ATTACHMENT 1
RESPONSES TO SWRCB EDW WORKSHOP TOPICS
TRI-TAC/CASA/SCAP COMMENTS

1. There are many waters in California that are primarily comprised of discharged wastewater during dry weather. Should these be afforded different levels of protection?

a. EDWs, like all waters of the State, should be afforded *reasonable protection of beneficial uses* based on consideration of the factors specified in the Water Code section 13241. The factors specified in Water Code §13241 that are particularly relevant to EDWs include the following: (a) past, present, and probable future beneficial uses of water; (b) environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto; (c) water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area; (d) economic considerations; and (f) the need to develop and use recycled water.

b. It should be recognized that, based on consideration of these factors, the water quality objectives necessary to provide reasonable protection of beneficial uses in EDWs may be less stringent than those necessary to provide reasonable protection of beneficial uses in natural, perennial streams. That is because the existing and probable future beneficial uses of water in EDWs will often require a lower level of protection.

c. It should also be recognized that applying less stringent water quality objectives to EDWs than statewide or nationally-recommended standards, does not necessarily mean a lower level of protection for aquatic life and human health than is intended to be achieved through application of the statewide or national standards in perennial streams. For example, the CTR human health criteria based on water and organisms (that are currently being applied to most EDWs in the State) are based on a cancer risk of 10^{-6}, assuming that individuals are both drinking the water from the EDW and eating fish from the water over a lifetime (70 years). In reality, drinking water from and fishing (other than incidental, often illegal, fishing) in EDWs is rare, and it would be essentially impossible to find a person who both drinks water from, and eats fish caught from, an EDW over a lifetime. Thus, application of the human health criteria to EDWs based on a cancer risk factor of 10^{-5} or 10^{-4} would, in reality, provide a much higher level of protection because of the reduced exposure. Likewise, with respect to aquatic life protection, scientific evidence demonstrates that many pollutants (e.g., metals and ammonia) are less toxic to aquatic life in EDWs than perennial streams because of the binding capacity of the waters in EDWs.

2. What does it mean to be "effluent-dominated" or "effluent-dependent"? What factors should be used to define and characterize such water bodies?

a. While recognizing the need for some type of definition, we strongly recommend that the SWRCB avoid focusing too much on developing a detailed or overly technical definition.

A number of different definitions exist or have been proposed for the terms effluent dependent or effluent dominated waters. The Central Valley RWQCB is using a more generalized approach in its efforts, which appears to be a practical approach. As such, we propose the following definitions of effluent dependent waters and effluent dominated waters:

Effluent dependent waters can be defined as water bodies that, due to low or intermittent natural flows, have characteristics dominated by wastewater discharge. EDWs are streams that would be ephemeral (only flowing in response to precipitation events or agricultural activities, and in some years or seasons can be completely dry) in the absence of treated wastewater discharge.

Effluent dominated waters can be defined as water bodies that consist primarily of treated wastewater discharge. They can, therefore, have a naturally perennial flow, but are comprised mostly of treated wastewater discharge.

Due to the inherent differences from perennial streams, EDWs represent a condition that needs to be addressed separately from natural, perennial streams.

Quite apart from the practical definitions for these terms, we also recommend that the SWRCB consider developing alternative terms that are descriptive of the conditions of these water bodies, due to the potential for adverse public reaction to the term "effluent dependent (or dominated) waters." While we do not have any recommendations for alternative terms at this time, we would like to provide further input to staff on this point at a later date.

3. What are the water bodies in each region that fit these categories?

a. In Central and Southern California, most inland water bodies are EDWs. In Northern California, many sloughs and agricultural drainage channels may also be considered EDWs.

In Central and Southern California, a large number of water bodies can be considered EDWs. For instance, in the Los Angeles Region, most, if not all, of the creeks and rivers are EDWs, including the San Gabriel River, the Los Angeles River, the Santa Clara River, and many tributaries thereto. All of these are examples of streams that would only flow intermittently (e.g. during wet weather, or in some reaches of the Santa Clara River, as a result of rising groundwater following wet years) without discharges of treated wastewater. The vast majority of the inland surface waters in the San Diego, Santa Ana, Los Angeles, Central Coast, and Lahontan Regions would likely be considered EDWs. Also, in Northern California (in the North Coast, Central Valley, and San Francisco Bay Regions), there are sloughs and agricultural drainage channels that flow primarily in response to point and non-point source discharges or releases rather than natural flows.

