

**Regional Water Quality Control Board
Central Valley Region
Board Meeting – 4/5 December 2008**

**Response to Written Comments for
University of California Davis – Main Wastewater Treatment Plant
Tentative Waste Discharge Requirements**

The Regional Water Quality Control Board, Central Valley Region (Regional Water Board) will consider adoption of an National Pollutant Discharge Elimination System (NPDES) permit (Proposed Permit) renewal for the University of California Davis Main Wastewater Treatment Plant. A tentative NPDES permit was issued for public comments on 25 September 2008. Written comments from interested persons regarding the tentative NPDES permit renewal were required to be submitted to the Regional Water Board by 27 October 2008 in order to be included in the administrative record. Comments were received by the due date from the following parties:

1. University of California Davis (UC Davis or Discharger),
2. California Sportfishing Protection Alliance (CSPA)
3. Reclamation District 2035 (RD 2035) and Conaway Preservation Group, LLC (Conaway)

Written comments are summarized below, followed by Regional Water Board staff responses.

UC DAVIS COMMENTS

UC DAVIS COMMENT # 1: Effluent Coliform Limitations - Section IV.f.i. The Discharger comments that the 7-day median contains two numbers (2.2/23 MPN/100 ml), and that the limitation is missing the words of Daily max.

Response: Regional Board staff concurs and has modified the Section IV of the proposed Order as shown below.

Total Coliform Organisms. Effluent total coliform organisms shall not exceed:

- i. ~~2.2/23~~ most probable number (MPN) per 100 mL, as a 7-day median; ~~and~~
- ii. ~~23/100 mL, more than once in any 30-day period;~~ and
- iii. 240 MPN/100mL, at any time.

UC DAVIS COMMENT # 2: Bacterial Coliform Groundwater Receiving Water Limitation - Section V. The Discharger comments that the proposed bacteria receiving water limitation is “based on a minimum of not less than 5 samples for any 30 day period” yet the permit requires quarterly testing. The Discharger requests that this section of the receiving water limitation be removed.

Response: The receiving water limitations in the proposed Permit based on water quality objectives contained in the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan). The receiving

water objective for bacteria in the proposed Permit is applicable to the South Fork and North Fork of Putah Creek and is not “removable”. Therefore, the propose bacteria receiving water limitation remains unchanged. Although the average period of the receiving water objective and the proposed frequency of the receiving water monitoring differ, review of the Discharger’s existing receiving water monitoring data indicates that monitoring more frequent than quarterly, as proposed in the permit, is not necessary and may be excessive.

UC DAVIS COMMENT # 3: Receiving Water Limitations - Section V.B.2.a. The Discharger comments that the proposed 2.2 MPN/100 mL coliform bacteria receiving water limitation is a new requirement. Since coliform exists in the earth naturally, it is likely that the groundwater contributes small amount of coliform without being contaminated from wastewater. The Discharger requests that this limitation be changed from “Total coliform organism median of 2.2 MPN/100 mL over any seven-day period” to “Fecal coliform organism median of 2.2 MPN/100 mL over any seven-day period”.

Response: The coliform limitation of 2.2 MPN/100 mL is a ground water receiving water limitation in the Basin Plan. Fecal coliform is a subset of total coliform bacteria and is not representative of the specified total coliform objective. The Discharger’s requested change is not in accordance with the Basin Plan. Therefore, the groundwater receiving water limitation in the proposed Permit remains unchanged.

UC DAVIS COMMENT # 4: Salinity/EC Site Specific Study Requirement - Sections VI.C.1.f and VI.C.2.c. The Discharger concurs with the proposed Special Provision for development of a site-specific salinity study to identify the EC levels in the receiving water that is necessary to support the beneficial uses. The Discharger comments, however, that it has not received any formal comments on the previous site-specific studies submitted to the Regional Water Board several years ago. The Discharger requests that the Regional Water Board provide direction regarding this requirement and the previous Study.

Response: Regional Water Board staff acknowledges that the Regional Water Board staff has not provided comments on previously submitted site-specific salinity study. The findings in the proposed Permit have been modified as follows:

II. FINDINGS

W. Site-Specific Electrical Conductivity Study. The Discharger conducted and submitted the following salinity studies to the Regional Water Board:

- (1) July 2004 – An Approach to Develop Site-Specific Criteria for Electrical Conductivity to Protect Agricultural Beneficial Uses that Accounts for Rainfall
- (2) 17 September 2004 – Draft Salt Reduction and Source Control Alternatives Study for the UC Davis Central Heating and Cooling Plant
- (3) 11 March 2005 – Technical memorandum: Expanded Campus Salt Study for Salt Reduction and Source Control Evaluation
- (4) 23 March 2007 – Technical Memorandum: EC Investigation Summary
- (5) 2007 – Reduction in Water Cycling in Cooling Towers

The Discharger is in the process of conducting the following salinity projects:

- (1) Installation of Reverse Osmosis Units at the Central Heating and Cooling Plant (winter 2008 completion)
- (2) Solano Project Water (engineering feasibility phase)
- (3) Davis-Woodland Surface Water Project (project scoping phase)

Additionally, the Site-Specific Salinity Study requirement in Section VI. (Special Provisions) of the proposed Permit has been modified to read as follows:

- c. **Salinity/EC Site-Specific Study.** The Discharger shall update and finalize the existing July 2004 Site-Specific Salinity Study titled *An Approach to Develop Site-Specific Criteria for Electrical Conductivity to Protect Agricultural Beneficial Uses that Accounts for Rainfall* (Study) and submit it to the Regional Water Board. The Discharger must work with Regional Water Board staff to address comments and concerns regarding the existing Study. At minimum, the finalized Study must include results of a site-specific investigation of appropriate EC levels to protect agricultural beneficial use in areas irrigated with water from Putah Creek diverted downstream from the discharge. The Study shall also: (1) determine the sodium adsorption ratio of soils in the affected area, the effects of rainfall and flood-induced leaching, and background water quality, and (2) evaluate how climate, soil chemistry, background water quality, rainfall, and flooding affect EC levels in the receiving water. Based on these factors, the study shall recommend site-specific numeric values for EC that fully protect agricultural uses and are in accordance with the Basin Plan.

