

# THE JACKSON LABORATORY, JAX WEST, AT UC DAVIS

## FINAL FOCUSED TIERED EIR

SCH. No. 2000122102

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## 1.1 PURPOSE OF THE FINAL ENVIRONMENTAL IMPACT REPORT

Under the California Environmental Quality Act (CEQA) and the University of California (UC) procedures for implementing CEQA, UC Davis is required, after completion of a Draft Environmental Impact Report (EIR), to consult with and obtain comments from public agencies that have legal jurisdiction with respect to the proposed project, and to provide the general public with opportunities to comment on the Draft EIR. UC Davis is also required to respond to significant environmental issues raised in the review and consultation process. This Final EIR has been prepared to respond to agency and public comments received on the Draft EIR for the Jackson Laboratory at UC Davis (JAX West) Project. The Draft EIR was issued for public review on December 29, 2000. The public review period lasted from December 29, 2000 through February 12, 2001. UC Davis held a public meeting on January 29, 2001, to receive comments on the Draft EIR. A court reporter prepared a transcript of the meeting.

This document and the Draft EIR constitute the Final EIR. The Draft EIR is hereby incorporated by this reference. Copies of the Draft EIR and the Final EIR are available during normal operating hours at the UC Davis Office of Resource Management and Planning, 376 Mrak Hall on the UC Davis campus; at Reserves in Shields Library on the UC Davis campus; at the Yolo County Public Library, 315 E. 14th Street, Davis; at the Vacaville Public Library, 1020 Ulatis Drive, Vacaville; and online at <http://www.ormp.ucdavis.edu/environreview/>.

The Draft and Final EIRs include extensive references to the 1994 UC Davis Long Range Development Plan (LRDP) and the 1994 LRDP EIR. The 1994 LRDP was designed to accommodate projected campus population growth and facilities development through 2005-06, and the 1994 LRDP EIR evaluated the environmental impacts of that growth and development. As allowed under Section 15150 of the CEQA Guidelines and as stated in the Draft EIR, UC Davis is incorporating by reference portions of the 1994 LRDP EIR (State Clearinghouse Number 94022005). Copies of the 1994 LRDP, 1994 LRDP EIR, and all documents that revise and amend these documents are available at the locations listed above.

The Regents of the University of California will certify this Final EIR prior to approving the project. Other agencies may also use this EIR in their review.

## 1.2 FORMAT OF THE FINAL ENVIRONMENTAL IMPACT REPORT

A Final EIR is required to include the Draft EIR (which has been incorporated into this document by reference), copies of comments received during public review of the Draft EIR, a list of persons or entities commenting on the Draft EIR, and responses to comments received on the Draft EIR. This Final EIR is organized as follows:

- **Section 1, Introduction**, provides an introduction and overview describing the intended use of the Final EIR.
- **Section 2, Summary of Impacts and Mitigation Measures**, lists the environmental impacts that would result from implementation of the proposed project, the level of significance of impacts prior to mitigation, the 1994 LRDP EIR mitigation measures that are recommended for the project, and the level of significance of the impacts after mitigation.
- **Section 3, Changes to the Draft EIR**, describes the project sponsor's proposal to develop the proposed project in phases and other minor changes in proposed operations. It presents an

assessment of impacts from these changes to the project and concludes that the changes to the project would not result in new significant impacts or increase the severity of impacts previously identified in the Draft EIR. It also presents other information that became available during the circulation of the Draft EIR.

- **Section 4, Mitigation Monitoring and Reporting Program**, reports on the mitigation monitoring and reporting program (MMRP) for the proposed project.
- **Section 5, Comments and Responses to Comments**, contains a list of all agencies and persons who submitted comments on the Draft EIR during the public review period. This section also contains the comment letters followed by responses to comments. Each letter and each comment within a letter have been given a number. Responses are numbered so that they correspond to the appropriate comment. Where appropriate, responses are cross-referenced between letters. This section also includes the transcript from the public hearing and responses to comments received at that hearing.
- **Section 6, List of Preparers**, presents the UC Davis authors, the technical specialists and consultants, the production team, and other key individuals who assisted in the preparation and review of the Final EIR.