4. What factors should be considered when determining appropriate beneficial uses of such water bodies?

a. Only existing and “probable future” beneficial uses should be considered as appropriate for EDWs. This is consistent with Water Code section 13241(a), which requires the State to consider the past, present, and probable future beneficial uses of water. It is clear that many of the beneficial uses that have been designated in basin plans, either directly or through application of a tributary rule, are inconsistent with the Water Code. Many designated uses identified as “potential” are clearly not “probable future” uses. To the extent that State and Regional Policies and Plans (e.g. Basin Plans) result in imposition of stringent standards based on a “potential” use, which is not a “probable future” use, this represents an unreasonable approach and is inconsistent with Water Code (including sections 13000, 13241, and 13263(a)). A prime example of this situation is the potential municipal water supply (MUN) beneficial use designation that has been applied to most EDWs in the Los Angeles and other Regions as a result of the SWRCB’s 1988 Sources of Drinking Water Policy (adopted to implement Proposition 65). With the MUN

designation, the CTR human health criteria based on water and organisms are being applied to EDWs as ambient water quality criteria. Based on most analyses that have been performed, it will be necessary to utilize unprecedented treatment processes, such as reverse osmosis and activated carbon treatment, to achieve these CTR standards. Implementation of these processes will result not only in significantly increased energy demands, but will double-to-triple the average homeowners' costs for sewerage services. These processes will also result in the creation of concentrated brine by-product, which must be disposed of elsewhere, thereby transferring the pollutants from one media to another or from one water body to another (e.g., the Pacific Ocean). Yet, no measurable public health benefit will result from these expenditures until such time that the EDW is actually, if ever, used as a municipal water supply. It is unreasonable, and contrary to the Water Code, to ask current ratepayers to fund treatment facilities now that are not necessary to protect an existing or a probable future use. It is more reasonable and in the public interest to employ any required level of treatment to protect the MUN use only when and if that use becomes an existing or a probable future use, as required by the Water Code.

b. Protection of in-stream uses, such as aquatic life protection and recreation, should be given greater weight than protection of off-stream uses, such as municipal, agricultural, and industrial water supply. This is supported from a practical standpoint, as well as from a legal standpoint, since these off-stream uses can either employ point of use treatment to achieve quality requirements, or can be served more cost effectively through other means or supply sources. As examples, waters from EDWs could be treated to acceptable municipal and industrial use standards upon removal from the EDW, as is generally done by municipalities and industries that use surface waters as a source of supply (e.g. Delta water users). Likewise, sensitive agricultural crops could be irrigated or blended with alternative water supplies rather than water from EDWs, since this would be more cost effective than treating the creek water.

To the contrary, such options do not exist for protection of in-stream uses such as fishing and swimming. This concept is consistent with one of the primary goals of the Clean Water Act - "It is the national goal that *wherever attainable*, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983." See CWA Section 1251(a)(2).

c. The SWRCB should consider developing new beneficial use subcategories for EDWs. The SWRCB Task Force on EDWs identified a number of possible beneficial uses and subcategories that could be considered. The following are use classifications that would appear to be especially appropriate for EDWs:

> Remove Fish Consumption use or add new use for Limited Fish Consumption. Many EDWs would fall into the latter category. EDWs may not have sufficient numbers of fish available to sustain a fishery. With limited fish consumption, there is a rationale for not applying the EPA organisms-only human health criteria or, where an existing or probable future drinking water use is designated, the water- plus-organisms criteria. In Arizona, where EPA is the NPDES permitting authority, EPA has approved removal of the fish consumption use entirely for many EDWs, based on a demonstration by the Department of Environmental Quality that fish consumption does not occur.
>
> Add a new use for Incidental Water Contact Recreation (or expand definition of REC-2 use). Many EDWs fit into this category, where occasional fishing and perhaps some wading and rare full body contact occur, rather than Non-contact, or Body-contact. Adding a new Incidental Contact use, or expanding the definition of REC-2 to include incidental contact would allow application of water quality objectives that are more

appropriate than those intended to protect waters with considerable body-contact uses, such as those properly designated with REC-1 use. Again, Arizona has adopted such an approach, which has been approved by EPA Region 9.