UC DAVIS COMMENT # 6: Compliance Determination for Chlorine Effluent Limitations - Section VII. The Discharger states that the proposed Order requires continuous monitoring for total chlorine residual, however, the Discharger does not have

continuous analyzers for chlorine residual. The Discharger requests that the continuous monitoring requirement be removed.

Response: Regional Water Board staff concurs that this treatment facility utilizes an ultraviolet light (UV) system for disinfection of wastewater and the Discharger does not use chlorine on a continuous basis. Therefore, continuous chlorine residual monitoring is not applicable. The proposed Permit has been modified to replace continuous chlorine residual monitoring with chlorine residual grab sampling.

UC DAVIS COMMENT # 7: Receiving Water Monitoring Station Locations - Attachment E, Table E-1, page E-2. The Discharger states that the descriptions for the upstream and downstream receiving water monitoring locations, RSW-002U and RSW-002D, are reversed.

Response: Regional Board staff concurs and has made the appropriate correction to Table E-1 of the proposed Permit.

UC DAVIS COMMENT # 8: Effluent Monitoring Requirements - Attachment E, Section IV, Table E-3, Footnote #2, page E-4. The Discharger states that the two outfalls are greater than a half mile away from the plant. With the exception of temperature monitoring, the required location of all effluent monitoring is at EFF-001 (downstream of the last treatment process). The Discharger requests that the effluent temperature monitoring location be changed from the discharge location to EFF-001.

Response: Regional Water Board staff concurs that it is appropriate to monitor effluent temperature at the same location of other constituent compliance monitoring and has modified Table E-3 accordingly.

UC DAVIS COMMENT # 9: Effluent Monitoring - Attachment E, pages E-8 & E-9. The Discharger proposes that it samples from Discharge Point 002 during the summer and Discharge Point 001 during the winter, to reflect the stream to which it is discharging.

Response: Regional Water Board staff does not concur with the Discharger's request. The proposed Permit allows for discharge from either of the two discharge locations year round, therefore, compliance monitoring is applicable year round. If the discharge is not occurring at a discharge location during the required monitoring time period, then receiving water monitoring is not required at that location. In its self monitoring report to the Regional Water Board, the Discharger must report "no discharge" for the corresponding point of discharge and receiving water monitoring locations.

UC DAVIS COMMENT # 10: Calibration of UV Disinfection System Transmittance Analyzer - Attachment E, Table E-9, page E-12. The Discharger suggests that footnote #1 be changed to read, “If the turbidity collected at EFF-001” instead of “If the influent to the UV system”.

Response: Regional Board staff concurs with the Discharger’s suggestion and has modified the corresponding information in Table E-9 in the proposed Order as follows.

Table E-9. Ultraviolet Disinfection System Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
UV Transmittance ^{3,4,5}	Percent (%)	Meter	Continuous

- ¹ Report daily average turbidity and maximum turbidity. If the turbidity sample collected at EFF-001~~influent to the UV system~~ exceeds 10 NTU, collect an effluent grab sample and analyze for total Coliform organisms and report the duration of the turbidity exceedance.
- ² Report daily minimum UV dose, daily average UV dose, and weekly average UV does. For the daily minimum UV dose, also report associated number of banks, gallons per minute per lamp, power settings, and UV transmittance used in the calculation. If effluent discharge has received less than the minimum UV dose and is not diverted from discharging to Putah Creek, report the duration and dose calculation variables with each incident.
- ³ To be monitored at EFF-001.
- ⁴ The Discharger shall report documented routine meter maintenance activities, including date, time of day, duration, in which the UV Transmittance analyzer(s) is not in operation to record monitoring information.
- ⁵ The UV Transmittance analyzer can be out of service for calibration no more than 2 hours. One UV Transmittance sample shall be grabbed and analyzed. Grab sample results will then be entered into the UV control system as the value used for UV dose calculation.

UC DAVIS COMMENT # 11: UV Monitoring - Attachment E, Table E-9, Page E-12. Attachment E, Page E-12, Table E-9 - The Discharger suggests that a footnote be added to the continuous minimum frequency monitoring of the UV transmittance that says “If UVT analyzer is out of service, a minimal 2 UVT samples shall be grabbed and analyzed per day. Grab sample results will then be entered into the UV control system as the value used for UV dose calculation.”

Response: Regional Board staff concurs and has modified the corresponding Footnotes Nos. 4 and 5 in Table E-9 as follows:

Table E-9. Ultraviolet Disinfection System Monitoring Requirements

- ⁴ The Discharger shall report documented routine meter maintenance activities, including date, time of day, and duration UV Transmittance analyzer is not in operation to record monitoring information.
- ⁵ The UV Transmittance analyzer shall not be out of service for calibration purposes more than 2 hours. One UV Transmittance sample shall be grabbed and analyzed during the time period the UV Transmittance analyzer is out of service. Grab sample results must be entered into the UV control system as the value used for UV dosage calculation.

