and treatment system. Shortly thereafter, the San Francisco Regional Water Quality Control Board (SFBRWQCB) urged investigation of plans and costs for sewerage facilities for the area.

As a result, the Stinson Beach County Water District (SBCWD) was formed in November 1962 to deal with these septic issues. Between 1965 and 1974, ten separate sewer studies were undertaken. All were rejected for many different reasons including excessive cost, potential for inducing population growth and density, failure to recognize environmental concerns, location and reliability of the projects. The voters of Stinson Beach defeated a sewer plan bond election in 1974. Studies were also completed during this time documenting the pollution of the lagoon as well as the degrading of other beneficial water uses, and in 1973 the SFBRWQCB adopted a resolution prohibiting any further construction using septic systems.

During that period of time, a number of changes occurred that made a plan for individual onsite wastewater disposal systems more likely to meet the approval of governmental agencies: The 1961 Master Plan was repealed and replaced with the existing Countywide Plan calling for a much reduced population density around the lagoon; Marin County adopted the 18.06 code requiring more stringent groundwater and percolation rate requirements for on site systems; and the technology of septic systems had advanced.

In 1975 the SBCWD embarked upon an exhaustive two-year study by Eutek Engineering. The study analyzed all sewage treatment alternatives then available and conducted a parcel-by-parcel survey of groundwater depth, failed systems, and potential costs. The study determined that the most cost-effective alternative was individual onsite systems and presented a feasible basis for their continued use. The study also provided a mitigation process for failing systems and a timetable for continuing inspection. After much discussion, revision of procedures, and numerous conditions, which have resulted in the program now in existence, SFBRWQCB agreed

to allow Stinson Beach to upgrade and maintain onsite systems, and allowed the resumption of building new septic systems.

Senate Bill 1902 was passed by the legislature on September 13, 1976, which made it possible to form a management district for the operation and maintenance of onsite wastewater disposal systems. This authority is codified in the California Water Code Sections 31145-31149. After the district adopted an acceptable set of rules and regulations, on January 17, 1978, the SFBRWQCB passed Resolution 78-01 to allow for the continued use of onsite systems for the treatment and disposal of wastewater in the community of Stinson Beach under the management of the SBCWD.

In 1988, the SBCWD assumed authority from the County of Marin for the permitting of new onsite systems, and in 1994 the District Board of Directors commenced the task of completely revamping the sixteen-year-old rules and regulations. The new Wastewater Code (SBCWD Ordinance 1994-01 and revised in 1996 as SBCWD Ordinance 1996-01) eliminates the relaxed repair code, formalizes design standards for sand filters, and requires the installation of a system that meets current code if "new construction" is proposed for the property.

Implementation of the SBCWD onsite program involved:

- Adoption of the program rules and regulations
- Employment of staff
- Development of office procedures
- Issuance of permits and citations
- Initiation of the inspection and monitoring program
- Continuation of the water quality monitoring program
- Submission of monthly reports to RWQCB
- Cooperative programs

The objectives of the SBCWD onsite program included:

- Educate the local general public regarding septic systems
- Select types of wastewater systems to be used throughout the district
- Monitor pollutants entering the groundwater including lagoons, bays, and streams
- Select the best type of wastewater system to be used in specific areas and increase groundwater testing and inspection as numbers increase
- Establish a uniform wastewater enforcement code

Each homeowner is requested to provide permanent access to the septic tank on their property for the purposes of inspection and routine maintenance. Systems found to be operating marginally as part of the district's routine inspection program are placed in a special monitoring category.

Special monitoring is also conducted for:

- High groundwater demonstration system
- Alternative waste disposal system
- Gray water systems
- Other non-conventional onsite systems

The district established a water quality monitoring program in 1978. The current program has six surface water and ten groundwater stations that are sampled quarterly for total coliform and fecal coliform, ammonia, nitrite, nitrate, and nitrogen. The purpose of the program is to:

- Inspect and document ambient environmental conditions of surface and groundwaters.
- Facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge.
- Prepare water and wastewater quality inventories.

Staffing, Budget, and Homeowner Costs

The program employs one full-time staff member, one clerical support position, one part-time engineering technician, and one engineering consultant (part-time).

The onsite program budget portion of the SBCWD

Expenses 2001–2002

• Employee Services	$ 201,556
• Supplies	9,281
• Outside services	28,042
• Contractual Service	37,536
• Debt Service	5,351
• **Total**	**$ 281,766**

Revenues 2001–2002

• Wastewater fees	$ 250,320
• Property Taxes	0
• Miscellaneous	31,750
• **Total Revenues**	**$ 282,070**

Homeowner Costs

- The yearly homeowners cost in the fiscal year 2001–2002 was $355.00 per residence ($59.17 bi-monthly).
- Each special inspection is an additional $30.00.

Future Plans

- The district is planning to utilize telemetry on each onsite system to collect data and monitor operation. Presently the district has eight alternative systems ready to use this technology.
- Onsite monitoring wells have been installed on 150 systems. These systems will monitor the groundwater quality in close proximity to the septic systems.
- The design procedures for alternative onsite systems will be continued to be reviewed as technological advancements are developed.

Since the inception of the Onsite Wastewater Management Program, the SBCWD has introduced special systems to the Bay Area that help solve depth to groundwater and poor percolation rate problems. These systems, first used in Stinson Beach, are being used throughout the county. Stinson Beach is considered to be a model for other communities throughout the US for onsite system management.

The Sea Ranch

In 1978, the State Legislature adopted SB 430, which authorized public agencies such as special districts that have powers to manage sewer systems, to form onsite wastewater zones. The zones were to provide for the collection, treatment, reclamation, or disposal of wastewater without the use of community-wide sanitary sewers or sewage systems. The purpose, the SWRCB asserted, was: “to provide the means and effective controls to allow small rural communities, where centralized treatment systems are very expensive to build, to maintain and employ less costly onsite wastewater treatment systems where technically appropriate.” They considered zone formation an alternative to establishment of septic prohibition areas, which would leave lots unbuildable.

The Sea Ranch Association is a planned community consisting of 5,200 acres containing 2,297 lots together with extensive common area within the County of Sonoma. The Onsite Wastewater Zone is a department of The Sea Ranch Association doing business under contract with the County of Sonoma.

In 1981, after an extended moratorium on construction at The Sea Ranch and protracted litigation with the Coastal Commission, The Sea Ranch Association agreed to abide by special legislation, AB 2076, the Bane Bill. The Bane Bill directed that something should be done about septic system construction, operation, and monitoring within The Sea Ranch to ensure protection of coastal zone resources. The Bane Bill did not specify *what* should be done, but whatever was adopted had to be approved by the NCRWQCB.

An attempt to comply with the Bane Bill by establishing a Community Services District to handle all utilities failed. A Wastewater Disposal Task Force was formed to determine what could be done to set up a zone/entity that would include all lots on The Sea Ranch that were designated for septic systems. The "zone" concept was allowed by SB 430 as stated previously.

In 1987, the Sonoma County Board of Supervisors approved the zone. On August 9, 1988, the county supervisors approved the implementing ordinance, which set up a fee schedule and general provisions relating to the use of onsite systems, operating permits, inspections, enforcement, and penalties for violations.

In early 1989, after extensive negotiations between The Sea Ranch Association and Sonoma County, an operating agreement was finalized. In the agreement, Sonoma County contracted with The Sea Ranch Association to operate and maintain the zone subject to the supervision and control of Sonoma County's health officer (this control was moved to the Sonoma County Permit & Resource Department in 1995).

There are 2,297 lots at The Sea Ranch; and as of September 2001, 712 or 31 percent were undeveloped. The Sea Ranch also includes common areas shared by all.

County Service Area 41 consists of two separate sewage collection zones:

Zone 1—Two sewage treatment plants that serve the northern-most end of The Sea Ranch. The Sea Ranch Water Company operates both under an agreement with the County of Sonoma.

Zone 2—The monitoring program established for the 1,570 properties designated for onsite systems on The Sea Ranch. Currently, 1,000 of those systems are in place and monitored.

Zone ordinances require the issuance and maintenance of operating permits for all septic systems in the zone. For new systems, the operating permit is issued following final construction inspection. For existing developed properties, the operating permit was issued following the initial septic system inspection; and then renewed at the time of each subsequent inspection. The operating permit is the means by which the zone maintains accounting of the functioning status of septic systems, and enforces timely attention to corrective work where needed.

Budget and Costs

The startup costs for The Sea Ranch Onsite Management and Inspection Program were funded through a loan granted by the County of Sonoma and repaid through assessments.

The Sea Ranch Association contracts with the County of Sonoma to administer The Sea Ranch Onsite Wastewater Zone. Each homeowner within the zone is currently assessed $105.00 per year on their property tax bill.

2000/2001 Budget:	$193,449.00
Zone Operating Budget:	$173,173.00

Sonoma County: $ 20,276.00
(administration costs, rents/leases for equipment, public/legal notices, legal services, audit/accounting, vehicle, small tools, and depreciation)

Staffing

Staff working with the onsite program: 3

Number of full-time staff 2.2

Town of Paradise

The management program for the Town of Paradise is unique because, while responsibility for the management of onsite systems is with the town, the actual implementation of the program is privatized. The ongoing operations such as inspection, approval, and system oversight are performed by a private consulting firm.

In 1992 the Town of Paradise created the Onsite Wastewater Management Zone (OWMZ) by adoption of Ordinance No. 219. This ordinance established the regulatory provisions for the installation, operation, and maintenance of onsite wastewater treatment systems. The Butte County Public Health Department (Environmental Health) administered the program for the first two years. In 1994 the Town of Paradise adopted Municipal Code Title 13, Chapter 13.04, *Sewage Disposal* and the *Manual for the Onsite Treatment of Wastewater* and assumed the administration of the zone. The code provides for the regulatory and enforcement aspects of the zone and the manual delineates the detailed technical specifications for design, construction, inspection, and operation of all onsite systems.

The OWMZ functions as a division within the Town of Paradise Public Works Department with the Onsite Sanitary Official reporting to the Director of Public Works/Town Engineer. The onsite division was privatized five years ago and is funded through an enterprise fund. Approximately 8,100 person hours/year are expended to carryout the responsibilities and duties within the zone. The annual operating budget for Fiscal 2001–2002 was $281,333.

The Central Valley Regional Water Quality Control Board (CVRWQCB) provides oversight to the OWMZ. They participate in the review process of all proposed rule and manual changes. The OWMZ provides the CVRWQCB with an annual *Report of Operations.*

There are approximately 13,100 parcels within the Town of Paradise with 11,118 of these having operating permits for onsite sewage treatment systems. Of these 11,118 systems 61 utilize enhanced treatment systems as follows:

- 22 bottomless sand filters
- 13 intermittent sand filters
- 18 recirculating gravel filters
- 7 activated sludge wastewater treatment

OWMZ estimates that three million gallons of wastewater are treated daily by the town's onsite systems.

OWMZ regulations require that permits be obtained to construct, operate, and repair onsite systems. The town does not issue an operating permit until as-built plans have been received, and for enhanced systems, the system designer has submitted operating and maintenance manuals. All systems must be periodically evaluated for compliance. Inspections are required whenever a system is pumped, the property is sold, or a complaint filed. Inspections are required at least every seven years except in identified areas of concern, where schedules are more frequent.

Auburn Lake Trails Subdivision
Georgetown Divide Public Utilities District

The Georgetown Divide Public Utilities District (GDPUD) provides management for the onsite/decentralized sewage treatment systems at the Auburn Lake Trails Subdivision. The subdivision is situated on the western slope of the Sierra Nevada mountain range, in El Dorado County.

GDPUD was formed initially to be the water utility for the subdivision. The proposed sewage treatment plant designed to handle the 2,500 lot subdivision could not be brought on-line to service the lots being developed due to the slow build-out rate. As a result onsite systems were proposed, but state and local agencies had concerns due to restrictive site and soil conditions and the associated water quality concerns.

In 1971 the GDPUD agreed, with concurrence from the county and The Central Valley Regional Water Quality Control Board (CVRWQCB), to initiate a comprehensive onsite management program that included site testing, system design, construction management, operation, maintenance, and environmental monitoring. GDPUD established an assessment district that provided the mechanism to build a plant when it was required. This approach allayed the concerns, and development commenced using onsite/decentralized sewage treatment.

By the mid 1970s, however, several problems arose including septic systems (many of them innovative) failing despite the management program. The CVRWQCB imposed a moratorium on more development until the problems were solved. In 1985 the district, homeowners, and the developer agreed to reorganize the district and establish a permanent wastewater management zone. This agreement reduced the number of lots in the subdivision to 1,100 and abandoned plans for a central sewer plant.

Program Staffing and Responsibilities

Present staffing consists of two-and-one-half people: the program coordinator and professional designer (part-time), and two field inspectors. The district has established a data system that includes system design aids, inspection results, water quality data, soil data, report generating, schedules and other "tickler" functions. The district has completely mapped the hydrology and soil geology of the subdivision, identifying 10 geological and soil types.

Staff members are responsible for:

- Site evaluation and testing
- System design, including post-backfill landscape design and erosion control
- Construction management and oversight
- System maintenance and monitoring
- Environmental monitoring of ground and surface waters
- Performance monitoring of alternative systems
- Alternative systems research

The district is in the process of retrofitting all tanks with new inspection risers that provide better maintenance access. Depending on their type, systems are inspected at intervals ranging from 4 to 18 months. Homeowners must grant an access easement to the district; retain ownership of their systems; and are responsible for operation, maintenance, and pumping costs of their system. The cost of repairs is also borne by the homeowner. The ultimate enforcement device of the district is its easement. If necessary, the district will pump or repair, putting a lien on the property until the costs are recovered.

Size and Cost of Program

The program was responsible for the management of 893 individual systems (approximately 200 conventional, the rest specially designed), and one communal system that presently services about 120 houses. User charges are apportioned according to the level of benefit received, and are as follows:

- Individual system design and construction oversight $ 540
- Design, construction oversight, and connection fees for the communal system $1,825
- Annual management charge for individual systems $ 150
- Annual charge for the communal system $ 275

There are also smaller annual charges on vacant lots. (The cost of pumping a system, which homeowners bear, is about $250; the cost of installing a system, which also falls to the homeowner, ranges from about $4,000 to $15,000 depending on requirements. Generally, lot prices reflect the anticipated cost of system installation.)

Monitoring and Reporting Program

Monitoring and reporting requirements are stipulated by the county and the Central Valley Regional Water Quality Control Board. Reports are submitted quarterly (at present the zone submits an annual report). The district is currently reinstalling monitoring and sampling wells. A number of the early wells were improperly installed resulting in unreliable sampling results. At present, personal contact with the CVRWQCB is not frequent, as the board has been satisfied with the program's progress and reports.

Alternative system designs are monitored for leachfield discharges, groundwater beneath them, and surface water at seven streams are regularly sampled and tested for fecal and total coliform, chloride, nitrate, electrical conductivity, temperature, and pH. Groundwater hydrology (depth to water table, flow rate, and other parameters) is also routinely monitored.

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Sonoma County

- Richard Holmer, Program Manager
- Sonoma County Permit and Resource Management Department

Santa Cruz County

- John Ricker, Land Use and Water Quality Program Coordinator and Land Use Program Manager
- Environmental Health Division, Santa Cruz County

Stinson Beach

- Richard Dinges, General Manager
- Stinson Beach County Water District

The Sea Ranch

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- The Sea Ranch Association

Town of Paradise

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Georgetown Divide Public Utilities District

- Dave Honeycutt, Program Manager
- Georgetown Divide PUD

E SUPPORTING RATIONALE FOR MANAGEMENT LEVELS

The information provided in this appendix was presented to the SWRCB and to the stakeholders during the SWRCB Stakeholder Project. The purpose was to present the importance of management in any considerations for statewide regulations, and to propose a variation of the EPA Voluntary Management Guidelines along with generalized guidance on how the program could work.

Statement of Basis for Recommended Management Levels in the California Onsite Regulatory Development Process

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Applying the Risk-Based Management Approach in California

A risk-based watershed approach is the essential ingredient for determining the appropriate management program that needs to be implemented for a given jurisdiction or area within a jurisdiction. The management level needed is determined by several important factors including the site and soil conditions, identified watershed or sub-watershed public health or environmental water quality concerns, the treatment technology being used, and the capacity of all of the involved parties to accept and carry out assigned responsibilities. Table E-1 summarizes the approach.

Table E-1
Proposed Revision to California's Draft Management Levels: Risk-Based Approach

Management Level	Risk Level	Risk Level Characteristic (can be assigned to an area or to a site.)	Site Response	*Minimum* Permitting Authority Responsibility (direct or delegated to service provider)	Examples of Currently Available Technologies That Could Provide Necessary Level of Treatment	Examples of Current Programs
I	R1	No water quality problem, no site limiting conditions	Any type of system allowed by local code is acceptable	Permit to Construct and standard operating permit and system inventory	Standard septic tank and leachfield or seepage pit	Most local implementing agencies are currently at this level
II	R2	Site limiting conditions (such as unsuitable soils and/or inadequate depth to limiting factor)	Any type of system that physically replaces what site is lacking to ensure that there is no human exposure to untreated sewage	Renewable operating permit that ensures non-standard components are maintained. Physical monitoring by system owner	Advanced treatment systems (media filter, ATU, others) and/or advanced soil treatment and dispersal (mound, subsurface drip, LPP, and others)	
III	R3	Areal dependence on shallow groundwater for drinking water, shellfish, or recreational use. Documented nitrate or human bacterial water quality problem in groundwater or nearby surface waters, or onsite system density exceeds area's assimilative capacity for contaminant	Risk level should be assigned to individual sites proposed for development. New systems should include advanced treatment. Repairs should include advanced treatment where feasible. Repairs and new systems should include advanced treatment that treats the contaminant of concern	Renewable operating permit that ensures non-standard components are maintained. Physical monitoring by regulator or contracted service provider required. Effluent sampling and/or groundwater monitoring required at permitting agency discretion	Standard systems and advanced treatment systems (media filter, ATU, others) and/or advanced soil treatment and dispersal (mound, subsurface drip, LPP, others) to address the contaminant(s) of concern, such as disinfection for bacteria or treatment for nitrate removal/reduction	Placer County, Sonoma County PRMD, Santa Cruz County (San Lorenzo), Town of Paradise
IV	R4	Documented water quality problem, nitrates and/or human pathogens, identified by the Regional Water Quality Control Board (RWQCB) through various water quality assessment processes (such as WMI, 303(d), or TMDL) or the Department of Health Services (Source Water Assessment)	Corrective action needed to mitigate, may require system upgrades and/or conversion to cluster or centralized sewer treatment	Waste discharge requirements issued to RME. Physical monitoring by regulator or RME required. Effluent sampling and/or groundwater monitoring required at state's discretion, in consultation with permitting agency	Same as above, and: Utility managed onsite, clustered or centralized sewage treatment should be considered as an option if homeowners are unwilling or unable to upgrade systems and assume burden of demonstrating compliance	Stinson Beach, The Sea Ranch, Georgetown Divide Public Utilities District
V	R5	Need for direct reuse (systems that irrigate, directly recharge a drinking water aquifer, or discharge fluids at surface or at depths less than minimum soil depth to restrictive horizon)	Denitrification and disinfection required. If disinfection by-products are of concern, chlorination is not an acceptable disinfection technology	Waste discharge requirements issued to RME. Physical monitoring by regulator or RME required. Effluent sampling and/or groundwater monitoring required	Utility owned onsite, clustered or centralized sewage treatment should be considered as an option if homeowners are unwilling or unable to upgrade systems and assume burden of demonstrating compliance	

Local agencies are required to establish the appropriate management program levels in order to conduct the onsite program within their jurisdiction and to receive delegated authority from the State Water Resources Control Board/Regional Water Quality Control Board (SWRCB/RWQCB). The local programs must be able to fulfill the required elements for any given program level needed within their jurisdiction in order to receive delegation. There is no prescriptive program design because there are a variety of program designs a local jurisdiction can implement to meet program requirements. The specific program design must integrate local need (public health and environmental concerns) with local resources (capacity to perform the necessary tasks by the public and private sector).

Each jurisdiction should develop a map, on paper or using a geographic information system (GIS), that depicts areas

- Dependent on Onsite Wastewater Treatment Systems (OWTS) in the jurisdiction
- Identified by local, state, or federal agencies as having water quality impairments known or suspected to be caused from OWTS use
- Known by the agency as problematic for OWTS due to poor site conditions

This mapping will provide a basis for determining the appropriate management levels for different sites and areas within the jurisdiction.

A local agency must decide what program level is appropriate for their area's specific need. For example, an agency might decide that Management Program Level 1 is sufficient to deal with local circumstances. This decision effectively restricts the use of onsite systems to standard system designs, but still requires that the agency develop record keeping and engage in educational activities. The point is, local agencies must make an assessment of the local circumstances and adopt the appropriate management level(s) as a result of this assessment. Local agencies must present plans for review and approval from the RWQCB in order to be given the authority to conduct an onsite program. A formal memorandum of understanding (MOU) between the local agency and the RWQCB(s) is anticipated to be the vehicle used to delegate authority.

At a minimum, agencies implementing local programs must consult with the following agencies in making management-level determinations:

- RWQCB Watershed Management Initiative (WMI) Coordinator(s) to determine identified impaired groundwater and surface water areas. Once these impaired areas are identified, a determination must be made as to whether onsite systems are a source or potential source of the impairment. These determinations may require the use of enhanced treatment systems and therefore require, at a minimum, Management Program Level 3. A complication is that a local permitting agency may have several RWQCBs within its area of responsibility. In such cases, it is essential that the RWQCBs and their WMIs are consistent in their expectations and interpretation.
- California Department of Health Services Office of Drinking Water Program to determine if there is contamination of public drinking water supplies attributable to onsite systems.

Additional factors to consider are the Source Water Assessment and Protection (SWAP) Program setback determinations that are in place to protect public drinking water supplies. Any future development in these areas may require the use of enhanced treatment systems and therefore require, at a minimum, Management Program Level 3.

- Local Program Agency (LPA) for the Small Public Water System Program to determine if there is contamination of public drinking water supplies attributable to onsite systems. Additional factors to consider are the SWAP Program setback determinations that are in place to protect public drinking water supplies. These assessments may require the use of enhanced treatment systems and therefore require, at a minimum, Management Program Level 3.[1]
- Local health department for information on private drinking water wells and contamination problems attributable to onsite systems. A complicating factor is that water well construction practices and standards for many developed areas are not known or are not consistent. Well construction practices have varied over the years, as have construction oversight inspections. This variation can exacerbate the task of attributing contamination problems to onsite systems versus poor well construction.
- California Department of Health Services for sensitive shellfish growing and other aquaculture areas that may be influenced by onsite systems. These assessments may require the use of enhanced treatment systems and therefore require, at a minimum, Management Program Level 3.

Management Programs

A local permitting agency/jurisdiction can have all five management program levels within its area of responsibility. This section describes each management program level.

Management Program Level 1

Management Program Level 1 is appropriate for many rural areas/jurisdictions where a Standard Onsite Wastewater Treatment System (SOWTS) is the typical installation and where there is no recognized water quality threat from onsite wastewater treatment system use. A SOWTS consists of a septic tank and gravity effluent distribution to the soil treatment area. Management Program Level 1 does require that the local agency adopt the minimum standards outlined in the state regulations. Therefore, there are prescriptive standards such as watertight septic tanks and effluent filters required for all new installations.

[1] Definitive attribution of contamination to OWTSs may be questioned due to well construction and other factors **but** this is probably also irrelevant from a political/public perception perspective

As used here, SOWTS can only be modified relative to the soil treatment area and the effluent distribution method, such as depth, width of leach line, use of various gravity distribution devices, use of chambers, and other methods. The local permitting agency is required to engage in a proactive education program to educate homeowners concerning onsite systems. The local agency should be encouraged to conduct sanitary surveys to assess system performance thereby significantly adding to the knowledge base. System malfunction and point of sale inspections will probably result in a number of systems that will need upgrading to enhanced systems. Therefore, the local agency will need to be prepared to meet the Management Program Level 2 agency requirements.

Under Management Program Level 1, only a standard operating permit is issued. This permit does not need to be renewed until there is a change of ownership or use.

An important feature of this baseline management level is that the local permitting agency needs to develop a record keeping and tracking system. Ideally this system would establish an electronic database that can be used to provide information for analysis (accurate and accessible information is important for policy/decision makers). The data system should be designed to capture information such as:

- Type of system
- Intended use (residential, commercial, other)
- Sizing information
- Date of construction
- Location (including a unique identifier such as assessor parcel number (AP#). Note that AP#s do change, so perhaps GPS location is a viable option
- Repair history
- Pumping history
- Type of water system serving the parcel (well log information and well identification numbers can be used as a data field to provide cross-reference capability)
- Any relevant watershed information or source water assessment program information

Agencies should start the data collection with new construction and should be encouraged to add existing system information into the system as soon as resources allow. Agencies are encouraged to consult with other programs (for example domestic water/public water supply programs) that can benefit from shared information. Common data fields and identifiers will aid in this effort to use and share information.

At this level operation and maintenance is solely the responsibility of the system owner. The permitting agency should help ensure proper maintenance by providing educational materials and maintenance reminders to system owners.

A great opportunity for education is at the point of sale. Pamphlets or other educational materials should be provided to the new owner through lenders and realtors (the local permitting agency should provide these). The ordinance requires an inspection at a change of ownership/ point of sale at which time the standard operating permit will also need to be renewed. The standard operating permit is not transferable, so the new owner will need to take some action (renewal), which provides an additional educational opportunity to the local permitting agency.

Standard systems can be modified with respect to the design of the soil treatment component. Allowed modifications include any non-mechanical design changes that improve distribution in the soil treatment area.

Only non-mechanical improvements are allowed to any component in the standard system. Any mechanical enhancements require ongoing operation and maintenance and therefore require that the system be managed at least at Management Program Level 2, which necessitates a service contract between the system owner and a registered service provider and a renewable operating permit.

All new installations require effluent filters and these require maintenance (cleaning) at a frequency quite probably more often then tank cleaning. Owners must be made aware of this maintenance need (or they are likely to find out for themselves when the filter clogs). Effluent filters do serve both as a device to help protect the soil treatment area and as a device that can help ensure that systems are serviced and maintained.

Management Program Level 1 is the minimum management requirement for local permitting agencies. One of the basic functions is to develop and maintain an adequate record keeping system. Agencies need this basic information to make informed decisions and to effectively provide the educational component.

This level relies on prescriptive standards for the design and installation of systems, which is appropriate in that standard systems properly sited, designed, and installed are effective treatment systems. Performance assurance is derived from exercising quality control measures such as thorough site evaluation, watertight tanks, effluent filters, appropriate soil application rates, construction inspections, and other measures; and an educational program that provides the owner with the knowledge necessary to keep the system functioning properly.

Management Program Level 2

Management Program Level 2 is appropriate for areas where enhanced treatment systems are required to mitigate site constraints. The most frequent conditions to mitigate

- Inadequate soil (soil depth) to restrictive conditions
- Inadequate soil characteristics (texture, structure, or other characteristics)

- Depth to groundwater
- Small lot size

Treatment systems are available that can provide enhanced treatment to overcome these types of site conditions. These enhanced systems do require ongoing maintenance (frequency dictated by the type of treatment system). Physical monitoring and maintenance remain the responsibility of the owner. To help ensure that this maintenance is performed, an enhanced treatment system is issued a renewable operating permit that prescribes maintenance and inspection requirements as conditions of the permit and renewal of the permit. Prior to permit renewal a qualified professional or an agent of the implementing agency inspects and certifies the system for proper function.

