CALIFORNIA COASTKEEPER ALLIANCE

Heal the Bay

January 10, 2011

Charlie Hoppin, Chair and Board Members
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
c/o Jeanine Townsend, Clerk to the Board
Via Electronic Mail: commentletters@waterboards.ca.gov

Re: Comment Letter: CEC Monitoring for Recycled Water

Dear Chair Hoppin and Members of the Board:

The California Coastkeeper Alliance (CCKA), which represents California's 12 Waterkeeper organizations, and Heal the Bay are Stakeholder Advisors to the "Advisory Panel for CECs in Recycled Water," and were active members of the drafting group for the State Water Resources Control Board's Recycled Water Policy (Policy). On behalf of CCKA and Heal the Bay, we welcome the opportunity to provide these comments on the State Water Resources Control Board's *Staff Report, Constituents of Emerging Concern (CECs) Monitoring for Recycled Water* (November 8, 2010) (Staff Report). Many of these comments also relate the Panel's *Final Report, Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water: Recommendations of a Science Advisory Panel* (June 25, 2010) (Panel Report). We also incorporate by reference our letter submitted to the State Board on May 14, 2010 on the previous draft of the CEC Advisory Panel's Recommendations, (*Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water: Recommendations of a Science Advisory Panel* (April 15, 2010)).

In brief, we disagree with the proposed, extremely limited set of monitoring proxies, which will fail to build the database of information needed to develop sound CEC standards that protect water quality and advance public acceptance of the increased use of recycled water. The Staff Report recommends only four health-based CECs and four different performance-based indicator CECs. While the Panel makes scientific arguments in support of this abbreviated list (as compared with the thousands of CECs potentially being discharged), it ignores the larger policy implications of a short-circuited monitoring program in terms of retarding public good will toward the safe use of recycled water. The list should be expanded, as we have argued consistently, to build scientific credibility and to assuage public concerns.[1]

[1] For example, at least one water district scientist raised questions about the selection of caffeine as a tracer since it is comparatively ubiquitous. (Personal conversation with OCWD Laboratory Director, September 27, 2010.) It was noted that some of the anti-epilepsy medications such as carbamazepine and primidone are particularly stable molecules that do not wax and wane like other markers, and would likely be better selections. *Id.* Gadolinium was also mentioned as a potentially useful tracer for these reasons. *Id. See also* Guo, Y. C. and Krasner, S. W. (2009), "Occurrence of Primidone, Carbamazepine, Caffeine, and Precursors for *N*-Nitrosodimethylamine in Drinking Water Sources Impacted by Wastewater," *JAWRA Journal of the American Water Resources Association*, 45: 58–67. doi: 10.1111/j.1752-1688.2008.00289.x, abstract and full article available at: http://onlinelibrary.wiley.com/doi/10.1111/j.1752-1688.2008.00289.x/abstract. In this study "[w]astewater impact on drinking water sources was assessed using several approaches, including analysis of three pharmaceuticals and

The Staff Report does propose to accept the list of CECs recommended by CDPH; we support the addition of these monitoring parameters. Recycled Water Policy Section 10.(a)(1) states that "all uses of recycled water must meet conditions set by CDPH." It is our understanding that the commenters at the December 15th raised questions with regard to CDPH support for these additional parameters, and urged that the CDPH-recommended compounds be revisited through the Panel's risk-based framework. We would argue that the Recycled Water Policy's deference to CDPH places the burden on those who would weaken the CDPH requirements to provide clear and convincing evidence that such weakening is unsupported by science or policy.

As Recycled Water Policy Section 10.(a)(4) states, "[r]egulating most CECs will require significant work to develop test methods and more specific determinations as to how and at what level CECs impact public health or our environment." It has been our direct experience that many members of the public care significantly about this issue. They are concerned about the fact that their regulatory agencies appear to be still unaware of the risks of CECs, and that they have been taking little meaningful action to redress these informational and regulatory gaps.[2] While we would of course support additional CDPH information on the reasoning for the choices of the monitoring parameters it recommends, we would oppose eliminating recommendations that better safeguard public health simply on this process issue. If California is to advance recycled water use, the potential impacts of CECs must be tackled assertively. This will not be accomplished by brushing aside the recommendations of CDPH for failure to follow the Panel's lead, where the CDPH recommendations may be more protective of public health, and more representative of treatment efficacy. Indeed, this runs the risk of moving the state *backward* in its use of recycled water, which is critical to the state's water supply future. Investment in monitoring now will reap significant dividends in both scientific understanding of CECs and public good will toward recycled water use in the future.

