
8 Methods of Compliance and Cost Analysis

8.1 Methods of Compliance

The proposed Policy requires action on the part of the regional water boards, the local agencies that review, inspect, and approve the design of OWTS and oversee the construction of the design, and the greater public, including public agencies, that use OWTS to dispose of wastewater. Under this proposed Policy, the State Water Board has requirements that it too must fulfill to comply.

8.1.1 State Water Board Requirements

As the state agency ultimately responsible, explicitly under state law, the State Water Board has functions that oversee implementation and take actions needed for continuation of the proposed Policy. Specifically, these duties are to:

- ▶ periodically review and renew the Policy;
- ▶ approve or reject regional water board basin plans incorporating the proposed Policy;
- ▶ adjudicate disputes between the regional water boards and the local agencies negotiating an approvable local program; and
- ▶ accept and consider requests for modification or revocation of local agency management programs.

8.1.2 Regional Water Board Requirements

The regional water boards are responsible for implementing the requirements of the proposed Policy. Ultimately, the regional water boards will incorporate and implement the proposed Policy with the local agencies, although each of their roles is different. For several regional water boards, this type of work (similar but different) is being addressed, as most regions have issued waste discharge requirements or waivers for OWTS and some have memoranda of understanding (MOUs) with their local agencies. Specifically, the regional water boards are required to:

- ▶ incorporate the Policy into the basin plan within 12 months of adoption;
- ▶ approve or reject local agency management plans;
- ▶ accept and consider requests for modification or revocation of local agency management programs;
- ▶ issue or deny waste discharge permits that do not meet standards;
- ▶ implement Tier 3, requiring pollution assessment and OWTS upgrades, as necessary; and

- ▶ adopt waste discharge requirements or waivers to exempt individual discharges from this proposed Policy.

8.1.3 Local Agency Requirements

Local agencies have been performing OWTS design review and approval for decades. Since local agencies are also the entity to issue a building permit, they are also the entities that have overseen the installation and construction of most of the OWTS in the state. In many cases, local agencies have worked with their respective regional water boards to integrate both of their requirements, allowing one permitting and inspection agency to oversee the program. The proposed Policy requires the local agencies to:

- ▶ determine which tier their local jurisdiction will be allowed to perform under (Tiers 0 thru 4);
- ▶ report annually to the regional water board on issues regarding complaints, septic tank pumping, number of repair permits, and the number and location of new permits issued within the year;
- ▶ retain reporting records for 20 years;

8.1.4 Requirements for the Public

The public is ultimately the group that demands the use of OWTS. Whether for a business, public facility or residence, OWTS serve those structures and the public that use them as a method to dispose of waste in a manner that is protective of public health and generally believed by the public to be without significant environmental damage. The proposed Policy allows a wide variety of OWTS that the public at large can purchase to comply with the policy. The cost of such OWTS are discussed below in Section 8.2. Overall, the type of compliance needed depends upon under which tier the public must comply. These are outlined below:

8.1.4.1 Tier 0

Tier 0 represents existing systems that are not obviously causing pollution and appear to be operating as designed. Nothing more is needed for the public to comply with the proposed Policy.

8.1.4.2 Tier 1

Tier 1 applies to OWTS that are being constructed new or that are being replaced. Under this Tier, OWTS must comply with siting and design requirements that the conditions for a standard OWTS. Only standard OWTS are allowed under Tier 1. Standard systems consist of a septic tank and leachfield.

8.1.4.3 Tier 2

Tier 2 applies to OWTS that are being constructed new or that are being replaced. Under this Tier, OWTS must comply with siting and design requirements contained in local management agency programs. Those programs will contain conditions for siting and design of an OWTS. The regional water board or State Water Board approves a Tier 2

management program. A Tier 2 program may allow a wide variety of OWTS, such as those listed in Table 8-1.

8.1.4.4 Tier 3

Tier 3 applies to OWTS that are adjacent to surface waters that are known to be polluted. Surface waters that fall into this category are listed pursuant to the Clean Water Act. The proposed Policy requires that those OWTS within 600 feet of an impaired water body listed as polluted by nitrogen compounds must be known not to contribute to the pollution or upgrade the OWTS to perform nitrogen removal by replacing the septic tank with a supplemental treatment system. An OWTS within 100 feet of surface water listed as impaired due to bacteria (pathogens) would have to be known not to contribute to the pollution or upgrade the treatment system from a septic tank to a supplemental treatment system. Supplemental treatment units that remove pathogens and nitrogen include those listed under “treatment systems” in Table 8-1. However, for disinfection, the bottom row called “disinfection” would have to be combined with one of the other treatment trains.

8.1.4.5 Tier 4

Tier 4 requires OWTS owners replace their failing OWTS (e.g. collapsed septic tank, overflowing leachfield) with a new component that will operate correctly. Replacement components (e.g. septic tank or drainfield) would have to meet the new standards, rather than out of date standards.

8.2 Cost Analysis

The proposed Policy addresses existing, new, replaced and upgraded OWTS. The methods of compliance and cost will vary, depending on the tier under which an OWTS is managed. The tiers are discussed in more detail in Section 3.0 Project Description in this SED. Cost of compliance is estimated using values found from existing literature (RSMMeans 2006) and estimates based from literature. Throughout the following discussion, it is important to note that replacement is only required for a major repair, not for any lesser malfunction. Hence, a rag-blocked or crushed sewer line would not trigger mandated compliance with the proposed policy.

