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Comment Letter – Proposed Recycled Water Policy Amendment

The Sanitation Districts of Los Angeles County (Sanitation Districts) serve the wastewater collection and treatment needs of approximately 5.6 million residents in the Los Angeles Basin, Santa Clarita Valley, and Antelope Valley. The Sanitation Districts have a long history of water recycling, encompassing over fifty years. Currently, almost 900 individual sites served by approximately three dozen water purveyors use over 100,000 acre-feet per year (AFY) of tertiary treated recycled water for non-potable applications such as urban landscape irrigation, agriculture, industrial process water, and potable uses, such as groundwater replenishment. Since the inception of our program in 1962, the Districts have delivered over one trillion gallons of recycled water for reuse.

The Sanitation Districts support the State Water Resources Control Board's (State Water Board's) efforts to amend the existing Recycled Water Policy to update and clarify its provisions, in so far as those changes will enhance, rather than unnecessarily impede, future recycled water project development and currently implemented projects. Expanding the use of recycled water will only increase in importance over time, as the cycle of drought years will inevitably continue, along with an ongoing increase in the state's population. There are several aspects of the draft Policy for Water Quality Control for Recycled Water (Proposed Policy) that we believe will support the Policy's goal of expanded recycled water usage, and the Sanitation Districts support these provisions. Examples of these provisions include removing an unenforceable mandate on the total amount of recycled water usage in California, making it clear that groundwater monitoring is not required for projects eligible for streamlined permitting, adding language stating that the regional boards are to use their authority to the fullest extent possible to streamline permitting of recycled water projects, removing the requirement for all irrigation projects to have an operations and maintenance plan (instead allowing regional board discretion on this issue), allowing groundwater recharge projects to comply with the Antidegradation Policy by demonstrating that their project is consistent with an adopted salt and nutrient management plan (SNMP), removal of required management practices associated with controlling and limiting incidental runoff, and removal of required priority pollutant monitoring for non-potable reuse projects. We are also supportive of most of the proposed new recycled water reporting requirements, in order to provide better information that will allow the State Water Board to track the quantity and usage of recycled water throughout the State on an ongoing basis.

However, the Sanitation Districts also have a number of concerns about the proposed changes to the Recycled Water Policy, as detailed below. Our primary concerns relate to the shift in overall focus of the policy, addition of a new goal to minimize ocean discharges of treated municipal water, new provisions relating to wastewater change petitions, and new requirements for use of bioanalytical screening tools. Our concerns are detailed below, along with suggested changes to address them.

Purpose of the Policy

The original Recycled Water Policy was adopted in 2009 with the purpose of increasing the use of recycled water from municipal wastewater sources. It appears that the Proposed Policy is heading in a different direction, and its purpose would no longer be to increase usage of recycled water. Rather, the focus seems to be on increasing the safety of recycled water and to provide direction to various parties on permitting of recycled water projects. This change in the purpose of the policy is not warranted. It continues to be essential to expand recycled water usage, as the concerns outlined in the Preamble of the original Recycled Water Policy are still valid (e.g., the Bay Delta ecosystem, climate change, population growth, droughts, etc.). Additionally, it is unclear why there needs to be an increased focus on increasing the safety of recycled water in California, in light of the long history of safe recycled water usage in the state, stretching back over at least 50 years.

This change in focus is reflected in the proposed title for the policy, which would be amended from “Recycled Water Policy” to “Policy for Water Quality Control for Recycled Water.” *We request that the original title be retained, to reflect that the purpose of the Policy is to broadly facilitate use of recycled water and not just to control its quality. We also request that the stated purpose of the Policy be reinstated to the purpose in the original Recycled Water Policy, i.e. “The purpose of this Policy is to increase the use of recycled water from municipal wastewater sources...”*

Statewide Consistency

Section 1.5 of the Proposed Policy addresses the State Water Board’s intent regarding statewide consistency in recycled water permitting. The language in the Proposed Policy is weaker regarding statewide consistency than the language in the original Recycled Water Policy. The original Recycled Water Policy stated intent was to “maximize” consistency, while the proposed language stated intent is to only “promote” consistency. *The Sanitation Districts believe that statewide consistency is essential to promoting increased use of recycled water, and requests that language to “maximize” consistency continue to be used in the Policy.*

Definitions

The Proposed Policy includes definitions for enclosed bays, estuaries and coastal lagoons, and ocean waters. These terms have already been defined by the State Water Board in documents such as the Policy for Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California. *To avoid confusion or inconsistencies, it is recommended that definitions for these terms not be included in the Proposed Policy, but rather a reference be made to where definitions can be found.*

Removal of Mandates and Certain Goals

The Sanitation Districts support the removal of storm water and water conservation goals from the Recycled Water Policy. This change helps to clarify the purpose of the Recycled Water Policy by eliminating issues that are only loosely associated with recycled water. Also, the Sanitation Districts support the elimination of the existing state-wide mandates for recycled water use, since many recycled water producers, such as the Sanitation Districts, do not provide direct water service, and many water purveyors do not produce their own independent source of recycled water. Setting mandates on either the producers or the purveyors individually are, indeed, unworkable and unenforceable. The Sanitation Districts and many other agencies have had significant success with the use of recycled water in their service areas by establishing partnerships with both wholesale and retail water purveyors to develop recycled water distribution systems, as noted above.

Inclusion of Unattainable Goals

Section 3.1.1 proposes highly aspirational goals for recycled water usage, calling for an increase from 714,000 AFY to 1.5 million AFY by 2020 and 2.5 million AFY by 2030. This would mean a doubling of recycled water use in the next two years, which is clearly impossible. It took over 50 years to develop infrastructure for the current amount of water being recycled. Additionally, these lofty goals do not reflect the amount of municipal wastewater currently available (or reasonably expected to be available in the future) as a feedstock to produce recycled water. For 2030, if one assumes a per capita indoor usage of 50 gallons per person per day and a population of 44 million (California Department of Finance projection), the total amount of wastewater generated is expected to be less than the proposed 2.5 million AFY goal. Even if were possible to recycle all available water within the next 12 years, allowance would still need to be provided for minimum stream flows and brine losses due to advanced treatment of water, as well as other factors such as storage availability to account for diurnal and seasonal variation, cost of treatment and distribution, customer availability, duplication of service issues, and capacity for expansion.

The Staff Report acknowledges that the goals are unrealistic, but states that data are not available to develop more realistic goals. However, as noted in Section 4.3 of the Proposed Policy, the Department of Water Resources is required by law to establish statewide recycled water targets and has already done so. *In the absence of data necessary to set a realistic goal, the Proposed Policy should use the Department of Water Resources established targets.*

Inclusion of Goal Regarding Minimization of Ocean Discharges

Section 3.1.2 of the Proposed Policy includes a goal to “Minimize the direct discharge of treated municipal wastewater to enclosed bays, estuaries and coastal lagoons, and ocean waters, except where necessary to maintain beneficial uses. For the purpose of this goal, treated municipal wastewater does not include brine discharges from recycled water facilities or desalination facilities.” This stated goal is highly problematic, especially when read in conjunction with the language in Section 3.2 (indicating that the State Water Board plans to evaluate progress toward this goal and “establish mandates as necessary”) and in conjunction with Section 3.4 (requesting that the State Lands Commission, Coastal Commission, and other state agencies use their authorities to the “fullest extent possible” in achieving this goal). The State Lands and Coastal Commissions have broad authorities that could lead to mandatory requirements to recycle from ocean discharging facilities.