Under this management program a renewable operating permit is issued, which needs to be renewed on a recurring basis, such as every two to three years. Therefore, system function can be evaluated at least at this frequency, with corrections made as determined necessary. Furthermore, enhanced treatment systems may require maintenance on a more frequent basis than the renewal term of the operating permit. The system, then, will be maintained more frequently with the proviso (in regulation) that the oversight agency must be notified of systems not functioning as designed. The operating permit should stipulate operation and maintenance (O&M) requirements as part of the permit.

The two key elements that differentiate this level from Level 1 are

- Renewable operating permits
- Owner responsibility for ongoing maintenance

This management level is suitable for areas where SOWTS cannot be installed due to site limitations, but where there is no public health/environmental concern. Most commonly these limitations include such factors as shallow soils, soils with poor texture or structure, or inadequate separation to groundwater. These limitations require that an enhanced onsite sewage treatment system be installed to compensate for the site limitations. Treatment technologies are available that can compensate for this lack of soil or separation distance by reducing constituents of concern to acceptable levels. The soil, then, is not essential for providing the treatment capacity.

All enhanced treatment technologies do require some level of ongoing maintenance since most rely on mechanical components (pump, blower, and other components) that need servicing at various frequencies. The type of treatment technology determines the frequency, with minimums established in regulation (the manufacturer may set more frequent maintenance requirements as part of the warranty conditions). The renewable operating permit should stipulate the minimum maintenance frequency and required maintenance items. The operating permit also requires the owner to obtain certification from a qualified third party as a condition of permit renewal.

A key provision of Management Program Level 2 is the educational component. The general public and political bodies must all recognize that environmental and public health concerns over using enhanced treatment systems can only be addressed by the ongoing maintenance of the systems and that ongoing maintenance can only be ensured by third-party service providers. Further, development of land with marginal/unsuitable site conditions should only be allowed by using enhanced systems.

Management Program Level 3

Management Program Level 3 is the most likely to be used/required for areas that have been identified as areas of concern by the local agency or by the RWQCBs. Identified impaired ground or surface water areas, sensitive coastal areas such as shellfish growing grounds and recreational beaches, source water protection areas for public drinking water supplies, and other areas of concern fit this level.

This management level is likely to be required for most of the urbanized counties/jurisdictions. These are the areas that have historically received the most scrutiny and for which watershed and groundwater information is the most complete. Most of the existing systems in these areas will be standard systems and, as part of this program, will need to be assessed for performance by an inspection/sanitary survey program. A properly performing standard system may be adequate in many situations. New system installations may include both standard systems and enhanced systems, but in either case renewable operating permits are required. The conditions of the renewable operating permit set maintenance and reporting requirements dependent on the system type and performance monitoring to ensure that the systems are performing to the design expectations/requirements.

There are four key elements of Management Program Level 3

- Mandatory third party maintenance contracts (service provider)
- Renewable operating permits (estimated term of two to three years)
- Sanitary survey of existing systems
- Performance monitoring and reporting

Performance monitoring is not defined. The type of monitoring required should be based on the public health/environmental concerns. Monitoring can range from determining that a standard system is functioning properly (after an evaluation concerning whether it was properly sited and other considerations) to a program requiring sampling of enhanced system effluent quality (assuming treatment goals have been identified), to groundwater monitoring (sampling for constituents of concern). The expectation is that if impairment has been identified and onsite systems contribute constituents of concern, then any new systems must treat to reduce/eliminate contributions and possibly existing systems need upgrading for the same purpose. In any case, as part of the renewable operating permit, the owner will be required to have monitoring performed.

The key element that differentiates Management Program Level 3 from Management Program Level 2 is that system performance must be maintained and monitored to ensure that public and/or environmental concerns are mitigated. Suitable system designs are predicated on producing a certain effluent quality that addresses the concerns. Both standard and enhanced treatment systems would be allowed at this program level. The level also requires renewable operating permits and mandatory service contracts for ongoing maintenance.

Defining and establishing the monitoring program needed is based on both the complexity of the treatment system and the potential for contributing to or causing a public or environmental problem. For example, monitoring of standard systems may involve a routine inspection program that requires septic tanks to be checked every three years for proper function and a determination made as to whether the tank needs to be pumped. The structural integrity of the tank and other system components would be checked at this time along with visual inspection of the soil dispersal system. This routine inspection program assumes that the system was sited properly (adequate soil conditions, sufficient setbacks, and other considerations) and that a properly functioning system provides the needed treatment. Enhanced treatment systems with more complex technology require more frequent monitoring. For example, a system that is designed to produce a certain quality effluent in order to mitigate a concern may need to be monitored on a yearly basis, with effluent samples taken to determine if the system is performing as intended. Monitoring could be performed by the permitting agency or other public entity or by private sector service providers. Private sector service providers would be required to submit monitoring reports to the permitting agency. Ideally the monitoring requirement would correspond to the required maintenance for a particular type of treatment system.

Monitoring programs may also include the need for groundwater monitoring for constituents of concern. This determination is made by the permitting agency after consultation with the RWQCB and other agencies that are involved in managing the resource at risk. Again, the main purpose of the monitoring program is to assess system performance.

Management Program Level 4

Management Program Level 4 provides additional public health and environmental protection since system performance, maintenance, and monitoring responsibility is assumed by a utility (public or private entity). The utility receives oversight via required program reporting to the local jurisdiction. The utility is required to conduct assessments at the watershed or subwatershed level to determine the appropriate type of system for any given area. The assessment determines the treatment goals for both existing and new systems.

The advantage of this program is that the local agency deals with a single entity and accountability is therefore much higher (and presumably compliance as well). Also, the local agency can work with the utility in determining what treatment goals are necessary to mitigate public health and environmental concerns in a coordinated (watershed or subwatershed) manner. Ownership of the system does remain with the owner and therefore system improvements, upgrades, or other aspects still need the owner's approval.

Management Program Level 5

Management Program Level 5 takes the elements of Management Program Level 4 one step further. The major benefit of this program, from a regulatory perspective, is that the utility is responsible and accountable for all aspects of system performance since it also owns the system. This level is appropriate for development in sensitive environments or dense developments where it is essential that systems are installed, operated, monitored, and maintained to meet specific treatment goals.

Performance-Based vs. Prescriptive Codes

For information about the benefit of developing regulations that encourage performance-based standards, refer to Appendix A, Performance-Based vs. Prescriptive Codes—A Discussion.

F STAKEHOLDER QUESTIONNAIRE SAMPLE

This appendix includes a sample of the Stakeholder Questionnaire that was sent to all of the stakeholder project participants.

Dear AB 885 stakeholder process participant:

I am preparing a critique of the process used for development of the statewide regulations. The critique includes a history and evolution of AB 885 into its final form, including the impetus behind the legislation and the factors that shaped it.

Part of the critique also deals with the regulation development process. The stakeholder process played a major role. I am interested in getting your impression of how this process worked.

I would appreciate your assistance by answering the following questions and also by providing your overall impression.

First, please identify which stakeholder group(s) you were in:

1. Stakeholder Advisory Team
2. State Discussion Group
3. Technical Advisory Committee
4. Project Support Team
5. Consulting Team

Questions: Please expand on your answers if so inspired!

1. Was the process explained well—in other words were the instructions/direction clear as to what the process was to be/how it was to work? Was this adequately reinforced during the process?
2. Was the process clearly defined?
3. Did the instructions/direction make it clear what the product of the process was to be?
4. Did the instructions/direction make it clear how the work product was to be achieved?
5. Was the process explained well in terms of defining the roles and responsibilities of your stakeholder group, the other stakeholder groups, and the SWRCB, the support staff and the facilitators?

6. Were the roles and responsibilities adhered to?

7. Was the format conducive to open dialogue?

8. Was the format conducive to open transfer of accurate information? I realize that accurate information is in the eye of the beholder, but do you feel that the process enabled this to occur?

9. Was the process consistent? In other words was the structure/format maintained throughout?

10. Were adjustments/changes made in the process in response to feedback from the group?

11. Were adjustments made in the process to reflect the stakeholder group desires?

12. Were you able to participate to your satisfaction?

13. Were your given the opportunity to present your views adequately?

14. Were the views of the stakeholders you represented adequately presented?

15. Were your views adequately presented/transferred to the rest of the group?

16. How many of the meetings were you able to participate in?

17. What were the best features of the process?

18. When did the process work best—meet its objectives?

19. What were the worst features of the process?

20. Can you identify any particular event(s) that did not follow the process, as you understood it to be?

21. When did the process fail to meet its objectives?

22. Were you generally satisfied with the process?

23. If not, what and how would you have changed the process?

24. Did the process result in the desired/expected outcome as described at the beginning—the January 3, 2001 kickoff meeting?

25. Did the process meet your expectations and achieve your desired/expected outcome?

26. Did SWRCB staff and the facilitators/consultants adequately support the process?

Overall Impression

Please describe your overall impression of the process.

G SWRCB REGULATION DEVELOPMENT TIMELINE

This appendix provides the timeline established for the SWRCB regulation development process and the seven requirements for AB 885 that drove the regulation development.

SWRCB Project Team

October 29, 2001

Timeline

Date	Group	Time	Notes
November 27	Consultation Team	9am–5pm	• Form and Launch Team • Scope project • Plan for Kickoff
December 13	Kickoff Meeting	9am–5pm	• All Project Participants • Agree upon high level roadmap • Roles and responsibilities
January 8	Stakeholder Meeting	9am–4pm	#1 and #6
January 22	Discussion Group	9am–4pm	
February 7	TAC Group	9am–4pm	
February 28	Stakeholder Meeting	9am–4pm	#1 and #6
March 12	Discussion Group	9am–4pm	
March 21	TAC Group	9am–4pm	
April 9	Stakeholder Meeting	9am–4pm	#1 and #6
April 23	Discussion Group	9am–4pm	
May 1	TAC Group	9am–4pm	
May 15	Stakeholder Meeting	9am–4pm	#1 and #6
May 28	Discussion Group	9am–4pm	
June 6	TAC Group	9am–4pm	

Date	Group	Time	Notes
June 19	Stakeholder Meeting	9am–4pm	#3 and #5
July 2	Discussion Group	9am–4pm	
Week of July 8	Environmental Groups	TBD	1 North, 1 South
July 18	TAC Group	9am–4pm	
July 30	Stakeholder Meeting	9am–4pm	#2, #4 and #7
August 13	Discussion Group	9am–4pm	
August 22	TAC Group	9am–4pm	
Start September 3	Circulate Draft Regulations and Initial CEQA Study		
October 1 (North)	Public Workshops	TBD	1 North, 1 South, 1 Central
October 23	Close Out/Product	TBD	• All Project Participants
October 28	Close for Public Comment		
Nov–Jan 2003	Public Response Document Prepared and Circulated		
February 2003	Board Staff Prepares EIR (as required)		
March 2003	Draft EIR Circulated		
April 2003	EIR Close for Public Comment		
April 2003	Board Adopts Regulations and CEQA Document		
40 Days After Adoption	Office of Administrative Law		
August 2003	Publish Final EIR		
October 2003	Board Adopts		

The Seven Requirements for AB 885

1. Minimum Operating Requirements: Siting, Construction, and Performance
   - Purpose: Systems that perform at a level of treatment necessary to protect watershed quality and beneficial uses by considering soil characteristics and site conditions
   - Outcomes:
     – Criteria established for tank and dispersal system
     – Best existing regulations and guidelines identified (both local and other States)
     – Best and new practices established

  - Measures of performance established
  - Measures of systems performance established
- Dependences:
  - UC Davis report due March 31 (Partially Dependent)

2. Requirements for Systems Adjacent to 303(d) Impaired Waters
   - Purpose: Ensure that impairment is not due to or exacerbated by onsite Sewage Treatment Systems (OSTS)
   - Outcomes:
     - Definition of "adjacent to impaired waterbody"
     - Regulations established that ensure successful dispersal of waste water generated adjacent to impaired water
3. Implementation
   - Purpose: Successfully resolve challenges associated with the oversight of OSTS
   - Outcomes:
     - Input on cut-off for domestic versus commercial
     - Clarity around waiver process (more consistency across regions)
     - Coordinate our work with CCDH subcommittee
     - Definition of "***qualified***" local agency
4. Corrective Action
   - Purpose: Statewide procedures established to address, resolve and abate failing OSTS
   - Outcomes:
     - Corrective actions identified that incorporate soil characteristics and site conditions
     - Corrective actions suggested for failing OSTS
   - Dependences:
     - Chico report due March 31
5. Monitoring/Management
   - Purpose: Monitoring/management program appropriate to system type
   - Outcomes:
     - Set "complexity brackets" with monitoring options for each
     - Integrate with EPA modules as straw-man

6. Exemption Criteria
    - Purpose: TBD
    - Outcomes: TBD
7. Systems Subject to Major Repairs
    - Purpose: Failure of OSTS defined in order to identify what systems need to be brought into compliance with new regulations
    - Outcomes:
        – "Major Repair" defined

H STAKEHOLDER WRITTEN RESPONSES TO THE SWRCB

This appendix includes letters that were submitted by various stakeholder groups to the SWRCB over the course of the regulation development process, including:

- California Conference of Directors of Environmental Health
- Regional Council of Rural Counties
- Heal the Bay
- California Association of Realtors
- California Onsite Wastewater Association
- United States Environmental Protection Agency

California Conference of Directors of Environmental Health

California Conference
of Directors of
Environmental Health

December 16, 2003

Arthur Baggett, Chair
State Water Resources Control Board
1001 "I" Street
Sacramento, CA 95814

SUBJECT: ONSITE WASTEWATER TREATMENT REGULATIONS

Dear Chairman Baggett:

You may be aware that on December 3 and 4, 2003 the California Conference of Directors of Environmental Health (CCDEH) co-sponsored the Onsite Wastewater Treatment Regulators Workshop with US EPA, the Regional Council of Rural Counties, the National Decentralized Water Resources Capacity Development Project, CSU Chico's Wastewater Training and Research Center and the California Environmental Health Association.

The purpose of the meeting was to provide a forum for local, regional and state agencies to develop a consistent plan for the effective and efficient implementation of AB 885 and its pending regulations. Please see the enclosed workshop program and participation list.

The State Board staff involved in the drafting of these regulations as well as staff from each of the nine Regional Boards were invited to participate in the workshop. The sponsors provided up to $14,500 in subsidies for Regional Board travel and accommodation to encourage regional board attendance. All state board staff workshop expenses were absorbed by the sponsors.

Approximately 102 local regulators and five State staff involved in the rule-making process attended the workshop. Unfortunately, despite our best efforts, only five Regional Board staff participated. Some 20 industry and other interested parties attended the open sessions of the workshop.

Although the state board was unwilling – or perhaps unable – to provide any specific language of their revised draft regulations, James Giannopoulos and Todd Thompson did provide an outline of some of the key provisions in the State Board's draft. Despite the lack of specific language to review, the participants were able to discuss at considerable length the overall implications of the State Board's proposal as contrasted with the draft language that CCDEH and other stakeholders had provided to your staff back in March of this year.

Without recounting all the discussions and recommendations of the workshop, I will share two broadly held sentiments and six specific recommendations for your Board to consider PRIOR to releasing the draft regulations for formal public comment. CCDEH understands that other interested parties that attended the workshop may be commenting separately to you.

While critical of your Board's handling of this rule-making process, these comments are offered in the spirit of full collaboration and with a commitment to continue to provide full local agency support for an effective and efficient program for permitting and enforcing onsite waste water management in the State.

First, we need to express our frustration. It appears that the core recommendations provided by the local agencies to your Board staff over the past two years have been ignored in this latest draft. This jeopardizes both the process and the outcome.

Second, while we recognize that the State Board may be statutorily unable to require greater participation and coordination with the nine Regional Boards, we would expect the State to be more assertive in facilitating better working relationships between state, regional and local agencies responsible for managing onsite wastewater treatment. While this one excellent opportunity to enhance communication and collaboration among all implementing agencies has been lost, we look to the State Board for leadership in this regard.

Acknowledging that we have not seen the specific language of the revised state board draft, we offer the following comments based on the outline provided to us on Wednesday last week by staff.

A. The universal requirement of "advanced" OWTSs for ALL new or major repairs by 2009 is unjustifiable and unwarranted. Insisting on this requirement without a stronger and better-substantiated rationale is likely to evoke strong opposition from most of the stakeholders involved in this process to date. The "white paper" that was provided as background at the conference was inadequate and, in places, very misleading. We will provide a more complete response to the white paper at a later date.

B. While CCDEH supports the principle of performance standards, we believe that one set can not be reasonably applied to every condition around the entire state and that any such standard needs to be linked to water quality objectives defined in the basin plans. Any performance standard must be described in the context of the point of compliance and a clear distinction between the use of the performance standard as a "treatment standard" versus a "water quality objective" must be made. We do concur with setting a more protective standard for 303(d) waters that have been impaired by onsite systems or by effluents that are associated with onsite

systems. However, that standard should be established within the context of a TMDL for the affected water body, which addresses all significant sources of impairment within the watershed.

C. In order to avail ourselves to the considerable body of research and experience in applying performance standards to onsite wastewater treatment systems, we propose that California adopt a tiered approach similar to that described in the voluntary guidelines published by the United States Environmental Protection Agency (see www.epa.gov/owm/mtb/decent/index.htm.) These guidelines encourage adopting a framework in which environmental risk or site unsuitability determine the need for cleaner effluent. The guidelines help determine when it is appropriate to rely on passive, conventional technology and soils for treatment, and when a higher standard (along with higher costs and more management) is necessary.

By adopting this approach statewide, SWRCB might help integrate watershed assessment functions that are the responsibility of the regional boards and local agencies with the drinking water source assessment program at a deeper, more practical level than it can by simply mandating that all systems meet the maximum contaminant level for nitrate. Such an approach will reinforce the strongest local regulatory programs already operating, and provide a benchmark for other jurisdictions needing to balance environmental protection with growth.

D. The certification of both the systems and the design, installation and maintenance personnel is crucial. Some local jurisdictions do not currently permit advanced treatment systems because of past poor performances of some unproven systems and the jurisdictions inability to adequately evaluate the efficacy of these non-traditional systems. Under appropriate conditions and with reliable assurances of their performance, advanced systems should be considered as a viable option for onsite wastewater treatment throughout the State. We urge the State Board to expedite the implementation of such statewide certification - whether done by the state or a third party.

E. The adoption of a single Memorandum of Understanding (MOU) between each local jurisdiction and its one or more regional boards is imperative for the clear and effective delineation of responsibilities and authorities of local, regional and state agencies.

F. Disinfection should be required only where there is a demonstrated need based on water quality objectives and soil and system capacities. CCDEH considers pathogen reduction through required performance standards as a preferable approach to a universal mandate of disinfection. Even though technology may currently exist, ongoing effective operation of disinfection equipment for individual OWTS will be expensive and technically challenging for property owners and locally regulators.

Notwithstanding the breadth of geographical and geological variation through the State, there still remains a need for some greater level of consistent regulation of OWTSs. CCDEH believes that the March 2003 draft language we helped draft found a sound balance between prescriptive statewide standards and location-driven flexibility. We also believe that the exemption and variance process outlined in our draft provides for full public health and water quality protection while still offering an essential opportunity to accommodate local conditions and needs.

We caution your board not to offer up a set of regulations that you can not justify and we can not implement. Our members are the public officials that assume the day-to-day responsibility for protecting public health, safety and environmental quality at the local level. As witnessed by our unflagging commitment to this rule-making process, our interest in adopting protective yet practical requirements is unequivocal and based solely on environmental health considerations – not "pro growth" or "no-growth" implications.

We trust that you will give our comments the careful consideration. Please contact me at (530) 621-5360 or Justin Malan, CCDEH Executive Director at (916) 944-7315 to arrange a meeting between your Board members and staff and CCDEH representatives before the draft regulations are released for formal public comment.

Sincerely,

Original Signed By:

Jon A. Morgan, President
CCDEH

Cc: SWRCB members and staff
Joyce Hudson, US EPA
Jeff Arthur, Assembly Committee on Natural Resources
Conference Attendees

Regional Council of Rural Counties

November 12, 2002

Mr. Todd Thompson, P.E.
AB 885 Project Manager, Division of Water Quality
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

RE: Preliminary AB 885 Draft Regulations

Dear Todd:

I appreciate this opportunity to offer input regarding the preliminary draft regulations that were distributed and discussed at the recent "AB 885 Wrap-Up Meeting" on October 23, 2002. Although the latest version of the regulations addresses some of the concerns previously raised by rural counties, many areas of concern remain.

At this point, I have not tried to provide an exhaustive "section-by-section" list of all outstanding comments that have previously been offered by me and others throughout the regulatory development process. I did, however, want to take advantage of this opportunity to try and generalize what I feel to be some of the more significant unresolved issues.

1. Definitional and Organizational Clarity. The regulations still suffer from a lack of definitional clarity regarding key items/terms. While narrative "glossary definitions" are useful in helping to understand the technical issues, concise and unambiguous "regulatory definitions" are needed to guide eventual implementation/enforcement activities and to ensure a common understanding between counties, Regional Boards, developers, etc. Also, improved organization using commonly accepted regulatory formatting would foster better comprehension and facilitate improved "cross-referencing" from one section to another. The "tone" of the regulations, in general, seem to be overly "narrative" and, in places, seem to get lost in unnecessary details explaining the "whys" and "how" of the development process. A more "streamlined" declarative syntax would be helpful and would provide a more meaningful basis for future detailed comments.

2. Prescriptive Standards. There continue to be outstanding issues regarding many of the prescriptive standards or "absolute minimums" that are being imposed statewide and many of the suggested prescriptions suffer because there is no clear nexus between water quality protection and the numeric limits being imposed. For example, there are outstanding questions about why many of the horizontal setbacks are fixed statewide, regardless of site hydrogeology and without consideration to the type of onsite treatment and resulting effluent quality.

3. Lack of Clarity Regarding Variances and Exemptions. Perhaps this is one of the most important issues and would help to alleviate many of the concerns about the proposed prescriptive standards. Stakeholders have talked at length during many of the workshops about the need for Local Enforcement Agencies to have explicit authority to issue variances from the prescriptive standards in consideration of local site conditions and based on a finding that water quality would not be threatened as a result of the variance. As far as I can tell, the regulations, as currently written, do no provide for this flexibility. Similarly, I do not feel the regulations provide the required guidance and regulatory framework by which categorical exemptions can be issued by the Regional Boards. Some statewide direction seems necessary in this regard to provide for consistency between Regions and to ensure Regional Board conformance with the statutory intent.

4. Confusion Regarding "Risk-Based Management Levels". The "management level" section of the regulations has been a constantly moving target throughout this rule-making process and, I feel, the latest version is confusing and will be difficult to apply to real world scenarios that will need to be addressed during the "MOU negotiation" process". Clearly there is a need to "match" the level of local authority with the available technical expertise for system evaluation. With the current focus on water quality issues instead of system complexity, I feel the regulations fall short in this regard.

5. Limited Design Flexibility. In many places, the regulations seem to impose unnecessary rigidity by disallowing for design flexibility in "difficult" soils. For example, imposing the selective use of "sidewall" versus "trench bottom" (but not both) for system sizing seems unnecessarily conservative and unreasonable in many cases. Also, arbitrary "cut-off" percolation rates (i.e., 10 minutes per inch) may preclude the construction of standard systems in areas where their operation would otherwise be acceptable and not adversely impact water quality. Similarly detailed and prescriptive methods for flow calculation provide limited flexibility and do not adequately provide incentives for water conversation. Generally speaking, I think the regulations should encourage innovative ways to allow for onsite wastewater treatment system (OWTS) designs that are protective of water quality. Excessively stringent "guidelines" run contrary to this goal.

6. Minimum Vertical Separation to Groundwater. This has been discussed at length and many Stakeholders have provided technical documentation in support of a less stringent requirement than that which is currently proposed. Despite this scientific evidence, the overly restrictive prescriptive standards remain. Additional analyses and re-consideration on this issue is recommended.

7. "Corrective Actions" for "Failing Systems". Considering the impacts of these determinations, I think that the regulations need more definitional clarity and need to focus more on direct and immediate public health impacts. For example, as currently written, the regulations say that a system could be considered as "failing" if a Regional Board were to make a determination that "inadequate treatment" was causing "pollution" of groundwater. There is no definition of "inadequate treatment" or "pollution". The regulatory "definition" of "failure" is said to be a "condition . . . that threatens public health or water quality by creating a potential for direct or indirect contact between sewage and the public". This is frighteningly ambiguous and could,

theoretically apply to any onsite wastewater system. There is no definition of "sewage" (does it include any treatment system effluent or does it mean raw sewage prior to septic tank treatment?) and it is not clear what is meant by "indirect contact" (it sounds a little oxymoronic). To me, the proposed definitions greatly exceed legislative intent. Also, the regulatory relationships between "corrective actions" and "major repair" and simple "repair" require additional clarification.

8. "Alternative" and "Experimental Systems". Throughout the AB 885 Stakeholder process, it has become increasingly clear to me that one of the most significant existing problems associated with the permitting of onsite wastewater systems (particularly in rural areas) is the lack of guidance and support regarding alternative and/or experimental systems. As currently worded, the regulations do not adequately address this problem—although the proposed OWTS Clearinghouse would seem to be a step in the right direction. The regulations, in general, provide very detailed strictures about the technical aspects of standard OWTS siting and performance—details that are well-known and well-understood by most local enforcement agencies. However, the one area in which local enforcement agencies have sought assistance from the State has received minimal regulatory attention. As such, there is no regulatory assurance that local agencies will be able to get the technical assistance they may need to adequately and consistently evaluate proposed "engineered" or "experimental systems". I would like to suggest that the regulations be amended to more clearly define the responsibilities of the SWRCB and the Regions in this regard.

9. Assessment of "Cumulative Impacts". The proposed regulatory process for assessing the "cumulative impacts" of OWTS is unclear and, as written, the regulations seem to impose an unrealistic and arbitrarily selective burden on potential applicants. I think there needs to be more clarity regarding who is responsible to assess "cumulative impacts" and more clarity regarding what type of "project" would trigger this requirement. Also, I am concerned that the regulations may encourage an overly broad interpretation of "cumulative impacts" that would require Regions to unilaterally restrict the construction of any standard OWTS within broad geographical regions because, for example, of high nutrient levels in underlying aquifers.

10. "MOU Process". In many respects, the anticipated "MOU" between individual Regional Boards and participating counties will supercede the State regulations. As such, the MOU "negotiation" process between the counties and the Regions is of paramount significance. Throughout this entire regulatory development process, there seems to be a presumption that the requirements of the Regional Boards (to be imposed as conditions in the MOU) will generally be accepted as "reasonable" by the local jurisdictions. This presumption deserves further analysis and I believe that the AB 885 regulations need to anticipate the possibility that the requirements of some Regional Boards may be unacceptable to some jurisdictions. To circumvent potential problems in this regard, I would suggest that the regulations need to address the "MOU" process in more detail. At a minimum, the regulations should restrict the authority of the Regional Boards to prevent imposition of unnecessarily stringent requirements (yes, it could happen) and to avoid excessive administrative and other requirements that may be imposed as conditions for "local approval". At a minimum, I believe that the regulations should explicitly provide for a "petition process" (or some other type of administrative "remedy" short of legal action) whereby local jurisdictions will have the ability to solicit assistance from the State Water Resources Control Board, if need be, to provide guidance and to help resolve any irreconcilable differences

that may prevent local jurisdictions and Regional Boards from reaching mutual agreement on specific terms of a MOU. I would also suggest that there be a regulatory provision specifying that the MOU require Regional Boards to provide local jurisdictions with necessary technical assistance in a timely manner.

