Draft Principles to Govern Development of a Regional Guidance Document Describing How the Regional Board May Use Its New and Existing Regulatory Authority to ~~Encourage~~ Accommodate and Mitigate the effects of Increased Conservation~~,~~ and Greater Use of Recycled Water during Drought periods; and therefore provide Better ~~Drought~~ Water ~~Protection~~ Resource Resilience in the Central Valley

Background

1) In the Recycled Water Policy (Resolution No. 2009-0011), the State Water Resources Control Board ("State Water Board") found that severe drought "*challenges California's ability to provide the clean water needed to support a healthy population, a healthy environment and a healthy economy now and in the future."*[1]

2) In adopting the Recycled Water Policy the State Water Board declared its *"independence from relying on the vagaries of annual precipitation and move towards sustainable management of surface water and groundwater, together with enhanced water conservation, water reuse and the use of stormwater."*[2] The Recycled Water Policy directs each Regional Water Quality Control Board ("Regional Board") to *"exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws."*[3]

3) *"When used in compliance with this [Recycled Water] Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses…*[4] *The State Water Board [also] finds that the use of recycled water in accordance with this Policy, that is, which supports the sustainable use of groundwater and/or surface water, which is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water, is presumed to have a beneficial impact."*[5]

4) The Recycled Water Policy requires the Regional Board to develop and implement regional and sub-regional salt and nutrient management plans to encourage greater use of recycled water while assuring compliance with applicable water quality standards. The degree of specificity within these plans will vary with a number of site-specific factors including stormwater recharge. "*It is also the intent of the State Water Board that because stormwater is typically lower in nutrients and salts and can augment local water supplies, inclusion of significant stormwater use and recharge component*

Commented [JBD1]: I know State Policy is to encourage as it is seen as all good everywhere all the time. But, the simple fact is that water over use (excessive re-use) does contribute to salinization and it was in fact the **primary** cause of the death of prior agricultural based civilizations. SO, if we're serious about long term salinity management being the prime focus for this group we should be the **one** group pushing back against blanket encouragement of these civilization killing practices. To not do so will get very costly (as I expect the CEQA econ analysis will make clear).

Commented [JBD2]: Can't protect against drought but can make sure you're prepared to mitigate its effects via increased use of recycled/conservation via a resilient system for the duration of the drought; and a proactive management plan to not continue to degrade the resource during normal and wetter times. …ie run the drip systems at 90+% efficiency in the drought but dial back to 70% during normal times …..and grab all the stormwater possible)

Commented [JBD3]: Maybe for the State as a whole, but maybe not for the region where it is practiced (depends what the freed up water resource is used for and where you are in the watersheds)

Commented [JBD4]: Here is where it is acknowledged that recycling is a potential problem…but it seems to say its still the right thing to do in general….CEQA econ should make clear it in certain regions it comes at a high cost if its effects are to be mitigated.

[1] Recycled Water Policy, Section 1 (Preamble), page 1
[2] Recycled Water Policy, Section 1 (Preamble), page 1
[3] Recycled Water Policy, Section 4 (Mandate for Use of Recycled Water), page 3; also, increasing the use of recycled water during drought conditions is consistent with Governor Brown's Executive Order (April 25, 2014) directing the State Water Board to *"adopt statewide general WDRs to facilitate the use of treated wastewater that meets the standards set by the CDPH in order to reduce demand on potable water supplies."*
[4] Recycled Water Policy, Sections 1 (Preamble), page 2
[5] Recycled Water Policy, Section 3 (Benefits of Recycled Water), pages 2-3.

within the salt/nutrient management plans is critical to the long-term sustainable use of water in California."[6]

Commented [JBD5]: Yes and using the conserved water for such recharge (ie not freed up for other uses) during normal and wetter years should be actively encouraged to at least partially mitigate the use of recycled and maximum conservation to actually free up water during the periodic dry times when it is necessary.

Regulatory Issues

1) Permit limitations governing the discharge of treated municipal wastewater (aka "recycled water") may include restrictions on the salt concentration in the final effluent. The limits themselves may be derived based on the applicable narrative or numeric water quality objective, on high quality receiving water, on a maximum allowable increase in Total Dissolved Solids (TDS) compared to the average salinity concentration in the water supply source, or on the best demonstrated performance of the treatment plant using representative historical discharge data.