There are a number of constraints that make it difficult to fully recycle all the water treated at certain ocean discharging treatment plants, including the Sanitation Districts’ Joint Water Pollution Control Plant (JWPCP). *For the reasons detailed below, Section 3.1.2 of the Proposed Policy should be removed in its entirety, and Section 3.2 should be revised to remove the phrase “or establish mandates”. Instead, a new Section 2.3 should be added to the “Benefits” section preceding the “Goals” section. It would read, “Expanding recycled water usage will allow for increased use of water that would otherwise be discharged to saline water bodies.” Additionally, the water boards should collect information on the extent of water recycling in California, as proposed under Section 3.2, and then, after full consideration of all of the factors that can affect the development of recycled water projects, revisit the numeric recycled water goals in a future policy revision.* We believe that this is a preferable way to address this issue.

Water Quality Constraints

The Sanitation Districts operate one wastewater treatment facility with an ocean discharge, JWPCP, located in Carson, CA. This facility currently serves about three million people and treats approximately 265 MGD of wastewater. The JWPCP receives industrial wastewaters that are high in salts which, historically, have been too expensive to treat to a quality suitable for use as recycled water. Instead of focusing on reuse from JWPCP, the Sanitation Districts have had a strategy of building water

reclamation plants (WRPs) to treat more suburban wastewater, and thereby produce recycled water closer to the intended users. This has resulted in today's current infrastructure that includes ten water reclamation facilities serving recycled water to nearly 900 sites.

As mentioned above, historically the saltiest water from the region has been sent to JWPCP, whose ocean outfall serves an important role in managing salinity in the region. This salinity management function extends to the Inland Empire which, in addition to a brine line that connects to the Orange County Sanitation District, has a dedicated sewer to send salty wastewater to JWPCP. This sewer is needed to remove salt from the Inland Empire and protect their groundwater basins. Therefore it is not possible to use the effluent produced at JWPCP, even for non-potable uses such as landscape irrigation, without the installation of costly advanced treatment.

Another concern for water quality is brine discharge. While the proposed goal would allow for brine discharges from recycled water facilities to continue, reusing all water except the brine would mean that brine would be discharged to the ocean without dilution from other treated wastewater. This could present potential issues with meeting receiving water quality objectives, particularly in instances where an outfall to an ocean, enclosed bay, or estuary has a low dilution credit, such as in the South San Francisco Bay. Consideration must also be given to meeting sediment quality objectives and to preserving communities of marine life near the outfalls.

Market Constraints

Another constraint on the use of recycled water generated by JWPCP relates to markets available for the recycled water. JWPCP is in the proximity of other wastewater treatment plants, including the Hyperion Treatment Plant and the Terminal Island Treatment Plant, both of which are owned and operated by the City of Los Angeles. The West Basin Municipal Water District (West Basin MWD), a large regional water wholesaler, has a robust water recycling program and purveys recycled water supplied by the City of Los Angeles, primarily from the Hyperion Treatment Plant. To date, demand has not been large enough for West Basin MWD to need any recycled water produced by JWPCP. Together, in the South Bay region of Los Angeles County, the two largest wastewater treatment plants west of the Mississippi (JWPCP and Hyperion) treat nearly 500 MGD (or over 560,000 AFY) of wastewater. There are not enough irrigation and industrial sites within a reasonable vicinity of JWPCP and Hyperion to reuse even a significant portion of the available recycled water. Additionally, for non-potable recycled water uses, such as for irrigation, demand is largely seasonal and drops significantly during the wetter, cooler months, which would necessitate enormous storage facilities if all of the recycled water was to be used, due to the amount of water under consideration. Constructing such storage could be an insurmountable challenge in a built-out urban area.

Due to the lack of sufficient nearby demand, the most promising approach for new large-scale water recycling at JWPCP is potable reuse, which can efficiently use larger quantities of water and integrate the new supply into the existing potable water infrastructure. While new infrastructure would be required, potable reuse projects generally avoid the need for dual plumbing and expensive retrofits of buildings and water distribution systems. Groundwater recharge has a long history in California, dating back to the Montebello Forebay Groundwater Recharge Project that began in the early 1960s. To date, there are no regulations to allow raw water augmentation or treated water augmentation reuse projects in California. Therefore, at the current time, large-scale potable reuse depends on the availability of replenishment capacity in groundwater basins and the availability of suitable surface water reservoirs. Such projects are only able to proceed in those areas where groundwater recharge and/or surface water augmentation is found to be feasible, and in some cases lengthy transmission lines are necessary to convey recycled water to the groundwater basin or reservoir.

Institutional Relationships & Legal Authority

One of the challenges for many wastewater agencies that want to (or must) recycle their effluent is that they do not have authority to purvey water. Even those that do have this authority may not be able to do so without permission from the local water agency or city (see, for instance, California Health & Safety Code Section 4767, which applies to districts formed under the County Sanitation District Act). Thus, if the State Water Board's proposed goal develops into a mandate for recycling all of certain types of effluent, some wastewater agencies will be in the untenable position of having to do something they do not have the legal authority to accomplish. Even if they have the legal authority, if they proceed to develop a recycled water system or project and serve the recycled water without the involvement and consent of the local water supplier, they risk having to pay damages under the Service Duplication Act (see California Public Utilities Code Sec. 1501 et seq.). This could add substantial additional cost and time to develop the recycled water project.

Another legal challenge for the development of recycled water supplies within the context of indirect potable reuse is the need for other groundwater basin or reservoir managers to allow waterbodies under their purview to be used for such projects. If they do not agree with the projects, then the wastewater agency would have no ability to use those basins or reservoirs, and would be forced to search for more distant locations to do the projects. This could make the projects far more expensive and challenging. It is preferable to develop recycled water projects and systems through collaboration and partnerships between wastewater and water agencies, and that is what typically happens. In some instances one of the agencies may not wish or be able to cooperate, which can lead to hurdles or even impasse. Starting on a path to develop mandates will change the dynamics of developing these partnerships and joint projects. The relationships and roles of various agencies that have responsibilities for water resources are very complex, and that complexity can create barriers in being able to move recycled water projects forward.

Good Planning is the Best Path Forward

We believe that a one-size-fits-all approach (e.g., pushing for 100% recycling of all waters discharged to ocean waters, enclosed bays, estuaries, and coastal lagoons) is not efficient or feasible using practical technologies, nor is it a good way to make decisions about the best investments in recycled water supply projects. California currently requires urban water suppliers to prepare Urban Water Management Plans, and wastewater agencies provide information about the availability of recycled water supplies to water agencies when they update these plans (see California Water Code Section 10633). Similarly, agricultural water suppliers are required to prepare Agricultural Water Management Plans. Many water agencies also prepare Recycled Water Master Plans, or similar documents, to plan their recycled water systems. Urging that one single source of water – recycled water – be prioritized ahead of all other options will lead to inefficient development of water supplies from an economic perspective, and may undermine water conservation initiatives or the development or use of other local water supply options that may make more sense, depending on the local area. For instance, along the North Coast there may be no need to use recycled water for a local water supply, or it may be technically infeasible to make it available. And, as previously discussed, in the Los Angeles region the location of two very large wastewater plants in close proximity to each other may make it economically infeasible to make use of all of the recycled water potentially available.

Costs

A combination of factors – large volumes of recycled water, the need for advanced treatment for most forms of reuse using JWPCP effluent, lack of sufficient demand for non-potable uses of recycled water, and lack of sufficient storage for enormous quantities of recycled water – indicates that the only way to approach a program of reuse for all or even a sizeable portion of JWPCP effluent is to focus on potable reuse. We believe this would likely be the case for many of California's ocean dischargers.

It seems likely that the statewide costs to recycle all water discharged to the ocean, enclosed bays, estuaries, and coastal lagoons (including the costs for state regulatory agencies) would be many billions of dollars, and it would be informative for a statewide feasibility analysis and cost estimate to be developed. It is important to remember that as more recycled water projects are done, the remaining projects are the more costly ones to do, because the “low hanging fruit,” meaning the easier, more cost-effective projects, have already been pursued. Currently state funding for water recycling (through Proposition 1 and the Clean Water Act State Revolving Loan Fund) is insufficient to meet demand. How will local agencies and their ratepayers afford the infrastructure to recycle all of this water without a massive infusion of state funds?

