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**Subject:** OGCS06-#151925-v1-aog\_9-15\_lttr\_to\_creedom\_re\_draft\_waste\_discharge\_requirements\_for\_ucd\_center\_for\_aquatic\_biology\_and\_aquaculture.DOC

Attached for your consideration is a copy of comments prepared by UCD regarding the draft NPDES permit for the CABA facility. A hard copy with attachments is being mailed to you and the Executive Officer via Federal Express for delivery early next week. Thank you for meeting with us earlier this week to discuss the draft permit. Tony

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September 15, 2006

Ms. Pamela C. Creedon

Executive Officer

Central Valley Regional Water Quality Control Board

11020 Sun Center Drive No. 200

Rancho Cordova, CA 95670

Re: Comments of University of California, Davis re Draft Waste Discharge Requirements for UCD Center for Aquatic Biology and Aquaculture (NPDES No. CA 0083348)

Dear Executive Officer:

The University of California Davis ("UCD") appreciates the opportunity to submit these comments on the draft renewal of the NPDES permit for the UCD Center for Aquatic Biology and Aquaculture ("CABA") (NPDES NO. CA 0083348). By way of background, CABA consists of two fisheries research facilities located on the UCD campus which support the scientific research conducted by the Aquaculture and Fisheries Program at the University. This research includes studies on toxicology, nutrition, stress, physiology, ecology, engineering, endocrinology, infectious diseases and reproduction. Some of this research is funded by grants from the California State Water Resources Control Board, California Department of Fish and Game and the US Fish and Wildlife Service. At no time has the CABA facility been used as a fish hatchery or fish rearing facility for production of fish.

General Comments:

While UCD appreciates the time and effort the staff of the RWQCB has

committed to developing the draft permit renewal, UCD believes that the draft permit fundamentally misunderstands the purpose and mission of the CABA facility. In particular, the draft permit erroneously categorizes the CABA facility as a cold-water concentrated aquatic animal production ("CAAP") facility which is subject to the effluent limitations established by the US Environmental Protection Agency ("EPA") for such facilities. (40 CFR 122.24).

This is a significant error in the draft permit since under EPA's regulations a CAAP facility must produce at least 20,000 pounds harvest weight of aquatic animals per year and feed at least 5,000 pounds of food during the calendar month of maximum feeding in order to be classified as a CAAP facility. (40 CFR 122.24 Append. C). As mentioned above, CABA does not produce any fish for harvest let alone 20,000 pounds per year, but is instead devoted entirely to scientific research. While the CAAP regulations also allow facilities with smaller production to be designated as CAAP facilities, this designation can only be made if the permitting authority determines that the facility "is a significant contributor of pollution to water of the United States...." The draft permit does not contain any finding that the CABA facility is a significant source of pollution but instead classifies the facility as a minor discharger. Accordingly, UCD respectfully requests that the findings categorizing the CABA facility as a CAAP subject to EPA's effluent limitations be deleted in its entirety from the draft permit.

Because the draft permit mistakenly lumps the CABA facility in with other CAAP facilities, the draft permit imposes extensive surface water and ground water monitoring requirements which are unreasonably expensive compared to the potential threat to waters of the state posed by the facility. UCD estimates, for example, that the ground water monitoring requirements imposed by the draft permit may require the installation of a minimum of six ground water monitoring wells at a capital cost of approximately \$150,000. In addition, the surface water and ground water monitoring requirements are estimated to cost approximately \$76,072 per year compared to the current monitoring program which cost approximately \$7,252 per year. These estimates do not include the cost of performing priority pollutant monitoring which is estimated to cost an additional \$5,000. In comparison, the entire current operating budget of the CABA facility is between \$50,000-60,000. Thus, over the five year life of the permit, the new monitoring requirements imposed by the draft permit would require UCD to spend over \$100,000 per year on monitoring which is nearly twice the entire budget of the CABA facility. Such a significant increase in the cost of operating the facility may result in a sharp reduction in the number and type of research projects conducted at the CABA facility or could even result in the closure of one or both of the CABA facilities. While the closure of the CABA facilities would be a blow to the University, it would also be a substantial blow to the ability of water quality agencies which sponsor the studies conducted at CABA.