Table 2-1 provides an overview of the environmental impact analyses contained in Section 3 of the Focused Tiered Draft EIR. The summary table presents (1) environmental impacts, (2) their level of significance prior to mitigation, (3) recommended 1994 LRDP EIR mitigation measures, and (4) the level of significance with mitigation.

**Table 2-1**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR**

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
<b>3.1 Hazards and Hazardous Materials</b>			
<p><b>3.1-1</b> Implementation of the proposed project would lead to an increase in hazardous chemical use at UC Davis that could expose campus occupants to potential health or safety risks.</p> <p>Due to prior implementation of 1994 LRDP EIR Mitigation Measures 4.6-1(a) through (c), this impact is considered less than significant.</p>	LS	<i>No additional mitigation required.</i>	LS
<p><b>3.1-2</b> Implementation of the JAX West project could lead to an increase in the generation of hazardous chemical waste at UC Davis that could expose campus occupants to potential health or safety risks.</p> <p>Due to prior implementation of 1994 LRDP EIR Mitigation Measures 4.6-2(b) and (d), this impact is considered less than significant.</p>	LS	<i>No additional mitigation required.</i>	LS
<p><b>3.1-3</b> Operation of the proposed JAX West project could lead to an increase in radioactive material use at UC Davis and use of radiation producing machines which could expose campus occupants to potential health or safety risks.</p> <p>Due to prior implementation of 1994 LRDP EIR Mitigation Measures 4.6-5(a) and (b), this impact is considered less than significant.</p>	LS	<i>No additional mitigation required.</i>	LS

<sup>1</sup> LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

Table 2-1 (continued)

## SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
<p><b>3.1-4</b> Implementation of the proposed project would lead to an increase in the generation of radioactive waste at UC Davis that could expose campus occupants to potential health or safety risks.</p> <p>Due to prior implementation of 1994 LRDP EIR Mitigation Measures 4.6-6(a), (c) and (d), this impact is considered less than significant.</p>	LS	<i>No additional mitigation required.</i>	LS
<p><b>3.1-5</b> The proposed project would increase the use of laboratory animals at UC Davis, thereby increasing the risk of animal bites and escapes.</p> <p>Due to prior implementation of 1994 LRDP EIR Mitigation Measure 4.6-10, this impact is considered less than significant.</p>	LS	<i>No additional mitigation required.</i>	LS
<p><b>3.1-6</b> The proposed project could lead to an increase in the generation of biohazardous waste at UC Davis that could expose campus occupants to potential health or safety risks.</p> <p>As all biohazardous waste is rendered non-hazardous prior to disposal and existing practices minimize the potential for adverse health effects prior to disposal, this impact is considered less than significant.</p>	LS	<i>No mitigation required.</i>	LS

<sup>1</sup> LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

Table 2-1 (continued)

## SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR

	Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
3.1-7	<p>Hazardous materials used at the proposed facility may be inadvertently released to the sewer or disposed of with non-hazardous solid waste.</p> <p>Due to prior implementation of 1994 LRDP EIR Mitigation Measures 4.6-24(a) and (b), this impact is considered less than significant.</p>	LS	<i>No additional mitigation required.</i>	LS
3.1-8	<p>Implementation of the 1994 LRDP, including the proposed project and other developments in the region that use hazardous chemical materials would increase the number of people exposed to health hazards associated with such use.</p> <p>As the campus cannot guarantee that additional hazardous chemicals used at off-campus locations outside the control of the campus would be managed safely, this impact is considered significant and unavoidable. Due to prior implementation of 1994 LRDP EIR Mitigation Measure 4.6-1(a) through (c), the project's contribution to this impact would not be cumulatively considerable.</p>	SU <sup>2</sup>	<i>No additional mitigation required for the proposed project. No additional mitigation available for the regional cumulative impact.</i>	SU <sup>2</sup>

1 LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

2 Impacts are significant on a cumulative level only; project level impacts will be less than significant. The project's contribution to the impact will not be cumulatively considerable.