Public Acceptance

Underlying all of the issues outlined above is the need for the public and the business community to support the use of recycled water on a large scale. While there has been good support of the use of recycled water for non-potable uses in most (though not all) areas, building support for potable use of recycled water is still in its early stages. The media’s tendency to play up controversy by calling potable reuse recycled water projects “toilet-to-tap” and other such monikers has increased public opposition to some potable reuse projects, and caused them to stall or be set aside. Business community support is also crucial, since costs could increase substantially and businesses can be large customers. As for general public acceptance, a statewide (or at least coastal region) sustained educational campaign to promote the use of recycled water as a new water supply in California would be helpful. Key to such an effort is the credibility of the source of the campaign. An entity such as the State Water Board or the Department of Water Resources should be tapped to lead such an effort, in consultation with stakeholder groups such as the Water Education Foundation, WaterReuse California, the California Association of Sanitation Agencies, and the Association of California Water Agencies.

Reporting Requirements

The Sanitation Districts support the State Water Board’s efforts to develop more usable and accessible data regarding recycled water usage. To comply with its recycled water permit requirements, the Sanitation Districts have always provided information on recycled water usage, both to individual sites and through discrete distribution systems. Developing a process to compile information on recycled water usage statewide will greatly enhance the ability of the State Water Board to understand and communicate the status of recycled water usage across the state.

However, we have some concerns about the reporting requirements as they are currently written. First, we feel that it is critical to avoid duplicative reporting of extensive amounts of data. The Sanitation Districts already report all of the information required under Section 3.2 on a monthly or quarterly basis, depending on the treatment plant. ***We therefore support the language on pages 45-46 of the Staff Report that call for the reporting in the Proposed Policy to replace existing regional water board reporting requirements. Additionally, while Section 3.2 calls for reporting on a monthly basis, submittal of reports should not be required at more than a quarterly frequency, and preferably on an annual basis.*** Combining of three or twelve months of data into one quarterly or annual report will save resources on the part of recycled water producers to prepare the reports, and resources on the part of the water boards to review the reports. The State Water Board does not have such an urgent need for the data that it must be submitted on a monthly basis.

Second, ***the Proposed Policy would not provide credit as beneficial reuse for a number of valuable environmental uses, including natural system restoration, wetlands, wildlife habitat, and required discharge for maintenance of minimum stream flows. Unfortunately, the only beneficial environmental use proposed to be reported is “recreational impoundments.” As the state moves to encourage higher and higher percentages of beneficial use of recycled water, these critical environmental uses should not be overlooked. Similarly, discharges of minimum instream flows to***

inland surface waters should not be considered “disposal.” Such discharges provide water supply benefits to downstream water users and/or wildlife, and thus discharges of these minimum flows should be considered a beneficial use.

Third, *the requirement for municipal wastewater treatment plants to report plant influent flows should be removed.* Production of recycled water will be quantified directly, so reporting of influent flows will not provide any useful information. Additionally, some municipal wastewater treatment plants are not able to measure influent flows due to their configurations. If the Proposed Policy does include a requirement to report influent flows, such reporting should only be required where it is reasonably feasible.

Finally, Sections 3.2.1.4.1 and 3.2.1.4.2 call for reporting of the volume of treated recycled water delivered to a recycled water producer for further treatment, and for reporting of the volume of treated recycled water directly distributed for beneficial reuse. In many cases, neither of these scenarios is applicable. Instead, recycled water is distributed by a producer to other parties, such as wholesalers and retailers, for distribution. *To avoid confusion, it is recommend that the word “directly” be removed from Section 3.2.1.4.2 (e.g., “Volume of treated municipal wastewater ~~directly~~ distributed for beneficial reuse...”), or that another category be added for distribution of recycled water by producers to other parties for distribution.*

Roles of State Water Board and Regional Boards

Section 4.6 of the Staff Report discusses the roles of the State Water Board Division of Drinking Water (DDW) and the regional boards in the recycled water permitting process. While Figure 4-3 indicates that it is the role of only DDW to review Title 22 Engineering Reports, the text on page 47 of the Staff Report indicates that it also the role of the regional water boards to review Title 22 Engineering Reports. *We recommend that the text of the Staff Report be amended to make it clear that it is DDW’s role, not the regional board’s role, to review Title 22 Engineering Reports as they relate to compliance with Title 22.* DDW staff has the knowledge, expertise, and experience to interpret the Title 22 regulations. The regional boards should instead focus their review on the ROWDs/NOIs and the antidegradation analysis, with review of the Title 22 Engineering Report conducted only to the extent necessary to address these issues. In some regions there have been significant delays in permitting of recycled water projects caused by the regional boards performing detailed reviews of compliance with Title 22 in Title 22 Engineering Reports, and clarifying these agency roles (i.e. limiting the Regional Board review only to elements relating to Basin Plan compliance/antidegradation) would minimize these delays.

Role of Department of Water Resources

Section 4.3 of the Proposed Policy discusses the Department of Water Resource’s review of urban water management plans and preparation of the California Water Plan. *This section should be broadened to include a discussion of the Department of Water Resource’s review of agricultural water management plans.* Agriculture is the largest overall user of water in the state, and also the largest user of recycled water. Expanding use of recycled water statewide needs to include greater consideration of agricultural uses and the potential to expand recycled water use for agricultural irrigation.

Wastewater Change Petitions

Wastewater change petitions for recycled water projects have received substantial attention of late. In many instances, the need to obtain State Water Board approval under this process has resulted in considerable delays. While it would be helpful if the revisions to the Recycled Water Policy could ease or streamline the water change petition process for recycled water projects, the proposed revisions seem to be going in the other direction. It is not clear why the State Water Board is proposing to add additional

requirements to implementation of recycled water projects. *If the State Water Board wishes to include language on water change petitions in its Recycled Water Policy, it is recommended that the language from Finding No. 32 of Order WQ 2016-0068-DDW be used, which reads as follows:*

“The use of recycled water that would otherwise be discharged to a watercourse can adversely affect the availability of water for beneficial uses of water downstream of the discharge point, including in-stream uses. Water Code section 1211 requires that: (1) the owner of any wastewater treatment plant obtain the approval of the State Water Board before making any change in the point of discharge, place of use, or purpose of use of treated wastewater where changes to the discharge or use of treated wastewater have the potential to decrease the flow in any portion of a watercourse, and (2) the State Water Board review the proposed changes pursuant to the provisions of Water Code section 1700 et seq. In order to approve the proposed change, the State Water Board must determine that the proposed change will not operate to the injury of any legal user of the water involved. (Wat. Code, §1702.) The State Water Board also has an independent obligation to consider the effect of the proposed change on public trust resources and beneficial uses established for areas downstream of the discharge point, and to protect those resources where feasible. (National Audubon Society v. Superior Court (1983) 33 Cal.3d 419 [189 Cal. Rptr. 346].)”

In particular, Section 5.1 adds a new requirement that was not previously in statute or the Policy – the requirement to obtain, prior to receiving state funding for a recycled water project, a determination from the State Water Board’s Division of Water Rights (DWR) regarding the project, even when the project will not decrease the flow in any portion of a watercourse. Additionally, Figure 4-3 of the Staff Report and language in the Staff Report on p. 47 indicates that such a determination must be obtained for all recycled water projects, even if no funding is being sought. In the past, a project proponent has been able to make such a determination on its own. DWR already has a huge backlog of petitions that need to be addressed, and having to obtain a determination from them raises a significant concern that this process will slow down projects and could bring them to a halt. DWR has already indicated that their processes can take years to complete. It is strongly inadvisable to add additional work to this already overburdened division, and in doing so add a potential delay to projects that will not decrease stream flows. The additional workload could also slow down the already very slow process for projects that do need to obtain Wastewater Change Petitions for recycled water projects.