As we have stated repeatedly in the past, we also strongly disagree with the Report's focus on monitoring solely for the purpose of assessing human health impacts. This approach directly contradicts the Recycled Water Policy's clear direction to include ecological assessments.[3] The initial list of compounds to be monitored should be expanded to include, at a minimum, those CECs for which eco-toxicity data is currently available. It also contradicts the Policy's goal of increasing the use of recycled water significantly beyond the current environmental conditions examined by the Panel, making foundational monitoring all the more important.

Severely limiting recommended monitoring as proposed in the Panel Report will reduce, rather than encourage, Californians' confidence in the use of recycled water. It also will delay effective action to prevent potential public health and ecological impacts, contrary to the goals of the Recycled Water

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personal care products (PPCPs) – primidone, carbamazepine, and caffeine – as indicators," with the results showing that "measurement of the two pharmaceuticals and NDMAFP tests can be used to evaluate wastewater impact in different watersheds, whereas caffeine results were more variable." *Id.* (emphasis added).

[2] House Committee on Energy and Commerce Subcommittee on Energy and Environment, "Endocrine Disrupting Chemicals in Drinking Water: Risks to Human Health and the Environment" (Hearing Feb. 25, 2010), information available at: http://energycommerce.house.gov/hearings/hearingdetail.aspx?NewsID=7673. *See also* Bergeson and Campbell, "House Subcommittee Holds Hearing on Endocrine Disrupting Chemicals in Drinking Water" (March 1, 2010), available at: http://www.lawbc.com/news/2010/03/house-subcommittee-holds-hearing-on-endocrine-disrupting-chemicals-in-drinking-water/ (noting that at the 2010 hearing, the "Subcommittee members criticized the slow pace of EPA's Endocrine Disruptor Screening Program").

[3] *See, e.g.*, Recycled Water Policy, Sec. 10(b)(2) ("The panel shall review the scientific literature and, within one year from its appointment, shall submit a report to the State Water Board and CDPH describing the current state of scientific knowledge regarding the risks of emerging constituents to public health *and the environment*") (emphasis added). *See also* Recycled Water Policy, Sec. 10(a)(4) ("Regulating most CECs will require significant work to develop test methods and more specific determinations as to how and at what level CECs impact public health or our environment").

Policy. A monitoring program, particularly when used as a shorter-term regulatory screening tool, necessarily must err on the side of comprehensiveness. The lack of data is no excuse to not include an appropriate constituent at this early stage of CEC monitoring programs. It is the follow-up regulatory effort, and associated longer-term monitoring program, that may be more circumscribed, *if* called for based on sufficiently comprehensive initial monitoring and analysis.

Given that our organizations invested heavily in the development of the Policy with the goal of increasing recycled water use *consistent with state and federal water quality laws*, we urge that the Staff Report be revised to recommend an initial screening period of monitoring, over three years, that includes the full list of CECs in Tables 8.1 and 8.2 of the Panel Report (Panel Report at 64, 66), and any additional appropriate contaminants from Table D-1. Monitoring for this list will far better ensure the protection of both human health and the environment, as envisioned by the Policy. Also, it will provide the public with the confidence they need to begin to embrace indirect potable reuse on a statewide basis. Alternatively, a survey of the CEC monitoring sections of all of the NPDES permits in the state would be useful in developing a standardized interim list of CECs to be monitored. These interim lists should be required for both freshwater *and* marine discharges, as the efforts to create a marine CEC monitoring program will not be completed for at least a year,[4] and there are *no* current plant efforts to identify appropriate CECs for *freshwater* eco-toxicological concerns. Again, this is flatly inconsistent with the Recycled Water Policy.

These comments are discussed further below, along with additional points.

The Recycled Water Policy Calls for Broad Consideration of Monitoring Needs in the Context of Protecting Human Health and the Environment

The Recycled Water Policy established the CEC Advisory Panel for the purpose of "describing the current state of scientific knowledge regarding the risks of emerging constituents *to public health and the environment*." (Emphasis added.) The Recycled Water Policy further called on the Panel's Report to "recommend actions that the State of California should take to improve our understanding of emerging constituents" because "[r]egulating most CECs will require . . . more specific determinations as to how and at what level CECs impact public health or our environment." This mandate was directed at an expert Panel because, as the Report notes, "[t]here needs to be additional research . . . to determine *potential environmental and public health impacts*." (Emphasis added.) This research is further needed to implement the Recycled Water Policy's direction to agencies to "minimize the likelihood of CECs impacting *human health and the environment* by means of source control and/or pollution prevention programs." (Emphasis added.)