11. Financial Support Mechanisms. As previously suggested, I believe that the regulations are remiss by failing to address the statutory requirement to consider financial assistance to private property owners that are disproportionately impacted by the proposed regulations.

Hopefully the above comments are helpful at this point. Generally speaking, I believe that major changes are still needed and I look forward to working with you and others as this process moves forward. While there is a common understanding of the need to protect our State's water resources, I am concerned that the regulations, as currently drafted, impose unnecessarily restrictive and costly requirements, especially in rural areas of California, that do not directly relate to increased water quality protection. As currently drafted, I believe that the regulations will have unanticipated and profoundly negative impacts on local land use control and planning. The regulations will unnecessarily restrict rural development and will impose significant unfunded mandates on local governments with no means of offsetting revenue generation.

As always, your consideration of our input is appreciated. I am available at your convenience, along with other rural county representatives, to discuss these comments and others in more detail and to answer any other questions you may have.

Sincerely yours,

James A. Hemminger, P.E.
Vice President for Regulatory Affairs

cc: RCRC Member Counties
Justin Malan, Executive Director, CCDEH
Ken Stuart, Chair, CCDEH Land Use Committee
Eileen Reynolds, Legislative Advocate, California Association of Realtors

Heal the Bay

November 8, 2002

Todd Thompson
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Re: Comments on the Tentative Draft Regulations for AB 885

Heal the Bay was a sponsor of AB 885 (Cal. Water Code, Division 7, Chapter 4.5, section 13290-13291.7) and we played an instrumental role in the drafting and passage of this critical legislation. We worked with Assembly member Jackson to bring forth this legislation because it was abundantly clear to the organization that septic systems in California were essentially unregulated by the State for the protection of water quality. California lacked a systematic and effective approach to regulating the thousands of onsite wastewater treatment systems in the state. Numerous water bodies are listed on the S. 303d list as impaired for fecal bacteria and/or nutrients in areas proximate to onsite wastewater treatment systems. One of the principle reasons for the creation of this bill was to help eliminate these water quality problems to better protect public health and aquatic ecosystems. The draft regulations in their current form fail to meet this goal, and in fact do not even meet the most basic requirements of AB 885.

The regulations fail to address the following sections of AB 885:

S.13291(b)1 – Minimum operating requirements for onsite sewage treatment systems.

S.13291(b)2 – Requirements for onsite sewage treatment systems adjacent to waters identified pursuant to Section 303(d) of the Federal Clean Water Act.

S.13291(b)4 – Requirements for corrective action when onsite sewage systems fail to meet the requirements or standards.

And S.13291(b)5 – Minimum requirements for monitoring used to determine system or systems performance, if applicable.

Also, the regulations fail to adequately address the following sections of AB 885:

S.13291(b)3 – Requirements authorizing a qualified local agency to implement those requirements adopted under this chapter within its jurisdiction if that local agency requests that authorization.

S.13291(b)6 – Exemption requirements to be determined by the regional boards.

And S.13291(b)7 – Requirements for determining a system that is subject to major repair, as provided in S.13291(a)2.

In addition, the draft regulations appear to offer a blanket exemption to single family homes, offer no guidance on the applicability of EPA's Model Management Guidelines' five tiered approach, dissuade local agencies from allowing alternative onsite systems, do not have mandatory water quality performance standards for **any** onsite treatment systems under **any** conditions, include no definitions, ignore the issue of cumulative impacts, and fail to address the most critical issue to county health agencies and local permitting authorities – the specific requirements of a Memorandum of Understanding (MOU) between the state and local agency. In short, the draft regulations appear to be little more than a rewrite of the Uniform Plumbing Code's requirements for siting and construction of onsite systems, rather than the legislatively mandated effort to come up with regulations to protect water quality, public health and aquatic life.

Heal the Bay comments do not focus on specific problems in the regulation like allowing groundwater separation of less than 5 feet or setbacks of less than 100 feet from creeks and the coast (as small as 25 feet for wetlands and ephemeral water courses!) because this comment letter would be extremely long and focus on the smaller issues rather than the big picture: onsite system caused or exacerbated water quality problems in California. The following is a brief summary of comments on steps that need to be undertaken to make the AB 885 regulations adequate:

1) The document should include a decision tree for onsite system requirements based on risks to human health and aquatic life. This recommendation from a break-out group was so popular that it generated loud applause. A decision tree approach gives the specificity needed to address a wide variety of existing water quality, site and cumulative impact conditions. Also, it gets rid of the current, one size fits all approach that caters to the least common denominator – systems in remote areas. In addition, the approach should eliminate blanket exemptions to single family homes which is both illegal under AB 885 and nonsensical in light of the purpose of the bill: to protect human health and aquatic life (see problems at Rincon and Malibu for examples of single family home caused or exacerbated water quality problems). One example of how the approach would work would be that – if your system is on a one acre or larger parcel, has a groundwater separation of more than 30 feet, and is not within 400 yards of a receiving water, then the requirements for that system should be extremely basic (the least common denominator). However, as groundwater separation decreases, lateral setbacks from receiving waters decreases, parcel size decreases, and onsite system densities increase in the area, the requirements on the system would increase dramatically (water quality performance standards, effluent filters, etc.). Soil and geologic conditions must be a critical factor in the decision tree matrix as well. As stated previously, the regulations ignore the issue of cumulative impacts, even though everyone agrees that requirements must be more stringent for high density areas, especially near groundwater or surface receiving waters. The most restrictive requirements should be for systems adjacent to impaired water bodies. As the risk increases, requirements for treatment and management levels would increase.

The regulations must include strict requirements for onsite systems adjacent to 303d listed water bodies. First of all, the regulations need to define what adjacent to impaired waters means. (Actually an entire section on definitions is sorely needed.) One potential way of looking at the problem is that any site within 100 feet of a water body impaired for nutrients and/or fecal

bacteria or upstream tributaries to that impaired water body should qualify for the more stringent regulations. At the last meeting, there was discussion of the requirements applying to the entire watershed containing the impaired water body.

Clarification of what systems this provision applies to is only the beginning. The document needs to include performance water quality standards for systems adjacent to S. 303d listed waters. As you may recall, early drafts of AB 885 had mandatory performance standards for all onsite systems, but their was consensus that this approach need only apply to systems adjacent to impaired waters or systems sited with other high risk conditions (inadequate setbacks or groundwater separation). The regulations must include requirements for nitrogen, phosphate and fecal bacteria removal for those systems adjacent to waters impaired by those constituents. Heal the Bay's recommendation is for 10 mg/l for nitrogen, 5 mg/l for phosphate and Title 22 requirements for fecal bacteria. As the regulations currently stand, they will do nothing for areas like Malibu Lagoon and Surfrider Beach, Rincon or Arroyo Quemada. These areas were some of the catalysts for the bill creation to begin with.

If these recommendations are incorporated into the regulations as required by AB 885, then this will require a dramatic change in the approach that the State Board has taken on alternative onsite wastewater treatment systems. These regulations should mandate the use of alternative systems in high risk conditions, not just allow them. Otherwise, water quality and beneficial uses will not be protected.

3. The regulations must adopt and mandate the use of EPA's risk based management level approach. Along with the decision tree recommendation, this recommendation enjoys the most support from all stakeholders. EPA spent a considerable amount of time and money coming up with the risk management level approach of managing onsite systems on a regional level. They've spent even more time coming to California and meeting with interested stakeholders to discuss the approach. Everyone from COWA to the Environmental Health Agencies to the environmental community agrees that it is a sensible approach to managing onsite systems. That being said, mere inclusion of a weaker version of the management levels without mandating use of the levels under certain conditions is useless.

For example – onsite systems adjacent to 303d listed water bodies should be at least be at Level IV. Operating permits and advanced treatment are needed for all systems adjacent to impaired waters (unless the responsible local agency can demonstrate scientifically that certain systems in these areas do not require retrofitting). Systems in poor soil conditions or near high groundwater or adjacent to receiving waters may fall under Level II or III. The systems on areas greater than one acre and near no aquatic resources would be in Level I. This language needs to be incorporated as part of the aforementioned decision tree matrix. Once again, this degree of specificity provides the guidance necessary for local health agencies, cities and Regional Boards trying to implement successful regional onsite wastewater management and compliance assurance programs.

4. The regulations must include comprehensive compliance assurance requirements.

Currently, the regulations do not include any compliance assurance requirements. Categories of needed requirements are inspections, system maintenance reporting requirements, operator and/or system contractor certification, a mandatory spill response plan, monitoring requirements, education, and enforcement provisions. Depending on the management level used by the local agency, some or all of these compliance assurance requirements are needed. Even for Management Level I systems, there should be some minimum educational, reporting and enforcement requirements.

Monitoring requirements must include system installation and performance. The State Board must clarify minimum requirements for visual monitoring and requirements for depth to groundwater monitoring, system performance monitoring of the effluent, and groundwater monitoring at property down-gradient property boundaries. For example, in the Los Angeles Region's (all of Los Angeles and Ventura Counties) General WDR (Order No. 01-031) for small commercial and multi-family systems, receiving waters were defined as groundwater at a point no greater than 50 feet hydraulically down-gradient of the disposal area, or the property line of the discharger, whichever is less. The General WDR includes extensive receiving water requirements as well (ex. 10mg/l for total N and nitrate N, and less than 1.1 MPN/100 ml for the three fecal bacteria indicators). Compliance with receiving water limits are determined by using a minimum of three appropriately located groundwater wells as determined by the Executive Officer of the Regional Board.

Heal the Bay provides these requirements as an example that is already used in the L.A. region, not as minimum requirements for all systems. However, these requirements are sensible for high-risk systems and systems adjacent to 303d listed waters. An additional requirement that needs to be included is for alternative systems, effluent water quality needs to be monitored on at least a quarterly basis.

5. The regulations must have clear minimum requirements for an MOU between the State and the designated responsible agencies for regional onsite system management.

The State Water Board **must** set criteria authorizing local agencies to implement AB 885 regulations. The purpose of the criteria is to ensure that local agencies take a comprehensive role in managing their local, decentralized wastewater system. Minimum requirements to adequately inventory systems, implement an effective compliance assurance program, and to assess the impacts of onsite systems on receiving waters must be part of the MOU. Also, the MOU must contain language on how the State expects the local agencies to implement the AB 885 program. Efforts by local environmental health agencies in the MOU arena have been extensive, yet the draft regulations to not even address their comments or concerns.

In a related category, the MOU must clearly give the designated agency the authority to do the following:

Enter upon the discharger's premises where a regulated facility or activity is located or conducted.

Have access to view and copy critical records.

Inspect at reasonable times any facilities, equipment, practices or operations.

And, sample or monitor at reasonable times for the purposes of compliance with this regulation.

Conclusion - We appreciate that the State has committed extensive time and resources to the stakeholder process, but it has obviously not resulted in the recommendations necessary to solve the State's wide-scale water quality problems cause or exacerbated by onsite systems, and it has not achieved stakeholder consensus. Ironically, the only clear consensus seems to be that the draft language does not amount to the clear and legally required regulations under AB 885. Approval of the current draft regulations would lead to tremendous confusion at the local agency level, would not result in measurable improvement in water quality, and would be completely illegal in light of the fact that the regulation ignores the majority of requirements in the bill. As a participant in the discussions on the numerous drafts of the regulations, Heal the Bay seemed to be among the majority of entities including environmental health agencies, COWA representatives, and numerous onsite system experts that believe that the draft regulations have completely missed the mark.

Please call me at 310-453-0395 x119 if you would like to discuss our comments.

Sincerely,

Mark Gold, D. Env.
Executive Director

Cc: Governor Davis, the State Water Resources Control Board, Assembly members Hannah-Beth Jackson and Fran Pavley, Senator Sheila Kuehl, the Los Angeles Regional Water Quality Control Board, Malibu, and the Santa Monica Bay Restoration Project

California Association of Realtors

September 11, 2002

C.A.R. Comments on AB 885 Regulations Wrap-Up Draft

Dear Todd:

As you know, the CALIFORNIA ASSOCIATION OF REALTORS® has been very concerned about the impact of the AB 885 regulations on existing property owners with onsite wastewater treatment systems. We are also concerned about the regulations' impact on the cost of new housing with OWTS. What follows are some of our primary concerns, in bullet format, which we would like to see addressed in the regulatory package before it is released for public review.

- Clarify in each section of the regulations, except where "major repair" and "failing systems" are involved, that the regulations apply only to "new installations" of OWTS (i.e., I.A. Site Investigation and Evaluation; I.B. Required Information; II.A. 1. New Construction Siting Requirements; II.B. Horizontal Separation Distances; III. System Applicability and Performance; IV.A.1. Septic Tank Construction; IV. B. 2. Septic Tank Sizing, etc.) and not to existing systems.

- I.B. The soil evaluation standards are too prescriptive for statewide standards.

- I.B.2.b.(1). Requiring a total of 6 percolation tests on one property is overkill, and will be unnecessarily expensive to the property owner. This standard could be practical for subdivisions and commercial installations, if warranted by site conditions, but it is inappropriate for a new installation at a single-family residential home site.

- II.A.1.a. We question a statewide 30% slope limitation. There may be some soil/topographic conditions that would allow for a greater slope. Statewide standards should be more flexible.

- II.H.1.b. Clarify that this is only a concern where the 303 (d) listed water body is listed for those pollutants related to OWTS. There was an attempt to do this in II.H.5., but it isn't very clear.

- II.H.1.c. and II.H.3. There should be a monetary amount to define "major repair." We suggest expenses of $10,000 or more, adjusted for inflation, should constitute a "major repair." Simply replacing a standard tank/treatment unit, without need for major changes to the dispersal system, should not constitute a "major repair."

• II.H.2. and II.H.2.a. These are good clarifications that existing OWTS/OSTS are not impacted by the regulations unless they are "failing" or needing "major repair," and that all feasible steps must be taken before deeming a structure uninhabitable or unusable. However, it should be further clarified that a "failing system" does not automatically trigger a "major repair."

• II.H.3.a.ii. It is apparent from this section that there is a goal to phase-out systems constructed of steel drums, redwood or cinderblock. In cases where there is a "major repair" of a standard system, it is unclear whether the property owner will be required to meet the requirements in Section IV, or some other standard. Clarification is needed here.

• II.H.3.iii.c. and III. C. The requirement for an effluent filter that impedes solids greater than 1/8 inch is too stringent. It raises questions about how these filters will be monitored and cleaned, how big the filters must be, where they will occur in the system, and whether the whole system will fail when such filters clog. This is an unreasonable requirement for statewide standards.

• II.I.1.a. #3 seems too broad. Should the regulations give more guidance to the Local Agencies and Regional Board about the circumstances under which a groundwater mounding analysis must be done?

• III. C. 4. This section calls for monitoring once every three years. How will this be implemented and by whom? Is it the homeowner? The installer? The Permitting Authority? The regulations should not set an arbitrary timeline for monitoring by government regulators, because of the unnecessary expense to property owners and the government, and the fact that government may not have enough personnel to perform the task. In addition, system performance must take into account system usage (vacation cabin vs. full time home, etc.).

• III.D.1.a. This section requires all alternative OWTS to have an Operation and Maintenance Manual. We feel strongly that ALL OWTS, whether alternative or not, should have an O&M Manual, so property owners will know about their systems and how to properly maintain them. Such a manual should include all of the information included in i. through xii., and also include other pertinent information, such as the benefits to OWTS of conserving water, whether it is appropriate to add liquid treatments, etc. A consumer O&M Manual would go a long way toward avoiding failures and the need for major repairs of existing systems

• III. D. 1, 2, 3, 4. While we are not qualified to comment on the scientific detail of this section on Alternative Treatment, we believe the recognition in the state regulations that alternative and experimental systems are acceptable and must be permitted under certain circumstances is important.

• III.E.1.c.(4), III. E. 3.d., III.E.4.a. If the O&M Manual recommends a timeline for monitoring that is greater than one year, the regulations should not force minimum annual monitoring in these sections. Who will perform this monitoring?

• V. This section has no detail at this time. Design Review and Approval, and System Installation and Inspections are MAJOR ISSUES that must be discussed by the Stakeholder

Group, TAC and State Discussion Group, and refined before releasing the draft regulations for public review. We are specifically concerned about V.C.4. Inspection Access Agreements and V.E. Recording, because we do not know what is meant by these headings. We do, however, see V.D.1-3 as an opportunity to educate property owners/users regarding the care and treatment of their systems, and feel strongly that this component must remain in the regulations and be done right to avoid the problems contemplated by the regulations.

Thank you for the opportunity to comment on the draft.

Sincerely,

Eileen Reynolds
C.A.R. Legislative Advocate

California Onsite Wastewater Association

November 19, 2002

Todd Thompson
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Subject: Comments on AB 885 Draft Regulations

Dear Todd:

Thank you for the opportunity to participate in the State Water Board's AB 885 Stakeholder process as the representative of the California Onsite Wastewater Association. You and Cecil have obviously put a lot of time and hard work into the development of the AB 885 Draft Regulations. I think most of us who have participated in the process to this point appreciate the valiant effort you have made, especially given the limited staff resources and support.

I wish I could give you a pat on the back and say we're almost there. Unfortunately, the painful reality is that the Draft Regulations, as they currently stand, are far from meeting the intent and specific requirements of AB 885 and are in need of major overhaul. The sad part is that the window of opportunity for us (the Stakeholders) to work with you and correct the problems with the draft is quickly coming to a close. This is especially disappointing in light of the thousands of hours of time volunteered over the past year to try to help you come up with a workable set of rules.

It seems to many of us that the State Water Board may have underestimated the significance of AB 885 and the work effort needed to engage and utilize the Stakeholders in the rule-making process. Our desire is to make sure that we achieve a set of statewide rules that are practical, logical, and science-based. You should understand that there is a strong commitment, as well as the ability and resources, to see that AB 885 produce something that will move us forward, not backwards, in the way onsite systems are viewed and managed in California. I don't know anyone who believes the current Draft Regulations are close to meeting these basic objectives. We would all like to be supportive of your efforts, but it appears more and more that we are headed toward adversarial positions on many issues. Given the large number of people, businesses, and resources affected across the state, this has the potential to be among the most controversial and hotly debated issues ever to come before the State Water Board. With this in mind, I'm hoping that these comments may help you find the time and support needed to undertake a major re-write of the Draft Regulations. For clarity, I've organized my comments according to key issues rather than individual section numbers. Many of these comments have been made before and by others.

DEFINITIONS

From the very outset the Stakeholders have asked for a list of proposed regulatory definitions for review and discussion. This is fundamental to any set of regulations, and particularly so for regulations dealing with a technical subject matter. It's impossible for anyone to understand the meaning and implications of the proposed Regulations without definitions. They are the cornerstone of the document. As a point of reference, in the Title 22 Water Recycling Criteria one-quarter of the regulations are devoted to definitions. Anyone who works with onsite systems knows the importance of having clear and unambiguous definitions when it comes time to interpret and apply the regulations.

There are a few definitions scattered throughout the document in different places; these need to be consolidated and presented, preferably in the beginning of the document, along with all terms that have regulatory significance. The "Glossary of Terms" that was prepared and distributed is useful and interesting background information, but it is not a substitute for definitions proposed to be adopted as part of the regulations.

UNNECESSARY EMPHASIS ON "HOW-TO" GUIDELINES

The proposed Regulations can be improved greatly by eliminating or condensing the sections and statements that provide an essentially "how-to" type of guidance rather than regulatory requirements. Guidance is a good thing, and there's always a temptation to try to offer advice in the regulations, but in the end this only serves to complicate and confuse matters. The State Board should take a lead in supporting or sponsoring the development of guidelines for a number of technical issues that have statewide significance (see 1994 SWRCB Onsite Systems TAC Report). However, there are a lot of "guidelines" in the proposed Regulations that are better left to local jurisdictions. A few examples of some of the "guidance" in the proposed Regulations that should be eliminated or substantially revised include:

Permit Application. Permit application information is presented as a mandatory "shall" requirement in paragraph I.A.1, and then as a "should" requirement in the next paragraph (I.A.1.a), which automatically classifies it as a guideline, not a regulation. This is an administrative matter that should be left to local jurisdictions. Many jurisdictions have developed or converted to computerized permit database systems that may or may not agree with these guidelines. The regulations need only include a simple statement to the effect that <u>applications shall provide all relevant information needed to verify compliance with the applicable regulations for system siting and design.</u> Currently, this basic statement is missing from the proposed Regulations.

Percolation Test Procedures. It's important to have consensus on general parameters for percolation testing (especially where a "prohibition" is at stake), but the step-by-step specifics of how to perform a percolation test should not be included in the regulations unless they are agreed upon to be the one and only definitive method. Unfortunately, the proposed method is a newly customized version that has several objectionable provisions that are impractical or unsubstantiated, including: (1) testing in "saturated soil"; (2) <u>mandatory</u> use of automatic siphons/valves for presoaking; (3) filter rock size specifications; (4) impractical measurement

precision; and (5) mandatory use of the "highest" test value when there is a 20 MPI spread in results. The proposed method conflicts significantly with the SWRCB's existing percolation testing guidelines (by Winneberger) contained as an appendix to the 1980 Mound and ET Guidelines. The Winneberger recommended test methods are accompanied by a very thorough discussion of the supporting rationale; it's fair to ask for a comparable technical explanation for the new proposed version of the percolation test if you intend to publish it as the State's new recommended practice.

Soil Evaluation Procedures. This is another area where the proposed Regulations contain very detailed and rigid procedures that in many cases are problematic, impractical, and not entirely necessary. This is an area of the regulations where the diversity in physical conditions, practices, and experience around the State need to be accommodated. This section is presented as an idealized "textbook" approach, without considering the practical limitations and needs presented by differing site conditions. Also, the proposed soil evaluation regulations rest heavily on the collection and testing of soil samples for particle size (hydrometer analysis) by a "California certified laboratory for testing." Unfortunately, there is no such thing as a certified laboratory for soils testing in California and we've been told that AB 885 does not provide for the establishment of new certification requirements. The underlying premise of the regulations that puts such heavy emphasis on laboratory testing should be reconsidered. Laboratory testing of soils can be a useful tool, but the idea that onsite systems can be sited and designed largely from laboratory test results is a mistake. Like it or not, field judgment is an essential part of onsite system site evaluations and should be acknowledged and accommodated in the regulations.

Cumulative Impacts. The proposed Regulations are very confusing in this area, partly because they attempt to offer abbreviated guidelines, rather than simply specifying basic minimum requirements. As the author of the 1982 "Ramlit Report", I can tell you that it provides useful information and guidance, but it does not contain criteria or standards that should be proposed for Statewide adoption. It's also more than 20 years old. As pointed out during several Stakeholder meetings, the 1994 SWRCB Onsite Systems TAC Report provides a framework for structuring this aspect of the regulations. You also might consider reviewing the Marin County Onsite System Regulations, which put cumulative impact requirements into regulation form in 1994.

Operation and Maintenance Manuals. Operation and maintenance is important, especially to ensure proper functioning of mechanical-electrical elements of treatment and dispersal systems. The requirement for O&M manuals is necessary; however, the inclusion of the specific elements of an O&M manual in the proposed Regulations crosses over into the area of guidance, which belongs elsewhere. This issue could be handled more simply as a definition structured to allow flexibility to adjust to different and changing technologies. The proposed list of required items is excessive for some existing alternative technologies and incomplete for others.

JUSTIFICATION FOR VERTICAL SEPARATION REQUIREMENTS

The vertical separation requirements are very confusing and lacking in technical justification.

1. What is the rationale for lumping "groundwater, bedrock, hardpan and clay" together? They don't have common properties or the same relationship to the functioning or impacts of onsite dispersal systems, and they can have individual variations as well (e.g., solid, fractured, weathered bedrock). The logic of this proposed approach is lost altogether in Figure 2 of the document, which requires as much as a 40-foot separation to "clay" in sand and loamy sand soils. Why?

   A more scientific approach might be to organize this aspect of the regulations according to the important characteristics and the risks or limitations these features pose to the onsite system, and vice versa. For example:

   - **Groundwater.** Groundwater is potentially at risk of contamination depending upon the hydrogeology and associated beneficial uses; groundwater can be perched, seasonal, isolated or continuous with drinking water supplies or surface waters, naturally degraded, etc. "Separation to groundwater" can and should take these factors into account.
   - **Fractured Rock.** Fractured rock is a potential conduit for effluent migration. Risk to water quality depends the local hydrogeology and beneficial uses of water. In some cases it may be appropriate to consider the fractured rock an extension of the water table; in other cases it may be more appropriate to consider the fractured rock as an "impermeable barrier."
   - **Impermeable Barrier**. Impermeable barriers represent an impediment to drainage that can affect the functioning of the dispersal system. This may include solid bedrock, hardpan, or impermeable soil layers. The concept of linear loading rate, as used for mound systems, can be applied to most any dispersal system to determine a reasonable vertical separation distance to an impermeable layer.

2. Depending on structure and mineralogy, some clay soils are an acceptable medium for wastewater disposal, in which case the proposed vertical separation requirement to "clay" is contradictory.

3. The proposed distinction between soil requiring 3-foot and 5-foot vertical separation to "groundwater, bedrock, hardpan and clay" (Section II.C.1.b.1 and 2) appears to be based solely on soil application rate, as a surrogate for expected treatment effectiveness; presumably this is for groundwater quality protection. Although this concept has some merit, it would have the unintended effect of creating lesser separation depth to groundwater in areas of more slowly permeable soils, which are more susceptible to poor drainage and localized groundwater mounding/soil saturation effects. This, in turn, would produce greater potential for adverse impacts on groundwater quality than areas of more permeable soil under the same vertical separation requirements. Consequently, there is probably no strong justification for distinguishing vertical separation requirements as proposed; Tables 2a and 2b have the serious potential to create major confusion and conflict, with questionable benefit.

LEACHFIELD DESIGN LOADING RATES

This area of the proposed Regulations is very troubling. Whether it is an honest mistake or intentional, the proposed Regulations dictate much larger leachfield sizing requirements than can be substantiated by the references cited.

Table 4a. Design Soil Application Rates. Table 4a presents leachfield sizing criteria related to percolation rates and has the following shortcomings:

1. The proposed Regulations cite the Region 3 basin plan as the basis for the criteria in Table 4a. However, the regulations propose that these rates be applicable only to the trench sidewall or bottom infiltration area, and not to the combined area. The Region 3 criteria do not include this limitation. Consequently, the effect is that for a typical 3-foot wide trench with 1.5-foot effective sidewall depth, the overall loading rate (per lineal foot of trench) under the proposed Regulations would be half of that permitted under the Region 3 criteria; this means that the required trench length would double. At a minimum, it is misleading to cite the Region 3 basin plan to support the criteria in Table 4a.

2. Table 4a also cites the 2002 US EPA onsite wastewater manual as a reference. This is also a mistake or, at a minimum, very misleading. The 2002 US EPA document does not contain any percolation rate-wastewater loading criteria. Such criteria are contained in the 1980 EPA manual, and the 2002 version does not retract or revise those previous criteria. The 1980 EPA wastewater application rates do not agree with those listed in Table 4a of the proposed Regulations.