Recognize Flood Control or Drainage Use. Many EDWs have been hydrologically modified to the point where some beneficial uses are not possible, yet this has not always been recognized in Basin Plans. Many EDWs in urban and agricultural areas have been straightened, deepened or channelized for the purposes of flood control or irrigation. Physical access may be limited, or even illegal, in some of these water bodies, and safety considerations may prevent the attainment of some of the beneficial uses; therefore, new beneficial use subcategories may be appropriate under these conditions.

5. What factors should be considered when determining appropriate water quality objectives for such water bodies?

a. As noted previously, the factors specified in Water Code section 13241 should be considered in establishing water quality objectives for EDWs.

b. Where such objectives have already been established, these factors should be considered prior to imposing permit limits based on the established objectives per Water Code §13263(a) and, if appropriate, modified through the development of site-specific objectives. This is consistent with the EPA Water Quality Standards Handbook, See Section 7.00.

c. Modified Water Quality Objectives for Drinking Water Use Subcategory

Another option that should be considered by the SWRCB to address issues related to the MUN use designation is for the SWRCB to develop and adopt alternative beneficial uses and water quality objectives for EDWs to replace the CTR water quality criteria adopted by EPA in 2000. Although this is the least preferred approach in the short term, because of the time and resources we expect would be required, it may provide a more universal long-term approach and should be considered. There are several ways in which the uses could be modified. First, in addition to the alternatives discussed elsewhere, a sub-category of the drinking water use could be developed to reflect incidental ingestion (such as if someone falls into the water body during a recreational activity), and human health criteria could be recalculated using different ingestion rates (since actual ingestion is likely to be a fraction of EPA's assumption of 2 liters per day for 70 years). Additionally, separate criteria for fish consumption and for drinking water could be developed (as opposed to the criteria for water and organisms that are based on exposure to both pathways). Another option is to apply different risk levels for carcinogens to reflect the much lower likelihood of population exposure to drinking water from the water body.

d. Modified Water Quality Objectives for Alternative Fish Consumption Use Designation

As noted above, removing uses for fish consumption or adding a limited fish consumption use would make sense for EDWs. The SWRCB's EDW Task Force proposed that the SWRCB consider adopting a new Fish Consumption beneficial use designation with several subcategories, such limited use of water by humans for incidental or occasional recreational purposes and sport fishing where fish are artificially planted by the Department of Fish and Game or some other entity. We believe that this approach makes sense, since a wide variety of use types and levels can be found in a state as large and diverse as California. Water quality objectives would then need to be tailored to address each subcategory. Recognizing that the purpose of this exercise would be to identify different levels of protection needed for the different subcategories, different fish consumption levels and/or risk factors could be adopted, depending on the expected consumption level and risk level associated with the use (i.e. population exposure).

e. Alternative Human Health Objectives for EDWs

We recommend that the SWRCB also consider additional options for adjusting the CTR human health criteria to reflect the reduced likelihood of human exposure through the drinking water and fish consumption pathways in EDWs. Additional ways to modify human health criteria for EDWs could include adjustment of the uncertainty and/or modifying factors used to calculate reference doses (RfDs) for noncarcinogenic human health criteria, use of 10^{-4} or 10^{-5} risk levels (instead of 10^{-6}) for carcinogenic human health criteria, adjustment of bioconcentration factors for human health criteria, and the adjustment of the low flow values, frequency of exceedence and/or criteria averaging periods used in deriving or applying the criteria.

6. What are the pollutants and other issues of concern to dischargers in these water bodies?

a. Overview

Dischargers to ephemeral or low flow streams often have difficulty meeting effluent limits that are based on U.S. EPA 304(a) criteria because effluent limits are often set equivalent to criteria for the receiving waters (end-of-pipe compliance), due to lack of dilution water available. Pollutants of concern include toxics (California Toxics Rule (CTR) constituents, chronic toxicity requirements, and application of narrative toxicity objectives), temperature, pH, dissolved oxygen, and salinity/TDS. Many constituents discharged to EDWs are a function of concentrations present in the water supply, plus loadings added through industrial, commercial and residential uses. Wastewater treatment plants incidentally remove many pollutants from these sources and control inputs with pretreatment programs, but are not designed to treat other source pollutants, like toxics and TDS. In addition, there will inevitably be new contaminants that will have to be addressed in the future. Ambient data and watershed-wide monitoring are needed to properly assess the health of EDWs for various types of pollutants, once appropriate water quality standards are applied. The influence of hardness, alkalinity and total organic carbon on toxicity to aquatic species in effluent dominated ecosystems should also be investigated when developing water quality criteria appropriate for EDWs.