Of equal importance to the University is the proposed effluent limit contained in the draft permit for electrical conductivity ("EC") of 700 umhos/cm. It is simply impossible for UCD to achieve this EC limit without installing expensive treatment technology such as reverse osmosis equipment due to the high EC content of the source water used for the facility. In particular, the two ground water production wells used by the CABA facility for source water have EC concentrations which range between 600-750 umhos/cm straight from the well head. As a consequence, the well water and the resulting discharge of flow through water from the facility already exceed the proposed EC limit of 700 umhos/cm during several months of the year. The University simply cannot accept a permit condition which it currently exceeds on a regular basis, or which would require it to install expensive treatment equipment. A previous study conducted on behalf of the UCD wastewater treatment plant several years ago indicated that the cost of reverse-osmosis treatment would cost approximately \$3 million. Given the current small size of the CABA facility and a total operating budget of \$50,000-60,000, the facility would have no option but to close its doors if the proposed EC limit of 700 umhos/cm is adopted in the final NPDES permit.

Specific Comments:

1. Classification as a Cold Water Concentrated Aquatic Animal Production ("CAAP") Facility. Findings Nos. 9-10 & 11;

As discussed in UCD's General Comments, the Findings of the draft permit erroneously classify the CABA facility as a Cold Water Concentrated Aquatic Animal Production ("CAAP") facility subject to EPA's effluent guidelines. (40 CFR 122.24). However, EPA's regulations make it clear that the criteria for classification as a CAAP facility are a minimum production of harvestable fish equaling 20,000 pounds per year and a minimum use of 5,000 pounds of food during the calendar month of maximum feeding. (40 CFR 122.24 Append. C). In contrast, the CABA facility does not raise a single fish for harvest but instead conducts scientific research on fish. Although the weight of fish used in research at the facility may be as high as 12,500 pounds per year, this is well below the 20,000 pound limit established by EPA's regulations. The CABA facility also uses a maximum amount of 2,000 pounds of food in any month which is also well below the 5,000 pound criteria established by EPA's regulations.

The CABA facility is thus well below the minimum threshold established by EPA's regulations for classification as a CAAP facility. Moreover, EPA has not even promulgated effluent limitations for all facilities which meet the CAAP criteria. Instead, EPA has only established

effluent limitations for CAAP facilities which produce more than 100,000 pounds of harvestable aquatic animals per year. The CABA facility has a maximum weight of aquatic animals which is approximately 10 percent of the threshold for application of EPA's effluent guidelines for aquatic animal production facilities.

While EPA's regulations also allow the permitting authority to designate a facility which does not meet the numeric thresholds as a CAAP facility, it may only do so if it determines that the facility "is a significant contributor of pollution to waters of the United States...." (40 CFR 122.24 (c)). In order to make this designation, EPA's regulations require consideration of the following factors:

- (i) The location and quality of the receiving waters of the United States;
- (ii) The holding, feeding, and production capacities of the facility;
- (iii) The quantity and nature of the pollutants reaching waters of the United States; and
- (iv) Other relevant factors. (40 CFR 122.24 (c)).

As noted in UCD's General Comments, the draft permit does not make the required finding that the CABA facility is a significant contributor of pollution to the waters of the United States. Nor can the permit make such findings for several reasons. First, the draft permit itself classifies the CABA facility as a minor discharger. (Finding No. 48). Second, as discussed above the facility is not intended and does not operate for the production of harvestable aquatic animals. Third, the maximum weight of aquatic animals held at the facility is 12,500 pounds per year which is well below the CAAP production thresholds. Finally, as will be discussed below in comments on the proposed EC limit, the main contaminant of concern discharged by the facility consists of natural salinity contained in the ground water wells which are used by the facility as source water. There is nothing UCD can do to prevent the discharge of such naturally occurring salinity without installing extremely expensive treatment technology costing several millions of dollars.

For all of these reasons, UCD respectfully requests that the Board delete or amend Findings Nos. 9-10 and 11 so that the CABA facility is not classified as a CAAP facility.

