

**STATE WATER RESOURCES CONTROL BOARD  
WORKSHOP SESSION – DIVISION OF WATER QUALITY  
OCTOBER 2, 2007**

**ITEM 13**

**SUBJECT**

WORKSHOP SESSION TO DISCUSS A PROPOSED WATER RECYCLING POLICY

**DISCUSSION**

On March 20, 2007, the State Water Resources Control Board (State Water Board) held a workshop on whether the State Water Board should develop a water recycling policy and, if so, what issues the policy should address. The comments received generally supported the development of a water recycling policy. The comment letters can be viewed at: <http://www.waterboards.ca.gov/quality.html>.

Recycled water is a major source of water supply in California and a major component in California's plan for meeting the state's growing water demand. The California Water Plan estimates that recycled water usage can increase from half a million acre-feet per year in 2003 to two million acre-feet per year in 2030. The Recycled Water Task Force issued a report in June 2003 that contained recommendations that California should implement to achieve this goal. Some of the recommendations concerned the need to consistently apply state statutes and regulations regarding water recycling and water quality.

In April 2006, the State Water Board ruled on a petition for review of waste discharge and water reclamation requirements issued by the Los Angeles Regional Water Quality Control Board (Regional Water Board) for the Alamitos Barrier Project. This project injects recycled water into aquifers to prevent seawater intrusion into the aquifers. The State Water Board ruled that effluent limitations placed on the recycled water that were based on notification levels adopted by the California Department of Public Health (formerly the Department of Health Services) be removed from the requirements.

The proposed Water Recycling Policy addresses requirements for implementation plans for salts, recycled water irrigation projects, groundwater recharge reuse projects, liability, and conflict resolution procedures. It does not address impoundments containing recycled water, incidental runoff of recycled water, or aquifer storage and recovery projects that do not use recycled water. Staff has concluded that impoundments are best handled by the Regional Water Boards on a case-by-case basis. State Water Board staff plan to address incidental runoff in the future, potentially through adoption of a statewide general National Pollutant Discharge Elimination

System permit for incidental runoff of recycled water. Staff also plan to propose a separate policy for aquifer storage and recovery projects.

### **POLICY ISSUE**

Should the State Water Board proceed with future adoption of the proposed Water Recycling Policy?

### **FISCAL IMPACT**

State and Regional Water Board work resulting from a Water Recycling Policy will be addressed with current and future budgeted resources.

### **BOARD IMPACT**

Yes, all Regional Water Boards.

### **STAFF RECOMMENDATION**

Staff recommends that the State Water Board proceed with a future adoption of the proposed Water Recycling Policy.

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## STATE WATER RESOURCES CONTROL BOARD RESOLUTION NO. 2007-

### WATER RECYCLING POLICY (POLICY)

#### WHEREAS:

1. The Legislature has declared its intent that the state undertake all possible steps to encourage the development of recycled water facilities so that recycled water may be made available to help meet the growing water requirements of the state.
2. The use of recycled water can provide a reliable local water supply for non-potable urban use, agricultural irrigation, and industrial uses, that is not as vulnerable to some of the risks associated with imported water supplies such as droughts, delivery system failures by earthquakes or levee breaks, pumping restrictions to protect endangered species, and uncertain precipitation changes caused by global climate change.
3. The use of recycled water versus imported water often results in substantial energy savings and corresponding reduction in greenhouse gas emissions.
4. A statewide approach that fosters a consistent application of requirements to the use of recycled water is desirable in order to encourage and broaden its usage. Although some variation throughout the state is desirable because of differing climatic and hydrologic conditions and differences in water recycling projects, much of this variation is due to differing interpretations of similar requirements in the Regional Water Quality Control Board's (Regional Water Board) Water Quality Control Plans (Basin Plans). Uniform interpretation of these requirements is needed to reduce uncertainty in the design requirements for recycled water projects. This uncertainty has created an obstacle to achieving the full potential for water reuse.
5. When discharged to groundwater, salts are persistent and difficult to remove, resulting in increasing concentrations in groundwater over time. These salts include those containing the cations sodium, boron, calcium, magnesium, and potassium and the anions bicarbonate, carbonate, chloride, nitrate, phosphate, sulfate, and fluoride. Salts are commonly measured by water quality parameters that measure combinations of ions, such as total dissolved solids (TDS), electroconductivity, and hardness.
6. When recycled water, surface water, or groundwater is used for irrigation, the salts in the water are concentrated in the percolate that flows from the surface of the irrigated site to groundwater because much of the water applied evapotranspires, thereby leaving most of the salt in the soil, where it eventually leaches to groundwater in the percolate. In arid parts of the state where there is little precipitation available to dilute salts, this effect has caused or threatened to cause violations of groundwater quality objectives for salts in areas that are or were irrigated.
7. Water Code section 13242 requires a program of implementation for achieving water quality objectives which includes, but is not limited to: (a) a description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate actions by any entity, public or private, (b) a time schedule of actions to be taken, and (c) a description of the surveillance to be undertaken to determine compliance with the objectives.