Table 2-1 (continued)

## SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
<p><b>3.1-9</b> Implementation of the 1994 LRDP, including the proposed project and other developments in the region that generate hazardous chemical waste, could place an additional load on hazardous waste management facilities.</p> <p>Because the University cannot guarantee that other government entities would take steps to mitigate this impact within other jurisdictions, this impact is considered significant and unavoidable. Due to prior implementation of 1994 LRDP EIR Mitigation Measures 4.6-4(a) and (b), the project's contribution to this impact would not be cumulatively considerable.</p>	SU <sup>2</sup>	<i>No additional mitigation required for the proposed project. No additional mitigation available for the regional cumulative impact.</i>	SU <sup>2</sup>
<p><b>3.1-10</b> Implementation of the 1994 LRDP, including the proposed project and other developments in the region that use radioactive materials, would increase the number of people exposed to health hazards associated with the use of radioisotopes.</p> <p>This impact is considered significant and unavoidable because the University cannot guarantee that additional radioactive materials used at off-campus locations would be managed safely. Due to prior implementation of 1994 LRDP EIR Mitigation Measure 4.6-5(a) and (b), the project's contribution to this impact would not be cumulatively considerable.</p>	SU <sup>2</sup>	<i>No additional mitigation required for the proposed project. No additional mitigation available for the regional cumulative impact.</i>	SU <sup>2</sup>

1 LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

2 Impacts are significant on a cumulative level only; project level impacts will be less than significant. The project's contribution to the impact will not be cumulatively considerable.

Table 2-1 (continued)

## SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
<p><b>3.1-11</b> Implementation of the 1994 LRDP, including the proposed project, in conjunction with other development in the region that generates radioactive waste, would place an additional load on radioactive waste management facilities.</p> <p>This impact is considered significant and unavoidable because only one out-of-state low-level radioactive waste facility continues to accept low-level radioactive waste for landfill disposal. In addition, the campus cannot guarantee that other jurisdictions will adopt, monitor, and enforce programs to minimize the generation of radioactive waste. Due to prior implementation of 1994 LRDP EIR Mitigation Measure 4.6-6(a) through (d), the project's contribution to this impact would not be cumulatively considerable.</p>	SU <sup>2</sup>	<i>No additional mitigation required for the proposed project. No additional mitigation available for the regional cumulative impact.</i>	SU <sup>2</sup>
<p><b>3.1-12</b> Implementation of the 1994 LRDP, including the proposed project, in conjunction with other development in the region that uses biohazardous materials and research animals would increase the number of people exposed to health hazards associated with such use.</p> <p>This impact is considered significant and unavoidable because the University cannot guarantee that additional biohazardous materials and research animals used in the Davis area would be managed safely. Due to prior implementation of 1994 LRDP EIR Mitigation Measure 4.6-9, the project's contribution to this impact would not be cumulatively considerable.</p>	SU <sup>2</sup>	<i>No additional mitigation required for the proposed project. No additional mitigation available for the regional cumulative impact.</i>	SU <sup>2</sup>

1 LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

2 Impacts are significant on a cumulative level only; project level impacts will be less than significant. The project's contribution to the impact will not be cumulatively considerable.

Table 2-1 (continued)

## SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
<p><b>3.1-13</b> Implementation of the 1994 LRDP, including the proposed project, and other development in the region that generates biohazardous waste, would place an additional load on available biohazardous waste management facilities.</p> <p>As all biohazardous waste is rendered non-hazardous prior to disposal and existing practices minimize the potential for adverse health effects prior to disposal, this impact is considered less than significant</p>	LS	<i>No mitigation required.</i>	LS
<b>3.2 Utilities and Service Systems</b>			
<p><b>3.2.1</b> Development of the proposed JAX West project would contribute runoff water to existing stormwater drainage systems and could increase the risk of flooding on- or off-site. This is considered a <i>less-than-significant</i> impact.</p>		<i>No mitigation required.</i>	LS
<p><b>3.2-2</b> Development of the proposed JAX West project would increase the demand for wastewater treatment and distribution. Because both collection and treatment capacity are sufficient to serve the project, and points of connection with adequate capacity are available, this is considered a <i>less-than-significant</i> impact.</p>	LS	<i>No mitigation required.</i>	LS

<sup>1</sup> LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

Table 2-1 (continued)

## SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
3.2-3 Development of the proposed JAX West project would increase the demand for electricity and related service systems. However, sufficient capacity is available to meet the demand. The impact is less than significant.	LS	<i>No mitigation required.</i>	LS
3.2-4 Development of the JAX West project would increase the demand for natural gas and related service systems. However, sufficient capacity is available to meet the demand. The impact is less than significant.	LS	<i>No mitigation required.</i>	LS
3.2-5 Development of the JAX West project would result in a direct increase in demand for telecommunication services on campus. However, adequate service will be available. This impact is less than significant.	LS	<i>No mitigation required</i>	LS
3.2-6 Cumulative development in the PG&E and WAPA service areas, including development of the proposed project in conjunction with 1994 LRDP development as amended, would result in increased demand for use of electricity and related service systems. There is no evidence that development on campus would create a need for new generating facilities. This impact is less than significant.	LS	<i>No mitigation required</i>	LS

<sup>1</sup> LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

**Table 2-1 (concluded)**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES IN THE DRAFT EIR**

Impact	Level of Significance Prior to Mitigation <sup>1</sup>	Mitigation Measures	Level of Significance Following Mitigation <sup>1</sup>
<p><b>3.2-7</b> Development related to the implementation of the 1994 LRDP, including the proposed project, and other development in the region would continue to result in an increase in the consumption of domestic water, as anticipated in the 1994 LRDP.</p> <p>Since the capacity of the deep aquifer that provides domestic water to the campus and the region is unknown, this impact is considered significant and unavoidable. Implementation of 1994 LRDP EIR Mitigation Measure 4.14-1(a) will ensure that the project's contribution to this impact would not be cumulatively considerable.</p>	SU <sup>2</sup>	<i>No additional mitigation required for the proposed project. No additional mitigation available for the regional cumulative impact.</i>	SU <sup>2</sup>
<p><b>3.2-8</b> Cumulative development in the PG&amp;E service area, including development of the proposed project in conjunction with 1994 LRDP development and the WWTP Replacement Project, would result in increased demand for use of natural gas and related service systems.</p>	LS	<i>No mitigation required.</i>	LS
<p><b>3.2-9</b> Development of the proposed project, in conjunction with 1994 LRDP development and the WWTP Replacement Project, would result in increased demand for telecommunication services on campus.</p>	LS	<i>No mitigation required.</i>	LS

1 LS = Significant; PS = Potentially Significant; S = Significant; SU = Significant, Unavoidable

2 Impacts are significant on a cumulative level only; project level impacts will be less than significant. The project's contribution to the impact will not be cumulatively considerable.

### **3.1 CHANGES TO THE PROPOSED PROJECT**

Since the circulation of the Draft EIR, The Jackson Laboratory (TJL) has developed additional information with respect to the proposed project. That additional information revises the proposed project in two ways: TJL now proposes to build the facility in two phases, and to construct and operate the facility in a manner that provides higher quality animal care than previously envisioned. These two changes are described below.

The Draft EIR described the proposed facility as consisting of a building with about 96,064 gross square feet of space that would accommodate up to 300,000 laboratory mice and would have a staff of about 131 persons. Based on information developed more recently, this facility would be built in two phases. The first phase would involve a 73,780 square foot building that would house approximately 183,000 to 185,000 mice, and the second phase that would add approximately 22,284 square feet of space (for a total of 96,064 square feet at buildout) and allow the number of mice to be housed to increase from 185,000 to 300,000. The facility at buildout would be of the size and scale evaluated in the Draft EIR.

The Draft EIR evaluated the building with a design that included animal holding rooms that would be sealed and sterile and ventilated with HEPA filtered incoming air; i.e., a positively ventilated system. Such a facility also required all personnel to change from street clothes to special caretaker clothes before entering the animal rooms. As the result of subsequent study, TJL has determined that an Isolator-based facility, rather than sealed animal holding rooms, would be more consistent with TJL's goal of achieving the highest-quality animal care. The Isolators are free standing, fully sterile, glove-wall units. Each is capable of housing approximately 100 duplex boxes of mice. In the Isolator-based facility using state-of-the-art equipment, animals would be housed in sterile sealed chambers supplied with isolated air supply. Employees would work in a non-sterile environment, and would access mice through gloved walls in the sterilized Isolator units, thus substantially reducing direct contact between employees and animals. This type of facility insures a higher level of sterility and consequently a generally higher level of animal health. It also would be as secure as the previous proposal from the viewpoint of release of the mice to the environment.