2) Historically, waste discharge requirements (WDRs) rarely included any special provision or consideration for variations in effluent quality, directly or indirectly related to recurrent drought conditions that are beyond the control of the discharger. In addition, the occasions when discharge quality is substantially better than required are not usually considered when assessing whether that discharge is causing or contributing to an exceedance of water quality objectives. This creates unnecessary compliance issues for groundwaters which have longer water quality "memory" than do flowing streams.

3) Extended periods of below normal precipitation (aka "droughts") can create compliance issues for some WDRs governing salinity.

    a) During droughts, there is generally less high quality (low TDS) surface water available and water agencies commonly increase their reliance on lower quality (higher TDS) groundwater sources to augment their water supply. Most municipal wastewater treatment systems are not designed to remove TDS. Consequently, higher salinity in the water supply tends to result in higher salinity in effluent.

    b) Mandatory conservation measures undertaken in response to prolonged drought may significantly alter the behavior of water users (shorter showers, larger laundry loads, less frequent flushing, etc.). The cumulative effect of these behavioral changes combine to reduce water use, which previously helped dilute the average TDS concentration in raw sewage and treated wastewater.

    c) These drought-related changes in water quality temporarily aggravate the more permanent long-term trend toward increasing TDS caused by widespread adoption of high efficiency, low-flow fixtures and appliances and greater use of in-home water softening technologies that increase TDS discharged to sewer systems.

    d) The net result is that, even where wastewater treatment plants have been able to cope with the long-term trend of rising TDS in the sewage influent, drought-related conditions may temporarily eliminate the small but critical buffer needed to assure consistent compliance with salinity-based permit requirements (including for TDS, electrical conductivity [EC], and various individual salt ions, such as chloride, sodium and sulfate).

[6] Recycled Water Policy, Section 6(b)(1)(a) (Salt/Nutrient Management Plans), page 5

e) Drought conditions create similar concerns for agricultural operators. Reduced availability of high quality (low TDS) surface water forces increased reliance on lower quality (high TDS) sources (e.g., groundwater and/or reuse of irrigation return flows) to maintain crop yields or assure long-term survival for vines and orchards. The net result is temporarily higher TDS concentrations recharging to groundwater below the root zone. Note that the increase in salinity of the irrigation supply water is *amplified* in the resultant agricultural discharge toi groundwater (i.e. a difference of 100 ppm TDS on the supply equates to a difference of 1000 ppm in the discharge, therefore substantial mitigation will be required for long-term sustainability)

4) Inability to assure consistent permit compliance for salinity discourages the routine use of recycled water for landscape or crop irrigation. In addition, these requirements may inadvertently disincentive greater implementation of more efficient (drip-style) irrigation systems.

5) This problem is compounded by the fact that permit requirements for TDS may be evaluated using relatively short-term averaging periods (e.g., daily, weekly, monthly averages or means). Since droughts typically persist for several years, even limits expressed as an annual average may be practically impossible to meet given the elevated salinity concentrations in the best available water supplies at such times.

Recommendations

1) For discharges to groundwater, calculate compliance with the applicable narrative or numeric salinity objectives using a long-term (10+ year) flow-weighted average while simultaneously taking into consideration the expected recharge and potential dilution from natural precipitation and streambed percolation to the same basin or sub-basin.[7]

   The above approach would be consistent with the Recycled Water Policy in that it accounts for the influence of stormwater recharge over the long-term and is also consistent with the State Water Board's previous precedential orders encouraging consideration of dilution and system mixing.[8] It also accounts for times when discharge quality is substantially better than required to meet WDRs.

   Many of the short-term averaging periods in common use originated in EPA regulations intended to protect surface waters (see, for example, 40 CFR 122.45(d)). These averaging periods are unnecessarily restrictive where discharges to groundwater take several years to pass through the vadose zone and reach the underlying aquifer.

   Most important, this approach would continue to protect water quality by assuring that compliance with a receiving water limitation for salinity is evaluated holistically, based on the cumulative net effects of all sources of recharge to the receiving water.