2. Proposed EC Limit. Findings Nos. 7, 8, 28; Effluent Limitations Nos. 1 & 2.

As discussed in UCD's General Comments, UCD simply cannot meet the proposed EC limit of 700 umhos/cm at either of the two CABA facilities due to elevated salinity levels contained in ground water used for the source water at the facilities. In particular, the CABA facility uses ground water from two production wells as source water for its two facilities. Since the two facilities are physically separated from each other by about three miles, the facilities have to use two separate ground water wells. As shown in the table attached as Exhibit A to these comments, the EC content of the Aquatic Center well varies from 625 to as much as 750 umhos/cm on a monthly average basis. The EC content of the well used by the Putah Creek facility is even higher ranging from 680 to as high as 873 umhos/cm. As a consequence, the concentrations of EC discharged from the two facilities range from approximately 625 to 750 umhos/cm at the Aquatic Center and 620 to 800 umhos/cm. Thus during several months of the year, the EC content of both ground water and the resulting flow-through discharges from the facility already exceed the proposed effluent limit of 700 umhos/cm.

It is possible that the draft permit proposes an EC limit of 700 umhos/cm due to erroneous monitoring data that was submitted by UCD in its permit application. This erroneous data appears in Findings Nos. 7 and 8 of the draft permit which state that the current EC discharges from the Aquatic Center are 530 umhos/cm and 450 umhos/cm from the Putah Creek facility. These values, however, are incorrect and based on a faulty EC meter used by the facility for the period prior to October 2003. As shown by the data in Exhibit A the actual EC values for both the ground water wells used by both facilities and the resulting discharges regularly exceed the proposed EC limit.

It is also UCD's understanding that the EC limit is being proposed at 700 umhos/cm in order to meet the narrative water quality limit of the Basin Plan to protect existing beneficial uses of receiving waters. UCD believes that the proposed EC limit of 700 umhos/cm is too stringent and not necessary to protect the existing beneficial uses of Putah Creek. First, it is important to recognize that no numerical limit has been established by the Board for salinity in Putah Creek. (Finding No. 28). Instead, Finding No. 28 states that an EC limit of 700 umhos/cm is based on a study by R.S. Ayer and D.W. Westcot which found that irrigation

water above an EC of 700 umhos/cm " will result in a reduction of crop yield for sensitive plants". This a gross overstatement of the potential impact of irrigation water containing more than an EC of 700 umhos/cm.

The reliance of the draft permit on the study by Ayer and Wescot for the 700 umhos/cm EC limit ignores the fact that UCD submitted an important site specific study to the RWQCB in 2004 regarding the impact of salinity upon agricultural uses performed by Daniel Isidoro-Ramirez, Maria Jose Berenguer-Merelo, and Stephen R. Grattan of the UCD Department of Land, Air and Water (July 2004) (hereafter "Grattan Report"). That report evaluated the beneficial impact of annual rainfall on permissible levels of salinity. The study concluded that an EC limit of 1,100 umhos/cm would be adequate to protect beans, the most sensitive crop potentially grown in the Davis area downstream of the UCD campus. A copy of the Grattan Report is attached as Exhibit B to these comments.

The RWQCB is well aware of the Grattan Report and in fact has used and quoted the Grattan Report as support for potential salinity objectives for the Lower San Joaquin River below Vernalis. A copy of the slides presented on February 8, 2006, by the Central Valley RWQCB at a public workshop on the Basin Plan Amendment to Establish New Salinity and Boron Objectives and a TMDL in the Lower San Joaquin River is attached as Exhibit C to this letter. The attached slides demonstrate that the RWQCB considers the Grattan Report to be a peer-reviewed study which can be relied upon in developing a salinity limit to protect agricultural beneficial uses. Although the RWQCB is aware of and is using the Grattan Report for the Lower San Joaquin River, the study is not mentioned or discussed in the draft permit.