UC DAVIS COMMENT # 12: Chlorine Residual Sampling Frequency - Attachment F, Section IV, page F-19. Rationale for Effluent Limitations and Discharge Specifications (C)(3)(g) – narrative says, “the Discharger can immediately comply with these new effluent limitations with chlorine residual”. It is true we will meet permit limits since we do not use chlorine, however, we do not have a continuous monitoring system in place and therefore will not be able to meet the testing requirement for chlorine residual listed on page 30 of the Permit.

Response: Regional Board staff has modified the chlorine residual monitoring requirements (and reference to continuous chlorine monitoring) in the proposed Order to correspond with the use of chlorine for maintenance and other intermittent-use purposes only.

UC DAVIS COMMENT # 13: Salinity Site Specific Study - Attachment F, Section IV.C.3.t.v, page F-29. Salinity Effluent Limitations (4th paragraph) – requires the Discharger to conduct a salinity/EC Site-Specific Study. The Discharger requests additional direction regarding this requirement.

Response: See Staff Response to Comment #4 above.

UC DAVIS COMMENT # 14: Settleable Solids – Attachment F, Section IV.C.3.v, page F-32. The discharger requests the last sentence of this section be removed because it incorrectly refers to copper.

Response: Regional Board staff concurs that the identified sentence contains a typographical error and has corrected the proposed language accordingly

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE (CSPA) COMMENTS

Designated Party Status. CSPA requested designated party status for the hearing. This request will be granted.

CSPA COMMENT #1: Electrical Conductivity (EC) Effluent Limitations. CSPA states that the proposed Permit fails to contain a final Effluent Limitation for electrical conductivity (EC) despite clear reasonable potential to exceed the water quality objective and contains an Interim Limitation for EC that is not protective of the beneficial uses of the receiving stream contrary to Federal Regulations 40 CFR 122.44 (d)(i) and interpretation of the regulatory requirement for Effluent Limitations by US EPA. The failure to include an Effluent Limitation for EC also constitutes backsliding in accordance with Federal Regulations 40 CFR 122.44 (l) and 122.62 (a)(16).

Response: The existing NPDES Permit contains a final EC effluent limitation of 900 umhos/cm. As explained in the existing permit, the final EC limitation is based on the protection of the MUN beneficial use of the receiving water and implements the Department of Public Health recommended value.

Despite successful efforts to minimize sources of salinity within the service area and treatment facility, the Discharger has not been able to comply with the final EC effluent limitation of 900 umhos/cm due to the high level of salinity in its water supply. The Discharger is investigating options to change its source water to improve the quality of its water supply, but implementing this change will take more than five years.

Regional Water Board staff has analyzed receiving water EC data for the South Fork of Putah Creek which resulted in a maximum running 30-day average EC of 599 umhos/cm during irrigation season months of April through August, a maximum running 30-day average of 684 umhos/cm during other months, and a maximum daily EC level of 877 umhos/cm. The receiving water data set for this facility includes over 1,000 data points, which provides an adequate basis to conclude that the current level of salt discharge does not have reasonable potential to cause or contribute to an exceedance of the MUN objective. The receiving water EC data indicates that municipal water quality objectives for the receiving stream are being met during the existing discharge and “reasonable potential” does not exist for exceedance of the DPH recommended standard of 900 umhos/cm that serves as the basis of the existing EC effluent limitation.

Regional Water Board staff is still considering CSPA’s comment regarding the EC limit, and will provide an additional response at a later time.

CSPA COMMENT #2: EC Interim Effluent Limitations. CSPA states that the Interim Effluent Limitation for electrical conductivity (EC) will cause violation of the Toxicity Receiving Water Limitation contrary to federal and state law.

Response: The interim EC effluent limitation in the proposed Permit is a performance-based limitation to “cap” the existing level of EC in the effluent. The interim limitation is not a water quality based effluent limitation. The Discharger has not been able to reduce the EC level in the effluent to the final effluent limitation of 900 umhos/cm in the existing NPDES permit, despite implementing source control (in the service area and within the treatment facility), tertiary treatment, and best practicable treatment and control (BPTC). The Discharger has identified that the feasible alternative for salinity reduction is a change in the water supply. As explained in Staff Response to Comment #2, the interim performance-based effluent limitation remains in effect as long as the Discharger complies with the corresponding conditions. Otherwise, the final water quality

based EC effluent limitation goes into effect. See also, Response to CSPA Comment #1.

CSPA COMMENT #3: Reclamation Requirements. CSPA states that the existing Waste Discharge Requirements, Order No. R5-2003-0003 contained Reclamation Requirements for the discharge of reclaimed water to the Arboretum Waterway which has been removed from the proposed Permit making it less stringent contrary to the Antibracksliding Requirements.

Response: The existing NPDES Permit and the proposed Permit renewal identify the Arboretum Waterway as a water of the United States and appropriately regulate the point source discharge from the UC Davis Campus WWTP into the Arboretum as Discharge D-002. A tributary does not lose its status as a water of the United States when it is dammed, diverted or modified. (*U.S. v. Moses* (9th Cir. 2007) 496 F.3d 984.) In addition, the Arboretum Waterway maintains its direct connection to Putah Creek through the weir. The Basin Plan refers to “Putah Creeks” as a surface water and one of the “larger tributaries” to the Sacramento River. (Basin Plan, page I-1.00.) Thus, “Putah Creeks” are waters of the United States (in fact, and according to the presumption established in this Basin Plan language).

The regulation of the downstream discharge from the Arboretum Waterway (the North Fork of Putah Creek) to the South Fork of Putah Creek, which includes storm water, is outside the scope of this NPDES Order. Since the Arboretum Waterway is a water of the U.S., and the facility’s addition of pollutants to the Arboretum Waterway is already regulated by a NPDES permit, releases through the weir do not constitute an *addition* of a pollutant. (*National Wildlife Federation v. Gorsuch* (6th Cir. 1982) 693 F.2d 156.) Management of stormwater into or from the Arboretum Waterway is regulated by the NPDES Storm Water Program.