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Commented [JBD6]: Important to show example of how bad this effect is

Commented [JBD7]: As they should, given the demonstrated threat these types of actions have had on the long term quality of the water and soils resources of prior civilizations.

Commented [JBD8]: These **should be encouraged** to provide freed up water during droughts …ie **for resiliency**, but not to provide water for other uses during normal/wet times

[7] Recharge models and long-term precipitation estimates should be periodically reassessed and updated to assure protections are based on best available data.
[8] State Water Board, Water Quality Order No. 81-5; City of Lompoc

2) Authorize the use of "Offset Projects," particularly increased stormwater capture and recharge, to demonstrate compliance with WDRs governing salinity discharges.[9] Allow offset credits to be created and banked by constructing and operating such projects or by discharging well below the WDR threshold in non-drought years. Recognize that the credits needed to achieve compliance during periods of drought must be generated at times of ~~above~~ normal and ~~precipitation~~wetter precipitation (especially El Niño winters) and, as such, must remain valid for at least 10 years.

3) Consider amending the Basin Plans to establish a temporary variance/exception from salinity-related standards during certain drought conditions. The variance/exception would be automatically triggered when a drought emergency is declared by an authorized federal or state authority or by some other trigger(s) that have been pre-approved the Central Valley Water Board.[10] At such times, more appropriate interim WDRs or effluent limits would apply.[11] Regional guidance should be developed to describe both the automatic triggers and the factors that should be considered when developing the alternate, interim WDRs that should apply when trigger conditions occur.

   In general, the purpose of this approach is to temporarily exempt dischargers from compliance when exceedances/violations are caused by the loss of high quality (lower TDS) water supplies and/or salinity increases directly related to mandatory conservation measures. It is also important to specify the condition(s) that cause the drought-related temporary variance/exception to be terminated.

4) Consider amending the Basin Plans to establish a temporary variance/exception from salinity-related standards where the TDS concentration in the permitted discharge is significantly better (lower) than the TDS concentration in the receiving water and will improve receiving water quality while promoting maximum use/reuse of available water supplies. Potential impacts to downstream/downgradient water quality must also be evaluated as part of this demonstration.

5) In lieu of authorizing a temporary variance/exception, consider pre-authorizing an automatic allocation of assimilative capacity (where it exists, or can be provided (i.e. via offsets) by the discharger) to accommodate higher TDS concentrations in the discharge/recharge during drought conditions.

~~5)~~6) Encourage management policies that encourage resiliency to handle droughts sustainably. For example: lessen conservation and efficiency practices in normal and wet years, if they can be shown to be cost effective mitigation (ie relative to desalting or direct dedication of the conserved water towards mitigation). In general, in order to be resilient and be able to conserve and maximize efficiency in a drought when it is dearly needed, the dial may need to be turned back during normal and wet times…and State policies should not preclude, or penalize such an approach, as they do now.

Commented [JBD9]: Normal must be included as the wet events are too transient to provide anywhere near enough mitigation by them selves

Commented [JBD10]: The CEQA econ analysis should make these tradeoffs clear

[9] Projects designed to generate compliance credits by harvesting and recharging stormwater must not interfere with downstream water rights, environmental (flushing) flows or unreasonably affect downstream water quality.

[10] See, for example, the strawman concept described in: "Development of a Basin Plan Amendment for Salt and Boron in the Lower San Joaquin River: Task #4 - Implementation Planning for Proposed Salinity Objectives," 9/18/15 (Table 10 in Chapter 5).

[11] For example, reasonable increment of use or mass-based limits may continue to work as interim restrictions.

Commented [JBD11]: Should also make clear that the use of recycled water and water conservation has different effects regionally….If near a salt sink or terminal drainage (to out of the basin hydrosphere), conserve and recycle all the time makes sense and probably doesn't require costly mitigation. For up gradient (ie practically all of the CV) the effects and costs to mitigate may be prohibitive and it should at least not be encouraged as a normal practice….so it can be implemented when needed during a drought.

Commented [JBD12]: In regards to footnote 9….I understand environmental flushing flows from storms are important to the long term environmental health of many water courses.