Furthermore, the Proposed Policy and the Staff Report do not provide any information as to what would comprise a “determination.” Would it consist of a letter, or could it be an email or a verbal confirmation? Would a formal process to request the determination be put into place? We are concerned that even if the process for a determination is set up initially as a simple process (i.e., simple request and an email reply) that the process will become more formal and burdensome over time, with DWR potentially expanding the making of any such determination into a complicated and time-consuming process.

Additionally, the Sanitation Districts strongly disagree with the inclusion of cumulative impacts in the evaluation of Wastewater Change Petitions. Therefore, Section 5.3 of the Proposed Policy is highly problematic. It would inappropriately amend the Recycled Water Policy to include language regarding the consideration of cumulative impacts as part of the California Water Code Section 1211 process. California Water Code Section 1211 explicitly states what must be considered as part of that process, and cumulative impacts are not included in the statute. Furthermore, CEQA statutes and regulations give the State Water Board the ability to analyze cumulative impacts, which is where that authority should remain. ***Section 5.3 should be deleted in its entirety.***

Section 5.4 should also be deleted in its entirety. It is ambiguous and unnecessary. To the extent that projects have permits or other existing obligations they remain in effect unless expressly rescinded.

Finally, Section 5.1 states that the State Water Board “processes and approves wastewater change petitions filed by wastewater dischargers for recycled water projects that have the potential to decrease the flow in any portion of a watercourse such as a river or stream”. ***In order for this section to not be misinterpreted in the future, the wording should be changed to “will decrease.”***

In conclusion, in addition to the changes outlined above to Section 5 of the Proposed Policy, there are issues that we believe it would be helpful for the Water Board to work on with stakeholders and other agencies such as the Department of Fish and Wildlife, and ***we support the proposal that a workgroup be convened to develop strategies for improvements to the 1211 petition process.***

Salt and Nutrient Management Plans

The Sanitation Districts have a number of comments about the proposed changes to the Recycled Water Policy that relate to SNMPs.

Use of Existing Wells in Monitoring Plans

The existing Recycled Water Policy states that the “preferred approach to monitoring plan development” is to collect samples from existing wells to the extent feasible. The Proposed Policy, at Section 6.2.4.1.2, would remove use of existing monitoring wells as a “preferred approach” and simply state that use of such wells is allowed. This is problematic, because use of existing wells provides the most cost-effective means of monitoring the ground water basins. It is expensive and time-consuming to construct new wells. Sometimes regional board staff may not be as sensitive to cost considerations as is optimal, and indicating that the use of existing wells is a “preferred approach” sends a strong signal to the regional board staff reviewing the SNMPs that such wells should be relied upon if at all possible. ***We recommend that the “preferred approach” language be retained.*** This will help control costs for the SNMPs in the long run, which is important because there is no steady funding source for writing or maintaining the plans, nor is there funding available for the monitoring required as part of implementation.

SNMP Reporting Frequency

The Proposed Policy, at Section 6.2.4.1.3, would increase the reporting frequency of SNMP data from every three years to annually, and would require electronic reporting “to a database identified by the regional board”. If the regional boards will only be assessing the data every 5 or 10 years, it is not clear why reporting needs to be conducted annually, instead of every three years. ***We recommend that the three year frequency be retained. Additionally, regarding electronic reporting, every effort should be made to not require duplicate reporting to multiple databases.***

New Requirement to Determine Intended Outcome of All Implementation Measures

Section 6.2.4.4 of the Proposed Policy would add a requirement that SNMPs include not only the implementation measure that will be used to manage salts and nutrient loading, but also the intended outcome of each measure. This will impose an additional burden on stakeholders preparing SNMPs, to quantify the exact effect of each implementation measure. Such effects would need to be determined through expensive modeling. Placing additional burdens on SNMPs will only discourage their preparation, not encourage it. ***We recommend that the language requiring SNMPs to assess the intended outcome of each implementation measure be deleted.***

Periodic Review of SNMPs

Section 6.2.6 of the Proposed Policy would require the regional boards, in consultation with stakeholders, to assess and review monitoring data generated from SNMPs every five years or, at

minimum, ten years. The assessment would need to include an analysis of trends, an analysis of the adequacy of the monitoring network, an evaluation of the ability of any models used to simulate water quality, and a determination of available assimilative capacity. The State Water Board should be aware that such an extensive review would involve considerable effort and financial resources, on the part of the both the regional boards and the SNMP stakeholders. If the regional boards do not have the resources to conduct the analysis, there is a strong possibility they will simply pass the burden of conducting the analysis onto the SNMP stakeholders. Even if regional board staff does the analysis, they may require the SNMP stakeholders to perform new model runs, which is expensive and time-consuming. While grant money was available to prepare many of the original SNMPS, it is not anticipated that grant money will be available to analyze the SNMPS going forward. Additionally, groundwater quality changes very slowly, so requiring full analyses and updates of the plans every five years is not generally necessary and not a good use of resources. Finally, knowing that a significant burden will be placed on them every five to ten years may discourage stakeholders from developing, or participating in the development, of SNMPS. ***To address these issues, the Sanitation Districts recommend that the extensive reviews only be conducted every twenty years, unless there is a specific reason or changed condition that necessitates an earlier review.***

Groundwater Monitoring for Irrigation Projects

Sections 7.3.2.2.1, 7.3.2.2.2, and 7.3.2.2.3 contain certain conditions (e.g., approval unless unusual circumstances apply and no project-specific groundwater monitoring unless required under the applicable SNMP) that apply for recycled water projects that are eligible for streamlined permitting and where the statewide general order is not used. These conditions should also apply when the statewide general order is used. To make this clear and to prevent any future confusion, ***it is recommended that the language in Sections 7.3.2.2.1, 7.3.2.2.2, and 7.3.2.2.3 be included in Section 7.2.***

Permitting Timeline for Groundwater Recharge Projects

Section 8.1.5 of the Proposed Policy discusses permitting for groundwater recharge projects conducting surface spreading of recycled water treated with reverse osmosis. The current Recycled Water Policy calls for approval of permit applications by regional boards for such projects within one year of receipt of the appropriate approvals and recommendations from CDPH (now DDW). The Proposed Policy would add a caveat that links approval of the brine disposal method to approval of the water recycling permit for the groundwater recharge project. Such a linkage is inappropriate and could result in permitting delays. Any permitting required of brine disposal by the regional board should be done through the appropriate permitting process for the brine, such as an NPDES permit for ocean disposal. In some cases, brine disposal may not need permitting by the regional board at all (e.g., evaporation at a fully enclosed industrial facility with no discharge). In such cases, it is not appropriate to give new authority to the regional boards to exercise approval authority where it does not currently exist. ***We therefore request that the phrase “provided that the project proposes a brine disposal method to the satisfaction of the regional water board” be deleted.***

Termination of Coverage Under Existing Regional Board General Orders

Section 11.2 of the Proposed Policy would terminate coverage under existing regional board general orders one year after the effective date of the Proposed Policy. Establishing a hard and fast deadline for termination of such orders does not take into account the potential need for more time by the regional boards in processing applications for coverage under Order WQ 2016-0068-DDW or a site-specific permit. Even if a recycled water producer or user submits a permit application in a timely manner, there may be circumstances where a regional board cannot process it by the deadline and then the recycled water system need to be shutdown. ***Some provision for such a circumstance needs to be added to this section, to avoid interruptions of service in existing recycled water projects.***

Review of Existing Title 22 Engineering Reports

The Proposed Policy, at Section 11.3.1, would add a requirement that the State Water Board, within three years of the policy effective date, review all Title 22 engineering reports issued prior to 2000. If the Title 22 engineering report was never prepared or is not consistent with current regulations, the State Water Board may require submittal of an updated report for review and approval. The State Water Board is certainly aware that DDW staff is already overloaded processing permit applications for numerous new or expanded reuse projects around the state. It would not be an effective use of resources to redirect staff from these important permitting efforts, which will serve to increase recycled water usage, to review old reports. Groundwater recharge projects have already had to do assessments of their compliance with the 2014 groundwater recharge regulations and are required to conduct five-year reviews of their engineering reports, so this requirement should not apply to them. For nonpotable reuse, the key element in protecting public health is the degree of treatment required, including disinfection. Review of treatment processes should be handled through permitting, with no need for extensive review of old documents. Similarly, updating monitoring requirements for consistency can be done through amendments to Monitoring and Reporting Programs, without needing to resort to detailed Engineering Report reviews. We believe that this proposed requirement would require a lot of staff resources without a commensurate public health, water quality, or water supply benefit, and the goal can be achieved in a more streamlined manner via the means mentioned above. ***We therefore request that Section 11.3.1 be deleted.***

Additionally, the Staff Report at p. 80 indicates that enrollment under Order WQ 2016-0068-DDW could not occur until the old engineering reports have been updated. This is likely to result in a significant delay in the transition of existing older water recycling permits to Order WQ 2016-0068-DDW.