### **3.2 ENVIRONMENTAL CONSEQUENCES OF PROPOSED CHANGES**

The proposal to develop in the proposed project in phases would not affect the significance or severity of the impacts identified in the Draft EIR, because the size and scale of the phased facility are the same as the project evaluated in the Draft EIR.

The proposal to develop the facility with isolator technology would insure a higher level of sterility in the animal environment and therefore would better meet the high quality animal health objectives of TJL. Further, it is anticipated that the already less-than-significant risks to employee health and safety also would be reduced in the isolator-based facility in comparison to the facility as originally proposed. Employees would have little direct contact with animals and reduced potential for exposure to airborne pathogens or allergens from the mice. Because this change in the manner in which the mice are housed would not change the footprint of the project, increase the number of employees or other traffic to the site, or require additional utilities and services beyond what was analyzed in the previous proposal, this change in the proposed project

would not affect in any way the significance or severity of the impacts identified in the Draft EIR.

### 3.3 OTHER NEW INFORMATION

#### 3.3.1 Results of Fourth Quarter 2000 WWTP Effluent Sampling: Copper

During circulation of the Draft EIR, results from the most recent quarterly testing of effluent from the campus Wastewater Treatment Plant (WWTP) became available and showed that copper detected in the effluent was in excess of the permitted level. The WWTP permit limit is 13 parts per billion (ppb), and the results of the December 2000 sampling indicated copper concentrations of 16 ppb in the WWTP effluent. The previous sampling of effluent from the new WWTP, which opened in March 2000, indicated that the new WWTP was in compliance with all permit limits, including copper in the effluent (5.4 ppb in June 2000 and 10 ppb in September 2000).

The 1994 LRDP EIR stated that, “increased flows to the Campus Wastewater Treatment Plant due to development allowed under the 1994 LRDP would generate increased discharge of treated effluent into the South Fork of Putah Creek which could adversely affect receiving water quality.” This impact was considered to be significant (LRDP Draft EIR page 4.8-23). To reduce this impact to a less-than-significant level, the following mitigation measures were adopted (LRDP Draft EIR page 4.8-24).

- 4.8-6(a) *The Campus shall continue to monitor effluent discharge, in compliance with WDR Order No. 92-040<sup>1</sup>, from the wastewater treatment plant to identify any exceedances of established WDR effluent limits.*
- 4.8-6(b) *If the effluent limits established in WDR Order No. 92-040 are exceeded, and action is required by the CVRWQCB, the Campus shall make modifications to the pretreatment program to ensure compliance with established effluent limits.*
- 4.8-6(c) *The Campus shall apply for and comply with any requirements of a NPDES WDRs<sup>2</sup> for the proposed new wastewater treatment plant prior to plant operation.*

As anticipated in the 1994 LRDP EIR (LRDP Draft EIR page 4.8-23) the campus has constructed a new WWTP. Consistent with the requirement of CEQA, an EIR was prepared for that project (WWTP Replacement Project Draft EIR, October 1996, and Final EIR, March 1997). The 1997 WWTP EIR stated that, “continued discharge of treated effluent into the South Fork of Putah Creek could result in potential water quality degradation because of the presence of toxic pollutants in the WWTP effluent” (WWTP Draft EIR page 4.1-54). Consistent with the 1994 LRDP EIR, this impact was considered potentially significant. To reduce this impact to a less than-significant-level, the following mitigation measures were adopted (WWTP Final EIR page 2-3) in addition to the 1994 LRDP mitigation measures.

<sup>1</sup> In 1997, WDR Order No. 92-040 was superseded by WDR Order No. 970-236.