In the context of these overarching mandates to ensure protection of both human health and the environment, the Recycled Water Policy directed the Panel as follows:

> (4) The panel report shall answer the following questions: What are the appropriate constituents to be monitored in recycled water, including analytical methods and method detection limits? What is the known toxicological information for the above constituents? Would the above lists change based on level of treatment and use? If so, how? What are possible indicators that

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[4] SCCWRP, "Project: Advisory Panel for CECs in Coastal and Marine Ecosystems," available at: http://www.sccwrp.org/ResearchAreas/Contaminants/ContaminantsOfEmergingConcern/EcosystemsAdvisoryPanel.aspx (given that, according to the public schedule, the Panel is scheduled to complete a Final Report by mid-June, widespread state adoption of some or all of its recommendations will take months more, as the current process is demonstrating).

represent a suite of CECs? What levels of CECs should trigger enhanced monitoring of CECs in recycled water, groundwater and/or surface waters?

As noted above, the Panel was charged with answering each of these questions for both human health *and* environmental perspectives, keeping in mind the overarching goal of increased use of recycled water consistent with water quality laws. The dearth of monitoring data to date and lack of consumer confidence in recycled water quality have been impediments to moving forward on recycled water use and development of the associated CEC standards.

The process that the Panel went through to look at the current information on CECs – examining existing monitoring data, analytical methods and risk (toxicity and exposure) in a systematic manner – is a logical approach. The Panel Report serves as a good reference on the state of CEC regulation, human health (though not environmental) risks, and effluent monitoring. Further, the analysis that was completed to develop the final list of CECs may prove to be of value for determining which CECs should be looked at more carefully for regulation in the future.

However, the final Panel recommendations are completely inappropriate in light of the data and fail to meet the requirements or goals of the Recycled Water Policy. For example, the Panel did not expressly acknowledge the fact that discharge of recycled water to receiving waters occurs on a daily basis, that many streams in southern California are effluent-dominated streams with 80-95% of dry weather flows coming from recycled water discharges, or that many northern California streams that may receive recycled water effluent interact regularly and closely with groundwater. As such, the importance of including monitoring recommendations for those CECs that potentially pose a risk to aquatic life and ecosystems is absolutely critical. By failing to recommend a robust monitoring program even in the short-term in light of this dearth of data, the Report will only delay the increased, safe use of recycled water that California needs to ensure a sustainable water future. The State Board should supplement the interim list of CECs to be monitored by looking at available eco-toxicity data. Those constituents that are toxic to aquatic life should be included on an interim CEC monitoring list. These additions will provide water boards with essential new information to better understand the potential aquatic life impacts of CECs. For instance, pyrethroids are notably absent from the Table 1 of the Staff Report, yet they have been shown by SCCWRP to be a predominant cause of toxicity in waterbodies such as Ballona Creek.

The State Board Must Provide a Comprehensive Monitoring Strategy That Will Help Guide Future Regulatory Efforts That Protect Both Human and Environmental Health

The Recycled Water Policy recognized the need for further research to determine "how and at what level CECs impact public health or our environment," in order to guide future regulation of CECs. The Recycled Water Policy in fact created the Panel with this uncertainty in mind. Given that the Panel reviewed existing information based on ongoing, relatively limited use of recycled water, we strongly disagree with the recommended monitoring regime of only a small set of CECs, particularly given that they were selected based on human health concerns, rather than considering *both* human and ecological health concerns. Such an extremely limited monitoring regime will fail to satisfy the research needs of the regulatory effort referenced in the Policy, will fail to provide the public confidence in the use of recycled water needed to ensure a reliable water supply statewide, and will fail to protect the health of the environment in the event that recycled water is used in the surrounding environment more extensively than examined by the Panel.