3. Other Regional Boards (e.g., 1 and 2) and many local health departments have established wastewater sizing requirements that conform generally to the 1980 EPA criteria. Thousands of systems have been installed over the past 20+ years following these criteria, many under operating and monitoring programs that can verify the validity of the designs. It seems reasonable that the State should take this into account before arbitrarily mandating a doubling of leachfield sizing requirements.

4. As a general comment and suggestion, many jurisdictions have long ago taken the logical step of converting the “step-function” loading rates (per Table 4a) to a graduated scale. Given the extensive effort devoted to conducting precise percolation tests, this is just common sense. The use of general application rate groupings is appropriate for soil–based design criteria (Table 4b), where general judgments of soil structure are relied upon, but they are not logical for percolation-based criteria. How, for instance, does one go about justifying why the leachfield size must double when going from 60 MPI to 61 MPI?

Table 4b. Design Soil Application Rates. Table 4b, relating wastewater application rates to soil conditions, is based on criteria from the US EPA 2002 manual; however, it seriously misrepresents the EPA information.

1. The EPA hydraulic loading rate criteria (i.e., gpd/ft^2) represent recommended average loading rates (see example on 4-15 of US EPA); the proposed Regulations arbitrarily change the EPA criteria to maximum loading rates, i.e., using maximum design wastewater flow. Maximum design flows are often as much as double the average flow for onsite systems, meaning a doubling of leachfield size. This could be an oversight; however, if it is intentional it will need to be justified by a reference other than US EPA 2002.

2. Table 4b substitutes "prohibited" for soil conditions where the EPA criteria do not list a recommended loading rate. This is a significant difference that will also require independent justification.

3. The EPA criteria are presented as "suggested" loading rates and are described as being a "generic guide." The EPA document also explains that the table is not a complete description of all soil conditions and does not account for regional or local differences in geomorphology. Clearly, the criteria were not developed in consideration of soil conditions in California. For example, there is no provision for the Aiken soil series of the Sierra Nevada region – a unique soil considered by soil scientists to be one of the best soils in the State for onsite systems, which also happens to be a clay. The EPA criteria also does not account for clay mineralogy (i.e., montmorillinitic and kaolinitic clays), which can be of significance locally in California. Hasty adoption of the EPA criteria without truly understanding their limitations and applicability in California would be a mistake.

MANDATORY PROVISIONS OF AB 885

The proposed Regulations fail to adequately address several mandatory provisions of AB 885, as follows:

303(d) Impaired Water Bodies. The proposed Regulations appear to side-step this requirement altogether. The language in Section II.H.5 simply shifts the burden to the local permitting authority and property owner to deal with this issue. It's hard to imagine that this is what the lawmakers had in mind for this provision of the regulations. The Stakeholders offered a number of suggestions about how to address this provision of the law, centered on the development and adoption of local "watershed-based" standards or plans. Such plans would essentially provide for customized requirements (i.e., code-plus systems) in areas adjacent to 303(d)-listed water bodies. Depending upon the local circumstances, there are a number of measures that could be considered in such plans to improve water quality protection vis-à-vis onsite systems, including:

- Enhanced treatment systems (especially appropriate for seepage pits).
- Dual (200%) dispersal systems.
- Increased horizontal setbacks.
- Increased vertical separation requirements.

- Increased or special monitoring/inspection requirements.
- Special system design criteria (e.g., maximum trench/seepage pit depth, reduced loading rates, pressure distribution, etc.).
- Special monitoring/inspection requirements.
- Additional requirements for "large" systems.

The regulations need to provide clear direction and support at the State Board level for local adoption and implementation of appropriate measures for 303(d)-listed areas. It is naïve for the regulations to assume that this will simply be worked out on a case-by-case basis between the property owner and the local permitting authority.

Major Repairs and Corrective Action. There's very little disagreement that the greatest threat to water quality and public health from onsite systems is associated with existing systems, not new systems. Clearly, this was the reason AB 885 included special emphasis on providing regulations for major repairs and corrective actions. The proposed Regulations seem to dance around this issue, and ultimately fall short of giving any clear direction on what is expected or required in these situations. The proposed Regulations seem to say, in essence, "put in a code-compliant septic tank and otherwise do the best you can." There's more that can be done and included in the regulations to address these provisions of the law. A good starting point would be to consider what is already being done in several local jurisdictions around the State in regard to repair standards/practices, and convert those existing practices into regulation form. The law clearly allows for, and one could argue that it anticipates, the adoption of specific regulations for major repairs and correction of failing systems that may be different from the specific criteria applied to new construction. This is another issue identified and addressed in the 1994 Onsite Systems TAC Report. Practitioners and local regulators routinely go through a hierarchical analysis and thought process whenever we come upon a system in need of repair on an existing "substandard" lot. The challenge for the regulations is to identify and codify the good and acceptable process and practices that are being followed (i.e., BMPs). This is an area where the regulations have the potential to make a very significant and positive contribution.

Exemption Criteria. On this issue the proposed Regulations simply defer everything to the Regional Boards without any parameters or limitations (Section VI.C.6). This suggests that each Regional Board can establish exemptions for anything and everything, or provide no exemptions at all; this could effectively render the regulations meaningless, and can't possibly be what the lawmakers intended. This issue was originally presented to the Stakeholders as one of the major "seven points of light" that the regulations would address. How can we hope to achieve any consistency in regulatory approach and management of onsite systems by sidestepping this important issue?

OTHER MISCELLANEOUS ISSUES

Several other miscellaneous issues that warrant further consideration include the following:

Proposed Horizontal Setbacks.

1. **Wetlands.** Use of the Corps of Engineers' definition for "wetlands" will require invasive testing by a qualified wetland scientist. The delineation of wetlands cannot be done from maps, aerial photographs, or casual observations. How is this to be performed on property not under the control of the applicant/discharger? Will local jurisdictions (and Regional Boards) be required to retain wetland scientists to review onsite system proposals? Will Environmental Health Specialists be required to be trained in wetland delineation methods? Who will arbitrate differences of opinions among experts, which will occur? The Corps of Engineers? Why not simply define "wetlands" as areas of seasonal standing water? Isn't this the issue?

2. **Community Supply Wells - Zone A Well Containment Area Prohibition.** This is a potentially huge prohibition at odds with the State Well Water Standards and the Drinking Water Source Assessment and Protection (DWSAP) Program guidelines. What is the technical rationale? I'm sure you're aware that "Zone A" defines the two-year groundwater travel distance contributing to a well, and that it may range from several hundred to over a thousand feet. This cuts both ways. In proposing this exclusion (prohibition) zone, does this mean that new/recent community water wells will have to be abandoned, declared non-conforming, or denied if they don't meet the setback requirement from pre-existing septic systems located within the Zone A area? Does it mean that existing septic systems and homes will have to be abandoned? Will the State Well Standards and DWSAP Guidelines be revised to be consistent with this requirement? Sanitary sewers and wastewater treatment plants located within Zone A have similar "high" and "very high" "vulnerability" ratings as septic systems under the DWSAP Guidelines. Will sewers and wastewater treatment also be banned? Is there a plan for compensation to well owners and septic system property owners for this new rule? Is this possibly a mistake in the draft?

Multiple Parallel Septic Tanks. Section IV.A.1.j allows for splitting the sewage flow into multiple parallel septic tanks. I've only heard of serious problems where this has been tried. Is there really an approved and reliable technique for doing this?

Regional Board Responsibility for Technology Transfer. The provision in Section VI.C.3 delegating the responsibility for technology transfer regarding alternative systems to each of the nine Regional Boards is impractical, at odds with the overall intent of AB 885, and in direct conflict with the recommendations in the 1994 SWRCB Onsite Systems TAC Report. The 1994 TAC Report made it crystal clear why alternative system technology guidance needs to be consolidated and, therefore, is an appropriate role for the State Board. I've not heard the rationale for splintering this function nine different ways.

I have a number of other questions and concerns regarding individual items and language in the draft regulations, but they are of a more minor nature and may become immaterial in the course of addressing the major issues. Thank you once again for all your hard work. It's unfortunate that the process did not allow you to take better advantage of the considerable Stakeholder expertise that was available. However, the process did serve to bring together a lot of motivated regulator, industry, and environmental professionals from all over the State, who seem to have coalesced into a formidable group with a common purpose. This gives me confidence that we will ultimately be able to achieve a workable set of rules we can all live with.

Sincerely,

Norman N. Hantzsche, P.E.
Vice President – North
California Onsite Wastewater Association

cc: COWA Membership

ref. 210227_AB885comments

United States Environmental Protection Agency

Stan Martinson
Division of Water Quality
California State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

SUBJECT: Comments on Final Stakeholder Draft of AB885,
California's Statewide Regulation for Onsite Sewage Systems

Dear Mr. Martinson:

Thank you for including the United States Environmental Protection Agency, Region 9 (EPA) as a stakeholder in the process for developing a statewide onsite sewage system regulation in response to Assembly Bill 885. The last nine months of meetings have certainly provided grounds for rigorous debate between the numerous stakeholders. As you prepare to finalize the draft for public release, EPA requests you consider these comments.

EPA has requested at the stakeholder meetings that these basic prohibitions be included in California's regulation, as general measures of public health and environmental protection, to underline local efforts to protect groundwater and the users of onsite wastewater systems, and to align with the federal Underground Injection Control regulations:

- prohibition of construction and continued use of cesspools (particularly those with the capacity to serve 20 or more persons per day) and
- limitations on the use of onsite wastewater systems for non-sanitary waste, meaning any substance of a nature that will interfere with biological treatment in any part of the system. Federal UIC regulations prohibit, for example, the use of such systems for the disposal of hazardous or motor vehicle waste.

When you write the definitions and general principles for the state code, please reconsider adding language into the code that reflects these two related objectives.

EPA has further concerns about some of the citations of EPA guidance. In order to insure their proper interpretation, we request that Mr. Rod Frederick of the EPA Office of Research and Development, who was responsible for the content of the EPA 2002 "Onsite Wastewater Treatment Systems Manual" be added to the list of people notified when the draft is made available for public comment. He can be reached at (202) 566-1197 (his address is included below.)

Most importantly, however, EPA remains concerned that the scope of the draft regulation misses the mark on two critical points: the draft does not address all of the points of the legislation (Assembly Bill 885) that mandated it, and it contains a technically indefensible level of detail, when you consider its points applied on a statewide basis, against the historical context of local

authority (and in many cases, local expertise.) Furthermore, based on past comments from EPA and other stakeholders, if the draft regulation's content remains so cumbersome to those participating in its creation, the draft regulation is likely to be unintelligible to the regulated community. While it is not necessary for all of the stakeholders to like what is in the regulation, it is critical that we understand it well enough to see it through to implementation.

Nine months is too brief a period for the stakeholders (including SWRCB) to fairly move from no regulation to an all-encompassing regulation. EPA commends all those who participated in the effort, but cannot call it conclusive. We hope that SWRCB will reconsider what the legislation intended the role of the state to be, and narrow its focus accordingly. Such an effort might result in a regulation that, by being more acceptable at the local government level, provides a firmer foundation for additional regulations, as the science and technology improves.

Detailed comments are being sent under separate cover from Elizabeth Janes. For discussion of this matter, please contact her at (415) 972-3537.

Sincerely,

Catherine Kuhlman
Acting Director, Water Management Division

cc: Todd Thompson, SWRCB DWQ
Rod Frederick, EPA OWOW AWPD, 1200 Pennsylvania Avenue, Washington, DC 20460

I STATE WATER RESOURCES CONTROL BOARD ISSUE PAPER

This appendix provides the issue paper that was presented by SWRCB staff at the Statewide Regulators Conference, December 3 and 4, 2003. This issue paper was also used by the SWRCB staff to brief the appointed state board members.

AB 885 Onsite Wastewater Treatment Systems (OWTS)

Issue Paper on Proposed Regulations

Issue

Septic tank system failures causing surfacing wastewater effluent in backyards have been the primary and historic concern with OWTS. Groundwater impacts from such systems, for the most part, were thought only to occur in the immediate vicinity of a leachfield. Conventional OWTS discharge nitrates, bacteria, and viruses (pathogens) to groundwater. These, among other constituents, are highly mobile in groundwater, can impair both groundwater and nearby surface water quality, and contaminate nearby domestic water supply wells.

The typical or conventional OWTS, consisting of a septic tank (for treatment) and a leachfield (for additional treatment and dispersal/discharge), has been in use for over 100 years. There are approximately 1.2 million OWTS in California that serve approximately 3.3 million people (10% of the population). Approximately 60% of the OWTS owners (approximately 2 million people) rely on a domestic well for drinking water.

Staff has been drafting regulations that for the first time address the prevention of groundwater impacts from OWTS. The draft regulations propose a significant increase in performance standards, for new or replaced OWTS. The draft regulations would establish performance standards for OWTS effluent including nitrate and pathogen reduction. Compliance with these performance standards would require additional OWTS treatment. Staff proposes to phase in the implementation of performance standards. Most of the increased performance standards would become effective January 2009. This proposal will be controversial.

Background: Statutory Requirement to Develop OWTS Regulations (AB 885)

OWTS are permitted by county health and building departments as a part of construction permits in rural and urban fringe areas. Since these systems discharge wastewater to land, most Regional Boards have entered into formal or informal agreements with counties. The agreements require counties to implement guidelines for OWTS that are contained in each Regional Board basin plan. Previous attempts by the SWRCB to establish statewide, consistent OWTS guidelines have been unsuccessful.

Environmental organizations have expressed concern that the lack of statewide standards for OWTS has resulted in poor OWTS siting decisions that led to degradation of surface waters. Indeed, existing documentation shows that surface waters are being impaired by OWTS, whether from contaminated groundwater flow to surface waters or surfacing wastewater contributing to waters (e.g., Rincon Creek (R3), Malibu Creek (R4), Eagle Lake (R6), San Lorenzo River (R3), etc.). These surface water impacts prompted Heal the Bay, a Santa Monica based environmental organization, to sponsor AB 885 (Jackson, 2000). AB 885 added Section 13291 to the California Water Code and requires the SWRCB, on or before January 1, 2004, to adopt regulations (or standards) for the permitting and operation of OWTS. (Note, we are one year behind schedule.)

Discharges from OWTS also appear to have caused more pronounced and pervasive groundwater impairments. The groundwater impairments that are well-documented (Chico (R5), Coachella Valley (R7), Red Bluff (R5), etc.) are believed to represent the tip of the iceberg. Groundwater impairment is further discussed below (Water Quality Issues).

Development of Draft Regulations

To assist in development of regulations, over a nine-month period DWQ staff met (21 facilitated meetings) with a stakeholder group of broad representation. In early 2003, DWQ staff produced a draft of the regulations and shared the draft with two principal stakeholder groups, environmental organizations (Heal the Bay (Mark Gold)) and counties (California County Directors of Environmental Health (CCDEH)). Shortly thereafter, CCDEH procured a consultant to develop a separate draft of the regulations. Mark Gold communicated with both CCDEH and DWQ staff that the DWQ version of the draft regulations did not adequately address 303(d)-listed water bodies affected by OWTS, among other comments and recommendations.

In the spring of 2003, DWQ staff met weekly (6 meetings) with representatives of CCDEH to resolve differences between the two versions of the draft regulations. During those meetings, CCDEH strongly expressed their belief that the original DWQ version focused too much on detailed (prescriptive) specifications for site evaluation as well as design and construction standards.

In reviewing both the early DWQ and CCDEH versions of the regulations, DWQ staff reevaluated the impact of OWTS on water quality as well as current and available OWTS treatment technology. The result of that reevaluation has caused DWQ staff to redirect the regulations away from prescriptive standards and towards performance standards that would achieve meaningful protection of groundwater and surface water quality.

Water Quality Issues

The conventional wisdom for many decades has been that a properly operating septic tank and a properly sited and designed leachfield will protect water quality and public health. OWTS "failures" are considered to occur when wastewater surfaces in the leachfield creating a potential health problem due to possible public contact In fact, the thrust of widely accepted standards for OWTS siting and design is to minimize surfacing effluent.

With proper siting, adverse impacts of OWTS to groundwater occur only in the immediate vicinity of the leachfield. However, national studies show that pathogens (bacteria and viruses)

and nitrates discharged from OWTS can travel considerable distances in groundwater. In a fractured rock environment (e.g., Sierra foothills), discharges from OWTS can travel considerable distances in a short period of time.

Of greatest concern are the potential impacts of OWTS on domestic water supply wells. As OWTS are commonly built in rural areas lacking both water supply and sewage collection infrastructure, over 60% of OWTS owners rely on a domestic water supply well for drinking water. Such wells are considered more vulnerable than public supply wells as they often draw water from more shallow aquifers and are not designed or constructed as carefully. (The typical cost of installing a domestic supply well is on the order of $2,500 whereas the typical cost of designing and installing a public supply well may range between $200,000 to $400.000). Further, there is no routine water quality analysis required of domestic supply wells as there is for public supply wells. (A few counties only require a single bacteria test after completion of a domestic water supply well.) In terms of siting, most county ordinances require a minimum 100 feet separation between a water supply well and an OWTS. Even on large lots, homeowners may not separate OWTS from wells by much more than the minimum 100 feet.

Does 100 feet of separation provide reasonable protection? The following excerpt is from the 2002 US EPA Onsite Wastewater Treatment Systems Manual:

State codes that specify 100-foot separation between conventional (onsite) treatment units and down gradient wells or surface waters should not be expected to always protect these resources from dissolved, highly mobile contaminants such as nitrate (Robertson, 1991). Moreover, published data indicate that viruses that reach groundwater can travel at least 220 feet vertically and 1,338 feet laterally in some porous soils and still remain infective (Gerba, 1995). One study noted that fecal coliform bacteria moved 2 feet downward and 50 feet longitudinally 1 hour after being injected into a shallow trench in saturated soil on a 14 percent slope in western Oregon (Cogger, 1995).

Can groundwater carry pathogens that result in illness? The relationship of groundwater to waterborne disease is discussed in the following excerpt from a 1987 US EPA publication authored by Dr. Marylynn Yates, currently Associate Executive Vice Chancellor and Professor of Environmental Microbiology at UC Riverside:

The consumption of untreated or inadequately treated groundwater was responsible for over one-half of all the waterborne outbreaks and 45% of all cases of waterborne disease from 1971 to 1979 (Craun, 1984). Overflow or seepage of sewage from septic tanks or cesspools was responsible for 43% of the outbreaks and 63% of the cases of illness caused by the use of untreated contaminated groundwater from 1971-1979. Many septic systems which were installed in the 1960's and designed to function for ten to fifteen years have exceeded their functional lifespan and are beginning to contaminate the groundwater (Canter and Knox, 1984). Thus septic tanks represent a significant threat not only to preserving the potability of groundwater, but to human health.

More recent data from the Center for Disease Control and Prevention indicates that untreated or inadequately treated groundwater was responsible for 66% of the waterborne disease outbreaks in the U.S. during the period 1991 – 2000.

SWRCB Voluntary Well Assessment Project

In response to concerns that OWTS might affect domestic drinking water wells, and as a part of the Groundwater Ambient Monitoring and Assessment Program, DWQ staff initiated the "Voluntary Well Assessment Project." During 2002 and 2003, private well owners in targeted counties (El Dorado and Yuba) were surveyed and asked to allow DWQ to sample and analyze well water. A significant percentage of the wells tested had impaired water quality.

Of 158 wells sampled in El Dorado County, 5 wells and 2 springs tested positive for *E. Coliform*, 56 wells tested positive for total coliform, and 44 wells have trace concentrations of MBAS (detergent surfactant). Additionally, four wells had total nitrogen concentrations above the MCL of 10 mg/l and 14 had total nitrogen concentrations above 4 mg/l. Levels of total nitrogen in groundwater above 2 mg/l are considered anthropogenic in origin and may be the result of fertilizers, animal waste or wastewater. It is also noteworthy that most of the wells sampled in El Dorado County were in a fractured rock environment and most of the residences were about 5 years old, although ranging between 1 and 10 years. *Because the area sampled has not had any significant agricultural or animal operations, the septic systems are the most probable source of nitrate, bacteria and MBAS in groundwater.*

Of 128 wells sampled in Yuba County, 24 wells tested positive for total coliform bacteria and 4 wells tested positive for *E. Coliform*. Additionally, 2 wells had total nitrogen concentrations exceeding the MCL of 10 mg/l, and 23 wells had concentrations above 2 mg/l. Although MBAS was not detected in the Yuba County wells, the contract laboratory for those analyses used a higher detection limit for MBAS.

Performance Standards for New and Replaced Systems

Until the last decade, providing additional treatment beyond the conventional septic tank/leachfield system was considered neither reliable nor affordable. However, alternative OWTS are now available that provide reliable treatment performance comparable to secondary wastewater treatment and with minimum maintenance, as documented by a review of OWTS prepared for the SWRCB by the U.C. Davis Department of Civil and Environmental Engineering in August, 2002.. Such units can also achieve substantial nitrate reduction. The basic cost for a conventional OWTS is $2,500. The *additional* cost of units that would meet the new performance standards range from $5,500 to over $9,000.

DWQ staff recently inspected "off-the-shelf" alternative OWTS operating at the U.C. Davis wastewater treatment plant. These OWTS had been in operation for over three years, were odorless and required very limited maintenance.

Routine (annual) professional maintenance of "alternative" OWTS would be necessary and required. However, such maintenance is not inconsistent with that required for water softeners and swimming pools. An improved effluent quality from post septic tank treatment reduces the pathogen population and also allows further pathogen reduction by separate disinfection

treatment (e.g., ultraviolet light). Alternatively, further pathogen reduction can be achieved by providing adequate retention time in the unsaturated zone for pathogen die-off through a combination of low discharge application rates (gallons per day per square foot) and a scientifically established vertical separation distance to groundwater. Note that because of the unpredictability of retention time in the unsaturated soil zone, the current feeling among DWQ and DHS staff is that some form of treatment for disinfection will be necessary to achieve protective levels of pathogen reduction.

The draft regulations will specify performance standards in terms of effluent quality (BOD, TSS, nitrate) and pathogen reduction. Staff proposes a phased implementation. The first phase would require new or replaced OWTS adjacent to 303(d)-listed water bodies impacted by OWTS to meet the specified performance requirements by January 2007. The second phase would require all new or replaced systems to meet the specified performance requirements by January 2009. Staff believes this phased approach will allow the regulatory community (Regional Boards and counties), the real estate community, and the OWTS industry sufficient time for an orderly transition from current practice.

Variances would be allowed where a public water supply is both available and unaffected by OWTS or where a registered professional certifies that a system will not affect any well that could be constructed within a setback allowed by the county. Finally, in order to address the concerns raised by county heath agencies, the draft regulations will be written so that counties can rely on their existing ordinances until the new performance requirements for OWTS become effective.

Arguments in Favor
Surface water and groundwater quality, including public health, would be protected from the discharge from new and replaced systems. The relatively long phase-in (2007/2009) will allow Regional Boards and counties to become familiar with the proposed performance requirements and allow industry to gear up for large-scale implementation.

The proposed regulations would not require the local agencies to completely revise local ordinances affecting OWTS.

Arguments Against
The performance requirements will increase the cost of new or replaced systems and require ongoing maintenance.

The proposal does not address the discharges from the estimated 1.2 million existing OWTS that are not being replaced.

Although 48 other states have OWTS standards, the proposal described herein is more stringent than that of any state in the nation.

J GUIDING PRINCIPLES FOR A MODEL CODE

The information in this appendix was distributed to the model ordinance design team at the beginning of the model ordinance project with the purpose of beginning dialogue and presenting talking points for the team to consider.

Guiding Principle:

The guiding principle of this model ordinance is onsite sewage treatment systems must fulfill a primary function, that of eliminating or reducing constituents/contaminants of concern to levels at which they no longer pose any threat to public health or the environment. Appropriate infrastructure can be developed to manage the systems and technologies are available or can be developed that provide the necessary treatment. The three elements of treatment, management, and application of appropriate technology are the keys to ensuring onsite/decentralized systems meet the primary function.

Background:

Onsite sewage/decentralized treatment systems are an important, necessary, and appropriate method of sewage treatment in California. A recent survey shows that these systems currently provide the sewage treatment method for ten percent of the States' population and housing units and will continue to do so for the foreseeable future.

In many applications onsite/decentralized systems are the fiscal, public health, and environmentally responsible method of sewage treatment. It is incumbent that a method be developed that enables the use of appropriate technology to achieve the primary function. Systems must be designed, installed, operated and maintained that protect the consumer and produce an effluent that when released into the receiving environment will not cause adverse public health or environmental impacts.

A critical element to ensuring that onsite/decentralized systems met the primary function is to establish a management program that provides adequate oversight to ensure that systems perform as needed.

Our view of onsite/decentralized systems must evolve from one that considers these as private systems to one that views them as an essential 'semi-public' utility that services a home, business, or other facility and as such share many of the same characteristics as other utilities. In order for utilities to remain functioning properly they need a to be operated properly and require a certain level of maintenance/service.

It is not realistic to expect homeowners to maintain these systems and certainly this is even more evident with more advanced treatment technology.

The view that these are private systems is due to the historical and still commonly held perspective that the function of these systems is subsurface disposal and function properly as long as effluent remains subsurface and does not backup into the home, the 'out of sight out of mind' perspective. This ignores that system impacts do not remain onsite, constituents/contaminants migrate offsite, albeit subsurface. So, while the systems initially handle and treat the sewage onsite, problems associated with this offsite migration are often not considered. This offsite impact places onsite systems into the public domain/interest.

The typical point of release is into the soil environment where the effluent is dispersed and eventually recharges groundwater . The fate of the dispersed effluent is governed by the hydrogeology of the area and as such can remain in the ground in confined aquifers or moves with the groundwater and is eventually released into surface waters. In either case, any constituents of concern present in the dispersed effluent have the potential of reaching sensitive/vulnerable receptors.

Another aspect of the guiding principle is these systems are not discrete units but rather must be considered in the context of the watershed into which the effluent is dispersed. In this context the cumulative impact of treatment systems must be taken into consideration when assessing the levels to which constituents/contaminants must be reduced or eliminated.

The provisions for this ordinance are based on the following assertions:

- A risk-based watershed approach is essential and must consider water resources management and the protection of public health:
- Proper system function and effectiveness must be evaluated in context of the watershed characteristics into which effluent is dispersed.
- Watershed characteristics shall determine the level of risk that onsite systems pose relative to public health and environmental considerations. Treatment goals shall be based on this risk assessment.
- System treatment performance shall be based on achieving the designated treatment goals identified for a watershed.

Onsite/decentralized systems

- Onsite/decentralized systems must be viewed as sewage treatment systems and not as disposal systems.
- Onsite systems that disperse effluent into the soil environment shall provide a level of treatment that recognizes this effluent recharges groundwater.
- Technical standards for onsite systems shall be performance based.
- Onsite/decentralized systems must be viewed as a 'semi-public' utility and as such must be afforded an appropriate level of service/maintenance to ensure that they function properly.

- Management of onsite systems is an essential element and therefore requires the establishment of an appropriate management entity that:
  - Maintains a data system that tracks permitting, inspection, system description and location, operation, repair history, monitoring, and maintenance.
  - Has regulatory authority for enforcement and abatement.
  - Is provided with, or has the means to obtain the financial resources necessary to fulfill its functions.
  - Provides an educational program to onsite system users.