b. Nutrients

A category of pollutants of great concern to dischargers is nutrients, particularly nitrogen. Because EPA has recently released its nutrient criteria document, *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria for Rivers and Streams in the Nutrient Ecoregion III (the Xeric West)*, we are providing some more detailed preliminary comments on this guidance document and its applicability to EDWs. The recommended criterion for total nitrogen for rivers and streams in the xeric west (which includes California) is alarmingly low. Most treatment plants will be unable to comply with the recommended nitrogen number unless reverse osmosis is employed, and the cost to meet these numbers using this method would be very high, with very likely no environmental benefit, and possibly environmental detriments from brine creation and dramatically increased energy usage. The proposed nitrogen criterion is unnecessary to protect the environment because EPA has based this number on data from at most 17 streams, and derived the criterion by calculating the 25^{th} percentile of nutrient concentration measurements, without considering the impairment or actual physical characteristics of any of these streams. Because of lack of data and site-specific considerations, the nitrogen criterion is not based on sound science, and treating effluent to these levels could actually impair waterbodies that may require higher nutrient concentrations to sustain the resident biota. EPA admits that it has issued these criteria ahead of the science, and because meeting these standards could actually result in increased impairment, the State should not adopt them.

The criteria recommended in the EPA nutrient criteria guidance document illustrate an example of the need to develop appropriate water quality objectives for EDWs. The nutrient criteria derived in this guidance document were "empirically derived to represent conditions of surface waters that are minimally impacted by human activities and protective of aquatic life and recreational uses." Thus, these criteria clearly are not applicable to EDWs, which are, by definition, highly impacted by human activities and are perennial only due to the presence of treated wastewater. EPA developed its guidance on criteria for rivers and streams by only considering rivers with hydrologic regimes characteristic of the Eastern United States. EPA did not take into account the heterogeneity of arid west streams, which includes EDWs, and acknowledges that the ecoregion criteria developed may not be appropriate for xeric west streams. The guidance also strongly encourages States and Tribes to classify their streams before developing a final criterion: "For nutrients, however, EPA expects that, in most cases, it will be necessary for states and authorized Tribes to identify with greater precision the nutrient levels that protect aquatic life and recreational uses. This can be achieved through development of criteria modified to reflect conditions at a smaller geographic scale than an ecoregion such as a ... specific class of waterbodies." It would be appropriate to treat EDWs as a separate class of waterbodies when determining nutrient standards, and EPA has given the states permission to do so. Waterbodies dominated by treated effluent have characteristics very different from natural streams, and standards for these waterbodies should be developed on a watershed- or site-specific basis. Nutrient levels and impairment vary highly site by site, and there is no easy way to shortcut site-specific studies and investigations.

7. Should appropriate beneficial uses and water quality objectives for these water bodies be addressed in a State policy, statewide or regional water quality control plans, or a combination thereof?

a. It is essential that the SWRCB, rather than the individual RWQCBs, adopt a policy that will *not* require subsequent Basin Plan amendments prior to implementation. That would unnecessarily prolong the process of permitting and TMDL development, by two to three years or longer. We believe it is possible for the SWRCB to adopt an EDW policy to guide RWQCB implementation of standards in permits and TMDLs without first requiring that the respective Basin Plans be amended.

8. What are the endangered species issues that may be of concern in development of a policy for these water bodies?

a. Net environmental benefits and the need to balance competing demands of endangered species protection and recycling of treated effluent both need to be considered in developing an EDW policy.