As has been repeatedly articulated by our organizations and supported in the scientific literature, CECs are a growing problem in aquatic environments, and will only increase in significance if recycled water is used more widely *unless* appropriate safeguards are put in place. The Panel itself acknowledged that "reuse practices engage conventional and advanced water treatment processes that result in very

different effluent water qualities" (Panel Report at 37), results that could have markedly varying environmental impacts that would go unexamined under the monitoring framework recommended in the Report. Moreover, the Panel acknowledged that it had ignored "[o]ther reuse practices that could result in discharge of recycled water to surface water, estuaries, and the ocean." (Panel Report at 2.) The Panel Report noted, possibly by way of explanation, that "the SWRCB, in collaboration with the Packard Foundation, established another Science Advisory Panel in January 2010 that was charged to address CEC discharge" in ocean and coastal ecosystems. However, the release of future reports related to environmental impacts of CECs is not relevant to the immediate mandate before the Panel and the Water Board to assess the "current state of scientific knowledge regarding the risks of emerging constituents to public health and the environment," and to answer monitoring-related questions that will further such scientific knowledge. Also, the ocean CEC panel's recommendations may not be finalized for another year, and there are no current plans to determine a CEC list for CECs posing toxicological risks to freshwater aquatic life. In the meantime, Regional Water Boards will continue issuing NPDES permits for recycled water discharges to rivers, lakes and coastal waters without needed safeguard. At a minimum, an interim CEC monitoring list for freshwater and marine discharges must accompany the Water Board's "CEC Monitoring for Recycled Water package."

As noted above, the Recycled Water Policy established the Panel to "recommend actions that the State of California should take to improve our understanding of emerging constituents" because "[r]egulating most CECs will require . . . more specific determinations as to how and at what level CECs impact public health or our environment." Increased use of recycled water, which is important to California's water sustainability, requires expedited development of this understanding of the impacts of CECs on public health and the environment, and an appropriate regulatory program based on such information. An initial screening period of three years of comprehensive monitoring is needed to build the foundational baseline to determine which CECs need to be further monitored and regulated – and, importantly, to build public confidence that the science behind recycled water use is sound.

This last point cannot be over-emphasized; the many years of difficulty in increasing the use of recycled water in the face of public concern about its overall safety must be faced with comprehensive and transparent monitoring programs that lead to protective standards. The example of recycled water projects like the LADWP East Valley Project being mothballed because of "toilet to tap" concerns illustrate the importance of consumer confidence. Without the baseline data created by a comprehensive initial screening period, the extremely limited monitoring framework being recommended by the Panel will fail to reassure a concerned public that the health and environmental impacts widely reported as resulting from CECs are being sufficiently studied and, as needed, regulated. More limited monitoring may be instituted after the initial screening period, based on the results of the initial monitoring and in light of the state's recycled water use objectives and environmental and public health protection goals.

The Panel Report itself appears to recognize the limitations of the recommended monitoring framework, noting that "there are a number of activities the State can undertake to improve the quality of future monitoring and toxicological information that feeds into the process that the Panel has identified for this inaugural CEC monitoring effort." (Panel Report at 74.) The inaugural monitoring effort, in fact, should be a baseline, comprehensive monitoring program, not the circumscribed program in the Staff Report, to set up the foundation for later regulation as needed. The Panel Report further notes that the state should "[d]evelop a process to predict likely environmental concentrations of CECs based on production, use, and environmental fate, as a means for prioritizing chemicals on which to focus method development and toxicological investigation." (Panel Report at vi.) Again, this cannot be done without a robust set of initial monitoring information.

We urge the State Board to revise the Staff Report to recommend an initial screening period of monthly effluent monitoring, and *at least* annual receiving water monitoring, over three years, that

includes the CDPH list, the list of CECs in Tables 8.1 and 8.2 (Panel Report at 64, 66), and any additional appropriate contaminants from Table D-1. These lists are far from a comprehensive compilation of CECs, but we are willing to support them based on the research done to date in developing them. Moreover, we oppose the Staff Report's insistence that "the process for selecting additional health-based CECs for monitoring *would have to be consistent with* the Panel's exposure screening approach (i.e., evaluation of MEX/MTL)" (Page 3, emphasis added). While the Panel's approach could be a floor, we do not view it as a ceiling. The Panel simply has not made the case for eliminating the authority of CDPH or a Regional Board to determine that more protective (from a public health or environmental perspective) monitoring is necessary to ensure that beneficial uses and other standards are met.