A training and certification program must be established for the onsite industry. Certification shall be required for:

- Regulatory personnel
- System designers
- System installers
- Maintenance personnel

A technology certification program must be developed at the state level to ensure that systems that are installed will meet the required performance standards. Certification shall ensure that:

- Systems shall meet the public health treatment goals required
- Systems shall meet the environmental protection treatment goals required
- Systems shall be evaluated to provide the consumer with a reliable and cost effective treatment unit

Additional Comments:

The model code may consider some type of hierarchy of treatment options. In this regard, then, the performance standards that should be considered begin at the least intensive treatment option, that for the recharge system and move to the most intensive treatment option-that of water reuse. The traditional treatment system (septic tank and leach field) is appropriate where site/soil conditions are suitable to mitigate any concerns relative to protecting ground water/surface water from effluent recharge. Therefore, the minimum treatment goal is to provide recharge that does not compromise public health or environmental concerns.

Factors that determine the treatment goal should be based on the ability of the receiving environment to accept the added effluent constituent contributions from the treatment system. These contributions determine the level of added risk posed by the system and determine if these are acceptable considering the whole watershed/subwatershed system (cumulative effects, etc.).

Our purpose is to provide a code that is technically sound and whose assumptions can be supported by science. Political considerations should not enter into our deliberations at this time. Local political leaders and their constituency will drive considerations of what is acceptable for a

local area. Our purpose is to provide at least a benchmark for all systems and then options for more advanced treatment systems warranted by local conditions/concerns. As discussed further below, whatever is proposed must still eventually be politically viable... so what ever is proposed must be acceptable and realistic.

The range of options and solutions relates directly to the range of system options that meet a specific performance need. In other words the code should offer solutions that address specific needs/constraints of the site(s). The expected performance of system types/treatment types needs to match the needs of the site and the expected fate of the final effluent.

Our ordinance design team is representative of the technical players in the onsite industry. The number of participants is intentionally being kept small to get a product before the rest of the community. Absent from the design team is the real estate, building, homeowner, and installer constituency to mention the major non-participants. These groups will be provided the opportunity to comment, however, they are not directly involved in the design process. We need to keep in mind what we expect there concerns would be. Certainly, primary among these would be the cost to implement. We may have an idealized code in mind, but must also consider cost/benefit.

Again, the decision concerning the level of performance (treatment) desired can be a local decision. What we need to do is provide the treatment method(s) and options that can be expected to reach the treatment goals that are established locally…but then local decisions are not necessarily made based on public health and environmental considerations. These goals in most cases will be driven by political considerations. However, there is an expectation that there will be/should be minimum standards that are universal. Do we hold to the concept that recharge considerations should establish this baseline? A number of low population, rural counties may object to any change as they may not feel the need to implement 'higher' standards. This is changing, however, as onsite systems are coming under increased scrutiny from the RWQCBs and there is increasing pressure to develop property that does not meet the site criteria for traditional systems. This is especially evident in the central valley and mother load counties, where development continues to fill the housing needs of the urban areas. There are also several rural counties that face localized development pressure for specific projects.

So, the challenge is to design a code that works in, for example, Modoc County (population 10,000) and urban counties such as Riverside, San Bernardino, San Mateo, etc.). Of course population is not the only criteria as higher system costs are much more acceptable and expected in the more urban areas. The economic disparity between urban and rural areas is a significant hurdle. A traditional system can still be installed in many rural areas for $3,000+/-. Adding costs to protect recharge considerations may be a hard sell.

A decision matrix may certainly be the most convenient tool to accomplish this. I have trouble visualizing this in that it seems to me that it needs to be three dimensional…1) Site conditions 2) performance standard 3) management standard. Developing a matrix that includes all of these elements (at a minimum) is desirable and presents a challenge to you. The purpose here is to make it flexible and easy to use.

This aspect is key to getting broad acceptance for any proposal. We can take the ‘ high ground’ and insist on recharge as the baseline standard.... and assume that effluent will reach groundwater and should not contribute to groundwater degradation. This would require that all treatment systems must address/mitigate potential contaminants, specifically nutrients that prove to be the most problematic relative to onsite treatment. This is a hard sell when considering the one dwelling on the 600-acre parcel. So, how do we determine what an acceptable level of contamination should be?

We should keep in mind that a major issue with the coastal counties is pathogen elimination (I am tempted to say reduction but I think the sentiment is that there should not be any risk presented by onsite systems relative to pathogens). A significant driving force for recently passed legislation (AB 885) was concern relative to the contribution of pathogens from onsite systems to the coastal zone, including coastal zone fresh water tributaries and drainages.

An overly restrictive model code will be rejected or ignored by local government. This takes us back to the ‘high ground’ question. The proposed use of the final effluent will at the minimum be recharge (eventually). Past experience with the ‘ one size fits all’ solutions that state government has attempted to impose on local jurisdictions dictates that a workable/acceptable/flexible code is presented. One way to address this is to provide a long phase-in period for implementation (for example, 5 years). This can provide rural counties with limited resources and understanding of the issues the time needed to gear up. And give the RWQCB time to document need?

As mentioned above, the major concerns in California are nutrient reduction (specifically nitrates) and pathogen reduction/elimination. Most of the moratoriums on onsite systems that are in place deal with concerns over nitrate levels, for example San Lorenzo watershed (Santa Cruz County), Los Osos, etc., see the Status Report for more case studies. Pathogen concerns are primarily in the coastal areas – Santa Monica, Stinson Beach, certain shellfish harvesting areas, etc.

Certainly, the point of measure at the outfall of the last treatment device prior to introduction to unconfined soils is the easiest measuring point. There is reluctance on the part of the authors of AB 885 and the interest groups that supported the legislation to rely on measurements at this point. They do not have knowledge/faith in the final soil component as an effective treatment area. Or, more specifically they want monitoring after this component to assure treatment. This is an expensive proposition and raises a lot of questions as to location, depth etc. of monitoring. It seems to me that the money needed to monitor after the soil component could be better used/applied to treatment technology.

Any suggestions concerning measurement statistics? The measurement system will need to address the concerns and skepticism of the regulatory community and the environmental community ... both want assurances that systems are functioning properly and that performance can be measured with some level of assurance. The sponsors of AB 885 initially wanted guarantees that ‘all’ systems are capable of performing to meet treatment goals and that treatment would effectively eliminate pathogens and significantly reduce nitrates.

The capacity of local governments and service providers varies greatly between local jurisdictions in California. In many rural counties the service provider community consists of traditional system installers and septic tank pumpers. It is probably unreasonable to expect that this segment can effectively respond to a sudden increase in monitoring/maintenance let alone to develop the expertise needed for some of the more sophisticated technology. The economic opportunity provided by increased service needs will have to pencil out for either new providers coming in or existing providers investing in upgrading their operation. Local government capacity has similar problems. In many of the rural counties, onsite regulation is just one of the environmental health responsibilities of one or two persons. Developing the capacity for these sectors is one of the challenges ... again, a realistic phase-in period should be established. Please note also that local enforcement programs now must be fee supported and any increased requirements on local oversight will have to be funded through fees. The point here is that there is an economy of scale issue. Revenues that can be reasonably imposed through fees must meet the expectation of increased regulatory oversight. This is difficult in jurisdiction with a small staff (1-6 for the sake of argument) in that assuming new responsibilities either requires adding a whole new staff person or decreasing service in some other area by redirecting staff activity.

These are some of my thoughts and I apologize for rambling. These are our challenges in designing a model ordinance that will be effective and acceptable. Please communicate you thoughts via E-mail so that I can pass everything along to the rest of the team.

Tibor Banathy

K MODEL ORDINANCE

Draft California Onsite Wastewater Treatment System Regulations—12/02A Revision

The California Model Ordinance for Onsite Sewage Treatment & Management follows.

Draft California Onsite Wastewater Treatment System Regulations - 12/02A Revision

California Model Ordinance for Onsite Sewage Treatment & Management

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Disclaimer:

This work does not necessarily represent the views or positions of the design team. It is solely the responsibility of the California Wastewater Training and Research Center.

Draft California Onsite Wastewater Treatment System Regulations - 12/02A Revision

GENERAL STANDARDS

GENERAL STANDARDS

1.0 Purpose and Objective

The purpose of these Regulations is to provide for safe, dependable and economical use of Onsite Wastewater Treatment Systems (OWTS) in California and provide consistency statewide in system management, design and installation practices. The objective is to provide statewide general guidance for use at the local level. It is the intent that this regulation be continually reviewed and updated as the industry and technology evolves.

1.1 Scope

The California Onsite Wastewater Treatment System Regulations:

1. Establish minimum management programs that must be implemented by the authorized local agencies.
2. Provide performance and prescriptive requirements for the use of standard and enhanced Onsite Wastewater Treatment Systems.
3. Establish site evaluation, design, installation and equipment standards.
4. Provide education, training and certification requirements for professionals who design, install, monitor, repair, maintain and regulate OWTS.
5. Establish provisions for adopting maintenance and monitoring programs at the county level and enforcement procedures to ensure that monitoring programs are successful.
6. Develop public education programs for property owners to promote water conservation and periodic monitoring and maintaining of their septic system.
7. Encourage research and demonstration projects for innovative technology.
8. Establish protocol for mainstreaming experimental and innovative systems for use in California.

2.0 Ordinances

The Authorized Local Agency[1] (ALA) overseeing Onsite Wastewater Treatment Systems shall prepare an Onsite Wastewater Treatment System (OWTS) Ordinance after holding a public hearing on reasonable notice thereof, to control and enhance the quality of the ground and surface waters in order to eliminate the pollution, waste, and contamination of water flowing into, through, or originating within watercourses, both natural and artificial, to prevent contamination, nuisance, pollution, or otherwise rendering unfit for beneficial use the surface or ground water used or useful, and to expend such amounts as are necessary to exercise such powers from the funds of local authorized agency. Such regulations shall not be in conflict with state law or county ordinances.

[1] The permitting agency shall mean any agency that has authority to regulate the use of Onsite Wastewater Treatment Systems.

GENERAL STANDARDS

The local ordinance shall be reviewed by the RWQCB for compliance with applicable State Standards and Regulations and the RWQCB Basin Plan. The local ordinance shall be reviewed and updated at least every 5 years.

3.0 Memorandum of Understanding

The ALA shall enter into a memorandum of understanding with the appropriate Regional Water Quality Control Board(s) that establishes the authority to implement the ALA program. The memorandum shall include the following:

4.0 Authority

The authorized local agencies shall have jurisdiction of OWTS up to a maximum daily average discharge of 20,000 gallons per day (gpd)[2] or as otherwise established by the memorandum of understanding between the ALA and the RWQCB. All other Onsite Wastewater Treatment Systems with discharges greater than 20,000 gpd shall be regulated by the RWQCB.

5.0 Authorized Local Agency Function and Duties

5.1 Function

The Authorized Local Agency (ALA) or its representative officers shall provide oversight of OWTS to protect health and safety and preserve water quality standards as prescribed in the RWQCB basin plan and the Federal and State water quality requirements. The ALA shall provide relevant operation and maintenance information and promote and distribute educational materials to assist the Owner in preserving the performance and life of their system.

5.2 Representative Officers

Representative Officers may include; qualified septic tank contractors, registered environmental health specialists or a qualified designer employed or contracted by the ALA.

5.3 Duties

In addition to the other powers provided by law, the ALA, shall have all of the following powers and shall promptly and effectively exercise such powers as may be appropriate to ensure that onsite wastewater treatment systems, as defined in Section 6952 of the Health and Safety Code (Section 6952. reads "On-site wastewater disposal system" means any of several works, facilities, devices, or

[2] Local authority must be established by Memorandum of Understanding with the RWQCB

other mechanisms used to collect, treat, recycle, or dispose of wastewater without the use of communitywide sanitary sewers or sewage systems), do not pollute surface water and ground water.

The ALA shall develop administrative procedures to:

1. Establish the appropriate management levels necessary to comply with the management standards of these regulations.
2. Establish a record keeping and reporting program to ensure that up-to-date records are kept of location, ownership, site evaluation, design, and compliance reports are maintained and performance of systems is monitored.
3. To carry on technical and other investigations, examinations, or tests, of all kinds, make measurements, collect data, and make analyses, studies, and inspections pertaining water quality, nuisance, pollution, waste, and contamination of water as such activities relate to the use of onsite wastewater treatment systems.
4. Enter into agreements with qualified management entities to fulfill the maintenance, operation and monitoring functions described for the management program levels.
5. Issue appropriate permits for the installation and operation of Onsite Wastewater Treatment Systems.
6. Inspect or cause to have inspected Onsite Wastewater Treatment Systems as prescribed by this ordinance.
7. Coordinate with the Regional Water Quality Control Board Watershed Management Initiative Program and other agencies to identify areas of special concern.
8. Develop/adopt and provide an educational program that ensures that system owners and service providers understand their roles, responsibilities, requirements, and procedures for managing onsite systems.
9. Monitor all OWTS performance throughout their jurisdiction or in concentrated areas of special concern, whichever is considered appropriate to protect public health and safety and evaluate the effects on ground and surface water quality.
10. Enter any parcel where an OWTS is located for the purpose of inspecting or evaluating the performance of the system. The ALA shall provide appropriate notice as to the date and approximate time of the inspection in writing to the owners and occupants before entering the property.
11. May enter property without written or verbal notification when there is reasonable cause to suspect that the OWTS is failing[3] and endangering public health, safety and water quality.

[3] A failing system shall be defined as any system where wastewater effluent and solids are no longer safely treated and/or discharged and pose a direct health and safety risk to humans, animals and water quality.

12. When an owner or occupant denies entry to the ALA or its representative officers during routine or emergency inspections, the ALA shall obtain a Court Order (Inspection Warrant) pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure for right of entry to inspect and/or evaluate the system.[4]
13. When applicable, the ALA shall issue to the owner a correction notice to pump the tank or correct any system deficiencies. The owner shall comply with the directives of the ALA within the required time stated in the notice. Failure of the owner to comply with the directive shall be in violation; their operating permit will be suspended; and the system must be abandoned until the requirements of the correction notice have been met. Continued use of the OWTS without an operating permit is a violation of law and subject to criminal action as may be set forth by the ALA.

5.4 Violation

Any violation of a regulation is a misdemeanor punishable by a fine not to exceed five hundred dollars ($500), or imprisonment not to exceed 60 days, or by both such fine and imprisonment. Each day of such a violation shall constitute a separate offense. Any violation or threatened violation of a regulation may also be enjoined by civil suit.

5.5 Eligible Management Entities

Cities & towns, public utility districts, water & sewer districts, special-use districts, and corporations and homeowner associations with demonstrated capacity to assure long-term management.

5.6 Areas of Special Concern

The local ALA may investigate and take appropriate action to minimize public health and/or environmental risk in formally designated areas such as:

1. Shellfish protection districts or shellfish growing areas;
2. Sole Source Aquifers designated by the U.S. Environmental Protection Agency;
3. Areas with a critical recharging effect on aquifers used for potable water;
4. Designated public water supply wellhead protection areas as identified in the County Source Water Protection Program.
5. Up-gradient areas directly influencing water recreation facilities designated for swimming in natural waters with artificial boundaries within the waters;

[4] See California Water Code Section 31143-31143.5 for possible abatement/enforcement language (Appendix III).

6. Areas designated by the State Water Resources Control Board as special protection areas;
7. Areas designated by the Regional Water Quality Control Board(s) as special protection areas identified in the Watershed Management Initiative program;
8. Wetland areas under production of crops for human consumption;
9. Frequently flooded areas delineated by the Federal Emergency Management Agency; and
10. Areas identified and delineated by the local ALA in consultation with the Regional Water Quality Control Board to address public health threat from on-site systems.

The ALA may impose more stringent requirements on new development and corrective measures to protect public health upon existing developments in areas of special concern, including:

1. Additional location, design, and/or performance standards for OWTS;
2. Larger land areas for new development;
3. Prohibition of development;
4. Additional operation, maintenance, and monitoring of OWTS performance;
5. Requirements to upgrade existing OWTS;
6. Requirements to abandon existing OWTS; and
7. Monitoring of ground water or surface water quality.

Within areas of special concern, to reduce risk of system failures, a person approved or designated by the local ALA shall:

1. Inspect every OWTS at least once every three years;
2. Submit the following written information to both the local ALA and the property owner within 30 days following the inspection:
3. Location of the tank;
4. Structural condition of the tank, including baffles;
5. Depth of solids in tank;
6. Problems detected with any part of the system;
7. Maintenance needed;
8. Maintenance provided at time of inspection; and
9. Other information as required by the local ALA.
10. Immediately report failures to the local ALA.

5.7 Fees

Agencies shall establish fees for permits, plan checking, inspection and monitoring and maintaining files and all other costs necessary to administer the program.

5.8 Appeals

ALAs shall establish an independent panel for hearing appeals. The panel shall be comprised of at least one each of the following members: one agency staff, one professional OWTS consultant, one OWTS Installer or Pumper, **one industry representative**, one person from the public at large with alternates for each

position. Decisions of the panel shall be reviewed by the Administrative Officer for compliance with the OWTS ordinance in force and the State Health and Safety code.

5.9 Abatement[5]

In the event that the local ALA determines that a violation of the provisions of this code exists, the local ALA shall **require the owner of the property to** abate any **system failure** or nuisance that imposes a risk to public health and safety.[6] Violation of any of the provisions of a regulation adopted pursuant to Section xxxx may be abated as a public nuisance, and the governing body may by regulation establish a procedure for the abatement of such a nuisance and to assess the cost of such abatement to the violator. If the violator maintains the nuisance upon real property in which he has a fee title interest, the assessment shall constitute a lien upon such real property.

6.0 Management Program[7]

Authorized Local Agencies shall establish a management program that consists of one or more of the five management levels (Table 1). Authorized Local Agencies shall establish the appropriate management level(s) after:

1. consultation with and concurrence from the Regional Water Quality Control Board(s) concerning the management level necessary to implement the provisions of this ordinance. The management level shall be determined by an assessment of the level of oversight and system management necessary to protect public health and water quality.
2. public hearing

6.1 Management Program Level 1 System Inventory and Awareness of Maintenance Needs

Management Program 1 is the required basic management program. It is suitable where:

1. Standard Onsite Wastewater Treatment Systems are/can be installed
2. There is no recognized water quality threat from OWTS use.
3. Onsite Wastewater Treatment Systems are owned and operated by individual property owners in areas of low environmental sensitivity. Areas of low environmental sensitivity are areas where there is no demonstrated impairment of ground or surface water resulting from the continued use of standard Onsite Wastewater Treatment Systems.

[5] This section was taken in part with additional changes from the Santa Cruz County Code.
[6] See Appendix III for Water Code language
[7] See Appendix IV for additional guidance for the management levels

An Onsite Wastewater Treatment System managed at this level shall be issued a standard operating permit. System operation and maintenance responsibilities lie solely with the system owner.

6.1.1 Program Objectives/Agency Responsibilities

a. to ensure that all systems are sited, designed and constructed in compliance with the prevailing rules for a Standard Onsite Wastewater Treatment System,
b. ensure that all systems are recorded and inventoried,
c. ensure property owners are informed of maintenance needs of the systems, and
d. to provide communities with basic data for determining whether higher management levels are necessary.

6.2 Management Program Level 2 - Renewable Operating Permits and Maintenance Contracts

Minimum management program necessary where enhanced Onsite Wastewater Treatment System designs are employed to provide treatment to overcome restrictive site conditions in areas of low environmental sensitivity. This program is suitable where:

1. Sites have limiting soil/site conditions that do not allow for a standard Onsite Wastewater Treatment System.
2. System owners retain responsibility for system operation and maintenance.
3. Maintenance is provided for by means of a maintenance contract with a public or private entity or by the system owner.

6.2.1 Program Objectives/Agency Responsibilities

a to ensure that all systems are sited, designed and constructed in compliance with the prevailing rules for a Enhanced Onsite Wastewater Treatment System,
b ensure that all systems are recorded and inventoried,
c ensure property owners are informed of maintenance needs of the systems, and
d to provide communities with basic data for determining whether higher management levels are necessary.
e Utilize Renewable Operating Permits (ROP) that are of limited term and are issued to the property owner. The owner must demonstrate that the system is in compliance with the terms and conditions of the permit on a predetermined frequency.
f The ROP provides the local permitting agency a mechanism for continuous oversight of system performance and negotiating corrective actions or levying penalties if compliance with the permit is not maintained.

g The ROP shall be renewed only upon certification of proper system function.

h The property owner shall provide the necessary maintenance as stipulated in the operating permit.

6.3 Management Program Level 3 - Renewable Operating Permits, Maintenance Contracts, and Performance Monitoring

Minimum management program necessary where:

1. Onsite Wastewater Treatment Systems are located in areas with sensitive receiving environments.

It is necessary to achieve specific water quality objectives.

6.3.1 Program Objectives/Agency Responsibilities

a to ensure that all systems are sited, designed and constructed in compliance with the prevailing rules for a Onsite Wastewater Treatment System,

b ensure that all systems are recorded and inventoried,

c ensure property owners are informed of maintenance needs of the systems, and to provide communities with basic data for determining whether higher management levels are necessary.

d Establish a monitoring and reporting program that ensures onsite systems continuously meet their performance requirements.

e Conduct sanitary surveys to provide assessment of existing onsite system performance.

f Utilize renewable operating permits that are of limited term and are issued to the property owner. The owner must demonstrate that the system is in compliance with the terms and conditions of the permit on a predetermined frequency

g The ROP provides the local permitting agency a mechanism for continuous oversight of system performance and negotiating corrective actions or levying penalties if compliance with the permit is not maintained.

h The property owner shall contract with a maintenance provider to provide the necessary maintenance as stipulated in the operating permit.

i Ensure that trained operators are under contract to perform timely maintenance.

6.4 Management Program Level 4 - Utility Operation and Maintenance

This management level is for Onsite Wastewater Treatment Systems where:

1. the sensitivity of the environment is high
2. the need for properly functioning systems is essential to maintain public health and environmental protection.
3. Operation and maintenance functions are delegated to a public or private utility.

Applicable where: monitoring of a public drinking water supply has detected pathogens or elevated levels of nutrients and a source water assessment has identified onsite/decentralized systems as sources of concern, or a determination has been made that ground water or surface water is impaired as a result of onsite treatment systems (CWA , 303(d) & 305(b) reports).

6.4.1 Program Objectives/Agency Responsibilities

a. to achieve greater control over compliance by issuing the operating permit to a utility instead of the property owner,
b. monitor and make assessments of watershed impacts from onsite systems and replace existing systems with higher performance units where necessary
c. to enable utilization of enhanced systems that provide the performance required to mitigate public health or environmental concerns,
d. ensure higher level of maintenance by having a public or private utility take responsibility for the operation and maintenance of systems,
e. ownership of the system remains with the property owner, and
f. the renewable operating permit is issued to a public or private utility that meets the specified criteria as determined by the local ALA.

6.5 Management Program Level 5 - Utility Ownership and Management,

The designated management entity both owns and operates the onsite systems. The utility maintains total control of all aspects of management, not just operation and maintenance. This management level is for Onsite Wastewater Treatment Systems where:

1. the sensitivity of the environment is high
2. the need for properly functioning systems is essential to maintain public health and environmental protection.

6.5.1 Program Objectives/Agency Responsibilities

a. provide professional management of all aspects including siting, design, construction, operation and maintenance,
b. monitor and make assessments of watershed impacts from onsite systems and replace existing systems with higher performance units where necessary
c. provide comprehensive monitoring, maintenance and operation in new, high-density development proposed in the vicinity of sensitive receiving waters.
d. provides the highest level of management and allows for integration of Onsite Wastewater Treatment Systems into the wastewater treatment infrastructure of a community.

GENERAL STANDARDS

Management Level	Risk Level	Risk Level Characteristic (Can be assigned to an area or to a site.)	Site response	**Minimum** Permitting Authority Responsibility direct or delegated to service provider	Available technologies that can provide necessary level of treatment
I	RO	No water quality problem, no site limiting conditions.	Any type of system allowed by local code is acceptable.	Permit to Construct and Standard Operating Permit & System inventory	Standard septic tank and leachfield or seepage pit
II	R1	Site limiting conditions (such as unsuitable soils and/or inadequate depth to limiting factor.)	Any type of system that physically replaces what site is lacking, to ensure that there is no human exposure to untreated sewage.	Renewable Operating Permit that ensures non-standard components are maintained.	Advanced treatment systems (media filter, ATU (?), etc., and/or advanced soil treatment & dispersal (mound, subsurface drip, LPP, etc.).
III	R2	Areal dependence on shallow ground water for drinking water, shellfish or recreational use	Risk level should be assigned to individual sites proposed for development. New systems should include advanced treatment. Repairs should include advanced treatment where feasible.	Renewable Operating Permit that ensures non-standard components are maintained. Physical monitoring by system owner.	Standard Systems and Advanced treatment systems (media filter, ATU, etc., and/or advanced soil treatment & dispersal (mound, subsurface drip, LPP, etc.).
	R3	Documented nitrate or human bacterial water quality problem in ground water or nearby surface waters, or onsite system density exceeds area's assimilative capacity for contaminant	Repairs and new systems should include advanced treatment that treats the contaminant of concern.	Renewable Operating Permit that ensures non-standard components are maintained. Physical monitoring by regulator or contracted service provider required. Effluent sampling and/or ground water monitoring required at permitting agency discretion.	Advanced treatment systems (media filter, ATU, etc., and/or advanced soil treatment & dispersal (mound, subsurface drip, LPP, etc.) to address the contaminant(s) of concern; such as disinfection for bacteria, or treatment for nitrate removal/reduction
IV	R4	Documented water quality problem, nitrates and/or human pathogens, identified by the Regional Water Quality Control Board (RWQCB) through various water quality assessment processes (such as WMI, 303(d), or TMDL) or the Department of Health Services (Source Water Assessment)	Corrective action needed to mitigate, may require system upgrades and/or conversion to cluster or centralized sewer treatment.	Renewable Operating Permit that ensures all components are maintained. Physical monitoring by regulator or contracted service provider required. Effluent sampling and/or ground water monitoring required at state's discretion, in consultation with permitting agency.	Same as above, and: Utility managed onsite, clustered or centralized sewage treatment should be considered as an option if homeowners are unwilling or unable to upgrade systems and assume burden of demonstrating compliance
V	R5	Need for direct reuse (systems that irrigate, directly recharge a drinking water aquifer, or discharge fluids at surface or at depths less than minimum soil depth to restrictive horizon)	Denitrification and disinfection required. Chlorination is not an acceptable disinfection technology if disinfection by-products are of concern.	Renewable Operating Permit, that ensures all components are maintained. Physical monitoring by regulator or contracted service provider required. Effluent sampling and/or ground water monitoring required.	Utility owned onsite, clustered or centralized sewage treatment should be considered as an option if homeowners are unwilling or unable to upgrade systems and assume burden of demonstrating compliance

303

GENERAL STANDARDS

7.0 PERMITS

Permits are required prior to the construction, **replacement**, operation and repair of any OWTS.

7.1 Onsite Wastewater Treatment System Installation Permits

The ALA shall require that Contractors installing or repairing OWTS have the proper license to conduct business within their jurisdiction. The ALA will either issue or deny the onsite wastewater treatment system installation permit within a reasonable amount of time after the receipt of a completed application for all standard or enhanced designs. The Permit shall be issued to the homeowner, the contractor hired by the owner, the easement holder on which the system is to be installed, or the utility that will own and manage the system. The approved onsite sewage treatment installation permit will remain effective for **a period of one year**, or as otherwise determined by the ALA, from the date of issuance for construction of the system. The onsite wastewater treatment system installation permit should not be transferable. If necessary, a renewal of an Onsite Wastewater Treatment System installation permit may be granted to the original applicant if the original permit has expired. The applicant should apply for a renewal prior to the expiration date of the onsite wastewater treatment system installation permit.