The discharge of tertiary-treated effluent into the Arboretum Waterway provides a beneficial use of freshening up the otherwise stagnant waterbody; however, it is a surface water discharge, thus losing the label of “reclaimed water” as the discharge enters the Arboretum Waterway. Therefore, reclamation requirements are not applicable and have been removed from the proposed Permit. The proposed Permit does, however, implement the California Toxic Rule (CTR), state and Federal regulations and the Basin Plan for protection of the aquatic life and human health beneficial uses of the receiving waters. The removal of water reclamation requirements does not alter the tertiary Title 22-level treatment requirements of the existing permit. Therefore, the proposed Permit is in accordance to federal and State antibracksliding policies.

CSPA COMMENT #4: New Discharge. The Discharge of treated domestic wastewater from the Arboretum Waterway to the South Fork of Putah Creek constitutes

a wastewater discharge which must comply with water quality standards and objectives in accordance with 40 CFR 122.44 and be fully monitored for compliance in accordance with Federal Regulations 40 CFR 122.41, 122.48, and 122.44. The discharge from the Arboretum Waterway constitutes a “new” discharge which must be fully compliant upon initiation of the discharge (SIP 2.1).

Response: There are two discharge points in the proposed Permit, Discharge Point No. 001 for the direct discharge of tertiary-treated wastewater into the South Fork of Putah Creek, and Discharge Point No. 002 for the direct discharge of tertiary-treated wastewater into the Arboretum Waterway. As discussed in Comment No. 4 above, the downstream discharge from D-002 of the Arboretum Waterway water to the South Fork of Putah Creek is not within the scope to this NPDES permit that regulates point source discharges from the UC Davis Campus WWTP. An additional NPDES permit that addresses storm water and drainage from the University of California Davis campus entering the Arboretum Waterway prior to discharging into the South Fork of Putah Creek may be necessary.

CSPA COMMENT #5: Protection of Municipal Beneficial Use. The proposed Permit Fails to Include Limitations that are Protective of the Municipal and Domestic Beneficial Uses of the Receiving Stream Contrary to Federal Regulations 40 CFR 122.4, 122.44 (d) and the California Water Code, Section 13377.

Response: Regional Water Board staff disagrees. The proposed permit is fully protective of the municipal and domestic water supply (MUN) beneficial use of the receiving water. The commenter claims that for pathogens, the most sensitive beneficial is MUN, due to the direct ingestion of the water, and the proposed permit only discusses protection of the contact recreation (REC-1) and agricultural water supply (AGR) beneficial uses with respect to pathogens.

There are no numeric water quality objectives applicable to the receiving water for pathogens for the protection of MUN. The only water quality objective that applies to surface waters is the bacteria objective in the Basin Plan, which states, *“In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.”* The proposed Order includes effluent limitations for pathogens based on recommendations by DPH for protection of REC-1 and AGR. These effluent limitations are also fully protective of the MUN use.

In 1987, the Department of Health Services (DHS) (now the Department of Public Health, or DPH) issued the “Uniform Guidelines for the Disinfection of

Wastewater” (Uniform Guidelines), which included recommendations to the Regional Water Board regarding the appropriate level of disinfection for wastewater discharges to surface waters. The DHS provided a letter dated 1 July 2003 that included clarification of the recommendations. The letter states, “A filtered and disinfected effluent should be required in situations where critical beneficial uses (i.e. food crop irrigation or body contact recreation) are made of the receiving waters unless a 20:1 dilution ration (DR) is available. In these circumstances, a secondary, 23 MPN discharge is acceptable.” DHS considers such discharges to be essentially pathogen-free. (Letter from David P. Spath to Gary Carlton (16 September 1999) p. 3 and Enclosure to same, p. 6.) The proposed Order is consistent with these recommendations, considering site-specific factors. Title 22 is not directly applicable to surface waters; however, the Regional Water Board has found that it is appropriate to apply an equivalent level of treatment to that required by DPH’s reclamation criteria when there is less than 20:1 dilution (receiving water:effluent) because the receiving water may be used for irrigation of agricultural land (AGR) and/or for contact recreation (REC-1) purposes.

In site-specific situations¹ where a discharge is occurring to a stream with a nearby water intake used as a domestic water supply without treatment, the DPH has recommended the same Title 22 tertiary treatment requirements for the protection of MUN, as well as protecting REC-1 and AGR. However, DPH has recommended a 20:1 dilution ratio in addition to the Title 22 tertiary treatment requirement to protect the domestic water supply only where there are existing users of raw water near the treatment plant outfall. In this case, there are no such known uses that could be affected by the discharge, so tertiary treatment plus 20:1 dilution is not necessary to protect the MUN, REC-1 or AGR uses.

The chemical constituents narrative objective states, “Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.” The narrative toxicity objective states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” When necessary, the Regional Water Board adopts numeric effluent limitations to implement these objectives. The *Policy for Application of Water Quality Objectives* states, “To evaluate compliance with the narrative water quality objectives, the Regional Water Board considers, on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations (e.g., State Water Board, California Department of Health Services, California Office of Environmental Health Hazard Assessment, California Department of Toxic Substances Control,

¹ For example, see Waste Discharge Requirements Order No. R5-2007-0133 (NPDES No. CA0079391) for the City of Jackson Wastewater Treatment Plant, Amador County.

University of California Cooperative Extension, California Department of Fish and Game, USEPA, U.S. Food and Drug Administration, National Academy of Sciences, U.S. Fish and Wildlife Service, Food and Agricultural Organization of the United Nations). In considering such criteria, the Board evaluates whether the specific numerical criteria, which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective.”