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8. Many groundwater basins in California have groundwater that violates or threatens to violate water quality objectives for salts including nitrate established in Basin Plans, and the Basin Plans do not have adequate implementation procedures for achieving or ensuring compliance with the water quality objectives.
9. The development and implementation of nutrient management plans reduces the discharge of nitrate to groundwater.
10. The California Code of Regulations, Title 22, Division 4, Chapter 3, Recycling Criteria, specify treatment processes for ensuring proper disinfection of recycled water. They also specify requirements for limiting public contact with recycled water to protect public health.
11. Overapplication of recycled water unnecessarily increases the amount of salt that flows to groundwater. This increase can be prevented by applying recycled water in an amount that does not exceed the amount needed for the landscape or crops, taking into account evapotranspirative demand, the distribution uniformity of the irrigation system, and leaching needed to prevent the buildup of salts in the soil root zone.
12. Through control of industrial discharges and self-regenerating water softeners, a recycled water producer can limit to 300 milligrams/liter (mg/l) the increase of TDS from a community's source water supply to its produced recycled water.
13. Irrigation in amounts that do not exceed the amount needed for landscapes or crops - taking into account evapotranspirative demand, the distribution uniformity of the irrigation system, and leaching needed to prevent the buildup of salts in soil - creates a substantial delay in pollutants reaching groundwater, limiting the effectiveness of groundwater monitoring. Furthermore, it is usually unreasonable to require groundwater monitoring for irrigation projects using recycled water because these projects generally pose a threat to water quality similar to irrigation projects using surface water or groundwater, for which groundwater monitoring is not required.
14. The California Department of Public Health (CDPH) (formerly known as the Department of Health Services or DHS) is responsible for establishing maximum contaminant levels (MCLs) for constituents in drinking water to protect the health of the public who drink water supplied by water utilities. These MCLs are adopted through an extensive scientific and public review process.
15. For groundwater recharge reuse projects, MCLs and other requirements or recommendations provided by CDPH provide reasonable protection of groundwater quality for the beneficial use of municipal supply.
16. Recycled water has the potential to contain constituents not typically found in surface water or groundwater, because it is usually produced from sewage. Hence, for groundwater recharge reuse projects, to protect public health, a Regional Water Board may need to establish a limitation for a constituent for which CDPH has not established an MCL.
17. Certain constituents readily attenuate in soils, the vadose zone, or groundwater, either by biodegradation or by adsorption onto particles. Hence, for groundwater recharge reuse projects, when hydrogeologic conditions are appropriate, it is not necessary to establish effluent limitations for these constituents. Groundwater limitations, along with groundwater monitoring, provide adequate water quality protection.