7.1.1 Application Requirements – New Installations

The application for an Onsite Wastewater Treatment System permit should include an approved Site Evaluation Report (SER) specified in Section 12.1 prepared by a qualified designer as specified in Section 10.2.

7.1.2 Application Requirements – Existing Systems, Replacements and Repairs

The application for a repair Onsite Wastewater Treatment System permit should include the information deemed necessary by the ALA. Application requirements shall be identified in the local ordinance.

7.2 Operating Permits

A valid Operating Permit shall be required for all OWTS. Operating permits are not transferable. An operating permit shall not be issued until such time that the system is in compliance with the terms and conditions of the onsite wastewater treatment system installation permit.

7.2.1 Standard Operating Permit (SOP)

A Standard Operating Permit (SOP) shall be issued by the ALA upon final approval of the completed Standard Onsite Wastewater Treatment System in Management Program Levels 1 and 2. The issuing agency shall issue an SOP when the system is in compliance with the requirements specified in the onsite wastewater treatment system installation permit. The issuing agency **shall** issue an operating permit **at such time that** the as-built plans and the operations and

maintenance instructions are submitted and the final inspection and testing of the system has been performed.

7.2.2 Renewable Operating Permit (ROP)

A Renewable Operating Permit (ROP) shall be issued by the ALA upon final approval of the completed Enhanced Onsite Wastewater Treatment System in Management Program Level 2-5. ROPs are also required for Standard Onsite Wastewater Treatment Systems in Management Program Level 3-5. The applicant shall also provide evidence, when required, that a maintenance agreement has been established with a qualified public or private entity. The issuing agency shall issue an ROP when the system is in compliance with the requirements specified in the onsite wastewater treatment system installation permit. The issuing agency shall issue a renewable operating permit **at such time that** the as-built plans and the operations and maintenance instructions are submitted, the final inspection and testing of the system has been performed, and when required a satisfactory maintenance agreement has been obtained.

7.2.2.1 Renewal Frequency

The maximum length of time a Renewable Operating Permit shall remain in effect is three years. The local implementing agency **may** determine **a shorter** length of time that the Renewable Operating Permit shall remain in effect **based on** one or more of the following considerations:

a. System complexity
b. Public health concerns
c. Environmental concerns

7.2.2.2 Renewal Procedure

The ALA personnel or representative officers shall renew the ROP after a satisfactory compliance inspection. Representative Officers may include; qualified septic tank contractors, registered environmental health specialists or a qualified designer employed or contracted by the ALA. The ALA shall require any corrections necessary to bring the OWTS into compliance with all applicable regulations. Failure to make the corrections within thirty days after written notification or posting of a Correction Notice at the site shall result in a violation of the permit process and the issuance of a Violation Notice by the issuing agency.

7.2.3 Change of Ownership

The ALA personnel or representative officers at all changes in ownership shall conduct an inspection of the OWTS in accordance with 11.4.3. Representative Officers may include; qualified septic tank contractors, registered environmental health specialists or a qualified designer employed or contracted by the ALA. The ALA shall require any corrections necessary to bring the OWTS into compliance with all applicable regulations. Permits shall only be renewed upon receipt of satisfactory evidence that the corrections have been made. Failure to make the corrections within thirty days after written notification or posting of a

Correction Notice at the site shall result in a violation of the permit process and the issuance of a Violation Notice by the issuing agency.

8.0 Maintenance, Operation and Monitoring

Onsite wastewater treatment systems require Maintenance, Operation and Monitoring (MO&M) consistent with the applicable Management Program Level and the type of system.

8.1 ALA Responsibilities

The ALA shall ensure that onsite wastewater treatment systems are maintained, operated and monitored in accordance with the Management Program Level in effect.

8.1.1 Maintenance, operation and monitoring assurance

The ALA may either establish it's own protocol to be administered by the agency personnel or representative officers or may require the owner of the OWTS to use one or more of the following methods to take effect within 12 months of implementation of the state regulations by the ALA:

a. owners may manage their own system and provide to the ALA routine monitoring and evaluation reports per requirements set forth by the ALA;
b. recording the presence and type of onsite system on the property deed;
c. recording the requirement for an on-going service contract on the property deed;
d. obtaining a Renewable Operating Permit (in addition to the initial onsite wastewater treatment system installation permit), with the maintenance requirements stipulated by the management level in effect for the OWTS;
e. obtaining the services of a management entity[8] to provide MO&M assurance.

8.1.2 Registration of Service Providers

a. Permitting agencies shall establish a method to register service providers that includes at a minimum the following:
b. Verification that the service provider has the demonstrated knowledge and ability to perform services on the system(s) or device(s) by possessing certification from the manufacturer or by some other method satisfactory to the ALA.
c. Reciprocity: Service providers with a valid registration with a local ALA shall be deemed eligible for registration in all jurisdictions. The local ALA may impose a local registration fee to cover administrative costs of the registration program.

[8] Examples of management entities include: cities & towns, public utility districts, water & sewer districts, special-use districts, and corporations and home-owner associations with demonstrated capacity to assure long-term management.

d. Maintain a listing of registered service providers that shall be made available upon request.

8.1.3 Record Keeping

a. The ALA shall establish a record keeping and tracking system to verify compliance with maintenance, operation and monitoring to include the following:
b. System location including assessors' parcel number or some other unique identification number established by the ALA.
c. Date of installation
d. Type of system
e. Owner of record
f. Maintenance, operation and monitoring requirements
g. Identification of service provider
h. Results of maintenance and monitoring reports

8.2 Owners Responsibility

Owners are responsible for proper operation and maintenance of their onsite wastewater treatment system. Owners shall be responsible for the following:

a. Maintain their system to prevent surfacing of effluent. In the event of surfacing effluent, the owner shall minimize use or cease operation of the system until it is repaired. Until the system is repaired, the owner shall prevent effluent from surfacing by having the system continuously pumped and the waste disposed at an approved septage handling facility until the system is repaired[9].
b. Have their septic tank inspected and the scum and solid levels measured at the prescribed frequency indicated on the operating permit. Owners shall have their tanks pumped when the clear liquid zone separation in the tank is less than 2/3 of the total depth in the tank.
c. Owners shall preserve and protect their onsite wastewater treatment system. Owners shall not place buildings, livestock, impervious materials, equipment, parking areas, or driveways over the treatment areas[10]. Surface and subsurface soils in the treatment areas shall not be removed, ripped, contoured or compacted. The treatment areas may be tilled with a light duty, hand operated garden tiller (no tractor operated implements), hand graded and covered with lawn or non-invasive plants. The treatment areas may be irrigated with portable sprinklers or landscape irrigation. Flood irrigation and surface drainage shall not encroach on or impact the septic tank, treatment areas or other components of the

[9] The system shall be pumped by a certified liquid waste hauler as defined in this ordinance. The system shall be repaired under permit issued by the local agency. All repairs and improvements shall be performed by a qualified licensed contractor as defined in this ordinance.

[10] Treatment areas include the primary and reserve areas

system. Building foundation and roof drains shall be located a safe distance and directed away from the treatment areas.

d. The owner shall control the wastewater discharge to the system within the design quantity and strength parameters. The owner shall not introduce strong bases, acids, chlorine, formaldehyde, thinners, solvents or other atypical wastewater components to their systems other than in minute concentrations contained in mild cleansers and chemicals used in normal household cleaning. The owner should refrain from using septic tank additives and soil amenders without first consulting with the system designer or ALA as to any possible adverse affects to the system and ground water quality.

e. The owner shall operate and maintain their system in conformance with the conditions prescribed in the operating permit and the Designer's and Installer's recommendations.

8.3 System Designer Responsibilities:

The onsite wastewater system designer must instruct, or assure that instruction is provided to, the owner of the residence or facility regarding proper operation of the entire onsite wastewater treatment system. This instruction should emphasize operating and maintaining the entire onsite wastewater system within the parameter ranges for which it is designed.

8.4 User's Manual - All Systems

a. A user's manual for the treatment system must be developed and / or provided by the system designer and/or manufacturer. These materials must contain the following, at a minimum:

   i. Diagrams of the system components including schematic flow diagrams.

   ii. Maintenance frequency of system components.

   iii. Explanation of general system function, operational expectations, owner responsibility, etc.

   iv. Names and telephone numbers of the system designer, local health authority, component manufacturer, supplier/installer, and/or the management entity to be contacted in the event of a failure.

   v. Information on "Trouble-shooting" common operational problems that might occur. This information should be as detailed and complete as needed to assist the system owner to make accurate decisions about when and how to attempt corrections of operational problems, and when to call for professional assistance.

8.4.1 Enhanced Treatment System Operations and Maintenance Manual

For enhanced treatment systems/devices, a complete maintenance and operation document must be developed and provided by the designer. This document must be made available to the system owner and the service provider. This document

must include all the appropriate items mentioned below, plus any additional general and site-specific information. A copy of this document must also be provided to the ALA, prior to the issuance of the onsite wastewater treatment system operating permit. The operation and maintenance manual(s) must be written so as to be easily understood by the owner and O&M service provider and include as a minimum:

a. a maintenance schedule for all critical components;
b. requirements and recommended procedures for periodic removal, **treatment and disposal** of residuals from the system;
c. a detailed procedure for visually evaluating function of system components;
d. a description of olfactory and visual techniques for confirming correct process parameters (i.e. mixed liquor concentration and biomass health) and system performance;
e. a recommended method for collecting and transporting effluent samples;
f. the effluent quality parameters expected to be produced by a properly operating system as established through analytical methods, and
g. safety concerns that may need to be addressed.

8.5 Proprietary System/Device Manufacturer Responsibilities:

The authorized representative for the Proprietary System/Device must instruct, or assure that instruction regarding proper operation of the Proprietary System/Device is provided to the owner of the residence or facility, the designer, and the ALA.

8.5.1 Operations and Maintenance Manual

The authorized Proprietary System/Device representative must provide a manufacturer-prepared manual to the wastewater system designer, the system owner and, if requested, to the local ALA at the time of system installation. The information in this manual(s) must be presented in a manner which can be easily understood by the owner and include, at a minimum:

a. a parts list which includes all primary functional components, equipment manufacturer(s) and model designations;
b. a statement of product performance demonstrated during testing;
c. a statement regarding the use of pre-treatment with the Proprietary System/Device, including whether or not a pre-treatment tank was used during product testing and any application-specific recommendations for using pre-treatment tanks.
d. a functional description of how the process functions, including diagrams which illustrate basic system design and flow-path;
e. a clear statement which provides examples of the types **and strength** of waste that can be effectively treated by the system;

f. a list of household substances that, if discharged into to the system could adversely affect system performance or groundwater quality;
g. comprehensive operating instructions that clearly delineate proper function of the system, operating and maintenance responsibilities of the owner and authorized service personnel, and service-related obligations of the manufacturer(s);
h. requirements for periodic removal of residuals from the system;
i. a course of action to be taken if the system is subjected to electrical power interruption **that could effect system performance**
j. a course of action to be applied if the system will be used intermittently or if extended periods of non-use are anticipated;
k. detailed methods and criteria for identifying system malfunction or problems;
l. a statement instructing the owner to reference the Proprietary System/Device data plate in the event that a problem is identified or service obligations related to the Proprietary System/Device needs to be met by the manufacturer;
m. the name and telephone number of a service representative to be contacted in the event that the system experiences a problem;
n. a description of the initial and extended service policies;
o. electrical schematics for the system if not appearing as a permanent attachment on the system; and,
p. emergency contact numbers for service providers, pumpers and local health.

8.6 Service Provider Responsibilities

a. Register with the local ALA in a manner prescribed by the agency.
b. Provide maintenance and monitoring reports for systems they are servicing to the ALA consistent with the terms of the renewable operating permit. Reports shall be provided to the ALA no later than 90 days following the required service.
c. Report system malfunctions that result in _____ within ____ hours/days to the ALA.
d. Maintain certification and training for operation and maintenance of systems as determined by the manufacturer, proprietary device manufacturer and the local agency.

8.7 Service Contract

A Service Contract for on-going service and maintenance of the entire wastewater system is required for all OWTS in Management Program Level 3. The service and maintenance requirements may be modified by the local ALA, but as a minimum continued service and maintenance must be addressed for the life of the system by an operation plan. OWTSs in Management Program Level 4 and 5

shall be deemed to comply with this section by nature of the management oversight provided by the utility.

8.8 Monitoring Easements

The ALA may require the owner to dedicate easements for inspections, maintenance and future expansion and replacement area for OWTS.

8.9 Groundwater Quality Monitoring

When there is reasonable cause to suspect that an owner's OWTS is contributing to groundwater quality degradation or contamination, the ALA may require either:

a. the owner provide an easement to the agency to install and monitor groundwater sampling wells on their parcel,
b. the owner install and sample monitoring wells at their own expense. Water samples collected by the owner shall be given to the ALA or to a certified water testing lab for analysis with the results sent to the ALA. The owner shall follow the water sampling procedures as directed by the ALA or water testing lab.

9.0 Enhanced Treatment System Warranty Requirements

All enhanced wastewater treatment systems and enhanced treatment system components shall have a warranty provided. It shall be the responsibility of the system designer to ensure that warranties are obtained. The system designer may warranty the entire system or may secure part or all of the warranty from the system component manufacturer and system installer. In all cases, the entire treatment system shall be warrantied through the designer, manufacturer, installer or some combination acceptable to the ALA. The warranty shall be for a period not less than five years in duration.

9.1 Adoption and use.

Warrantied individual wastewater treatment systems meeting the requirements under this section may be employed unless specifically prohibited in local ordinance.

9.2 Submittal requirements

The designer or manufacturer must submit satisfactory information to the ALA as follows:

a. how the system must be used and installed, how it is expected to perform under those conditions, the anticipated design life, and the period to be warrantied;
b. pertinent existing data, including in-field testing data, that the system will perform as expected;
c. a commonly accepted financial assurance document or documentation of the designer's or manufacturer's financial ability

to cover potential replacement and upgrades necessitated by failure of the system to meet the performance expectations for the duration of the warranty period;

d. a full warranty effective for the designated warranty period, which must be at least **five** ~~three~~ years from the time of installation, covering design, labor, and material cOWTS to remedy failure to meet performance expectations for systems used and installed in accordance with the designer's or manufacturer's instructions; and
e. additional information requested by the ALA to ensure compliance with this part.

9.3 Allowable designer, manufacturer, installer conditions for warranty.[11]

9.3.1 Enhanced Onsite Wastewater Treatment Systems

Designer, manufacturer and installers of treatment systems and system components may set exclusions, limitations and conditions on warranties. These shall be made available in writing prior to entering into a contract for installation to the system owner and the ALA. Exclusions, limitations and conditions voiding the warranty must be specified by the designer or manufacturer for the following reasons:

a. Failure of the System Owner to maintain an active service contract with a service provider who is trained and certified as required by the designer and/or manufacturer and registered with the ALA.
b. System or component failure is determined to have occurred as a result of improper operation or maintenance of any component of the System.
c. Failure is a result of introduction of toxic contaminants not normally present in the area water supply or derived from normal human wastes or gray water.
d. Discharge of any garbage grinders, grinder pumps, or vacuum pumps into the system.
e. Construction, installation, and/or start up of the system are not done by a licensed and/or certified installer.
f. Any materials, parts, or equipment used in the construction or maintenance of the system do not conform to the plans and specifications or have not been approved by the system designer or manufacturer.
g. Flows exceed the design capacity of the system.
h. The system is not operated and maintained according to the Operation and Maintenance Manual provided by designer and/or the manufacturer.
i. Unauthorized changes in system settings or operation of pumps, metering devices, effluent distribution

[11] Designer, manufacturer, and installer include duly authorized persons acting on behalf of the designer, manufacturer or installer.

j. The System Owner changes components or other parts that can affect the integrity and proper functioning of the system without consultation with, and the concurrence of, a System service provider trained and certified by the designer and/or manufacturer.
k. Failure of the System Owner to allow the designer and/or manufacturer, or any agent or service provider designated by the designer and/or manufacturer to enter the System Owner's property where the System is located at any reasonable time, to inspect, sample, test and monitor System for the purpose of assuring proper operation and warranty compliance.

9.3.2 Enhanced Treatment Systems with Performance Requirements

Designer, manufacturer and installers of treatment systems and system components that must meet performance requirements may set 'influent constituent standards' to limit their liability as it relates to system performance by specifying influent quality and quantity limits for constituents of concern. The influent quality and quantity standards specified may include limits for the following:

a. Hydraulic load
b. BOD
c. TSS
d. TN
e. pH
f. Total Coliform
g. Alkalinity
h. Fats, Oil and Grease (FOGs)
i. Temperature
j. Toxic/Chemical Contaminants

9.4 Administrative requirements

1. Individual wastewater treatment systems meeting the requirements of section 9.3 shall be listed as an approved enhanced treatment system by the ALA.
2. Changes made to a warrantied individual wastewater treatment system that are not included in the original warranty submittal require resubmittal to the ALA.
3. The ALA may remove a warrantied individual wastewater treatment system from consideration as an approved enhanced treatment system upon a finding of fraud, system failure, failure to meet warranty conditions, or failure to meet the requirements of this part or other matters that fail to meet with the intent and purpose of this chapter. Removal of a technology or design does not alter or end warranty obligations for systems installed under the previously approved warranty.
4. A copy of the warranty must be provided to the owner and included with the design records.

GENERAL STANDARDS

10.0 License, Certification, Training and Education

Any person who is responsible for the investigation, design, installation, inspection and regulation of onsite wastewater systems is subject to the requirements contained in this section.

10.1.1 Qualifications

The following professions are authorized to perform the functions listed under Table 10-1.

Table10-1

Occupation	Soil investigation	Design	Installation	Inspection	Regulation
Civil Engineer	X	X		X	X
Geologist	X	X		X	
REHS	X	X		X	X
Soil Scientist	X				
A1, B1 & C42 & C36 Contr.			X		

10.1.2 Experience

Licensed or registered persons shall work within their field of expertise and demonstrate reasonable knowledge and experience in onsite wastewater systems.

10.1.3 Responsibility for Design

All soils evaluations and designs shall by stamped and signed by the licensed or registered person responsible for the work. Unregistered individuals may perform the above work under the supervision[12] of the registered individual in control of the work.

10.1.4 Responsibility for Installation

A Contractor, the Contractor's responsible managing employee or subcontractor working directly for the Contractor of Record, shall perform all installations and repairs requiring the work of a licensed Contractor. The installation shall be the sole responsibility of the Contractor of Record.

10.2 Education and Training

Persons involved in the design and installation of OWTS shall have received sufficient training and education to be competent in performance of their work. Civil Engineers, Environmental Health Specialists, and Engineering Geologist, shall be registered in the State of California. Soil Scientists are required to show proof of registration from any State in the U.S. Any person qualified under section 10.1 that is responsible for soils evaluations, design, plan review and inspection of OWTS shall have completed a total of 9 college semester units, with 3 units each from the following group of courses:

a. 3 semester units of soil science, soil morphology or soil mechanics,
b. 3 semester units of fluid mechanics or hydraulics,

[12] Supervision shall mean the direction and responsibility for a subordinate's work by a registered professional. A subordinate can perform office and field work outside the physical presence of the registered supervisor in control of the work.

c. 3 semester units of biology, microbiology or chemistry.

All persons actively engaged in and responsible for work related to the design, installation, inspection and regulation of OWTS shall have completed a minimum of 6 months in-service training under the direct supervision of qualified professional working in the OWTS profession. It is recommended that professionals earn at least 3 units of continuing education every 2 years in related subjects, workshops and seminars in OWTS technology.

10.3 Certification

Persons who are actively engaged in the design, installation, repair, inspection, maintenance, and regulation of OWTS shall have completed a State-recognized training and/or testing program and obtained a certificate in onsite wastewater systems. Such persons shall submit a copy of certification to be kept on record with the State Department of Consumer Affairs. Permitting agencies responsible for the regulation of OWTS systems shall require that OWTS professionals working in their jurisdiction provide proof of certification. Individuals or entities who are currently engaged in work in the OWTS profession in California will be required to obtain a Certificate of training from a State recognized training and/ or testing program within two years of establishment of a statewide OWTS certification program.

10.4 Violation

It shall be a misdemeanor for persons who misrepresent, ignore or willfully violate any portion of section 10.0; those who do may be subject to fines or legal action as set forth by the ALA.

11.0 Parcel Development and Requirements

This section addresses existing undeveloped parcels, developed parcels with OWTS systems, developed parcels requiring modifications to the existing OWTS and creation of new parcels for commercial and residential use.

11.1 Variance/waiver

Developed and undeveloped parcels shall comply with the requirements of this Regulation whenever feasible. Portions of this Regulation may be waived by the ALA to provide for reduced setbacks or incorporate adjacent lands through recorded easements or allow for use of enhanced treatment systems to mitigate any of the following conditions:

a. Insufficient parcel size or
b. Insufficient effective soil depth or
c. Insufficient ground or surface water clearance

The waiver shall be granted only if ALA makes a finding that the proposed system does not degrade water quality, impact beneficial uses or create a health hazard or nuisance condition

GENERAL STANDARDS

11.1.1 Repairs to Failing Systems

When a failed system is repaired, no increased usage or expansion to the system will be permitted unless the system can be upgraded and sized in accordance with the applicable sections in this Ordinance.

11.1.2 Modifications to existing systems

Expansion or modifications to the existing system to allow for increased usage shall conform to the Technical Standards of this document. Waiver of these standards to expand or modify an existing system for increased usage is not permitted.

11.1.3 Off-Parcel Systems

When additional land is required outside the boundaries of the parcel where sewage is to be generated, an easement binding to the land shall be executed and recorded describing the location, dimension and components of the system that cross property lines and which lies in part or wholly on land different from the parcel from which the wastewater generates.

The ALA on case-by-case basis may waive portions of these regulations to accommodate repairs.

11.2New land division

11.2.1 Residential and Subdivisions

Any residential land division including single and multi-family parcels that will use OWTS for wastewater treatment shall be subject to the following criteria for approval:

a. Documented site and soils evaluation by a qualified consultant or the ALA.
b. Any additional evaluation or testing deemed necessary to satisfy the standards set forth in these regulations.
c. A plot or site plan prepared by the consultant performing the site and soils evaluation noting the dimension and location of the proposed waste treatment area. The soil treatment area shall note the size and dimension of the primary treatment and expansion fields. The site plans shall be recorded with the parcel or subdivision map. A copy of the site plan and recommended type of OWTS shall be placed on file with the ALA.
d. Each parcel within the proposed land division shall have a designated sewage treatment area. The location of the treatment area shall be determined from evaluation of the site and soil characteristics, and absorption capacity of the soil in gallons per day, per square foot. The treatment areas for all parcels shall be sufficient to accommodate a minimum daily flow of 300 gallons and the recommended type of treatment system.

GENERAL STANDARDS

11.2.2 Commercial Land Divisions

The creation of parcels for commercial use shall conform to Section 11.3.1 except that the reserved treatment area shall be sized according to the estimated strength and volume of waste flow generated by the commercial facility and shall be sized to accommodate a minimum of 200% expansion. The use of OWTS for any waste discharge other than sewage and gray water shall not be allowed without Waste Discharge Requirements issued by the RWQCB or an Underground Injection Control (UIC) permit from the U.S. Environmental Protection Agency.

TECHNICAL STANDARDS

12.0 Evaluation Procedures

The purpose of the site and soils evaluation is to assess the suitability of a given site and location to be used for wastewater treatment

12.1 Site evaluation report (SER)

A Site Evaluation Report (SER) is required for every individual parcel proposing use of an OWTS. The ALA shall establish the specific information required for a complete SER.

12.2 SER Minimum Requirements

The SER shall include information regarding soil conditions, characteristics and estimated permeability, depth of zones of saturation, depth to bedrock, surrounding geographic and topographic features, direction of ground contour and % slope, distance to drainages, water bodies and potential for flooding, location of existing or proposed roads, structures, utilities, domestic water supplies, wells and ponds, existing wastewater treatment systems and facilities, relevant geographic and topographic information and drainage features. Site limitations and special conditions shall be listed in the SER.

12.2.1 Site Limitiations

During the preparation of the SER, the consultant shall address the direction treated water will travel once it enters the soil treatment area. Additional work may include a geotechnical report and a site capacity study (SCC). Special designs and site conditions are required for systems on slopes over 30 percent.

TECHNICAL STANDARDS

12.2.1.1 Table 12-1

MINIMUM REQUIRED HORIZONTAL SETBACKS – STANDARD SYSTEMS

		Soil Treatment System		
		Septic Tank & Other Treatment Unit	Primary Effluent	Secondary Effluent
Public Water Supply Well		100’	150’	
Water Well		100'	100'	100'
Springs or Seeps				
Upgradient		50'	50'	50'
Downgradient		50'	100'	50'
Flood Plain (10 year event)		50’	100’	100’
Lava Outcropping		50'	100'	50'
Surface Waters				
Perennial Streams		50'	100'	100'
Intermittent Streams		50'	100'	50'
Ephemeral Streams		50'	25'	25'
Lakes & Reservoirs		50'	200'	100'
Wetlands		50’	100’	100’
Ocean – mean high water mark		50’	100’	100’
Groundwater Interceptors				
Upgradient		20'	20'	20'
Downgradient		25'	75'	25'
Irrigation Canal				
Lined		25'	50'	25'
Unlined				
	Upgradient	50'	100'	50'
	Downgradient	50'	100'	50'
Storm Drainage Pipe[2]		5'	25'	5'
Cutbanks				
Intersect effective soil depth within 48" of ground surface		25'	4X Height	4X Height
Effective soil depth not intercepted		10'	4X Height	4X Height
Fill		10'	4X Height	4X Height
Escarpment				
Intersect effective soil depth within 48” ground surface		25'	75'	50'
Effective soil depth not intercepted		10'	50'	25'
Roadway Setback		20'	20'	20'
Property Line		5'	5'	5'
Swimming Pool		5'	5'	5'
Water Pipe				
Main Line		10'	10'	10'
Service Line		5'	10'	5'
Driveway or Parking Area				
Perc Rate < 30 MPI		0'	0'	0'
Perc Rate > 30 MPI		0'	Not Allowed	0'
Foundation				
Footing		5'	5'	5'
Basement		5'	25'	25'
Absorption Trench		1'	10'	6'

Footnotes: 1 If domestic water supply, setback shall be 100'
2 Watertight

12.3 Soil evaluation

TECHNICAL STANDARDS

12.3.1 Procedure

The number of soil observations shall be determined by the ALA and the professional judgment of the individual conducting the site evaluation. Soil observations shall be performed in an exposed pit. Underground utilities must be located before soil observations are undertaken. Required safety precautions[13] must be taken before entering soil pits. Soil observations shall be conducted prior to any required hydraulic tests to determine whether the soils are suitable and to determine if and at what depth hydraulic tests are warranted. The depth of the soil profile test pits shall be to the seasonally saturated layer, the bedrock, or three feet below the proposed depth of the system, whichever is less.

a. Soil observations. The soil profile pit shall be observed and described measuring the thickness of each major horizon and depth relative to the ground surface. The soil description shall be based on the USDA soils definition of textural classes, structure, color, chroma, size and percentages of roots, pores, rocks, clay skins and redoximorphic features and the USDA soils chart[14] for estimating soil permeability. The soil profil*e* description shall identify soil characteristics that may enhance or limit treatment of wastewater.

b. Soil description. Each soil observed at the proposed soil treatment area shall be evaluated under adequate light conditions with the soil in a moist state.