Quality Assurance and Quality Control

Section 1 of Attachment A of the Proposed Policy specifies quality assurance/quality control (QA/QC) measures that must be in place in order for a laboratory to undertake constituent of emerging concern (CEC) monitoring, including bioanalytical screening. We have several concerns about this section.

Quality Assurance Project Plan

The introductory language to Section 1 of Attachment A requires submission and approval of a quality assurance project plan (QAPP) prior to beginning any sampling and analysis. However, there are several different QAPP templates available, including ones developed by the U.S. EPA, the Surface Water Ambient Monitoring Program (SWAMP), and the State Water Board's Office of Information Management and Analysis. ***It would be helpful if the Staff Report would include a list of required QAPP elements and/or include a list of which QAPP templates are acceptable.***

TNI Compliance

Attachment A, Section 1.1 allows use of the National Environmental Laboratory Accreditation Conference Institute (TNI), 2016 Standard to demonstrate that an adequate quality management system is in place. ***However, the Proposed Policy does not specify what documentation needs to be maintained to demonstrate compliance with the TNI requirements. It would be helpful if this could be discussed in the Staff Report.*** Additionally, it is our understanding that the 2016 TNI standard has not yet been implemented by TNI. Instead, the 2009 Standard is currently being used. ***Language needs to be added to the Proposed Policy allowing use of the 2009 Standard until accreditation under the 2016 TNI standard is available.***

Inclusion of Test Method QA/QC Procedures in the Quality Manual

Attachment A, Section 1.1.2.1 states, “The quality manual shall address all quality assurance and quality control practices to be employed by the laboratory and shall, at least, include the quality assurance and quality control requirements specified for the CECs and bioanalytical test methods.” ***Quality control requirements for individual methods are typically specified in the method Standard Operating Procedure (SOP) and not in the quality assurance manual. The Proposed Policy should be revised accordingly.***

Quality Manual Updates

Attachment A, Section 1.1.2.2 states, “The laboratory technical manager shall review and amend if necessary, the quality assurance program and quality manual at least annually. The technical manager shall also review and amend the quality assurance program and manual whenever there are changes in the methods or laboratory equipment employed, in the laboratory structure or physical arrangements, or changes in the laboratory organization.” This language is problematic, because in most laboratories reviewing and updating the QA program and quality manual are the responsibilities of the quality manager and not the technical manager. This requirement would only make sense in cases where the quality manager and the technical manager are the same person. Additionally, requiring the quality manual to be updated whenever there are changes in methods, equipment, laboratory structure and arrangements, and laboratory organization will create a lot of unnecessary work. In most laboratories, methods and equipment are updated on a routine basis so capturing these changes on an on-going basis is necessary; however, ***updating the QA manual to reflect these changes should be done during the annual review process.***

Quality Assurance Program Implementation Records

Attachment A, Section 1.1.2.3 requires laboratories to maintain records of the implementation of their quality assurance programs. ***It would be helpful if a list could be provided of the types of implementation records that need to be maintained by laboratories.***

Attachment A, Sections 1.2.2 and 1.3.2 require submittal of method detection limit (MDL) studies to the State Water Board for review and approval prior to beginning sampling and analysis, to ensure that required reporting levels (RLs) are met. However, the procedures used to conduct the MDL study and RL limit verification are not specified. ***It would be helpful if the Staff Report could address this issue, including indicating whether the procedure listed in the 2016 TNI Standard is acceptable and whether there are other acceptable procedures.***

Selection of Analytical Chemistry Methods

Attachment A, Section 1.2.1 provides a hierarchical order for choosing analytical chemistry methods for analysis of CECs, including a requirement to use U.S. EPA-approved methods if available. Inclusion of this hierarchy is inconsistent with the recommendations from the expert panel convened in 2017 and 2018 to develop monitoring recommendations for CECs in recycled water (CEC Expert Panel). The CEC Expert Panel report (*Monitoring Strategies for Constituents of Emerging Concern in Recycled Water*, Southern California Coastal Water Research Project, April 2018; CEC Expert Panel Report) instead simply listed the standardized methods that have applicability for CECs in recycled water without making a recommendation as to preferential use of any of them.

The proposed hierarchical order specifies that “U.S. EPA–approved methods”, if available, must be used. While the term “EPA-approved methods” is not defined in the policy, it appears to include methods published by EPA that are not formally included in 40 Code of Federal Regulations Part 136. It would therefore include EPA Method 1694, which is the method for analysis of pharmaceuticals and

personal care products (PPCPs). The Sanitation Districts have serious concerns about specifying that EPA Method 1694 be used preferentially over Standard Method 6810, and believe that instead Standard Method 6810 should be the required method, or at minimum at least an allowable method, for gemfibrozil, iohexol, sucralose, and sulfamethoxazole. Standard Method 6810 is superior to EPA Method 1694 for these constituents. Standard Method 6810 was developed due to the shortcomings with EPA Method 1694, which is a non-specific method for water, particulate, and sediment. EPA Method 1694 has not been verified at multiple laboratories.

In contrast, Standard Method 6810 was developed specifically for wastewater. Its development and validation included participation of a number of key players including Shane Snyder (CEC Expert Panel member), Jorg Drewes (CEC Expert Panel member), Andy Eaton of Eurofins, and some European laboratories. It was validated using a round robin of twenty laboratories, and the method was selected by Standard Methods because it was the best method available. While EPA Method 1694 can analyze for a wider spectrum of compounds, Standard Methods analyzes for a smaller set of compounds but does it much more accurately. Use of Standard Method 6810 in lieu of EPA Method 1694 will provide more accurate data to the State Water Board. Note that Standard Method 6810 can meet all the RLs specified in the Proposed Policy.

While only thirteen compounds are listed in Standard Method 6810 as analytes, the method can be extended to include a number of other analytes, including iohexol and sucralose. The introduction to the method states, "This method may be applicable for other PPCPs if the laboratory can demonstrate acceptable recovery, precision, and stability of the compounds using the quality control (QC) protocols in Section 6020 and in this method." The Sanitation Districts' laboratory has validated Standard Method 6810 for iohexol and is the process of conducting the validation for sucralose. It is anticipated that other laboratories would not have difficulty doing the validation for these two compounds as well.

Regarding analysis for 1,4-dioxane, the Proposed Policy states that EPA Method 522 is the only method available. This is not correct. The Sanitation Districts have been successfully using a modified version of EPA Method 8270 to conduct 1,4-dioxane analysis. EPA Method 8270 is a wastewater method that is essentially the same as EPA Method 522, which is a drinking water method. Both methods use gas chromatography/mass spectrometry (GC/MS) as the heart of the method and are essentially the same method. We therefore believe that EPA Method 8270 should be an allowable method for 1,4-dioxane monitoring.