Moreover, the RWQCB is currently considering three options for a possible salinity objective and has not determined whether an EC limit of 700 umhos/cm is necessary to protect agricultural uses. In fact, none of the three options being considered by the RWQCB would limit discharges to an absolute limit of 700 umhos/cm. The first option being considered for the Lower San Joaquin River is a year-round EC objective of 1,600 umhos/cm. This option is based on the upper level Maximum Contaminant Level ("MCL") for domestic drinking water supplies under Title 22 of the California Environmental Health Code of Regulations. The second option is to have a split salinity level of 700 umhos/cm from April 1 to August 31, and a limit of 900 umhos/cm from September 1, to March 31. This split option is based in large part on the Grattan Report which demonstrates that annual rainfall helps remove salts from agricultural soils during the winter rainy season. The third option being considered is a year round salinity objective of 1,000 umhos/cm based upon the numeric standard for Delta waters at intakes to the California Aqueduct and the Delta-Mendota Canal. Until the RWQCB

selects a final approach to establish a salinity objective for other agricultural areas of the state, it is premature for the Board to incorporate a stringent EC limit for the CABA facility at 700 umhos/cm.

As discussed above, the work of Ayer and Wescot suggests that an EC limit of 700 umhos/cm will protect the most sensitive crop, beans, from any loss due to salinity.

In fact, previous documents developed by the RWQCB demonstrate that an EC concentration of 1,000 umhos/cm will still protect 90 percent of the yield of even the most sensitive crop, beans. This information is set forth in Table V-3 in the draft chapter prepared by the RWQCB in 2000 for a proposed salinity water quality objective. A copy of the draft Chapter V, Water Quality Objectives prepared by the RWQCB in 2000 is attached to this letter as Exhibit D. As noted in Table V-3, an EC limit of 1000 umhos/cm will protect 100 percent of all other crops, and 90 percent of the yield of beans. As a consequence, the proposed EC limit of 700 umhos/cm contained in CABA's draft permit is not necessary to protect agricultural beneficial uses.

Furthermore, there is no evidence in the draft permit that beans are even grown downstream of the UCD campus. In contrast, a survey performed by the Department of Water Resources of crops grown in the Davis area demonstrates that beans are not actually one of the crops grown downgradient of the UCD campus. A copy of the map prepared by the Department of Water Resources is attached as Exhibit E. Since beans are not actually grown downstream of UCD, an EC limit of 700 umhos/cm based on protection of beans is unnecessarily stringent. This is particularly true since an EC limit of 1,000 umhos/cm would protect 90 percent of the yield of beans and would fully protect all other agricultural uses.

Finally, the proposed EC limit of 700 umhos/cm in the CABA permit is much more stringent than the EC limit established by the RWQCB for the UCD wastewater treatment plant. The NPDES permit for the UCD wastewater treatment plant sets an EC limit of 900 umhos/cm. Although UCD continues to dispute the appropriateness of 900 umhos/cm for the campus wastewater treatment plant, there is no justification to impose a 700 umhos/cm EC limit for the CABA facility when the UCD wastewater treatment facility has an EC limit of 900 umhos/cm.

The proposed EC limit of 700 umhos/cm would also require the installation of extremely expensive treatment equipment in order to meet the limit. The only technology that could meet such a stringent limitation would be reverse-osmosis treatment technology. A previous cost estimate prepared for the UCD wastewater treatment plant estimated that installation of reverse- osmosis equipment for the wastewater

treatment plant would cost approximately \$3 million. While the wastewater treatment plant is larger than the CABA facility discharge, the proportionate cost for reverse-osmosis to treat the CABA discharge would be at least \$1 million. In contrast, the entire annual operating budget of the CABA facility is between \$50,000-60,000. If the facility is required to meet an EC limit of 700 umhos/cm, the facility would be forced to close because the cost of treatment would not be cost effective.

For all of the above reasons, UCD respectfully requests that the Board either delete the EC effluent limit for the two CABA discharges or adopt an EC limit of 1,000 umhos/cm for CABA discharges. As demonstrated by the Grattan Report and RWQCB staff reports, an EC limit of 1,000 umhos/cm would adequately protect all existing agricultural uses downstream of the UCD campus.

3. Ground Water Monitoring Requirements. Findings No. 40; Groundwater Provisions Nos. 1-2; and Groundwater Monitoring Requirements.