(1) The depth of each soil horizon measured from the ground surface. Soil horizons are differentiated by changes in soil texture, soil color, redoximorphic features, bedrock, consistence, and any other characteristic that may affect water percolation or treatment of effluent.

(2) The soil matrix and mottled color described per horizon by the Munsell Soil Color Charts, 1992 Revised Edition or equivalent, which is incorporated by reference. This document is available from Macbeth Division, Kollmorgen Instruments Corporation, 405 Little Britain Road, New Windsor, New York 12553.

(3) A description of the soil texture and consistence using the United States Department of Agriculture (USDA) soil classification system as specified in the Soil Survey Manual, Agricultural Handbook No. 18 (October 1993), which is incorporated by reference. The manual is issued by the United States Department of Agriculture and is available through the Superintendent of Documents, United States Government Printing Office, Washington, D.C.

(4) Depth to the bedrock.

(5) Depth to the seasonally saturated soil for new construction or replacement as determined by redoximorphic features.

(6) Any other soil characteristic that may need to be described to properly design a system such as hardpans or restrictive layers must be classified in accordance with chapter 3 of the Soil Survey Manual, Agricultural Handbook No. 18, which is incorporated by reference in sub item (3).

[13] See CALOSHA requirements for entering open excavations

[14] Soil texture based on USDA soil triangle

TECHNICAL STANDARDS

12.3.2 Classification

Soils shall be classified using the U.S. Department of Agriculture soils classification system for soil name, type and particle size limits. The soil type shall be classified in the field by the consultant and/or representative officers of the ALA having jurisdiction for OWTS. Soil classification may include supplemental laboratory procedures along with the field work. Where the soil permeability or infiltration rate cannot be reasonably estimated, additional testing procedures may be required by the ALA. These tests may include traditional percolation testing and other methods approved by the ALA.

12.3.3 Evaluation of Groundwater

A static water table that lasts longer than three weeks in any given season shall be considered groundwater. The water table shall be evaluated using peizometers constructed in accordance with _____.

12.3.3.2 Data and Information

The groundwater evaluation shall include an assessment of the hydraulic gradient and direction of flow of the groundwater. The collected data shall be reviewed by the consultant and ALA to determine if wastewater can be applied without contamination of the groundwater or creating significant groundwater mounding.

12.3.3.3 Monitoring

Groundwater monitoring shall be performed at the time of year when the maximum groundwater elevation is expected to occur. The monitoring shall be performed during the normal wet season after 80% of the expected average rainfall has occurred. Monitoring shall be performed 48 to 72 hours after a rainfall. In areas that experience high groundwater due to flood irrigation, monitoring shall be done when flooding is at its maximum.

12.3.4 Estimating Soil Permeability

The estimated soil permeability shall be based on the USDA soil classification chart for soil structure and texture. Hydraulic testing may be required to provide meaningful data that can be used to design absorption fields.

12.3.5 Hydraulic Tests

Hydraulic tests shall be required for the following:

a. Soils with an estimated clay fraction greater than 30% as determined from the USDA soil chart.
b. For any proposed system that will serve more than one single-family residence.
c. Any site where in the opinion of the consultant or the ALA, the soil permeability is questionable.
d. The hydraulic tests shall either be a percolation test, infiltration test, or absorption test, as determined by the ALA. **The type of test depends on the type and size of soil absorption system needed.**

TECHNICAL STANDARDS

13.0 Design and Performance Parameters

13.1 Minimum discharge standards

Onsite Wastewater Treatment Systems shall be designed to meet the minimum treatment standards in table 13-1:

Table 13-1

Predominant soil below soil treatment system bottom	Min. Soil (ft) below soil treatment system	BOD5	TSS	NH3-N	N	TKN	PO4-P	Coliform CFU's
Sand / Loamy Sand	4	?	?	?	?	?	?	?
Sandy Loam	3							
Loam	3							
Silt / Silt Loam	3							
Sandy Clay Loam	2							
Clay Loam	2							
Silty Clay Loam	2							
Sandy Clay	2							
Silty Clay	2							
Clay	2							

* Values for BOD5, TSS, NH3-N, N, TKN, and PO4-P are discretionary and all are to be determined by the ALA with **concurrence from the Regional Water Quality Control Board.**

13.2 Determining design flows

Design flows shall be estimated by one of two methods:

1. by number of bedrooms for the proposed dwelling or by estimating the treatment capacity of the soil treatment area/leachfield in gpd/sf. In sizing by number of bedrooms the designer shall use a minimum of 120 gpd /bedroom with low flow fixtures, otherwise 150 gpd/bedroom. The minimum design flow for single-family residences shall be 300 gal/day.
2. The dwelling shall be designed not to exceed the maximum number of fixture units or number of bedrooms that can be supported by the estimated maximum daily flow in relation to the capacity of the soil treatment area to treat and accept effluent.

13.3 Replacement area

There shall be a minimum of 100% reserve area set aside for replacement of the Onsite Wastewater Treatment System.

13.4 Determining design application rates (gpd/sf)

Soil application rates may be determined from either table 13-2 Table 13-3, or the USDA soil chart. Empirical methods may be used in conjunction with the USDA soil chart.

13.4.1 Table 13-2[15]

To determine the design application rate, read the table below in sequence beginning at the top row and continue downward. Find the soil description that best matches the predominant soil type found below the soil treatment system (bottom of trench, bed, etc.). Use the corresponding application rate in the right hand columns.

Table 13-2

Soil Texture	Structure	Application rate Gallons per Day / SQ. Ft.
Gravelly coarse sand & coarser	loose or cemented	0.0
Clay, sandy or silty clay silt loam	weak or massive massive	0.0 0.0
Sandy clay loam, clay loam or silty clay loam	massive	0.0
Sandy clay, clay or silty clay	moderate to strong	0.2
Sandy clay loam, clay loam or silty clay loam	weak	0.2
Sandy clay loam, clay loam or silty clay loam	moderate to strong	0.4
Sandy loam, loam or silt loam	weak	0.4
Sandy loam, loam or silt loam	moderate to strong	0.6
Fine, very fine, loamy fine and very loamy fine sand	na	0.8
coarse, single grain sand	na	1.2

13.4.1.1 Empirical Methods Used to Determine Application Rates

Empirical Methods may include use of hydraulic tests. Enhanced treatment systems shall be used for soils with rates faster than 5 minutes per inch and slower than 60 minutes per inch. Soils with percolation rates greater than 240 minutes per inch are generally considered to be unsuitable.

[15] Compiled from Wisconsin Small Scale Waste Management Project and North Coast Regional Water Quality Control Board Guidelines.

13.4.2 Table 13.3 Suggested hydraulic and organic loading rates for sizing infiltration surfaces – USEPA Manual (modified)

Texture	Structure		Typical Perc Rate min/inch	EPA 2002			
				Hydraulic loading rate (gal/ft^2/day)		Organic (lb BOD/ Loading 1000ft^2/day)	
	Shape	Grade		BOD=150	BOD=30	BOD=150	BOD=30
Coarse sand, sand, loamy coarse sand, loamy sand	Single grain	Structureless	<0.1-5	0.8	1.6	1.00	0.40
Fine sand, very fine sand, loamy fine sand, loamy very fine sand	Single grain	Structureless	0.1-5	0.4	1.0	0.50	0.25
Coarse, sandy loam, sandy loam	Massive	Structureless		0.2	0.6	0.25	0.15
	Platy	Weak		0.2	0.5	0.25	0.13
		Moderate, strong					
	Prismatic, blocky, granular	Weak		0.4	0.7	0.50	0.18
		Moderate, strong	6-15	0.6	1.0	0.75	0.25
Fine sandy loam, very fine sandy loam	Massive	Structureless		0.2	0.5	0.25	0.13
	Platy	Weak, mod., strong					
	Prismatic, blocky, granular	Weak		0.2	0.6	0.25	0.15
		Moderate, strong		0.4	0.8	0.50	0.20
Loam	Massive	Structureless		0.2	0.5	0.25	0.13
	Platy	Weak, mod., strong					
	Prismatic, blocky, granular	Weak		0.4	0.6	0.50	0.15
		Moderate, strong	16-30	0.6	0.8	0.75	0.20
Silt loam	Massive	Structureless			0.2	0.00	0.05
	Platy	Weak, mod., strong					
	Prismatic, blocky, granular	Weak		0.4	0.6	0.50	0.15
		Moderate, strong	31-45	0.6	0.8	0.75	0.20
Sandy clay loam, clay loam, silty clay loam	Massive	Structureless					
	Platy	Weak, mod., strong	46-60				
	Prismatic, blocky, granular	Weak	46-60	0.2	0.3	0.25	0.08
		Moderate, strong	46-60	0.4	0.6	0.50	0.15
Sandy clay, clay, silty clay	Massive	Structureless					
	Platy	Weak, mod., strong					
	Prismatic, blocky, granular	Weak					
		Moderate, strong	61-120	0.2	0.3	0.25	0.08

Source: USEPA Onsite Wastewater Treatment Systems Manual – Adapted from Tyler, 2000.

TECHNICAL STANDARDS

13.5 Adequate separation from groundwater

13.5.1 Determining Depth to Groundwater or Seasonal Water Table

The level of groundwater or seasonal water table shall be determined in accordance with Section 11.3.2.

13.5.2 Minimum Groundwater Separation

Table 13.4 shall be used to determine the minimum required separation from groundwater. Groundwater shall be defined as the highest seasonal level of the permanent water table in the soil. Perched water or seepage observed in the profile hole shall be monitored to determine if the water is a localized phenomenon or if the water reaches a standing level in the soil mantle.

13.5.3 Table 13.4 Groundwater Separation

Table 13-4

Soil Texture	Structure	Separation/ft
Gravelly coarse sand & coarser	loose or cemented	Enhanced treatment required
Clay, sandy or silty clay silt loam	weak or massive massive	3 3
Sandy clay loam, clay loam or silty clay loam	massive	3
Sandy clay, clay or silty clay	moderate to strong	3
Sandy clay loam, clay loam or silty clay loam	weak	3
Sandy clay loam, clay loam or silty clay loam	moderate to strong	5
Sandy loam, loam or silt loam	weak	5
Sandy loam, loam or silt loam	moderate to strong	5
Fine, very fine, loamy fine and very loamy fine sand	na	5
coarse, single grain sand	na	40 or enhanced treatment

13.5.4 Groundwater Mounding

Groundwater mounding analysis shall be used to predict the highest rise of the water table during the wet weather season taking into account background

groundwater conditions. The maximum acceptable short term rise of the water table under treatment systems are as follows:

Systems with design flows of <1,500 gpd.....50% reduction in separation

Systems with design flows > 1,500 gpd.....Minimum of 24" separation

13.5.5 Assessing Cumulative Impacts[16]

The local regulatory agency and Regional Board shall determine the need for a cumulative impact assessment of OWTS for subdivisions, commercial development and for single systems with a design capacity greater than 1,500 gpd. The assessment shall include, but not be limited to, effects of groundwater mounding, nitrate loading and fecal (**pathogen?**) contamination. Analysis of cumulative impact effects shall be conducted using principles of groundwater hydraulics and shall reference the methodology and literature used in the analysis. The wastewater flow used for the analysis shall be as follows:

Individual Residential Homes.....120 gpd per bedroom (150 gpd per bedroom without low flow fixtures) or number of fixtures units

Multi-family and Non-Residential Systems.....System design flows

13.5.6 Nitrate Loading

Analysis of nitrate loading effects shall be based, at a minimum, on an estimate of an annual chemical - water mass balance. The minimum values used for the total nitrogen concentration of septic tank effluent shall be 40 mg/l as N (for average flow conditions) for residential wastewater, or as determined from the sampling of comparable system(s) or literature values. Onsite Wastewater Treatment Systems shall not cause the groundwater nitrate concentration to exceed 10.0 mg/l N at any source of drinking water on the property nor on any off-site potential drinking water source.

14.0 Onsite Wastewater Treatment Systems

14.1 Classification and description

14.1.1 Standard Onsite Wastewater Treatment System

Standard onsite wastewater treatment systems consist of a septic tank and gravity distribution of effluent to a soil treatment system consisting of leaching trenches, fields, or beds. Effluent is discharged from the septic tank to the leachfield by gravity.

14.1.1.1 Design

Standard system designs may be prepared by a certified design consultant or by the ALA. The septic tank shall be sized in accordance with section 13.3. Soil treatment system sizing shall be determined using the estimated application rate as defined in Section 13.5.

[16] Portions of this section are reprinted from the North Coast Regional Water Quality Control Board Basin Plan for On-Site Wastewater Systems.

TECHNICAL STANDARDS

14.1.2 Enhanced Onsite Wastewater Treatment Systems

Enhanced treatment systems are defined as any system other than a standard system. Enhanced treatment systems shall be used on parcels where site and soil conditions will not support a standard system or where increased treatment is needed. These systems are designed by professional consultants deemed eligible under Section 10. Enhanced treatment systems are characterized as having increased design and performance criteria. Unlike standard systems, enhanced treatment systems vary in design and concept depending on the site and soil conditions and are usually required in specific applications.

14.1.3 Experimental Systems

Experimental systems are individual or proprietary designs that are considered to be new or recent innovations in the industry, or in use in other states and countries but uncommon to California.

14.1.3.2 Approval of Experimental Systems

Experimental systems shall be reviewed on a case-by-case basis at the local level. The use of experimental systems may be considered combined with a reasonable testing and monitoring protocol subject to approval by the Regional Water Quality Control Board having jurisdiction.

14.1.3.3 Testing and Monitoring

Experimental systems shall be tested and evaluated for a minimum of three years and shall be limited in number of installations per year by agreement between the RWQCB and the local permitting agencies. The RWQCB shall issue a wastewater discharge permit during the testing period. The owner and the design consultant of the system shall be responsible for the performance, operation and evaluation of the system for the first five years. Thereafter, the owner shall assume responsibility to operate and monitor the system. The owner shall also have a contingency system approved for replacement should the experimental system fail to perform in accordance with the local ordinance and the wastewater discharge permit requirements.

14.1.4 Proprietary Systems

Proprietary systems are components or units used for treatment of wastewater. Proprietary systems may include filters, aeration units, treatment processes and distribution equipment. Proprietary systems are distinguished as being manufactured equipment that is patented and sold commercially through the manufacturer and their distributors. The proposed application or use of the proprietary system shall determine what classification requirements govern its use.

14.2Final effluent handling

14.2.1 Surface Treatment

Treated effluent can either be applied to land or discharged to surface water.

TECHNICAL STANDARDS

14.2.1.4 Surface Water Discharge

Onsite Wastewater Treatment Systems designed for surface water discharge of effluent requires that ~~a~~ National Pollutant Discharge Elimination System (NPDES) Permit is obtained from the RWQCB with jurisdiction. **(Comment: An NPDES permit for a small system is extremely difficult to obtain and is strongly discouraged due to CEQA constraints and cost.)**

14.2.1.5 Land Application

a. Use of treated effluent for irrigation is allowed when it can be applied safely and effectively and when it can meet state wastewater discharge requirements contained in Title 22 reclamation regulations.
b. Land application subject to storm water runoff requires disinfection to a median 23 MPN/100 ML total coliform (240 max) (California Department of Health Services).
c. For applications requiring disinfection, Title 22 requires an engineering report, redundancy features, and daily coliform monitoring.
d. Wastewater used for crop irrigation for non-milking animals (with no stormwater runoff) requires secondary undisinfected effluent.

14.2.2 Subsurface Treatment

Approved methods of subsurface treatment of effluent include leaching trenches, beds, **sub-surface drip dispersal (SDD), and** seepage pits.

14.2.3 Evapo-transpiration and Wetland Systems

Evapo-transpiration systems are shallow lined holding ponds with large exposed surface areas. The performance of evapo-transpiration systems is dependent upon optimum climate conditions and therefore has limited applications. Most evapo-transpiration systems are site specific and vary in design and concept. Artificial wetlands use aquatic plants to filter nutrients and pathogens from the wastewater. The wastewater is dispersed to the atmosphere through evapo-transpiration.

14.2.3.6 Evapo-transpiration requirements

14.2.3.7 Wetland systems requirements

(1) The bottom slope is a maximum of 1 percent. For larger flows, the bottom slope should be based on hydraulic loading rates.
(2) To assist in providing adequate retention time, the length-to-slope ratio shsll br between 2-to-1 and 3-to-1.
(3) Sufficient cross-sectional areas must exist in the bed/channel for water to move through it without surfacing.
(4) Hydraulic retention time in the bed/channel (amount of time the effluent remains in the bed/channel), is a minimum of 2 – 3 days.

(5)Discharges other than into the soil require disinfection (maximum two log reduction in fecal coliform) and aeration (they are anaerobic).

14.2.4 Holding Tanks

Use of holding tanks is generally limited to recreational areas, parks and commercial facilities where sewer facilities are not available and where installation of OWTS is not feasible. Operating permits for installing holding tanks shall include a routine pumping schedule. Holding tanks shall be equipped with high water alarms and have sufficient reserve storage capacity. Holding tanks shall be watertight and have sampling wells installed to monitor contamination. Use of holding tanks for individual and multi-family residences is not permitted for new development. Holding tanks may be used as a temporary facility in emergencies or during repairs to an existing septic system. Sampling wells are not required on temporary installations.

14.2.5 Graywater Systems

Graywater systems are to be designed in accordance with the provisions of the Uniform Plumbing Code (UPC) except as otherwise provided for in Appendix G Graywater Systems, Title 24, Part 5, California Administrative Code, and any additional requirements set forth by the ALA. The use of graywater systems shall conform to the requirements of the General and Technical Standards in this Ordinance.

15.0 Material and Component Requirements

All pipes, fittings and appurtenances used in onsite wastewater systems shall be made of non- degradable, corrosion resistant PVC, ABS or polyethylene plastic materials. Use of ferrous metal, aluminum, copper, brass or bronze coated materials is not allowed. Fittings with solid stainless steel parts are acceptable. Stainless steel coated parts and fittings should not be used.

15.1 Septic and dosing tanks

Septic and Dosing tanks shall be water tight and tested when installed in accordance with section 15.1.8.

15.1.1 Septic Tank Sizing

15.1.2 Tank Construction

Tanks shall be constructed as described in Appendix II of this ordinance. Tanks shall maintain their rigidity and structural integrity when filled with water. Any tank that deforms sufficiently to distort, bend or separate the baffle, tees, fittings, connections and risers from the tank shall be rejected and removed from the site. The inlet and outlet ports of tanks shall be fitted with a molded or cast in place IAPMO approved flexible neoprene waterproof boot gasket. Tank openings

requiring that fittings be mortared or connected with screw or bolt on adapters are not allowed except for repairs or necessary modifications as approved by the ALA. A registered civil engineer shall design all septic and dosing tanks. Septic tanks shall be capable of supporting a vertical load of a least 500 lbs./sf when the maximum coverage does not exceed three feet. Tanks installed with more than three feet of cover shall be reinforced to support the load. All Tanks shall be designed for lateral loads of at least 62.4 lbs. / cf. All tanks shall be marked on the uppermost exterior tank surface with the liquid capacity of the tank and the manufacturer's identification.

15.1.3 Tank Configuration

a. Concrete tanks shall be "one-piece" whenever practical. Joints between tank sections and between the cover and access riser shall be tongue and groove, sealed watertight using a bituminous compound or epoxy. All tanks shall be fitted with access risers.
b. Septic Tanks shall have multiple compartments. The primary (inlet) compartment shall have a minimum liquid capacity of at least two-thirds of the required liquid capacity, as measured from the invert of the outlet tee fitting.

15.1.3.1 Pump Systems

Pump systems shall require a separate septic tank and dosing tank. The septic tank may be single or multi chambered. The dosing tank (where the pump is located) may be a single chamber tank. In certain applications where expected waste flows will be low and intermittent (e.g. office with few employees with restroom and no other facilities) a two chamber baffled septic tank may be used as a combination septic and dosing tank with the pump located in the secondary chamber. Any tank equipped with a pump shall conform to the requirements of section 14.1.6.

15.1.3.2 Dosing tanks

The pump intake port shall be located in the clear liquid zone of the minimum liquid level or a minimum of 8 inches above the bottom of the tank; whichever is the greater distance from the bottom.

15.1.4 Tank Fittings and Appurtenances

Pipes, valves and appurtenances located in septic and dosing tanks shall be installed for easy access, repair and replacement through the tank access hole and risers. Electrical splice boxes may be installed internally in the tank risers or externally mounted on a weatherproof, non-degradable pedestal, securely anchored to prevent settlement or tilting. Splice boxes shall be gas and water tight and corrosion resistant and installed in conformance with the manufacturer's specifications and local electrical codes where applicable. All electrical conduits exiting the tank shall be sealed against gas vapor and moisture with silicone or other National Electrical Manufacturers Association (NEMA) approved materials.

15.1.5 Effluent Filter

All effluent discharged from the septic tank shall be screened with a 1/8th inch mesh screen filter. If a dosing tank is used following a septic tank, the effluent filter shall be located at the dosing tank outlet.

15.1.6 Access Riser Assembly

The septic and dosing tanks shall have at least one 24"∅ access riser with removable lid set to grade for access and inspection. The diameter of the riser shall be increased depending on the depth of the tank to facilitate access to the tank. Septic tanks with pump chambers and dosing tanks shall have the access riser installed where the pump assembly is located. Risers and lids shall be concrete, fiberglass or PVC. The lids shall have a gas and watertight seal. Risers shall be permanently attached to the tank by epoxy or a bituminous mastic compound. Risers shall not be attached to the tank lid with cement or mortar products. No-shrink cement grout may be applied as an additional coating sealant at the joints after the riser is installed with epoxy or bituminous mastic. Risers shall be subject to the testing requirements of section 15.1.8.

15.1.6.3 Access Riser Cover Security

Access risers shall be equipped with tamper proof covers that require the use of entry tools or procedures or strength not normally possessed by children under 11. Access risers at or above the ground surface in areas accessible to the public shall be locked to prevent unauthorized access and entry.

15.1.7 Pump and Suspended Pump Assemblies

Pumps shall be rated for wastewater use. Pumps shall be appropriately sized so that the pump does not operate near its shut-off head. When appropriate, pumps shall be fitted with anti-siphon and back-flow check valves. Mechanical floats or timers shall control each pump. Pumps may be seated on a level and stable platform of poured concrete or cement block or placed in suspended pump assemblies with the pump intake port placed in the clear liquid zone whenever feasible. In all cases the pump inlet port shall be located a minimum of 8 inches above the tank bottom or per the pump manufacturers requirements, whichever is greater. The pump or suspended pump assemblies shall be installed in accordance with the manufacturers requirements and recommendations. Suspended pump packages shall be held in place with PVC or other non-corrosive brackets inside the tank riser. Package Assemblies need not rest on the tank bottom or platform unless specified by the manufacturer. The Pump discharge should not exceed a rate that causes the pump to stir the liquid or solids in the tank.

15.1.8 Emergency Storage Reserve

Tanks with pumps shall maintain emergency reserve storage area measured below the invert of the inlet tee. The minimum reserve storage shall be 200 gallons or one-day average daily flow (gpd), whichever is greater. The average daily flow shall be determined by the number of bedrooms of the home multiplied by 120 gallons per day per bedroom (150 gpd/bedroom without low flow fixtures). Local

jurisdictions regulating onsite wastewater systems may consider enhanced treatment system proposals for providing emergency storage they feel are reasonable and appropriate. The tank shall be equipped with a high water alarm float. The minimum liquid level shall be set no lower than what is necessary to provide the minimum required emergency storage + dosing volume. Setting the "off" floats arbitrarily low to maximize emergency storage capacity is discouraged. The off float shall not be set as to expose any portion of the pump. Tanks and pump configurations should be selected which will optimize the use of the tank volume during operation and not compress the clear liquid zone. The minimum liquid level should be kept as high as practical to minimize the exposed interior surface of the tank to corrosive gases and stress from exterior hydrostatic and earth pressures.

15.1.9 Testing Tanks for Leakage

Tanks are to be tested in place prior to backfill using a 24 hr. hydrostatic water test. The tank shall have the inlet and outlet sanitary tees and riser installed. The inlet and outlet tees shall be temporarily sealed to hold water. The tank shall be filled with water to 2 inches above the tank lid and riser interface to check for leakage. Tanks shall not have a drop in water greater than 1 inch in a 24-hour period.

15.1.10 Control and Alarm Assembly

Pumps used in an OWTS shall be connected to and operated from an approved control panel assembly. Pump controls and alarms shall be located in an exterior rated, water proof, non-corrosive service panel, mounted outside dwellings and buildings in a location that is visible and easily accessible for service. Each pump shall be controlled either by a mechanical float or timer assembly. Each pump shall have an event counter and hour meter included in the control panel. The conduits enter pump control and service panels shall be sealed against gas vapor and moisture with silicone or other approved NEMA sealant.

15.1.11 Control Panel Access and Security

Control panels shall be equipped with covers that require the use of entry tools or procedures or strength not normally possessed by children under 11. Control panels in areas accessible to the public shall be locked to prevent unauthorized access and entry.

15.2 Effluent distribution and soil treatment system

15.2.1 Gravity Distribution

Gravity distribution of effluent through the soil treatment system can be either serial or uniform distribution. In a serial distribution system the trenches are constructed in such a way that effluent is discharged continuously into one trench with the excess effluent flowing to the next trench in serial fashion. A system using uniform distribution applies the effluent equally to all of the trenches.

TECHNICAL STANDARDS

15.2.2 Distribution Boxes, Flow Splitter and Divider Assemblies

Distribution boxes and flow divider assemblies shall be made of concrete, ABS, PVC, PE plastic or fiberglass. Concrete assemblies shall have a corrosion resistant coating applied to interior surfaces. D-boxes and flow divider assemblies shall be installed outside of traffic and pedestrian areas with the lids and inspection ports set at or above grade for easy access and inspection.

15.2.3 Pipe and Filter Media and Plastic Leaching Chambers

Distribution pipe in the treatment field shall conform to Section 15.0. Filter media used in the treatment field shall be approved by the ALA. Plastic Leaching Chambers may be used for private and commercial applications in lieu of pipe and filter media. Installation of plastic leaching chambers shall conform to the manufactures specifications and recommendations.

15.2.4 Pressure Distribution Systems

Pressure distribution systems shall be engineered to distribute the effluent uniformly under low pressure throughout the soil treatment system. The pipe laterals in a pressure distribution treatment field shall be CL 200 or greater PVC plastic pipe with 1/8 to 1/4 inch ∅ orifices of uniform size drilled at even spacing along the length of the pipe.

15.2.4.4 Pressure Distribution Hydraulics

Pressurized distribution systems shall be designed for the appropriate head and capacity and shall be demonstrated to produce a minimum residual head or squirt height of five feet. All pressure distribution lines shall be squirt tested to verify adequate squirt height. The designer shall determine the maximum length of pressure laterals used in each design in conformance to section 14.2.4.2.