To address the issue of methods to be used for CEC monitoring, the Sanitation Districts recommend that the language in the current version of the Recycled Water Policy (Attachment A Section 1.1) be retained. This language was developed based on extensive review and comment on this issue during the public comment period, and reflects a reasonable means of choosing appropriate analytical methods.

Selection of Analytical Chemistry Reporting Levels

Regarding the required RL for 1,4-dioxane, the Sanitation Districts currently attain an RL of 0.4 µg/L for 1,4-dioxane using EPA Method 8270, and are looking at the possibility of lowering it further. EPA Method 522 can achieve an RL of 0.1 µg/L, but only under clean matrix conditions. Such conditions may not be present in all tertiary effluents that are used to feed surface spreading groundwater recharge projects. ***Due to needing a very clean matrix to attain an RL of 0.1 µg/L, the Sanitation Districts recommend that the required RL for 1,4-dioxane be increased to at least 0.2 µg/L, or preferentially 0.4 µg/L.*** Both of these numbers are well under the regulatory standard for 1,4-dioxane, which is a reporting level of 1 µg/L.

Use of Bioanalytical Tools

Attachment A of the Proposed Policy includes requirements to both monitor potable water reuse projects using bioanalytical screening tools (also called bioassays) and to take required actions based on the results obtained. These requirements are highly troublesome, as bioanalytical screening tools and our ability to interpret results from these tools have not reached a point where they are ready to be used on a routine, required basis. Specific comments on use of bioanalytical methods are provided below.

Required Monitoring is Not Consistent with the Direct Potable Reuse Expert Panel Report

The issue of whether to require use of bioanalytical tools was addressed extensively in the final report of the expert panel convened to evaluate the feasibility of direct potable reuse (DPR Expert Panel). (*Expert Panel Final Report, Evaluation of the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse*, State Water Board, August 2016; DPR Expert Panel Report). The DPR Expert Panel recommended against routine use of bioassays at this time, stating “Bioassays have a potential role in the identification of yet-to-be discovered contaminants, but the Expert Panel does not recommend the routine use of bioassays in monitoring programs for DPR projects at this time.” (DPR Expert Panel Report, p. 7.) Instead, the DPR Expert Panel indicated that use of bioassays should be limited to research applications, stating “Bioassay-directed fractionation is a useful research tool for identifying compounds in recycled water that merit further evaluation. For this reason, research efforts that employ bioassays and non-target screening analysis simultaneously are encouraged to be used to discover new contaminants of concern in municipal wastewater and water produced by DPR projects.” (DPR Expert Panel Report, p. 7.)

The DPR Expert Panel Report noted several reasons for these conclusions. The main reason was that clear and quantifiable risk relationships have not yet been developed between bioassays results and adverse health effects. Additionally, guidance needs to be developed for the appropriate technical interpretation of the data relative to health risk and the communication of the results. Finally, a certification process needs to be established that would require the standardization of bioassays, methods of concentrating samples from water, and identifying methods for minimizing and/or eliminating false positives and false negatives, as well as describing the methods and quality control.

Implementation of Bioassay Monitoring is Not Consistent with CEC Recycled Water Expert Panel

The Proposed Policy not only calls for required routine monitoring of recycled water in potable reuse projects using bioassays, in contradiction with the DPR Expert Panel Recommendations, it includes a suite of required response actions based on the results obtained. This is inconsistent with the recommendations from the CEC Expert Panel. The CEC Expert Panel Report instead recommended a phased approach (see pp. 78–79 and 83 of the CEC Expert Panel Report). Phase I would consist of data collection using the estrogen and aryl hydrocarbon (ER- α and AhR) assays for screening of potable reuse facilities. Phase II would be a pilot evaluation of the interpretive framework for bioassay monitoring results, using initial monitoring trigger levels (MTLs) to guide appropriate response actions. Phase III would constitute full implementation of bioanalytical monitoring, where validated and certified bioanalytical methods would be an integral component of routine screening/monitoring of recycled water quality.

The CEC Expert Panel Report specifically recommends against implementation of required response actions at this time, stating, “The Panel recognizes the need for a robust interpretive framework for bioanalytical monitoring results and has proposed a framework to establish monitoring trigger levels and appropriate response actions. However, the Panel feels that requiring response actions during Phase I data collection is premature.” (p. 83; emphasis added.) This was reiterated several times, including on p. 102 and on p. 82, “The Panel further recommends that requiring response actions during the initial data collection phase is premature and, thus not appropriate, until such methods are fully validated and

certified by the appropriate entities [e.g., the State Water Board's Environmental Lab Accreditation Program (ELAP)], and that the interpretive framework outlined in 7.3 has matured and has been subject to a critical evaluation by water quality experts, State Water Board personnel, and stakeholder representatives." Jumping ahead of the CEC Expert Panel recommendation for a phased approach into full implementation is inappropriate and could lead to unsupported conclusions regarding the safety of recycled water. ***We therefore support use of the phased approach recommended by the CEC Expert Panel.***

The Sanitation Districts acknowledge that an initial draft of the CEC Expert Panel Report, released January 31, 2018, did contain a proposed list of actions that could be taken if a bioassay result was above a screening level. However, after receiving and considering public comment on this issue, the CEC Expert Panel made a reasoned choice to not include this list in their final report. The Panel instead chose to revoke its initial recommendation to establish, at this time, recommended actions to be taken if bioanalytical screening triggers are exceeded.

At the June 11, 2018 State of California Constituents of Emerging Concern Bioanalytical Screening of Recycled Water Workshop (Bioassay Workshop), State Water Board staff indicated that they overrode the Expert Panel recommendations so that the framework of responses to bioassays would be consistent with the framework of responses for the analytical chemistry results. This attempt at consistency is misguided. The Expert Panel is the entity that developed the framework for the analytical chemistry results, and if the Panel had believed that a similar framework was appropriate at this time for bioanalytical screening results they would have proposed one. Instead, they made a deliberate choice not to do so. It is inappropriate for the State Water Board to override the CEC Expert Panel, which was specifically convened to provide technical expertise on this topic.

Finally, as further detailed below, the Proposed Policy includes a number of elements that were not included in the CEC Expert Panel Report, including imposition of required RLs, establishment of MTLs, and no formation of a multi-stakeholder advisory group to guide the process forward. Again, it is inappropriate for the State Water Board to second guess the CEC Expert Panel, which was specifically convened to provide technical expertise on this topic.

Appropriate Thresholds of Concern for Human Health Have Not Yet Been Developed

The DPR Expert Panel Report very clearly cautioned against routine usage of bioassays to assess potable reuse water quality until a clear and quantifiable risk relationship between the bioassay result and adverse health effects had been developed through an established adverse outcome pathway consistent with those used to develop maximum contaminant level goals (MCLGs) and public health goals (PHGs). The CEC Expert Panel Report attempted to address this gap by proposing a framework to derive a MTL for a bioassay using a predicted no effects concentration (PNEC) for a chemical that is known to cause a response on the bioassay (see CEC Expert Panel Report, Textbox 7.1, p. 77). The CEC Expert Panel Report example of an MTL derivation was for 17 α -ethinylestradiol (EE2) and called for using a PNEC of 3.5 ng/L. However, no clear basis was provided for the choice of a PNEC of 3.5 ng/L (the reference provided, Cadwell et al., 2010, does not contain any PNECs). In contrast, the PNEC for EE2 used by the CEC Expert Panel for assessment of analytical chemistry data was based on the PNEC from the USEPA CCL3 list, which is 28 ng/L (see CEC Expert Panel Report, Table D.3). It is unclear why a value an order of magnitude lower (3.5 ng/L versus 28 ng/L) was chosen for the bioassay in comparison to the analytical chemistry threshold.