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18. In some circumstances, a proposed groundwater recharge reuse project may change the geochemical equilibrium in an aquifer, thereby causing the dissolution of constituents, such as arsenic, from the geologic formation into groundwater. This can cause an aquifer to become degraded and polluted.
19. Water Code section 13540 requires, in part, for any waste well that injects waste into a subterranean water bearing stratum, that CDPH find, after a public hearing, that the proposed recharge not degrade the quality of the water in the receiving aquifer as a water supply for domestic purposes. Such findings issued by CDPH are conditional.
20. Water Code section 13304 allows a Regional Water Board to issue a cleanup and abatement order to any person who has caused a condition of pollution or nuisance and such orders may include a requirement to provide replacement water or wellhead treatment.
21. In 1996, CDPH and the State Water Resources Control Board (State Water Board) signed a Memorandum of Agreement on the use of recycled water that describes procedures for issuing water reclamation requirements and for resolving conflicts between CDPH and the Regional Water Boards.
22. [State Water Board Resolution No. 68-16](#) requires, in part, that any activity that produces waste that is discharged to existing high quality waters to meet waste discharge requirements which result in best practicable treatment or control of the discharge necessary to ensure that (a) pollution or nuisance will not occur, and (b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.
23. [State Water Board Resolution No. 68-16](#) requires, in part, that whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality water will be maintained until it is demonstrated to the state that any changes will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses of such water, and will not result in water quality less than prescribed in the policies.
24. For recycled water irrigation projects, discharges of salts to groundwater can be reasonably controlled by implementing a nutrient management plan, applying recycled water in an amount that does not exceed the amount needed for the landscape or crops, and controlling salt discharges to collection systems from industrial facilities and self regenerating water softeners. These actions represent best practicable treatment or control for controlling salts for recycled water irrigation projects.
25. For groundwater recharge reuse projects, CDPH provides recommendations for the design and operation of these projects. These recommendations have been consistent with best practicable treatment or control.
26. Recycled water irrigation projects and groundwater recharge reuse projects provide benefits to the people of the state. These benefits include extending the state's limited water supply to provide water to its growing population, reducing diversions of surface water, and reducing use of groundwater supply. These benefits outweigh the costs associated with lowering of water quality, as mitigated through best practicable treatment or control, that would be caused by a recycled water irrigation project, provided that the lowering does not cause a violation of a water quality objective.

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27. To comply with the California Environmental Quality Act, the State Water Board adopted a certified regulatory environmental program study on December 4, 2007.

## THEREFORE BE IT RESOLVED:

1. For the purpose of this Policy, “distribution uniformity” is the ratio of the average irrigation volume applied to the driest quarter of the field (or grid) and the average volume applied across the whole field (or grid). Distribution uniformity measures how uniformly an irrigation system applies water to a crop or landscape.
2. For the purpose of this Policy, a “groundwater recharge reuse project” means a project that uses recycled water and that has been planned and is operated for the purpose of recharging a groundwater basin for use as a source of domestic supply or for the purpose of controlling salt water intrusion.
3. For the purpose of this Policy, “nutrient management” is the act of managing the amount, source, placement, form and timing of the application of plant nutrients and soil amendments. It is done to budget and supply nutrients for plant production, properly use manure or organic by-products as a plant nutrient source, minimize degradation of surface and ground water resources, protect air quality by reducing nitrogen emissions (ammonia and NOx compounds) and the formation of atmospheric particulates, and maintain or improve the physical, chemical and biological condition of soil.
4. For the purpose of this Policy, “recycled water” has the same meaning as in Water Code section 13050(n).
5. For the purpose of this Policy, “recycled water irrigation projects” are defined as those projects that use recycled water primarily to meet a water supply need, instead of a disposal need.
6. By January 1, 2018, the Regional Water Boards shall adopt revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts are being, or are threatening to be, violated.
7. Regional Water Boards shall require the following in waste discharge and water reclamation requirements for recycled water irrigation projects:
  - (a) the development and implementation of a nutrient management plan;
  - (b) compliance with the California Code of Regulations, Title 22, Division 4, Chapter 3, Recycling Criteria;
  - (c) the recycled water to be applied in an amount that does not exceed the amount needed for the landscape or crops, taking into account evapotranspirative demand, the distribution uniformity of the irrigation system, and leaching needed to prevent the buildup of salts in soil;
  - (d) the monthly average TDS concentration in the recycled water to not exceed the monthly average TDS concentration of the source water supply, plus 300 mg/l. The monthly average TDS concentration of the source water supply shall be the flow-weighted monthly average TDS concentration of the public water supply of the service area that generates sewage from which the recycled water is produced;