In this case, however, there are no known users of treated drinking water or raw water (i.e., existing uses of untreated domestic water) in the vicinity of the discharge, and there is no direct evidence of beneficial use impacts. For public water supplies, wastewater discharges do not require drinking water treatment plants to add any additional treatment, since state and federal law require residual chlorine and/or ultraviolet disinfection of surface water. (See, e.g., Surface Water Treatment Rule, 40 C.F.R. Part 141, Subpart H; Cal. Code of Regs. Title 22, section 64447.) Wastewater discharges do not interfere with such treatment processes. In this case, moreover, there are no public drinking water intakes near the treatment plant outfall. Thus, a 20:1 requirement is not required. When 20:1 dilution is unavailable, treating pathogens to a level more stringent than tertiary treatment would produce a chlorine residual in the effluent that would be toxic to aquatic life in the receiving water. Pathogens are not bio-accumulative, so discharges at the permitted levels do not threaten any potential uses of the receiving water for untreated domestic use. Therefore, the requirement to implement tertiary treatment only when 20:1 dilution is not available adequately protects beneficial uses and is appropriate for this site under the case-by-case approach described in the *Policy for Application of Water Quality Objectives*.

The State Water Board has already determined that tertiary treatment is not necessary when dilution exceeds 20:1. (Order WQ 2004-0010 (City of Woodland).) The City of Woodland order addressed REC-1 and not MUN, which was not an existing use of the receiving water. However, the State Water Board has twice concluded that it is appropriate for the Regional Water Board to rely on DHS (now DPH) guidance in determining the level of treatment necessary to protect human health. (*Id.*, p. 11; Order WQ 2002-0016 (City of Turlock), p. 11.)

In summary, there are no numeric water quality objectives for pathogens for the protection of MUN. Therefore, the Regional Water Board, when developing NPDES permits, implements recommendations by DPH for the appropriate disinfection requirements for the protection of MUN, as well as REC-1 and AGR. The disinfection requirements in the proposed Order implement the DPH recommendations and are fully protective of the beneficial uses of the receiving water.

Finally, the commenter is incorrect in characterizing the Basin Plan language regarding discharges to ephemeral streams as a prohibition. The Basin Plan expresses a strong policy against using ephemeral streams as a permanent discharge location where alternatives are available. However, such discharges are not prohibited unless the Regional Water Board adopts a site-specific or water-body-specific prohibition. The discharge is consistent with all applicable provisions of the Basin Plan.

CSPA COMMENT #6: Hardness.: The proposed Permit establishes Effluent Limitations for metals based on the hardness of the effluent as opposed to the ambient upstream receiving water hardness as required by federal regulations; the California Toxics Rule (CTR, 40 CFR 131.38(c)(4))

Response: The proposed Order has established the criteria for hardness-dependent metals based on the reasonable worst-case estimated ambient hardness as required by the SIP, the CTR and Order No. WQO 2008-0008 (City of Davis). Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, “floating” effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. The SIP does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones. The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. The Regional Water Board thus has considerable discretion in determining ambient hardness. (Order WQ 2008-0008 (City of Davis), p.10.) The City of Davis order allows the use of “downstream receiving water mixed hardness data” where reliable, representative data are available. (Id., p. 11.)

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals

criteria. Recent studies² indicate that the previously used approach of using the upstream receiving water lowest hardness for establishing water quality criteria is not always the most protective for the receiving water (e.g. when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The Regional Water Board has evaluated these studies and concurs that to establish effluent limits that are protective of beneficial uses for some parameters the ambient hardness can best be estimated using the lowest hardness value of the effluent, while for other parameters, the use of both the lowest (or highest) hardness value of the receiving water and the lowest hardness value of the effluent best estimates the ambient conditions. This approach was used to establish water quality-based effluent limitations for hardness-dependent metals in the proposed Order and adequately protects the beneficial uses of the water body that receives the treated wastewater.

CSPA COMMENT #7: Oil and Grease Effluent Limitations. The proposed Permit does not contain an Effluent Limitation for oil and grease in violation of Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.

Response: The previous permit, Order R5-2003-0003 Amendment No. 1, does not contain an effluent limitation for oil and grease. Based on information received, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative objectives for oil and grease and floating material. Oil and grease used to be a problem at many publicly owned treatment works (POTWs) and was a necessary effluent limitation to protect receiving waters, but implementation of fats oils and grease (FOG) pretreatment programs in conjunction with improved levels of treatment have resulted in an overall reduction of oil and grease in wastewater treatment plant effluent.

The proposed Order is adequately protective. It contains narrative receiving water limitations for oil and grease and floating materials, and requires weekly effluent monitoring for oil and grease.

CSPA COMMENT #8: Mass-based Effluent Limitations. The proposed Permit fails to contain mass-based effluent limits for aluminum and cyanide as required by Federal Regulations 40 CFR 122.45(b).

Response: 40 CFR 122.25(f) states the following:

² "Developing Protective Hardness-Based Metal Effluent Limitations", Robert W. Emerick, Ph.D., P.E. and John E. Pedri, P.E.

“Mass limitations. (1) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass except:

- (i) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;*
 - (ii) When applicable standards and limitations are expressed in terms of other units of measurement; or*
 - (iii) If in establishing permit limitations on a case-by-case basis under §125.3, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (for example, discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.*
- (2) Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.”*

40 CFR 122.25(f)(1)(ii) states that mass limitations are not required when applicable standards are expressed in terms of other units of measurement. The numerical effluent limitations aluminum and cyanide in the proposed Order are based on water quality standards and objectives. These are expressed in terms of concentration. Pursuant to 40 CFR section 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is expressly allowed and is in no way contrary to Federal Regulations.