The State Water Board recently released a letter ("Re: Information request for bioscreening endpoints (email dated 2/2/18; revised 5/14/18)," May 14, 2018, from Keith Maruya of SCCWRP to Tessa Fojut of the State Water Board) that was used as the basis to establish MTLs for the ER- α and AhR bioassays. This letter was apparently the result of the State Water Board asking the CEC Expert Panel to propose "action levels" for these two bioassays. In this letter, the Expert Panel made it clear that any level

established should not be used as a regulatory limit but instead be used only for screening level analysis, and the Panel proposed use of the term “bioscreening level.” The Panel recommended that 17- β estradiol (E2) be used instead of EE2 as the reference constituent for the ER- α assay, and that a bioscreening level of 3.5 ng/L be used. The basis for the 3.5 ng/L level was the PNEC for EE2, since the activity of E2 is within a factor of two of the activity for EE2 (although, as noted above, the analytical chemistry threshold for EE2 is considerably higher at 28 ng/L). The letter also recommended against setting any health-based bioscreening level for the AhR assay at this time, but did recommend setting the required RL for TCDD at of 0.5 ng/L.

Given the CEC Expert Panel’s clear reluctance to set thresholds for further action at this time, the State Water Board should not include MTLs for the ER- α or AhR assays at this time. This is especially clear-cut for the AhR assay, as the Panel did not provide any value that could be used as an MTL, and instead stated that one should be developed in the future as more information becomes available. It is highly problematic for the State Water Board to set a MTL with no technical basis, especially considering the potential adverse impact setting such an MTL could have on the perceived safety of recycled water used for potable applications.

Justification for Establishment of Monitoring Trigger Levels at This Time is Not Valid

The Staff Report justifies the inclusion of MTLs in the Proposed Policy by stating, “Providing monitoring trigger levels to compare bioanalytical screening tool results to and response actions for different levels of bioanalytical results provides context for the results and why there is a need for monitoring with bioanalytical screening tools. If monitoring trigger levels, which are thresholds of concern based on human health effects, were not included, then the need to monitor with bioanalytical screening tools would not be clear.” (p. 73). The Sanitation Districts strongly disagree with this conclusion. The CEC Expert Panel is proposing a phased approach to implementation of bioanalytical monitoring. The first phase, Phase I, would be a data collection effort to determine the ranges of responses for bioassays. This data would then be used as information for subsequent phases, including a Phase II pilot evaluation of the interpretive framework for bioassays. Once these phases have been completed, and lessons learned from them implemented in the program, then the full program would be rolled out as Phase 3. There is value to implementing Phase I, with data collection only, because not only will it determine the ranges of responses for bioassays, but because implementation of Phase I will serve as a beta test of the bioassays, providing additional time to work out problems that arise during implementation, including laboratory availability, willingness of laboratories to conduct the needed quality assurance verifications, and variation in results among different commercial assay kits.

Bioanalytical Testing is Not the Same as Analytical Chemistry Testing

The State Water Board needs to be aware bioanalytical testing is at a very different state of development than analytical chemistry testing. Analytical chemistry testing for organic compounds has been well established for many decades, and is routinely used in required monitoring programs. Utilities are familiar and comfortable with such testing. Extension of analytical chemistry methods to quantify new emerging compounds was therefore accomplished relatively easily, although there were issues with unreliable results when the test methods for emerging compounds were first rolled out. Those issues have been mostly resolved, and there is a high degree of comfort among utilities emerging compounds can be reliably quantified using analytical chemistry. In contrast, bioanalytical methods are an entirely new field of testing. While bioanalytical methods have been used in research efforts for many years, they have not been routinely used for required monitoring.

It is therefore prudent to move forward cautiously as these new methods as moved from research applications to routine, required monitoring, as there may be unexpected hurdles during the implementation phase and unanticipated results may occur. ***The Sanitation Districts support the CEC Expert Panel’s recommendation to test with bioanalytical methods for a few years before setting***

thresholds for further actions based on results. The roll out period can be used to further develop testing infrastructure and to develop a broader sense of expected results.

Public Perception of Bioanalytical Screening Results Must be Considered

The intent of the addition of bioanalytical screening to monitoring for potable reuse projects is to provide additional assurances to the public regarding the safety of recycled water. However, this could backfire if MTLs are set at overly conservative thresholds. At the June 20, 2018 State Water Board hearing on the Proposed Policy, State Water Board staff indicated that it was acceptable to move forward with bioanalytical screening now because the required response actions are minor (e.g., continuing to monitor and contacting the Water Boards to discuss additional actions) and because staff did not expect any test results to be above the proposed trigger levels.

However, at the Bioassay Workshop, the CEC Expert Panel member present, Dr. Nancy Denslow, indicated that no data was available for the ER- α or AhR bioassays for water that had treated by soil aquifer treatment (SAT) after surface spreading. This is a major gap in information, and would be easily addressed by collecting data at existing projects for several years before establishing MTLs. Additionally, the only AhR bioassay data presented at the Bioassay Workshop indicated that the proposed MTL was exceeded for both GAC and UV/AOP treated recycled waters (see Slide 10, “Current Status of Bioanalytical Methods,” Alvine Mehinto, June 11, 2018).

If recycled water for potable reuse exceeds thresholds are established by the state, it could lead to a serious lack of public confidence in the recycled water. Although the thresholds may be conservative, the public may not appreciate this nuance. Members of the public will likely simply point to the fact that their water supply is being supplemented with water above state-established thresholds. It is critical to have adequate data on the expected results of the bioassays before establishing any threshold such as an MTL, so that serious consideration can be given to the degree of conservatism appropriate for the threshold to ensure public confidence is not undermined.

Availability of Laboratories to Perform Services

The Sanitation Districts are concerned that adequate commercial laboratory capacity may not be available to perform the proposed bioanalytical screening. The CEC Expert Panel Report indicates that there are currently four labs that can “provide services, including bioanalytical screening of organic extracts of water samples” (p. 71). The four labs cited are BDS, INDIGO Biosciences, IonTox, and Attagene, Inc. The Sanitation Districts are in the process of contacting each laboratory to confirm that they can perform the proposed analyses and to obtain quotes for their services. Note that none of the laboratories are located in California, and (BDS) is in Amsterdam. The need to preferentially use EPA approved methods, meet very low reporting levels, submit the results of a method detection limit (MDL) study and RL verification data in advance, have a documented quality management program in place, and submit extensive quality assurance/quality control (QA/QC) documentation may further limit the number of laboratories available and willing to conduct the analyses.

Requirement to Preferentially Use EPA Methods

Attachment A Section 1.3.1 requires use of EPA methods where they are available, and if no such methods are available then the State Water Board is to be consulted regarding an appropriate method. This requirement appears to apply to both the extraction step and the analysis step. For the extraction step, utilities that cannot perform their own extractions using EPA method will be limited to sending their samples to laboratories that perform extractions using EPA methods. We have not yet been able to obtain information from the four laboratories listed as to whether they are using EPA methods for extractions. For the analyses, it is also not clear if any of the laboratories are using EPA methods. Note that if only one laboratory runs an EPA method, then the proposed structure of the regulation would require all

samples to be sent only to that laboratory. If there is an interruption of service at that laboratory, then it would be impossible to run samples. ***For these reasons, the Sanitation Districts recommend against inclusion of a requirement to only use EPA methods when available. As stated above, we instead recommend retaining the language in the current Recycled Water Policy regarding choice of methods.***

Quality Management Requirements

Attachment A Section 1.1 of the Proposed Policy requires compliance with TNI standards or certain quality assurance requirements. The Sanitation Districts have not yet been able to determine if the four laboratories listed in the CEC Expert Panel Report have acceptable quality management systems in place. We have found that BDS maintains ISO/IEC 17025 accreditation for certain analyses, and that IonTox is pursuing ISO certification for the bioassays. It is our understanding that the ISO/IEC 17025 certification is the international standard on which TNI is based. ***We recommend that ISO/IEC 17025 be added to the Proposed Policy as an acceptable quality management system.***