As an alternative to the above monitoring recommendation, the State Board could obtain the list of CECs that are being monitored by dischargers in all the regions and develop an interim list with appropriate detection limits. Throughout the state, NPDES permits have moved forward that include monitoring requirements for a variety of different CECs. For instance the Tapia Water Reclamation Facility NPDES Permit adopted on September 2, 2010 includes a special study for CEC monitoring of 26 constituents. The bottom line is that California needs meaningful CEC monitoring for all permits moving forward. Currently, some Regional Boards require CEC monitoring while others do not, and there is no consistency on the CEC lists or the minimum detection limits. In addition, the full CEC monitoring list itself should be revisited on a biennial basis initially, since the science and number of new chemicals and pharmaceuticals coming on the market are changing so rapidly. Review of the monitoring list can move as appropriate to a triennial basis.

With respect to timing, the Staff Report recommends quarterly monitoring of CECs for the first year and biannual monitoring for baseline operations. This is too infrequent. Instead, we urge the State Board to recommend initial monthly monitoring. Although some may argue that monthly monitoring may be cost prohibitive, the State Board must not lose sight of one of the main purposes of the screening effort: to provide consumer confidence that recycled water poses negligible human and aquatic life health risks. A monthly monitoring program for three years would capture any variability in plant performance and seasonal influent water quality and provide a more solid base of information to present to the public. The state needs to build a robust database on the issue quickly, and it needs to provide adequate information to the public on the effluent water quality discharged from various different levels of water recycling treatment. Some technologies like MF/RO may do a good job of removing many CECs to below detection levels, and other treatment technologies will hopefully be effective at CEC removal as well. But the state needs to collect and publicly present this data to a skeptical public, *and* demonstrate its understanding of the impacts of the discharges to receiving waters, in order to make the scientific and policy case for a larger strategy to increase statewide water recycling. Again, effluent monitoring can be reduced in the longer term based on the results of this initial screening process, but this must be done consistent with an initial, comprehensive review of effluent concentrations and receiving water impacts.

Adequate monitoring during this initial period will reassure the public that the science is being developed fully, and it will produce the information necessary to make a more informed decision about which parameters to include and exclude in a longer-term monitoring and regulatory framework. Monitoring should be required for all constituents both in the effluent and in the receiving waters, to build the database that the CEC Advisory Panel recognized is needed to "predict likely environmental concentrations of CECs based on production, use and environmental fate, as a means for prioritizing chemicals on which to focus method development and toxicological investigation." Of note, the Staff Report does not provide recommendations for receiving water monitoring other than for groundwater recharge/reuse, which is a major short-coming. To ensure fate and transport is readily understood, receiving water monitoring should be conducted at least annually, with a trigger of increased frequency to quarterly if any CECs on the list are detected in the effluent more than once in a 90-day period.

Finally, the State Board should ensure that recommendations are made based on the need for monitoring, not the current availability of analytical methods, and that research on analytical methods moves forward. The Staff Report lists the CEC Advisory Panel's recommendations for additional research, including the development of robust and reproducible analytical methods to measure CECs in recycled water. However, it states that these research topics may be funded at the discretion of the State Board. This research is critical. Discounting the need for analytical methods based solely on the fact that they are currently unavailable will assuredly continue the status quo of their unavailability. Requiring necessary contaminant monitoring and a reasonable timeframe for method development is a sounder course to achieve the Policy's goals and directions.

Surrogate Parameters Should Not Be Used in Lieu of CEC Monitoring

The Staff Report proposes "...monitoring for the presence of selected CECs *and/or* monitoring operational surrogate parameters and constituents to evaluate treatment unit and overall treatment process performance" (Page 4, emphasis added). It appears from this language that the State Board is proposing that certain dischargers may only monitor surrogate parameters. We would strongly oppose such a direction, which is inappropriate and would reduce, rather than encourage, consumer confidence in the use of recycled water. Under no circumstances should surrogate monitoring replace CEC monitoring.

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Consistent with our organizations' support for the increased, safe use of recycled water consistent with state and federal water quality controls, we must oppose broad implementation of a recycled water program based solely on monitoring for an extremely circumscribed set of potential proxies for human health impacts, and *no* consideration of ecological impacts. The proposed program of CEC Monitoring for Recycled Water must be expanded to be consistent with the Recycled Water Policy and with the state's need to increase recycled water use safely.

Thank you for the opportunity to provide these comments on an issue critical to the health and well-being of Californians and their environment. If you have any questions, please do not hesitate to contact us.

Regards,

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