8.2.1 Tier 0

Under Tier 0, the means and cost to comply with the proposed Policy is nil, since the owners of existing systems not within the zones of a polluted water body defined in Tier 3 are not subject to any requirements resulting from the proposed Policy. With no change in management or regulatory requirements, there would be no change in the requirements or the cost.

8.2.2 Tier 1

Tier 1 will have potential costs resulting from implementation of the proposed Policy. This is because Tier 1 requires new and replaced OWTS to meet the standards specified in Sections 7.0 and 8.0 in the proposed Policy. From an assessment standpoint, the costs, although real, may be less than those required by current requirements because local governments with more restrictive requirements are likely to require more than what is contained in Sections 7.0 and 8.0 of the proposed policy. At those locations, Tier 1

imposes no additional costs. Even though that may be true, the estimated cost for complying with Tier 1 standards is estimated in Table 8-2. The range in values for the replaced leachfield is due to the sizing criteria in the proposed Policy. Soils that are more permeable (e.g. sands) result in smaller leachfields, whereas the opposite is true for finer,

Supplemental Treatment Systems	Dispersal Systems
Suspended Growth Aerobic Treatment Systems	At-grade and Mound Systems
Attached Growth Aerobic Treatment Systems	Bed and Trench Systems
Composting Systems	Bottomless Packed Bed Systems
Anoxic and Anaerobic Systems	Upflow Biofilter System
Combined Suspended and Attached Growth Aerobic Treatment Systems	Seepage Pit Systems
Solar, Aquatic, and Plant Based Treatment Systems	Shallow Subsurface Drip System
Incineration Systems	Gravelless Trench Systems
Disinfection Systems	Pressure Distribution System

less permeable soils (e.g. clays). Also shown in Table 8-2, the cost for a homeowner under Tier 1 is significantly less than that of OWTS serving larger flows, such as schools and restaurants. This, too, is related to the size of the system, as well as the variation in wastewater (e.g. restaurant).

8.2.3 Tier 2

Tier 2 is written to allow variability in local programs while retaining comparable standards to maintain the function of OWTS in protecting the environment and human health through institutional controls and management. Conceptually, Tier 2 Programs will consist of local programs with some small changes to current existing programs and practices. An OWTS under Tier 2 management may consist of a variety of technological

designs for both the treatment and dispersal system. The selection of the technology would be made to accommodate site constraints, in order to ensure that the design provides adequate protection given the site's slope, groundwater level, soil conditions, topographic location, and other natural barriers. Table 8-1 lists different supplemental treatment systems that would be allowable under a Tier 2 Program. Generally, these treatment systems are required by local government to mitigate site constraints and minimize the probability that pollution from pathogens or nitrogen will occur.

Table 8-2: Estimated Cost of Tier 1 Compliance			
	Replaced Septic Tank	Replaced Leachfield	Whole New OWTS
Home	\$2,000	\$1,300-\$4,800	\$3,300-\$6,800
Restaurant (213 meals per day)	\$12,350	\$12,600-\$50,000	\$25,000-\$62,000
School (716 Students)	\$12,600	\$43,300-\$175,000	\$55,900-\$188,000

The potential costs associated with constructing or repairing a system under Tier 2 may be anywhere from that similar to a standard Tier 1 system (e.g. septic tank with seepage pit or leachfield installation) to the higher cost associated with an OWTS to provide supplemental treatment to remove pollutants before release to the environment, similar to a Tier 3 situation with the high cost of supplemental treatment. Generally, a standard OWTS for a three bedroom home with 2 bathrooms is expected to cost approximately \$6,800, including design and construction (SWRCB 2011). The cost for an OWTS for the same type of home using supplemental treatment is expected to cost approximately \$22,000 (SWRCB 2011). Now, larger systems and more complex systems could cost more. Likewise, State Water Board staff estimates that the costs associated with a restaurant or school would have a significant range too, estimated at \$54,000 to \$188,000 for a school and \$23,000 to \$138,000 for a restaurant, with the variation due to the size of the leachfield. If supplemental treatment is required by the local agency management program, costs would be higher, but would depend on what the appropriate level of treatment the local regulators and the designer determined was needed.

8.2.4 Tier 3

Tier 3 represents a departure from current practice. It requires that OWTS be upgraded to meet performance standards for nitrogen, pathogens or both where surface waters are polluted resulting, in part, from OWTS discharges. Overall, this may require the use of supplemental treatment systems like those listed in Table 8-1. An assessment of the site, assuming it includes groundwater monitoring with three wells to assess whether the OWTS is contributing to the impairment (by determining pollutant concentrations in the groundwater and groundwater flow direction), could cost as much as \$5,000 dollars (Means 2007). Assuming that such testing confirmed the need for advanced treatment, Tier 3 cost of inspection and upgrade of the septic tank to a supplemental treatment

system like those listed in Table 8-1 could cost \$22,000 dollars for a three bedroom home or more, where the OWTS is larger or more complex. For a school serving 716 students and including 34 faculty and 11 administrators and support staff, compliance using the same supplemental technology is estimated at over \$560,000. A restaurant serving 213 meals per day would require similar supplemental treatment at a cost of over \$151,000.

8.2.5 Tier 4

Tier 4 requires that failing OWTS be repaired. Such repairs will consist of whatever is appropriate under Tier 1, Tier 2, or Tier 3. Similarly, the costs associated with Tier 4 would be the same as the respective Tier under which the OWTS is found appropriately fit.