15.2.4.5 Pressurized Laterals

Pressure laterals in treatment fields shall be a minimum 1 1/4" ∅ diameter pipe. Lateral orifices may be pointed up or down. Orifices pointed up shall have orifice shields or other protection to prohibit media particles from blocking or clogging the orifice. Lateral distribution lines shall not exceed a maximum allowable 15% loss in head between the first and last orifice in each lateral and a maximum 15% loss across the entire field between the first and last lateral. Pressure laterals can be designed with variable lengths and configurations limited to the following design parameters:

a. Maximum allowable head loss in each line as defined above,
b. Orifice diameter and maximum allowable spacing determined by the designer and ALA,
c. Adequate placement of cleanouts (maximum of one cleanout every 70 feet for lines 1" to 11/4" ID and every 100ft for laterals 11/2" ID and up).[17]

[17] Pressure laterals 3/4" to 11/4" ID may be greater than 70 if with proper location of cleanouts. Cleanouts can be located in line with laterals and are not limited to terminal

d. A maximum of 35-gpm design pump discharged from the dosing tank, other hydraulic and mechanical limitations which may impair performance and operation.[18]

15.2.5 Infiltrative surface sizing requirements

15.2.6 Subsurface Drip Dispersal Soil Treatment Systems

Subsurface drip dispersal distribution systems are enhanced treatment systems that are engineered.

15.2.6.6 Requirements

a. self-cleaning filters shall be designed to remove particles larger than 100 to 115 microns

b. backflush water generated from a self-cleaning filter and dripline flushing shall be returned to the headworks

c. time dosing shall be used to dose effluent to the distribution system

d. uniform pressure distribution at 15-45 psi

e. turbulent flow emitters require that filtered wastewater must first pass through a pressure regulator to control the maximum pressure in the dripline.

f. the difference in discharge rates between emitters shall be no more than 10 percent

g. vacuum relief valves are required at the high points of both the supply and return manifolds

h. manufacturer recommended hydraulic loading rates shall be used in design to establish the square foot of drip distribution footprint area necessary

i. operations and maintenance manual

15.3 Inspection Wells

A sufficient number of inspection wells, as determined by the ALA, shall be strategically placed directly in the subsurface treatment beds and trenches to observe the standing liquid level. Inspection wells shall extend to the bottom of the trench or leaching bed and anchored sufficiently to prevent disturbance or removal. The inspection wells shall have removable caps and may either extend above grade or be enclosed in service boxes set to grade with removal lids. The boxes shall be made of non-degradable material such as PVC, fiberglass or concrete. Additional inspection and sampling wells may be installed outside the leaching area to monitor groundwater and movement of effluent through the soil.

15.4 Cleanouts

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ends. Most plumbing outfits and rooter services carry on hand a standard plumber's snake 75 ft. in length and can rod pipe 1" ID and greater. Most rooter services have plumber snakes 100 ft. in length. Plumbers and rooter services can clean 3/4" ID pipe and up.

[18] Pump discharge from the dosing tank should not exceed 35 gpm to prevent stirring the tank.

Cleanouts are recommended on all gravity and pressure laterals in leaching beds and trenches. The cleanouts should be installed above grade or at grade enclosed in a service box with removable lid. Gravity leach lines may benefit from having cleanouts installed to provide periodic flushing of sludge and grease that settles in the pipe. Pressure pipes require cleanouts and should be flushed annually to prevent clogging of distribution orifices. Cleanouts are required at mid section or both ends of pressure laterals over seventy-five feet in length.

15.5 Diversion Ditches and Curtain Drains

Use of diversion ditches or curtain drains shall conform to the set back requirements in table 12-1. Diversion ditches and curtain drains may be used to intercept seasonal surface and subsurface lateral seepage on the uphill slope above the treatment field. Curtain drains should not be used to attempt to de-water sites or lower the water table to install a treatment field.

16.0 Design Review & Plan Checking

All design submittals for new OWTS and for repairs shall be reviewed by the ALA or its representative officers.

16.1 Design submittals

Designs submittals shall conform to these regulations and any additional requirements of the ALA. Designs shall be signed and stamped by the person responsible for the design.

16.1.1 Design Review

Competent staff or representative officers of the ALA who possess the appropriate training, certificates and experience in OWTS as prescribed in section 10.0 of the General Standards of these regulations shall review designs. Jurisdictions that do not have qualified personnel to review designs shall contract with outside agencies or consultants to perform design review and plan checking. Any person who provides OWTS designs, plan review and checking and who is not trained and certified in accordance with section 10.0 may be subject to misdemeanor violation and penalties under sub-section 10.4.0.

16.1.2 Design Approval

Designs that are judged to be in substantial compliance with the regulations of the ALA shall be approved for construction. Designs shall be valid for a minimum of one year from date of approval. Permitting agencies may extend the approval date beyond one year at their discretion.

16.2 General Installation Requirements for OWTS

All materials, fixtures or equipment used in the installation, repair or alteration of any sewage treatment system shall conform to the standards referenced in this code. All materials installed in sewage treatment systems shall be handled and installed so as to avoid damage. The quality of the material shall not be impaired.

Defective or damaged materials, equipment or apparatus shall not be installed or maintained.

16.3 Workmanship

All construction shall be completed in a professional manner in conformance with the accepted industry standards and shall be of such character as to secure the results necessary to comply with this code.

16.4 Inspection

All sewage treatment systems shall be inspected after construction is completed and prior to backfill. Any system that has been backfilled before being inspected shall be uncovered to allow for inspection. The Installer shall make arrangements with the ALA to perform an inspection and the operation of the system. The Installer is required to provide all the necessary apparatus, equipment, power, and water for testing the system. The design consultant shall certify in writing that the system installation has been completed in substantial conformance with the approved plans and specifications and that all necessary construction inspections have been completed. Where inspection discloses defective material, design, siting or un-workmanlike construction not conforming to the requirements of this ordinance, the owner and Installer shall be issued a correction notice to bring the system into compliance and to schedule for re-inspection of the system by the ALA.

16.4.1 Precover Inspection

The system installer shall request a precover inspection after completion of construction, alteration or repair of the system and before the system is backfilled and covered. The ALA shall inspect the system to determine if the system conforms to the design and regulatory requirements. The precover inspection may be waived at the discretion of ALA. Once the system is installed, it shall be backfilled (covered), only after the permitee is notified by the ALA that the precover inspection has been completed or was waived. The designer shall provide the ALA with a detailed, as-built plan (drawn to scale) of the system at the completion of work and before the initial operating permit is issued. Unless otherwise required by the ALA, the installer should backfill the system within a reasonable amount of time after issuance of the Initial Operating Permit.

16.4.2 Recommended Minimum Inspection Intervals

Standard Systems	Every 5 years
Enhanced Treatment Systems	Twice during the first year and every three years thereafter. *
Experimental Systems	Twice during the first year and once a year for 5 years, every three years thereafter. *

*Or as defined in the maintenance and operation plan submitted by the system designer or manufacturer, but no less than indicated in this table.

- Whenever the septic tank is pumped.
- Whenever the property is sold.
- Whenever a complaint is filed with the ALA.
- Every 5 years for residences identified by the issuing agency as having a high rate of water use or being located in an area of water quality concern.
-

16.4.3 Exceptions

Systems treating high strength or atypical wastewater shall be inspected annually by representatives or officers of the ALA or by entities eligible under Section 4.2.

16.4.4 Inspection During Sale Or Transfer Of Property

The owner's OWTS shall be inspected at the time of property sale prior to close of escrow. Certified staff or representative officer of the ALA, at the expense of the property owner, shall prepare an inspection report. The report shall be presented to the buyer, lender and ALA. The report shall contain the following information:

a. The type, configuration and condition of the septic tank, the primary soil treatment system (and reserve treatment area if known) and any enhanced treatment components and treating devices.[19]
b. The operational status of the system as observed in the field or taken from recent monitoring reports on file with the ALA.
c. If the tank requires pumping based on a measurement of accumulated scum and solids greater than 25% of the total tank depth.
d. Any observable problems or needed repairs requiring immediate attention.
e. An estimate of remaining usable area on the parcel to support repair or expansion of the existing leachfield if no known expansion site has been designated for the system.

[19] Enhanced as opposed to a standard gravity septic tank and leachfield system.

TECHNICAL STANDARDS

Appendix I – Septic Tank Construction Requirements

General Design Criteria

a. Top = 500 psf *(The tank shall be capable of supporting long-term unsaturated soil loading in addition to the lateral hydrostatic load.)*

b. Lateral Load = 62.4 pcf *(The tank shall be capable of withstanding long-term hydrostatic loading with the water table maintained at ground surface.)*

c. Concentrated Wheel Load = 2500 lb. *(The tank and accesses shall be capable of supporting short-term wheel load in addition to the unsaturated soil loading.)*

d. Soil Bearing = 1000 psf *(Soil bearing is site specific and must reflect the worst case conditions.)*

e. Cold weather installations requiring deep burial need special consideration.

f. All tanks shall successfully withstand an above ground static hydraulic test.

g. The inlet plumbing shall penetrate at least 30.5 cm (*12 in*.) into the liquid from the inlet flow line. If the submerged scum depth is expected to be greater than 30.5 cm (*12 in*.), the inlet fixture should be extended into the liquid two inches below the expected lowest scum depth.

General Specifications

a. Manufacturer's Guarantee shall be for a period of two years.

b. All tanks shall be installed in strict accordance with the manufacturer's instructions.

Concrete tanks

The walls, bottom and top of reinforced-concrete tanks are usually designed spanning the shortest dimension using one-way slab analysis. Stresses in each face of monolithically-constructed tanks are determined by analyzing the tank's cross-section as a continuous fixed frame.

The walls and bottom slab should be required to be poured monolithically. When a tank is expected to be submerged, subjected to heavy traffic loads, or buried deeply, the top slab must be cast onto the walls with wall reinforcement extending into the top slab.

The bottom thickness of the wall should be equal to the thickness of the floor, which is usually thicker. At the wall-floor joint the stress is equally shared; therefore, steel spacing is more efficient and cost effective if the wall thickness is equal to the thickness of the floor. The wall can taper to *three* inches at the top. Tapering the interior mold at the bottom improves the flowability of the concrete around the walls and into the floor. Chamfering the wall-floor junction on the inside reduces the effect of suction between the tank-mold and concrete surfaces; thus the integrity of the concrete at the joint is better maintained and less effort is needed to remove the interior mold.

TECHNICAL STANDARDS

Casting the top in place will produce a much stronger tank than will setting the top in place. A cast on lid, with wall reinforcement adequately tied to the top reinforcement, improves the structural capacity of the top and bottom by more than 40 percent and the walls by about 25 percent. The required rebar spacing will be wider, which reduces materials cost and labor in fabrication. With the wall and top joint cast together there is greater assurance that if differential settlement occurs the top will not separate from the wall causing loss of lateral support at the top. Separation of the top lid from the wall would significantly reduce the tank's strength and its watertightness would be lost. Set in place lids must be mechanically attached to the walls to assure the joint does not separate when the tank shifts or settles.

Concrete Specifications

Concrete must achieve a minimum compressive strength of 4,000 psi in 28 days. The design of the concrete mix depends on the gradation of the aggregate and should be determined by a professional engineer. A common 4000 psi ready-mix design has a cement content of six and one half ($6^1/_2$) sacks per cubic yard and maximum aggregate size of 19 mm ($^3/_4$ *in.*) *(Ready-mix cement conforming to ASTM C-150, Type II.)*

Water/Cement Ratio. To ensure proper curing and ultimate strength, it's important to keep the water/cement ratio low, 0.35 ±.

Air-entraining agents may be required depending on the mix design, although they are not usually necessary for small concrete tanks. Air-entrainment without additives is usually 1 to 2 %.

Fiber Additives may be used to enhance watertightness by controlling concrete shrinkage.

Protective Coatings. Heavy *cement-based* sealants may be used inside and out. The manufacturer's directions must be followed exactly. *Bituminous coatings are not necessary*.

Reinforcing Steel shall be Grade 60, fy = 60,000 psi (*ASTM A-615 Grade 60*). Size and placement must be determined by a structural engineer. Wire fabric is not acceptable. Weldable steel may be specified if the reinforcing cage is to be tack welded during assembly. Misalignment of reinforcement in a three-inch thick section can significantly reduce the strength of the tank; for instance, a quarter inch of misalignment will reduce the capacity of that section by about thirty percent, one-half inch of misalignment will reduce the capacity by fifty percent.

Form Release must be Nox-Crete or equal. Diesel or other petroleum products are not acceptable.

TECHNICAL STANDARDS

Vibration. Tank molds must have attached vibrators to ensure adequate flow of concrete down the walls and across the bottom. Excess vibration can cause the aggregate to segregate.

Curing. Proper curing techniques are necessary to ensure watertight tanks. Tanks must not be moved until they have cured for seven (7) days or have reached two-thirds of the design strength.

Test Cylinders must be taken from each batch of concrete and tested until the minimum compression strength has been obtained.

Fiberglass Tanks

Glass fiber and resin content must comply with IAPMO IGC 3-74, and there should be no exposed glass fibers.

Metal parts must be 300 series stainless steel.

Wall thickness must average at least 6.3 mm ($^{1}/_{4}$ *in.*) with no wall thickness less than 4.8 mm ($^{3}/_{16}$ *in.*) No delamination is allowable.

Holes specified in the tank must be protected with an application of resin on all cut or ground edges sufficient so that no glass fibers are exposed and all voids are filled.

Neoprene gaskets, or an approved equal, must be used at the inlet to join the tank wall and the ABS inlet piping. ABS Schedule 40 pipe and fittings must be used at the inlets.

Testing

Follow these test procedures to ensure watertightness. Test every tank at the factory and again after installation:

1) Fill the tank to its brim with water and let it stand for 24 hours. To help expedite larger orders a vacuum test may be substituted at the factory, and after the tanks are delivered to the job site. A vacuum test may not, however, take the place of the final installed static water test.

2) Measure the water loss; if there is no water loss during the first 24 hours the tank is acceptable for installation. Some water absorption, however, may occur during this first time period. If so, refill the tank and determine any exfiltration by measuring the water loss over the next two (2) hours. Any water loss is cause for rejection.

3) Install the tank and repeat steps 1 and 2. These procedures should be followed after setting and after backfilling. Test the seal between the riser and the tank top for watertightness by filling the riser with water to a level 2" above the top brim of the tank. *Caution: To prevent hydrostatic uplift damage to the top joint of the tank, do not allow the level of water in the riser to exceed the level of the backfill.*

TECHNICAL STANDARDS

Buoyancy

Improper septage pumping of a buried tank may result in the tank suddenly "floating" to the surface, causing damage to piping, landscaping or worse, injuring maintenance personnel. The following precautions help to ensure tank submergence in areas with high groundwater:

- Require a minimum cover where high groundwater conditions are suspected (evaluation must be provided after identifying site specific soil conditions).
- After setting the tank, pour an additional 15.25 cm (*6 in*.) of concrete over the top; extend a minimum of 30.5 cm (*12 in*.) beyond the sides of the tank. Lightweight plastic tanks (≈ 400 lbs) require concrete or other counter measures sufficient to exceed the buoyant force.
- The weight of concrete tanks can be increased by adding thickness to the walls, top and/or bottom.
- Operation and maintenance instructions should clearly state that tanks must never have more than half (50%) of their contents pumped out during periods when the groundwater is high; especially if they are located in sandy soil. This recommendation is for cautionary purposes only, and is not a substitute for physical buoyancy restraints.

TECHNICAL STANDARDS

Appendix II – California Codes

CALIFORNIA CODES
WATER CODE
SECTION 31143-31143.5

31143. In addition to the other powers provided by law, the San Lorenzo Valley Water District, Santa Cruz County, shall have all of the following powers and shall promptly and effectively exercise such powers as may be appropriate to ensure that onsite waste water disposal systems, as defined in Section 6952 of the Health and Safety Code, along the San Lorenzo River do not pollute the river, its tributaries, and ground water:

(a) To carry on technical and other investigations, examinations, or tests, of all kinds, make measurements, collect data, and make analyses, studies, and inspections pertaining to the water supply, use of water, water quality, nuisance, pollution, waste, and contamination of water within the district as such activities relate to the use of public, combined, or private onsite waste water disposal systems.

(b) To require all persons discharging from onsite waste water disposal systems within the district to register the system with the district, and to charge annual registration fees in such amount as will defray all or a portion of the cOWTS of exercising the powers provided in this article. Applications for permits for onsite waste water disposal systems within the district to the County of Santa Cruz shall be referred to the district for the district's review and comment.

(c) To adopt and enforce regulations for onsite waste water disposal systems within the district, after holding a public hearing on reasonable notice thereof, to control and enhance the quality of the ground and surface waters of the district, in order to eliminate the pollution, waste, and contamination of water flowing into, through, or originating within watercourses, both natural and artificial, within the district, to prevent contamination, nuisance, pollution, or otherwise rendering unfit for beneficial use the surface or ground water used or useful in the district, and to expend such amounts as are necessary to exercise such powers from the funds of the district. Such regulations shall not be in conflict with state law or county ordinances.

31143.1. The district shall immediately do all such acts as are reasonably necessary to secure compliance with any federal, state, regional, or local law, order, regulation, or rule relating to water pollution or discharges from onsite waste water disposal systems within the area of the district. For such purpose, any authorized representative of the district, upon presentation of his credentials, or, if necessary under the circumstances, after obtaining an inspection warrant pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure, or with the permission of the owner, shall have the right of entry to any premises on which an onsite waste water disposal system is located for the purpose of inspecting such system, including securing samples of discharges therefrom, or any records required to be maintained in connection therewith by federal, state, or local law, order, regulation, or rule.

31143.2. (a) Violation of any of the provisions of a district regulation adopted pursuant to Section 31143 may be abated as a public nuisance by the district, and the board of directors may by regulation establish a procedure for the abatement of such a nuisance and to assess the cost of such abatement to the violator. If the violator maintains the nuisance upon real property in which he has a fee title interest, the assessment shall constitute a lien upon such real property.

(b) The amount of any cOWTS incurred by the district in abating such a nuisance upon real property shall be added to the annual taxes next levied upon the real property subject to abatement and shall constitute a lien upon that real property as of the same time and in the same manner as does the tax lien securing such annual taxes. All laws applicable to the levy, collection, and enforcement of district taxes shall be applicable to such assessment, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attached thereon, prior to the date on which the first installment of such taxes would become delinquent, then a lien which would otherwise be imposed by this section shall not attach to such real property and the delinquent and unpaid charges relating to such property shall be transferred to the unsecured roll for collection. Any amounts of such assessments collected are to be credited to the funds of the district from which the cOWTS of abatement were expended.

31143.3. (a) The owner of any real property upon which is located an onsite waste water disposal system, which system is subject to abatement as a public nuisance by the district, may request the district to replace or repair, as necessary, such system. If replacement or repair is feasible, the board of directors, in its sole discretion, may provide for the necessary replacement or repair work.

(b) The person or persons employed by the board of directors to do the work shall have a lien, subject to the provisions of subdivision
(b) of Section 31143.2, for work done and materials furnished, and the work done and materials furnished shall be deemed to have been done and furnished at the request of the owner. The district, in the discretion of the board of directors, may pay all, or any part, of the cost or price of the work done and materials furnished; and, to the extent that the district pays the cost or price of the work done and materials furnished, the district shall succeed to and have all the rights, including, but not limited to, the lien, of such person or persons employed to do the work against the real property and the owner.

(c) As an alternative power to the enforcement of the lien provided in subdivision (b), the board of directors may, by ordinance adopted by two-thirds vote of the members, fix the cOWTS of replacement or repair; fix the times at which such cOWTS shall become due; provide prior to the replacement or repair for the payment of the cOWTS in installments over a period not to exceed 15 years; establish a rate of interest not to exceed 8 percent per annum, to be charged on the unpaid balance of the cOWTS; and provide that the amount of the cOWTS and the interest shall constitute a lien, subject to the provisions of subdivision (b) of Section 31143.2, against the respective lots or parcels upon which the work is done.

(d) With the written consent of the owner and the lien holder, if other than the district, the board of directors may issue an improvement bond pursuant to the improvement bond provisions of the
Improvement Act of 1911 (Part 5 (commencing with Section 6400) of Division 7 of the Streets and Highways Code), to represent and be secured by the lien established pursuant to subdivision (b). The bond may be delivered to the lien holder if other than the district or may be sold by the board of directors at public or private sale. The amount of the bond shall be the amount of the lien, including incidental expenses allowable under the Improvement Act of 1911. The bond term and interest rate shall be determined by the board of directors within the limits established by the Improvement Act of 1911 and other applicable provisions of law.

31143.4. In order to avoid duplication, either the district or the County of Santa Cruz may contract with the other party for any services or activities authorized to be performed pursuant to this article.

31143.5. Any violation of a regulation of the district adopted pursuant to Section 31143 is a misdemeanor punishable by a fine not to exceed five hundred dollars ($500), or imprisonment not to exceed 60 days, or by both such fine and imprisonment. Each day of such a violation shall constitute a separate offense. Any violation or threatened violation of a regulation of the district may also be enjoined by civil suit.

CALIFORNIA CODES
HEALTH AND SAFETY CODE
SECTION 6950-6954

6950. "Board" or "board of directors" means the governing authority of a public agency.

6951. "Public agency" means a city, a county, a special district, or any other political subdivision of the state which is otherwise authorized to acquire, construct, maintain, or operate sanitary sewers or sewage systems.
"Public agency" does not mean an improvement district organized pursuant to the Improvement Act of 1911 (Division 7 (commencing with Section 5000), Streets and Highways Code), or the Municipal
Improvement Act of 1913 (Division 12 (commencing with Section 10000), Streets and Highways Code) or the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500), Streets and Highways
Code), or a county maintenance district.

6952. "On-site wastewater disposal system" means any of several works, facilities, devices, or other mechanisms used to collect, treat, recycle, or dispose of wastewater without the use of communitywide sanitary sewers or sewage systems.

TECHNICAL STANDARDS

6952.5. "Owner of real property" means any public agency owning land and any person shown as the owner of land on the last equalized assessment roll; provided that where such person is no longer the owner, the term means any person entitled to be shown as owner on the next assessment roll and where land is subject to a recorded written agreement of sale, the term means any person shown therein as purchaser.

6953. "Zone" means an on-site wastewater disposal zone formed pursuant to this chapter.

6954. "Real property" means both land and improvements to land which benefit, directly or indirectly from, or on behalf of, the activities of the zone.

CALIFORNIA CODES
HEALTH AND SAFETY CODE
SECTION 6975-6982

6975. An on-site wastewater disposal zone may be formed to achieve water quality objectives set by regional water quality control boards, to protect existing and future beneficial water uses, protect public health, and to prevent and abate nuisances. Whenever an on-site wastewater disposal zone has been formed pursuant to this chapter, the public agency shall have the powers set forth in this article, which powers shall be in addition to any other powers provided by law. A public agency shall exercise its powers on behalf of a zone.

6976. An on-site waste water disposal zone shall have the following powers:
(a) To collect, treat, reclaim, or dispose of waste water without the use of communitywide sanitary sewers or sewage systems and without degrading water quality within or outside the zone.
(b) To acquire, design, own, construct, install, operate, monitor, inspect, and maintain on-site wastewater disposal systems, not to exceed the number of systems specified pursuant to either Section 6960 or Section 6960.1, within the zone in a manner which will promote water quality, prevent the pollution, waste, and contamination of water, and abate nuisances.
(c) To conduct investigations, make analyses, and monitor conditions with regard to water quality within the zone.
(d) To adopt and enforce reasonable rules and regulations necessary to implement the purposes of the zone. Such rules and regulations may be adopted only after the board conducts a public hearing after giving public notice pursuant to Section 6066 of the Government Code.

6977. The public agency shall do all such acts as are reasonably necessary to secure compliance with any federal, state, regional, or local law, order, regulation, or rule relating to water pollution or the discharge of pollutants, waste, or any other material

within the zone. For such purpose, any authorized representative of the public agency, upon presentation of his credentials, or, if necessary under the circumstances, after obtaining an inspection warrant pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure, shall have the right of entry to any premises on which a water pollution, waste, or contamination source, including, but not limited to, septic tanks, is located for the purpose of inspecting such source, including securing samples of discharges therefrom, or any records required to be maintained in connection therewith by federal, state, or local law, order, regulation, or rule.

6978. (a) Violation of any of the provisions of a rule or regulation adopted pursuant to subdivision (d) of Section 6976 may be abated as a public nuisance by the board. The board may by regulation establish a procedure for the abatement of such a nuisance and to assess the cost of such abatement to the violator. If the violator maintains the nuisance upon real property in which he has a fee title interest, the assessment shall constitute a lien upon such real property in the manner provided in subdivision (b).

(b) The amount of any cOWTS, which are incurred by the zone in abating such a nuisance upon real property, shall be assessed to such real property and shall be added to, and become part of, the annual taxes next levied upon the real property subject to abatement and shall constitute a lien upon that real property as of the same time and in the same manner as does the tax lien securing such annual taxes. All laws applicable to the collection and enforcement of county ad valorem taxes shall be applicable to such assessment, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attached thereon, prior to the date on which such delinquent charges appear on the assessment roll, then a lien which would otherwise be imposed by this section shall not attach to such real property and the delinquent and unpaid charges relating to such property shall be transferred to the unsecured roll for collection. Any amounts of such assessments collected are to be credited to the funds of the zone from which the cOWTS of abatement were expended.

6979. (a) The owner of any real property upon which is located an on-site wastewater disposal system, which system is subject to abatement as a public nuisance by the public agency, may request the public agency to replace or repair, as necessary, such system. If replacement or repair is feasible, the board may provide for the necessary replacement or repair work.

(b) The person or persons employed by the board to do the work shall have a lien, subject to the provisions of subdivision (b) of Section 6978, for work done and materials furnished, and the work done and materials furnished shall be deemed to have been done and furnished at the request of the owner. The zone, in the discretion of the board, may pay all, or any part, of the cost or price of the work done and materials furnished; and, to the extent that the zone pays the cost or price of the work done and materials furnished, the zone shall succeed to and have all the rights, including, but not limited to, the lien, of such person or persons employed to do the work against the real property and the owner.

TECHNICAL STANDARDS

6980. A board may exercise all of the public agency's existing financial powers on behalf of a zone, excepting that any assessment or tax levied upon the real property of a zone shall be subject to the provisions of Sections 6978 and 6981.

6981. Notwithstanding any other provision of law, a public agency may levy an assessment reasonably proportional to the benefits derived from the zone, as determined by the board, and subject to the approval of the voters pursuant to the provisions of Article 6 (commencing with Section 2285) of Chapter 3 of Part 4 of Division 1 of the Revenue and Taxation Code. Such benefit assessment shall be in addition to any other charges, assessments, or taxes otherwise levied by the public agency upon the property in the zone.

6982. (a) Notwithstanding Section 6952, the West Bay Sanitary District may use the procedures in this chapter to provide alternative or innovative waste water technologies in the district's jurisdiction.

(b) The determination of a public health officer pursuant to Section 6955.1 shall include written findings, adopted by the district board of directors, regarding the existing or potential public health hazard.

(c) If the district uses the procedures in this chapter to provide alternative or innovative waste water technologies pursuant to this section, the district shall submit to the Legislature, by January 1, 1991, a report on the effectiveness of alternative waste water technologies and the procedures in this chapter, recommend changes, if any in the requirements, and make recommendations as to the desirability of continuing the requirements after January 1, 1992.

(d) "Alternative or innovative waste water technologies" means either (1) an onsite waste water disposal system, as defined in Section 6952, or (2) such a system in conjunction with communitywide sewer or sewage systems, if one or more of the components of the system is located on or in close proximity to the real property and employs innovative or alternative waste water technologies, including, but not limited to, grinder pump pressure sewer systems, septic tank effluent pump pressure sewer systems, vacuum sewer systems, or small-diameter gravity septic tank systems.

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