The proposed order requires UCD to install monitoring wells for the first time to monitor the potential impact of discharges from the three ponds operated by the CABA facilities. Although the draft permit provides that UCD may be able to use some of the existing monitoring wells at the sanitary landfill, UCD may have to install a minimum of at least six new wells if the RWQCB does not accept existing wells. In any event, UCD would have to install a minimum of four new wells even if it is able to use existing monitoring wells. Due to the depth of ground water at the UCD campus, the estimated construction cost of each monitoring well will be between \$20,000-25,000. As a consequence, UCD will incur a capital cost of between \$80,000 to \$150,000 to install monitoring wells in order to comply with the draft permit. This represents an enormous cost compared to the total annual operating budget of between \$50,000 to \$60,000 and may result in the closure of one or both of the CABA facilities. The increased costs moreover are inconsistent with the provisions of section 13267 (b) (1) of the Water Code which requires that monitoring requirements must be reasonably related to the benefits of monitoring: "The burden, including costs, of these (monitoring) reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports." Water Code sec. 13267 (b) (1).

The proposed ground water monitoring requirements imposed by the draft permit, moreover, do not appear necessary in order to protect ground water or beneficial uses. In particular, the facility already monitors discharges from both CABA facilities prior to the discharge of a portion

of the discharge to ponds at the facilities. Since concentrations of pollutants are already monitored prior to discharge to the ponds, additional ground water monitoring is not necessary in order to protect ground water quality.

Furthermore, the flow of ground water from the three ponds at the CABA facilities flows in the direction of property owned and used by the UCD campus for agricultural crops grown for scientific purposes. Since the agricultural fields owned by the campus stretch for several miles downgradient of the CABA facilities, any ground water impact would occur entirely beneath campus owned and operated land. Thus, any ground water downgradient of the CABA facilities would be used solely for irrigation of campus agriculture which is not sold to or consumed by the public. In addition, the flow of ground water immediately downgradient from the Putah Creek facility ponds is toward the adjacent campus sanitary landfill. The landfill already has a monitoring well network of 39 total monitoring wells, including 16 shallow wells. These wells adequately monitor the quality of ground water downgradient of the Putah Creek facility.

For all of the above reasons, UCD believes that the ground water monitoring provisions contained in the draft permit are not necessary to protect the quality of ground water in the region and not economically cost effective. UCD therefore, respectfully requests that the Board delete the ground water monitoring requirements proposed in the permit.

#### 4. Proposed Effluent Monitoring Requirements. Findings No. 45; Effluent Monitoring Schedule.

The draft permit proposes to significantly increase the number of constituents and frequency of effluent monitoring required at the two CABA facilities compared to the current NPDES permit. (WDR Order No. 99-017). The existing permit in fact requires monitoring for only the following constituents: BOD, Total Suspended Solids, Settleable Matter, Specific Conductivity, pH, Chlorine residual, flow, temperature and acute bioassay. In contrast, the draft permit requires periodic monitoring for all of the above constituents and adds monitoring requirements for the following additional constituents:

Formaldehyde, cadmium, oxytetracycline, selenium, phrethroies, microcystin, beta naphthoflavone, estradiol, chlorophyrophos, florfenicol, chloramines T, hardness as CaCo3, hexavalent chromium, total chromium, and priority pollutant metals, as well as chronic toxicity. Although the list of constituents which must be monitored has drastically increased compared to the existing permit, absolutely no change has occurred in the operation of the CABA facility which would warrant this

increase in monitoring. The CABA facility is still being operated as a scientific research facility just as it was in 1999 when the current permit was issued.

While most of the additional parameters are required to be monitored only when the specific chemicals are being used at the facility, the draft permit requires weekly monitoring of these additional chemicals during the period of use. This requirement is overly burdensome given the minute quantities of the chemicals that will be used. Nearly all of the additional chemicals will only be used in minute quantities in research to determine the chronic toxicity of such compounds to aquatic organisms. The discharges from individual research projects will be combined with total water flow from either of the two CABA facilities prior to discharge to Putah Creek. This combination of flows will further reduce concentrations of the additional constituents to levels which could not adversely impact aquatic organisms. Yet the cost of performing weekly monitoring for these chemicals will significantly increase the cost of research efforts and may result in the decision of individual researchers to cease research on the chemicals for which monitoring is required.