<sup>2</sup> National Pollutant Discharge Elimination System Waste Discharge Requirements

- 4.1-6(a) *The Campus shall strictly implement the pretreatment program and aggressively enforce the local limits to reduce pollutant concentrations and ensure the NPDES permit limits would be met. Implementation of the pretreatment program to ensure that local limits are met will include monitoring, inspection of facilities, education, and enforcement, all as described above in “Regulatory Setting”, in Appendix E, and in the UC Davis WWTP Final Local Limits Report (Krieger and Stewart 1995) or subsequent updates.*
- 4.1-6(b) *The Campus will modify the operation and/or treatment processes at the new WWTP as necessary to comply with all applicable permit conditions related to toxics that are in the final NPDES permit for the new WWTP.*

As required by the monitoring programs in both the previous and current WWTP Waste Discharge Requirements (WDR), and consistent with the LRDP and WWTP mitigation measures, the campus has monitored WWTP effluent on a quarterly basis. Between March 1998 and through the first quarter of 2000, the copper concentration in effluent from the old WWTP averaged 33 ppb with a maximum concentration of 59 ppb (Phillips, February 2001).

The results of toxicity testing using bioassays in 100% raw effluent at the concentrations of copper discharged from the old plant generally met or exceeded EPA standards using Ceriodaphnia, fathead minnow larvae, and algae<sup>3</sup>. A recently completed yearlong toxicity study of the Cache Creek and Putah Creek watersheds (1998-1999) included sampling stations upstream and downstream from the old campus WWTP discharge to Putah Creek and included samples of 100% effluent from the old WWTP (California Regional Water Quality Control Board 2000). The study concluded that:

*In the Putah Creek Watershed, minor levels of toxicity were detected and these tended to be watershed-wide events not related to the UC Davis wastewater treatment plant discharge. Also Putah Creek sampling was coordinated with that conducted by the UC Davis wastewater treatment plant. Results of the treatment plant’s self-monitoring indicated no toxicity to any of the test species during the study period.”*

Through three quarters of effluent sampling at the new WWTP, copper concentrations in effluent have been much lower than from the old WWTP, averaging 10 ppb with a maximum of 16 ppb in the December 2000 sample.

### 3.3.2 Implementation of LRDP EIR and WWTP EIR Mitigation Measures

In response to the fourth quarter 2000 exceedence, and consistent with the LRDP EIR and WWTP EIR mitigation measures, the campus has taken several steps to bring copper concentrations into compliance with the permit limit. These steps include strictly enforcing the pretreatment program and aggressively enforcing local limits by identifying and removing sources of copper to wastewater where feasible.

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<sup>3</sup> UC Davis Wastewater Treatment Plant self-compliance monitoring reports.

- Campus sewer disposal policies were changed in February 2001 to lower the local limit to zero and completely prohibit the discharge of any wastewater containing added copper that is generated by campus users.
- Staff from EH&S performed an audit of campus departments that maintain significant quantities of copper in their laboratories to ensure that all waste is being properly disposed.
- Staff at the campus WWTP are working with campus wastewater researchers, faculty, and outside professional engineers (Brown and Caldwell Environmental Engineering and Consulting) to identify whether operations at the WWTP can be modified to enhance the removal of copper during treatment.
- The campus retained the services of a firm that specializes in source control studies (Larry Walker Associates) to identify enhancements to the pretreatment program to reduce copper loadings.

The results of the campus audit to date have indicated that nearly all campus copper users are properly collecting and disposing of their wastes. However, several users were identified that historically discharged wastewater containing added copper. These sources of copper have now been removed.

The evaluation of methods to reduce effluent copper concentrations at the WWTP prepared by Brown and Caldwell (February 2001) concluded that:

- Limited data available from the new WWTP are not sufficient to conclude that copper concentrations are increasing with time. Trace metal concentrations in wastewater are variable particularly from a source as diverse as UC Davis.
- Improved effluent sampling and analysis techniques are needed. The methodology used to collect and analyze effluent samples at the new WWTP may be generating samples that are artificially high in copper levels. The two-person clean sampling method (EPA Method 1669) should be used to collect all compliance samples. This method ensures a more representative sample and reduces the potential for contamination. EPA has generated data showing that clean sampling can result in lower concentrations. Improved analysis techniques would distinguish between particulate copper and copper in solution. The existing methodology used by the campus does not distinguish between these forms of copper.
- Potential localized sources of contamination at the effluent monitoring point should be removed because they could bias the compliance samples. Metal structures are present in the vicinity of the sampling point and should be evaluated as a potential source of contamination of the compliance samples.
- Chemical treatment methods could be added to the WWTP processes to remove copper. Ferric chloride could be added to raw sewage from the headworks. Ferric chloride and sodium sulfide could be added to the solids storage basin supernatant. Pilot programs are recommended to test the efficacy of these methodologies. If they are effective, and if source control

and improved sampling and analysis methods don't reduce copper levels below permit limits, then these or other chemical treatment methods would be implemented.