CSPA COMMENT #9: Settleable Solids Effluent Limitations. The proposed Permit contains no Effluent Limitations for settleable solids (SS) which are present in the existing NPDES Permit contrary to the Antidegradation requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (I)(1).

Response: Based on information included in self-monitoring reports submitted by the Discharger, the effluent settleable solids concentration was non-detectable (<1.0 mg/L) in all 1,596 samples obtained from January 2003 – May 2007. Therefore, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan’s narrative objectives for settleable solids.

The previous permit, Order R5-2003-0003, Amendment No. 1, included an average monthly and maximum daily effluent limitation for settleable solids of 0.1 ml/L and 0.2 ml/L, respectively. However, the regulation of settleable solids is not always applicable to a tertiary treated wastewater. Settleable solids monitoring data provides information regarding the performance of a secondary system that is dependent on clarification and/or settling to meet technology-based effluent limitations. For tertiary treatment facilities that treat wastewater to

a concentration of total suspended solid of less than 10 mg/l and turbidity to Title 22 standards, regulating settleable solids is not applicable. The proposed Order does not include the effluent limitations for settleable solids based on new information consistent with anti-backsliding requirements of CWA sections 303(d)(4) and 402(o)(2)(B), and 40 CFR 122.44(l)(2)(i)(B)(1).

The proposed Order is adequately protective. It contains a narrative receiving water limitations for settleable solids, and requires 3 times weekly effluent monitoring for total suspended solids.

CSPA COMMENT #10: Turbidity Effluent Limitations. The proposed Permit replaces Effluent Limitations for turbidity which were present in the existing permit; contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

Response: The prior turbidity limit was not based on the water quality objective for turbidity or the need to regulate turbidity in the receiving water. As stated in the Fact Sheet, turbidity testing is a method of determining the effectiveness of the treatment filter performance, and provide operational control information for the Discharger to correct deficiencies in the filter performance. Yet, higher effluent turbidity measurements do not necessarily indicate that the effluent discharge exceeds the water quality criteria/objectives for pathogens (i.e. bacteria, parasites and viruses), which are the principal infectious agents that may be present in raw sewage. Therefore, operational requirements for turbidity are appropriately included as a Provision in the proposed Order for ultraviolet light disinfection operational specifications rather than effluent limitations. On the other hand, total coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing pathogens. Therefore, effluent limitations for total coliform organisms are necessary and have been included in the proposed Order. The existing Order included effluent limitations for turbidity. The operational turbidity requirements in the proposed Permit are equivalent limitations that are not less stringent than the turbidity effluent limitations requirement in the existing Order No. R5-2003-0003, Amendment No. 1. Therefore, the removal of the turbidity effluent limitations does not constitute backsliding.

The revision in the turbidity limitation is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 because this Order imposes equivalent requirements to the prior permit and therefore does not allow degradation. Therefore, even if changing the limit from an effluent limitation to a provision did constitute backsliding from a water-quality based effluent limitation, it would be allowed under CWA sections 303(d)(4) and 402(o).

The discharge does not have reasonable potential to cause or contribute to an exceedance of any turbidity objective, so water quality based turbidity effluent limitations are not required. The proposed Order nevertheless includes receiving water limitations based on the Basin Plan's site specific turbidity objectives.

CSPA COMMENT #11: Temperature Receiving Water Limitation. The proposed Permit contains an Effluent Limitation which will cause violation of the Receiving Water Limitation for temperature.

Response: Regional Water Board staff concurs that the temperature effluent limitation included in the proposed Permit is in error because it is only applicable to discharges to the Sacramento-San Joaquin Delta. The proposed temperature effluent limitation has been removed from the proposed Permit.

CSPA COMMENT #12: Criteria for Aluminum Effluent Limitations. The proposed Permit fails to contain an Effluent Limitation for aluminum in accordance with Federal Regulations 40 CFR 122.44, US EPA's interpretation of the regulation, and California Water Code, Section 13377. CSPA states that the chronic criterion (87 µg/L) recommended by the USEPA Ambient Water Quality Criteria (NAWQC) for Aluminum should be applied for this discharge.

Response: The chronic criterion is based on studies conducted on waters with low pH (6.5 to 6.8 pH units) and low hardness (<10 mg/L as CaCO₃), which are conditions not commonly observed in Central Valley receiving waters like Putah Creek and the Sacramento River. Consequently, the criterion is likely overly protective for this application. For similar reasons, the Utah Department of Environmental Quality (Department) only applies the 87 µg/L chronic criterion for aluminum where the pH is less than 7.0 and the hardness is less than 50 mg/L as CaCO₃ in the receiving water after mixing. As discussed in the Fact Sheet, for conditions where the pH equals or exceeds 7.0 and the hardness is equal to or exceeds 50 mg/L as CaCO₃, Regional Water Board staff believes that the 87 µg/L chronic criterion for aluminum is not applicable and the 750 µg/L acute criterion and 200 µg/L standard for protection of human health is applicable.

CSPA COMMENT #13: Antidegradation Analysis. The proposed Permit contains an inadequate antidegradation analysis that does not comply with the requirements of Section 101(a) of the Clean Water Act, Federal Regulations 40 CFR § 131.12, the State Board's Antidegradation Policy (resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247.

Response: Water Codes Section 13146 and 13247 require other state agencies to comply with water quality control plans when those state agencies are discharging waste. Although these sections are not relevant here, Regional

Water Board staff concurs that the Regional Water Board must comply with state and federal antidegradation policies when issuing NPDES permits.