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- (e) compliance with the federal Code of Regulations, Chapter 40, Part 122, National Pollutant Discharge Elimination System; and
  - (f) the use of recycled water to not cause or contribute to violations of water quality objectives.
8. A Regional Water Board shall only require groundwater monitoring for a recycled water irrigation project if it determines that site conditions such as shallow groundwater could cause an increased potential for the irrigated site to adversely affect public health or surface water quality.
  9. A Regional Water Board shall not require for recycled water irrigation projects salt management measures other than those listed in paragraph No. 7 prior to January 1, 2018, unless such measures are part of a salt implementation plan adopted pursuant to paragraph No. 6.
  10. For constituents for which CDPH has established an MCL, when interpreting a narrative objective for toxicity to develop a numeric effluent limitation for the constituent for protection of public health for a groundwater recharge reuse project, the Regional Water Board shall establish the effluent limitation at a concentration equivalent to the MCL. A Regional Water Board may establish a limitation that is more stringent than the MCL, if necessary to protect a designated beneficial use other than municipal or domestic use, such as agricultural use.
  11. For constituents for which CDPH has not established an MCL, a Regional Water Board may interpret a narrative objective for toxicity for protection of human health to establish an effluent limitation for the constituent for a groundwater recharge reuse project, only if it finds that: (a) the constituent is present in the recycled water; (b) the constituent is likely to be persistent in groundwater in the recharge area; (c) adequate information is available to characterize the toxicity of the constituent and establish an effluent limitation; and (d) approved analytical methods are available to measure the concentration of the constituent.
  12. For groundwater recharge reuse projects, if a Regional Water Board finds that attenuation of a constituent will occur within soil, the vadose zone or groundwater, in lieu of establishing an effluent limitation, the Regional Water Board may establish a groundwater limitation for the constituent. If a groundwater limitation is established, the Regional Water Board shall require monitoring of the constituent in groundwater. The groundwater shall comply with the limitation at specified monitoring points. The discharger shall have legal control over the attenuation area between the discharge points and the monitoring points to prevent the use of domestic or municipal wells within the attenuation area.
  13. The Regional Water Board shall require the evaluation of the potential of a proposed groundwater recharge reuse project to change the geochemical equilibrium in an aquifer, thereby causing the dissolution of constituents, such as arsenic, from the geologic formation into groundwater. If this potential exists and it could cause a condition of degradation, pollution or nuisance, the Regional Water Board shall establish requirements to limit the degradation and to prevent the project from causing violations of groundwater quality objectives.

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14. For groundwater recharge reuse projects that use injection wells, the Regional Water Board shall require that the discharger comply with conditions established by CDPH when making its findings of non-degradation in accordance with Water Code section 13540, or, if the Regional Water Board disagrees with the conditions, the Regional Water Board shall follow the conflict resolution process prescribed in the 1996 “Memorandum of Agreement between the Department of Health Services and the State Water Resources Control Board on the Use of Reclaimed Water.”
15. For groundwater recharge reuse projects that use spreading basins, the Regional Water Board shall require the discharger to implement the recommendation provided by CDPH, or, if the Regional Water Board disagrees with the recommendation, the Regional Water Board shall follow the conflict resolution process prescribed in the 1996 “Memorandum of Agreement between the Department of Health Services and the State Water Resources Control Board on the Use of Reclaimed Water.”
16. Water recycling irrigation projects and groundwater recharge reuse projects that comply with this Policy, the Porter-Cologne Water Quality Control Act, and the applicable Basin Plan, shall be considered to have met the requirements of [State Water Board Resolution No. 68-16](#).
17. Compliance with requirements based, in whole or in part, on this Policy does not exempt a discharger from liability for contamination of groundwater. If drinking water standards become more stringent after a Regional Water Board establishes requirements for a project, the discharger shall be liable, under Water Code section 13304 or other applicable provisions of law, for any past or continuing discharge that has caused, is causing, or threatens to cause groundwater to violate the new or more stringent drinking water standard(s). This liability may include the provision of an alternative water supply or wellhead treatment to any affected parties.
18. The Regional Water Board shall include at least the liability description in paragraph No. 17 in requirements for groundwater recharge reuse projects. In addition, Regional Water Boards may, at their discretion, require project owners to pass a financial means test or otherwise provide financial assurances of their ability to bear such liability. Regional Water Board staff shall consult with appropriate State Water Board staff prior to recommending specific language implementing any such financial means/assurance requirements.
19. If CDPH and the Regional Water Board disagree on proposed water reclamation requirements or waste discharge requirements for a water recycling project, the Regional Water Board shall follow the conflict resolution process prescribed in the 1996 “Memorandum of Agreement between the Department of Health Services and the State Water Resources Control Board on the Use of Reclaimed Water.”



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20. To the extent of any conflict between [Resolution No. 77-1](#) and this Policy, this Policy supersedes any conflicting provision contained in [Resolution No. 77-1](#).

## CERTIFICATION

The undersigned, Acting Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on December 4, 2007.

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Jeanine Townsend  
Acting Clerk to the Board