Analytical Costs May be Underestimated

Table 4-6 (p. 74) of the Staff Report provides cost estimates for conducting the two required bioanalytical screening tools (ER- α & AhR). While this table includes the costs of purchasing kits and conducting tests, it does not include the considerable costs that would be incurred to develop general technical knowledge, train staff, conduct a MDL study, obtain certification, and conduct inter-laboratory calibration studies. ***The table should be revised to include these costs.***

Monitoring Trigger Level for AhR Set at the Reporting Level

The monitoring trigger level (MTL) for the AhR assay is set at the same level as the RL, 0.5 ng/L. This is an inappropriate practice as it essentially means that the required response actions in Table 10 of Attachment A Section 5.3 would be based on bioanalytical equivalent concentration (BEQ) measurements that are below the method RL, meaning they are estimated values only. For example, consider a lab that performs an MDL study and determines their method MDL is 0.1 ng/L for the AhR assay. If the lab analyzes a recycled water sample using the AhR assay and determines the BEQ for the sample is 0.4 ng/L the result would be reported as an estimated value or < RL. However, according to Table 10 the BEQ/MTL ratio for this example would be $0.4 \text{ ng/L} \div 0.5 \text{ ng/L} = 0.8$. From Table 10 the 0.8 ratio requires the Response Action of "Continue to monitor". The problem is that the 0.4 ng/L BEQ measurement, a value between the MDL and the RL, is an estimated value only and does not carry the same level of analytical confidence that one has with values at or greater than the RL. We can be confident that values at or above the RL carry a known level of certainty in terms of precision and accuracy, not so with values below the RL. Hence, using measured BEQs below the RL means that recycled water producers would be required to make Response Actions using estimated values with low confidence rather than truly quantitative data. It should be noted that the MTL for the ER- α assay is set at 3.5 ng/L (Table 9, Section A-5.3), seven times greater than the RL, suggesting that the concern described here may not be as significant for ER- α data.

Bioassay Equivalency

It should be noted that different bioassays will give different responses to different chemical signatures. While all may be calibrated to have a threshold at a certain chemical equivalent (e.g., 3.5 ng/L for EE2), the bioassays will have varying sensitivities to other chemicals present. A recent literature article (Kunz, P.Y., et al. (2017) Water Research. 110: 378-388) compared five different estrogen transactivation assays (YES, ER α -CALUX, MELN, T47D-KBluc, and GeneBLAzer-ER α) and indicated a coefficient of variation of 32% between all five assays across all tests performed. Due to this variation, end users may get significantly different results even though they targeted the same receptor (i.e., the ER- α or the AhR). Recommendations regarding acceptable levels of variation between the different bioassays

available for each receptor type should be established, and bioassays with acceptable degrees of variation should be identified in a rigorous intercalibration study.

The CEC Expert Panel acknowledged this issue in Section 7.5.3 of the CEC Expert Panel Report (pp. 82-83). To address this issue, the Panel recommended that simple mixtures with agonists and antagonists of various potencies be evaluated. ***Such an evaluation has not yet been conducted and should be done.***

Interlaboratory Testing of Extraction/Bioassays Pairs Needed

To ensure accuracy and reliability in bioanalytical screening, an interlaboratory round robin testing of paired extraction/bioassay needs to be conducted. This is necessary to verify that consistent results can be obtained across laboratories when running the same sample. Without such a round robin testing effort, there is no assurance that the results being obtained are consistent.

No Guarantee of a Monitoring Off-Ramp

Another problematic aspect to the Proposed Policy is that the only apparent way for recycled water projects to discontinue monitoring, per Table 10, is to achieve a BEQ/MTL ratio consistently less than 0.1. The only way to achieve this for the AhR assay is to measure a BEQ of < 0.05 ng/L for the recycled water sample, which is a full order of magnitude below the RL and possibly below the laboratory's experimentally determined MDL. This approach may very well lock recycled water projects into continuous monitoring at higher frequencies. Even then, the values obtained would be below the RL and thus would be non-quantitative, estimated values only, where there is no confidence in their precision and accuracy. The prescribed approach will force recycled water projects to preferentially select laboratories that can achieve the lowest bioassay detection limits to ensure the project has the best opportunity of achieving the BEQ/MTL of <0.1. In essence, this framework favors laboratories and methods that can achieve the lowest detection limits even though the results are well below the RL and potentially below the MDL as well.

Lack of Guidance on Interpretation and Communication of Data

The DPR Expert Panel made a strong recommendation that interpretative and communication tools be developed before using bioassays in the field, stating, "There needs to be clear descriptions of the meanings that will be attached to positive and negative bioassay results. This issue comes to the fore as the intent is to monitor water intended for human consumption. It must be clear – qualitatively and from a dose-response standpoint – how bioassay results are linked to adverse health outcomes. Before any *in vitro* bioassay is used in the field for this purpose, guidance should be developed for the appropriate technical interpretation of these data relative to health risk and the communication of the results of each bioassay in light of its specific application." (DPR Expert Panel Report, p. 132). ***Such guidance does not exist and needs to be developed prior to full roll out of bioassays, to prevent potential unwarranted concerns about the quality of recycled water.***

Formation of an Advisory Group

The CEC Expert Panel recommended formation of a bioanalytical advisory group consisting of select CEC Expert Panel members, CEC Stakeholder Advisory Group members, bioanalytical application experts, State Water Board staff, and representatives from commercial laboratories (CEC Expert Panel Report, p. 81). The purpose of the group would be to define goals for bioanalytical monitoring; specify protocols for sampling, extraction, measurement, and data reporting; and provide guidance for interpretation of bioanalytical monitoring results, including QA/QC data. The group would also interact with on-going and future efforts to develop, evaluate, and apply bioanalytical tools for water quality screening. The Sanitation Districts believe that formation of such an advisory group is critical to

successful implementation of bioassays as a tool for assessing recycled water. It will ensure that State Water Board has access to a broad spectrum of knowledge and experience as it moves forward, rather than relying solely on limited internal resources for decision making.

The Proposed Policy makes no mention of formation of an advisory group. At the Bioassay Workshop, State Water Board staff indicated that they support formation of such a group, but that they did not want to put formation of the group into the Proposed Policy in order to maintain maximum flexibility regarding its formation. The Sanitation Districts are concerned that if the advisory group is not included in the Proposed Policy that it may not be formed. ***We strongly support specific mention of the formation of an advisory group in the policy, or at minimum formation of the advisory group should be mentioned in the adopting resolution for the Proposed Policy.*** Details regarding the current vision of how the group would work and who it would include could be discussed in the Staff Report rather than the Proposed Policy or adopting resolution, so that flexibility on these details could be retained.

Monitoring Trigger Levels are Regulatory in Nature

The DPR Expert Panel cautioned against establishment of trigger values because they could inadvertently become real standards, stating, "The Expert Panel considered a broad range of data, addressing not only the capabilities of bioassays, but also requirements that would arise either as dictated by regulations or as rules that are considered in the routine monitoring of DPR unit processes and final product water. This need is absolute if these tools are to be employed in compliance monitoring. The Expert Panel cautions that any monitoring related to screening-type trigger values could still inappropriately and/or inadvertently become real standards even if they are not linked to risk and become industry practice." (DPR Expert Panel Report, p. 132). ***The Sanitation Districts support this viewpoint.***

In conclusion, the Sanitation Districts believe that a number of changes are needed to the Proposed Policy before it is brought to the Board for adoption. We thank you for the opportunity to comment on Proposed Policy and look forward to providing additional input as the revisions to the Recycled Water Policy move forward. If you have any questions, please direct them to me at (562) 908-4288, extension 2801, or by email at aheil@lacsdsd.org.

Very truly yours,



Ann Heil
Section Head
Reuse and Compliance

ATH:ep