In addition, the frequency of monitoring for several constituents is increased by the draft permit from quarterly to monthly, or from monthly to weekly. For example, the current NPDES permit requires the facility to monitor for BOD, total suspended solids, and chlorine residual on a quarterly basis. In contrast, the draft permit increases the monitoring frequency for BOD and total suspended solids from quarterly to monthly. The draft permit also increases the monitoring frequency for total residual chlorine from quarterly to daily when being used for cleaning and sanitizing. The frequency of pH monitoring is also increased from monthly to weekly by the draft permit. However, there is nothing in the Findings or elsewhere in the permit which demonstrates or discusses the reasons why such an increase in the frequency of monitoring is required. Without specific findings or a discussion of why increased monitoring is necessary, UCD believes that the increased monitoring frequency is not justified.

The increased monitoring frequency contained in the proposed permit is also inconsistent with the monitoring frequency required by NPDES permits for CAAP facilities. For example, while UCD is required to monitor TSS on a monthly basis in the draft permit, the USFWS Livingston Stone National Fish Hatchery in Shasta County is only required to monitor for TSS on an annual basis. (NPDES No. CA 0084298) (Exhibit F). Similar inconsistencies exist for other parameters. For example, while UCD is required to measure formaldehyde, pH, and Chloramine T on a weekly basis, the USFWS facility is only required to monitor these constituents on a monthly basis. Other fish hatcheries are also only required to monitor these constituents on a monthly basis including the

California Fish and Game Feather River Fish Hatchery (NPDES No. CA 0082350) (Exhibit G) and the CDFG San Joaquin Fish Hatchery in Fresno County (NPDES No. CA 0004812) (Exhibit H). In addition, none of these hatcheries are required to perform acute or chronic toxicity monitoring. In contrast, UCD is required to perform both acute and chronic toxicity testing on a quarterly basis. There is no justification or discussion in the draft permit explaining why a more stringent and monitoring program is required for the CABA facility than fish hatcheries operated by USFWS and CDFG. Without some explanation of the reason for the difference in treatment, there is no reason to require more frequent monitoring at the CABA facility than required for other similar facilities.

As discussed in UCD's General Comments, the increased monitoring imposed by the draft permit will increase the cost of monitoring at the CABA facility from approximately \$7,252 per year to approximately \$76,072 per year. This represents an increase of nearly \$70,000 in effluent monitoring costs alone. This increase will equal or exceed the total current annual operating budget of the CABA facility which is between \$50,000 and 60,000. As discussed previously, these increases in monitoring costs are significant and could result in the closure or at least curtailment of operations at the facility.

This increase in monitoring costs is also inconsistent with the provisions of section 13267 (b)(1) of the Water Code which provides in part that "The burden, including costs, of these (monitoring) reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports." Water Code sec. 13267 (b) (1). UCD believes that there is no justification for increasing the monitoring requirements for the facility from \$7,252 per year to \$76,072 per year at the CABA facility. Unless the RWQCB can demonstrate that the current monitoring program is inadequate or fails to protect the public, the current monitoring program should be retained.

In order to prevent the closure of the CABA facility, UCD respectfully requests that the Board delete the proposed monitoring schedule contained in the draft permit and renew the current monitoring program adopted by the Board in 1999. Without an identification of any deficiencies in the current monitoring program, there is no justification to increase it to the extent proposed in the draft permit.

Conclusion:

UCD appreciates the opportunity to submit comments on the draft NPDES

permit. For the reasons set forth in the paragraphs above, UCD believes that RWQCB has mistakenly classified the CABA facilities as large scale CAAP facilities and that this classification has led to a significant increase in the frequency and stringency of effluent and ground water monitoring requirements. Put simply, the CABA facility cannot afford to meet the proposed effluent and ground water monitoring requirements given its limited budget. Nor can the CABA facility meet the proposed EC limit of 700 umhos/cm contained in the draft permit. The source water which the CABA facility depends upon to operate already exceeds the 700 umhos/cm proposed EC limit on a regular basis as do discharges from both CABA facilities. Without installing expensive reverse-osmosis treatment technology, which UCD cannot afford, the CABA facility will not be able to attain the proposed salinity limit. UCD, therefore, respectfully urges the Board to renew the monitoring requirements of its current permit, delete the ground water monitoring requirements, and adopt an EC limit of 1,000 umhos/cm for the CABA facility.

Respectfully submitted,

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University Counsel

blb

Encs.

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