The antidegradation analysis conducted on the South Fork of Putah Creek is consistent with the State Water Board's Resolution 68-16 and the Federal Antidegradation Policy 40 CFR 132.12. The Fact Sheet addresses the items in the State Water Board's Administrative Procedure Update No. 90-004. Regional Water Board staff determined the antidegradation analysis performed on the South Fork of Putah Creek demonstrates that beneficial uses of the receiving water in this branch of Putah Creek will be maintained from the proposed increase in regulated flow, and degradation of the receiving water is limited through discharge of tertiary-treated Title 22-quality wastewater (implementation of Best Practicable Treatment or Control (BPTC)). Furthermore, a finding is included in the proposed permit stating the proposed increased in regulated flow may cause degradation in the receiving water, and the Regional Water Board finds that allowing the increase in regulated flow provides a social and economical benefit to the people of the State.

Although the existing NPDES Permit allowed discharge of tertiary-treated effluent to the Arboretum Waterway at discharge location D-002, Regional Water Board staff concurs that the antidegradation analysis for the existing discharge to the Arboretum Waterway was not conducted in conjunction with the South Fork of Putah Creek analysis. A Special Provision has been added to the proposed Permit requiring the Discharger to conduct an antidegradation analysis that includes the results of the required CTR and non-CTR Constituent Study for the existing and proposed discharge D-002. A Discharge Prohibition to the Arboretum Waterway has also been added to the proposed Permit, prohibiting discharge at D-002 three years after the permit adoption date if the Discharger does not comply with the antidegradation analysis requirement. A reopener provision has been additionally added to allow the permit to be reopened and prohibitions and effluent limitations modified upon approval of the antidegradation analysis. All effluent limitations are the same for discharge points D-001 and D-002, so the increased discharge to the Arboretum Waterway will not cause unacceptable degradation to Putah Creek downstream of the weir. The existing antidegradation analysis is thus adequate for this temporally-limited discharge.

CSPA COMMENT #14: Decrease in Flow. The proposed Permit prescribes requirements that allow for a modification in the point of discharge which will result in a partial decrease in flow without consultation with the State Board Division of Water Rights.

Response: Section VI.A.2.u of the proposed Permit specifies that prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board,

Division of Water Rights, and receive approval for such a change under CWC section 1211. Changing the point of discharge without State Water Board approval would constitute a violation of the permit if the change results in a decrease in flow in the South Fork. If the new discharge point is upstream of the old discharge point, the change in the outfall location might not result in a change in flow requiring a wastewater change petition. This is a factual determination for the State Water Board and the Discharger, and is not within the Regional Water Board's jurisdiction. In addition, both the existing Permit and the proposed Permit allow for discharge from the WWTP to either the South Fork of Putah Creek (at D-001) or the Arboretum Waterway (D-002). Therefore, a decrease in discharge is not anticipated with the renewal of the existing Permit.

CSPA COMMENT #15: Antibacksliding. CSPA comments that the proposed Permit contains effluent limitations less stringent than the existing permit for aluminum, copper, dichloromethane, Dioxin/Furans, iron and lead contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

Response: The Fact Sheet within the proposed Order evaluates, pollutant by pollutant, whether or not concentrations are discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. As described in the Fact Sheet, Regional Water Board staff analyzed the Discharger's self monitoring effluent data and upstream receiving water data, and considered the nature of the Facility's operations to determine if the discharge demonstrates reasonable potential to exceed applicable water quality criteria or objectives. Using the method prescribed in Section 1.3 of the SIP, Regional Water Board staff compared this data for each pollutant with the applicable water quality objectives in the Basin Plan or water quality criteria from USEPA, and the CTR. Although the SIP applied directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as a guidance for water quality-based toxics control (Order WQO 2001-16 [Napa] and Order WQO 2004-0013 [Yuba City]). Based on the prescribed methodology in the SIP, Regional Water Board staff finds that the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for copper, dichloromethane, Dioxin/Furans, iron, and lead. The previous Order No. R5-2003-0003, Amendment No. 1 contained effluent limitations for these constituents. The proposed Order removes the effluent limitations for copper, dichloromethane, Dioxin/Furans, iron, and lead based on new information consistent with anti-backsliding requirements of CWA section 402(o)(2)(B) and 40 CFR 122.44(l)(2)(i)(B)(1).

CSPA COMMENT #16: Report of Waste Discharge. The proposed Permit is either based on an incomplete Report of Waste Discharge contrary to Federal Regulations and the CWC or the Fact Sheet is incomplete in accordance with federal regulations.

Response: The Discharger has submitted a complete permit application for their NPDES permit renewal in compliance with State and Federal requirements (Cal EPA Form 200, U.S. EPA NPDES Form 1 and Form 2C). As stated in 40 CFR § 122.21(e)(1), “The Director shall not issue a permit before receiving a complete application for a permit except for NPDES general permits. An application for a permit is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity.” 40 CFR § 124.3(a)(2) states, “The Director shall not begin the processing of a permit until the applicant has fully complied with the application requirements for that permit. See §§270.10, 270.13 (RCRA), 144.31 (UIC), 40 CFR 52.21 (PSD), and 122.21 (NPDES).” Accordingly, Regional Water Board staff has concluded a complete NPDES permit application was submitted by the Discharger and the wastewater has been adequately characterized in compliance with the regulations cited above.

To address CSPA’s comment, Regional Water Board staff modified the findings in the proposed Permit by adding the date in which the Discharger’s Report of Waste Discharge was deemed complete, as shown below.

A. Background. University of California Davis (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2003-0003 Amendment No. 1 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0077895. The Discharger submitted a Report of Waste Discharge, dated 29 June 2007, and applied for a NPDES permit renewal to discharge up to 3.6 million gallons per day of tertiary treated wastewater from University of California Davis Main Wastewater Treatment Plant (WWTP), hereinafter Facility. The application was deemed complete on 19 May 2008.