If the SWRCB were to impose effluent limits and standards that are appropriate and reasonably attainable for EDWs, the opportunities for habitat creation and enhancement, and the protection of listed and non-listed species would increase significantly. While we advocate treating EDWs as a special category in order to facilitate habitat creation, we would also note that, under California water rights law, dischargers have the ability to control the amount of effluent that is discharged to the waterbody once the habitat is created. However, under the Endangered Species Act, if habitat supporting an endangered species is created by effluent discharges, this habitat generally must be maintained regardless of other demands for the effluent. Unfortunately, this requirement restricts the amount of treated effluent that can be put to other beneficial reuse, and does not allow the balancing of the water supply needs of our ever-growing state with the protection of listed species. Because of this restriction, dischargers may be reluctant to use

treated effluent for purposes of habitat creation, and will instead seek out other ways to beneficially reuse their high quality effluent. This can have the perverse effect of reducing the amount of aquatic and riparian habitat available. Therefore, flexibility is necessary to maximize the benefits of using treated effluent. For this reason, we believe EDWs should be considered a special category of waterbodies that allows these competing demands to be balanced.

In addition, the SWRCB (and RWQCBs) must work with state and federal wildlife agencies (i.e. DFG, FWS, NMFS) to avoid situations in which the discharger is caught between agencies imposing conflicting mandates. For instance, one discharger in the Los Angeles region has been ordered by the RWQCB to stop its discharge during the dry season, yet at the same time has been required by NMFS to maintain a minimum flow because the discharge is to a stream designated as steelhead critical habitat. In this situation, it turned out that federal Endangered Species requirements superceded RWQCB requirements.

9. How does the required protection of downstream beneficial uses in our estuaries and coastal waters affect the consideration of these EDW issues?

a. Discharges to EDWs must be regulated in a manner that will provide reasonable protection of downstream beneficial uses in estuaries and coastal waters. This is not only reasonable, but is a requirement of USEPA regulations.

b. Discharges to EDWs should not be regulated to protect downstream waters with respect to a particular constituent in the absence of a demonstration that the downstream waters are impaired, e.g., listing on the section 303(d) list and completely lacking available assimilative capacity. The SWRCB in its recent *Tosco* decision has determined that listing on the 303(d) list is only suggestive, not determinative of an impairment. Listing information may not represent water quality conditions throughout the entire water body and may not reflect seasonal variations. Furthermore, downstream waters are often coastal or ocean waters with different criteria. Thus, the ambient data must demonstrate that upstream regulation is necessary or required to protect downstream waters.

c. If impairment of a downstream water is demonstrated, final effluent limits applied to discharges to the upstream EDW should be based on the results of the TMDL process.

d. It is conceivable that the cost of controlling upstream discharges in order to achieve downstream standards may be judged unreasonable and pursuant to the Water Code must result in an adjustment of the downstream standard from that previously established. Of course any such conclusion must be based on a detailed analysis of the factors specified in Water Code section 13241.

10. What are the water reclamation issues that need to be addressed for such water bodies?

a. Without a reasonable EDW policy, regulatory requirements currently being implemented are likely to dampen efforts to increase water recycling.

We are concerned that the regulatory requirements being imposed as a result of the adoption of the CTR and SIP -- without regard for EDW discharges -- are going to have a chilling effect on water recycling activities. The provisions contained in the CTR and SIP result in an increase in the number of effluent limits and make those limits more stringent. To comply, many discharges will be required to install advanced treatment, such as ultraviolet disinfection, activated carbon,

lime precipitation, microfiltration, reverse osmosis, or some combination thereof, to meet the more stringent limits. These types of treatment would exceed what is normally required for reuse. Even if a system were to approach 100% recycling, there will be times when discharge to an inland surface water will likely be necessary (such as during wet weather or times of low demand, or when the recycled water delivery system must be shut down for maintenance), thus necessitating the need for advanced treatment. While intuitively it might seem that advanced treatment would be an incentive for using more recycled water, this will not always be the case. For groundwater recharge, it is anticipated that a maximum cap will be applied by the Department of Health Services irrespective of the level of treatment. Moreover, recycled water will not be used if the cost of its conveyance and treatment is more than the wholesale cost of a water purveyor's alternative supplies. The competitiveness of reclaimed water rates with potable rates depends on the source of the domestic water and the calculated per acre-foot cost of the recycled water.

11. Are there additional ideas/concerns regarding these types of water bodies?

a. It is essential that the SWRCB quickly adopt a strategy to guide RWQCBs in reissuance of permits and in the development of TMDLs in the interim, prior to the development of the EDW policy. Without an interim strategy which applies statewide, most permits and TMDLs or Basin Plan standards based on national criteria imposed upon discharges to EDWs are likely to be appealed to the SWRCB and may eventually go to court. This will result in a waste of public resources that would be better spent on productive activities to protect water quality.