- Wetlands could be added to polish effluent before it is discharged to Putah Creek. If measures described above are not sufficient to bring the WWTP into compliance for copper, a pilot wetland project could be used to evaluate whether this method would be feasible for reducing copper concentrations.

Brown and Caldwell concluded that implementation of these measures would lower copper concentrations sufficiently to achieve compliance with the copper limit in the permit for the campus WWTP.

The source control evaluation concluded that a major potential source of copper in the WWTP effluent is corrosion of copper pipes (Larry Walker Associates, February 2001). The study noted that replacement of existing copper pipes and using alternative materials in new construction is not considered feasible. It stated that reducing velocities and temperatures in hot water circulating systems may reduce copper loadings and should be evaluated by the campus. UC Davis Fleet Services and Unitrans garages are potential sources of copper discharges and should be evaluated to be sure standard best management practices are being implemented.

Recommendations were also made for other miscellaneous sources. As part of the implementation of the mitigation measures identified in the LRDP EIR and WWTP EIR, the campus will evaluate and implement these recommendations if efficacious and feasible, and if needed after implementing the recommendations described above for reducing copper concentration at the WWTP.

Implementation of the above described measures by the campus, previously adopted as mitigation measures and identified in the LRDP EIR and WWTP EIR, will reduce the copper concentration in WWTP effluent to within the permit limit. No new significant impacts have been identified and no new mitigation measures are required.

### 3.3.3 Contribution of Proposed Project

The proposed project includes no special characteristics that would make it an atypical contributor of copper to the wastewater received at the WWTP due either to its design or the operation of the facility. The project would be required to comply with the campus pre-treatment program and therefore no copper containing compounds would be discharged to the sanitary sewer from the proposed facility. Similar to other laboratories on campus, the new facility would be subjected to periodic audits to ensure that all wastes including copper containing materials are disposed of properly. Therefore, as for most other campus buildings, the more likely source of copper from the proposed project would be corrosion of copper pipes.

If the concentration of copper in wastewater from future projects averages the same as that currently entering the plant, no change in effluent concentrations would occur. Unless a new project is an extremely large source of copper entering the WWTP, the effect of the new project on copper concentrations in effluent levels would be de minimis. If future projects discharge at copper concentrations lower than current average influent levels, the cumulative effect would be to slightly decrease copper concentration in the WWTP effluent. If several new large projects

were added to the WWTP that had copper levels twice current influent concentrations, the copper concentration in effluent at the WWTP would increase only 1 ppb (Phillips 2001).

As identified in the LRDP EIR and WWTP EIR mitigation measures, source control and modification of treatment processes at the WWTP are the correct methods to use to ensure the plant meets discharge limits and will reduce the impact on water quality of copper in the WWTP effluent to a less-than-significant level. Because the proposed project will not be an atypical source of copper, it would not contribute to an increased exceedance of the permit limit for copper in effluent and would make a de minimis contribution to the concentration of copper in WWTP effluent from all campus sources. No additional mitigation measures are required to address project-level and cumulative water quality impacts of increased discharges of wastewater to the WWTP.

CEQA requires that a lead agency establish a program for monitoring and reporting on mitigation measures adopted as part of the environmental review process. This MMRP is designed to ensure that, if the proposed project is approved, the mitigation measures identified in the Draft and Final EIRs will be implemented.

No project-specific mitigation measures were required for the proposed project. This Project incorporates relevant 1994 LRDP EIR mitigation measures, including 1997 WWTP EIR mitigation measures, previously adopted by The Regents. Compliance with the 1994 LRDP EIR mitigation measures during Project implementation will be monitored pursuant to the 1994 LRDP EIR monitoring program previously adopted by The Regents.