RECLAMATION DISTRICT 2035 & CONAWAY PRESERVATION GROUP (RD AND CONAWAY) COMMENTS

Designated Party Status. RD 2035 and Conaway requested designated party status at the hearing. Each party will be granted designated party status. RD 2035 and Conaway will likely be assigned a combined time limit for presenting testimony and cross-examination.

RD 2035 & CONAWAY COMMENT #1: Applicable Beneficial Uses. The beneficial uses listed in Table 5 do not include groundwater recharge (GWR) or freshwater replenishment (FRESH), both of which have been listed in the City of Woodland’s tentative discharge permit (NPDES No. CA0077895). Given that both discharges are tributaries to the Sacramento River, UC Davis’ permit should also include FRESH as a

designated beneficial use. It has been documented that seepage from Putah Creek and the Sacramento River recharge Yolo County's aquifers, therefore GWR should also be included as a designated beneficial use.³

Response: Although the beneficial uses of GWR and FRESH are defined in the Basin Plan, they are not designated uses specific to Putah Creek in the Basin Plan per Section II, Table II-1. Therefore, GWR and FRESH are not included at specific beneficial uses for the receiving stream.

RD 2035 & CONAWAY COMMENT #2: Increased Loading of Salt, Selenium, Boron, Mercury and Other Constituents to Groundwater. UC Davis is proposing to increase the amount and rate of its wastewater discharge by 33%. This will result in an increase in the loading of numerous wastewater constituents including salt, selenium, boron, mercury, and others into the groundwater basin, and the Sacramento River and northern Delta.

Response: The Discharger conducted an antidegradation analysis that identified the potential degradation due to the increase in regulated flow discharged into the South Fork of Putah Creek. Additionally, the proposed permit addresses protection of groundwater through implementation of Best Practical Treatment or Control (BPTC) as applicable. See Staff Response to CSPA Comment #13 for further detail regarding antidegradation requirements for the proposed Permit.

RD 2035 & CONAWAY COMMENT #3: Non-Compliance with Effluent Limitations. RD 2035 and Conaway are concerned that the state and federal antidegradation and anti-backsliding policies will be violated. These concerns are magnified by UC Davis' history of noncompliance with its current NPDES permit, for which the Regional Board recently issued Administrative Civil Liability Complaint R5-2008-0577. More specifically, the MEC for selenium described in the fact sheet is significantly higher than the numerical limits proposed in Table 6. How does UC Davis intend to comply with this particular limitation?

Response: Selenium is not a constituent identified in Administrative Civil Liability Complaint R5-2008-0577 as a part of the Discharger's violation. The Maximum Effluent Concentration for selenium, as explained in the proposed Permit Fact Sheet, is 6.56 µg/L. This is the maximum observed concentration of selenium in the effluent. The proposed numerical limitations are average monthly and maximum daily limitations of 3.5 µg/L and 9.2 µg/L, respectively. Existing effluent data does not indicate that the Discharger will be out of compliance with the proposed numeric effluent limitations. Additionally, the Discharger did not submit a request for a compliance schedule. Therefore, the

³ Jenkins, M., Conjunctive Yolo County, *California's Water Supply System Conjunctive Use Without Management*, September 1992. <http://www.dcn.davis.ca.us/dcn/projects/conjunctiveuse/>.

proposed effluent limitations will become effective on the effective date of the Permit.

An NPDES Permit contains discharge prohibitions, limitations and requirements with which the Discharger must comply; however, unless a compliance alternative is mandated by federal law, NPDES permits cannot mandate how the Discharger will comply with prohibitions, limitations and requirements in the Permit or corresponding enforcement orders. (CWC § 13360.) Therefore, the proposed permit does not address how the Discharger intends to comply with the above mentioned limitation.

RD 2035 & CONAWAY COMMENT #4: Increase in EC Effluent Limitation. We understand the proposed permit allows an increase in the numerical electrical conductivity effluent limits of 500 $\mu\text{mhos/cm}$ (from 900 to 1,400 $\mu\text{mhos/cm}$) and compliance may require UC Davis to change water supply sources. At a minimum, the adopted permit should include a specific date and reasonable timeline/schedule for compliance with the lower electrical conductivity limits.

Response: See Response to CSPA Comment #2 above. Unless the Discharger submits a request for a compliance schedule, the effluent limitations become effective upon the effective date of the Permit. Also, see response to CSPA Comment #1.

RD 2035 & CONAWAY COMMENT #5: Compliance Schedule for New Water Supply Alternative. RD 2035 and Conaway states that the Regional Board's proposed timeline to investigate alternative water supplies is inadequate given the continued deterioration of this region's groundwater resources. Both RD 2035 and Conaway agree that the implementation of an alternative water supply will concurrently address selenium and electrical conductivity levels. Given that the project mass loading concentrations for selenium are anticipated to exceed the Board's significance threshold of 10 percent coupled with the uncertainty as to whether the treated effluent will comply with the proposed selenium limits, RD 2035 and Conaway request that a specific timeline and/or schedule for the implementation of an alternative water supply be included in the NPDES permit. RD 2035 and Conaway have information concerning a potential alternative water supply solution that they feel should be addressed by Regional Board staff and incorporated into UC Davis' NPDES permit.

Response: As stated in Staff Response to Comments #3, existing effluent data indicates that the Discharger is able to comply with the proposed effluent limitation for selenium. See Staff Response to CSPA Comment #2 for further discussion regarding compliance with proposed EC limitations. Any additional evidence about potential water supplies that could have affected permit requirements is not timely and should have been submitted during the public comment period.

