

## 2002 WMRS ANNUAL REPORT

The 2002 annual report for the White Mountain Research Station (WMRS) MRU covers fiscal year 2001/2002. However as in previous reports, data related to station use are reported for the 2002 calendar year, which correlates more closely with the main research season from June through September at the station. The report is organized according to the January 8, 1998 General Campus ORU Policies and Procedures. According to the 1982 UC Policy on ORU and MRU reports, this is submitted by the Chair of the Advisory Committee to (1) the President, *via* the Provost and Senior Vice-President for Academic Affairs, and (2) the Vice Chancellor for Research with copies to the Chancellor on the Director's home campus.

### 1. SUMMARY OF MAJOR ACTIVITIES IN

**a. Research and educational "use"** of a field station is one of the most valuable measures of its success. WMRS tracks the total number of users, the total number of "user nights" (requiring room and or board) and "user days" (*e.g.* classroom use for teaching or a conference), and the institutions and disciplines represented by the users for the *calendar year*. The calendar year corresponds more closely to the research season, which peaks between April and October and straddles the fiscal year. Patterns of use were similar last year to the year before:

<b>Summary of Usage for Calendar Year</b>	<b>2001</b>	<b>2002</b>
<b>Number of individual users</b>	<b>9,560</b>	<b>9,259</b>
<b>Number of user nights, all sites</b>	<b>3,497</b>	<b>2,763</b>
<b>Number of institutions represented</b>	<b>91</b>	<b>102</b>
<b>Research user nights</b>	<b>4,811 (50%)</b>	<b>3561 (38%)</b>
<b>Education user nights</b>	<b>3,265 (34%)</b>	<b>2927 (32%)</b>
<b>Other user nights</b>	<b>1,494 (16%)</b>	<b>2771 (30%)</b>
<b>UC User Nights</b>	<b>5,199 (54%)</b>	<b>4137 (45%)</b>
<b>Non UC User Nights</b>	<b>4,361 (46%)</b>	<b>5122 (55%)</b>
<b>Owens Valley Laboratory user nights</b>	<b>6,262 (66%)</b>	<b>7822 (84%)</b>
<b>Crooked Creek user nights</b>	<b>1,894 (20%)</b>	<b>882 (10%)</b>
<b>Barcroft user nights</b>	<b>1,404 (15%)</b>	<b>555 (6%)</b>
<b>Campus most represented:</b>	<b>WMRS (1,610)</b>	<b>WMRS (1,897)</b>
<b>Discipline most represented:</b>	<b>Earth (3,982)</b>	<b>Earth (2,840)</b>

**b. WMRS Research Programs.** WMRS scientists submitted 12 proposals in 2001 and 10 or 83% were awarded and received external funding. Proposals currently being funded through the period of 1/1/2001-12/31/2002:

1. **Population biology Research on Sierra Nevada Bighorn Sheep.** California Department of Fish and Game, \$145,068 7/1/00-6/30/03, J. Wehausen, PI and R. Ramey, Co-PI.
2. **Context-Dependent Constraints of Sagebrush-Herb Dynamics.** NSF grant, \$40,302, 4/99-12/01, Eric Berlow, PI.
3. **California Postsecondary Eisenhower Professional Development Grant Program,** \$105,383, 7/1/02-9/30/04, Susan M. Szewczak, PI.
4. **Minority Postdoctoral Research Fellowship,** NSF grant, \$25,000, 2/1/00-1/31/02, N. Aguilar – Post Doc, PI's: Frank L. Powell and Jim Hicks
5. **Sierra Nevada Willow Flycatcher Demography Study.** USFS contract, \$49,768, 6/1/01-1/31/02, Mike Morrison, PI.
6. **NAS, Lemoore -Fresno Kangaroo Rat Study Plan.** US, Navy, \$40,000 6/1/01-5/31/02, Mike Morrison, PI
7. **Cooperative Agreement Data Collection for Ecological Assessment of Wilderness Plan.** USGS, \$39,683, 9/1/00-5/30/01, E. Berlow, PI; S.M. Szewczak, Co-PI.
8. **Modeling, Developing, and Assessing Scientific Inquiry Skills Using a Computer-Based Inquiry Support Environment.** NSF-ROLE subcontract, \$7,509 1/1/01-12/31/03, S.M. Szewczak, PI.
9. **White Mountain Research Station Documentary.** Informal Science Education supplement to NSF Field Stations and Marine Laboratory Improvements award for Major Laboratory and Telecommunications Improvements for WMRS, \$38,173, 11/1/01-10/30/02, Frank Powell, PI and Rich Wargo, Co-PI.
10. **A Facility for Cosmological Research at the White Mountain Research Station.** UC Multicampus Science and Technology Research Fund, jointly awarded to WMRS and INPAC, \$50,000, 7/1/01-6/30/02, Philip Lubin, PI.

**c. WMRS Educational Programs:**

1. **WMRS Undergraduate Internship Program.** The total budget for the 2002 Internship program was \$121,127 with funding provided by the Berger Foundation (42,300), National Science Foundation (64,357) and natural resource agencies (14,470). Twenty-one undergraduates participated in the 2002 program. As participants in the NSF-REU (Research Experience for Undergraduates) program in its first year at WMRS, eight of these students worked as research assistants and also completed individual research projects of their own. We continued focusing on technology education this summer, with each intern receiving training in Global Positioning Systems (GPS) and computer-aided mapping with Geographical Information Systems (GIS). Each student used Front Page and Photoshop to create web sites containing project descriptions and details from their standard published reports such as methods and results sections. Several interns also committed many hours of their own time to create an attractive and professional interface for these web pages. For a second year, Eastern Sierra Institute of Collaborating Education (ESICE) was able to

purchase a Ford Explorer and Suburban for the Internship program and donate the vehicles to WMRS. Given the success of this year's REU program, we plan to continue the program next year, focusing several research projects on the Lower Owens River as part of the Lower Owens River Project. The recent formation of a partnership with the Community Conservation International in Los Angeles has given us the opportunity to expand next year's IRT program by recruiting minority students from urban areas. Advanced interns will work in collaboration with USFS, BLM, the University of Nevada and the University of California.

#### **d. WMRS Outreach Programs**

**Friends of White Mountain Research Station.** The Friends of White Mountain, comprising interested and supportive local citizens, is officially recognized as a Campus Support Group at UCSD. The purposes of this organization are (1) to help the station enhance its community outreach activities and (2) provide support to WMRS rural community education needs programs. The mission includes hosting the annual WMRS open house. The open house involved organizing presentations by WMRS scientists and other users, assisting with logistics, answering guest questions, and providing general staffing for the event. Friends also assisted with maintaining the WMRS library and updating the research bibliography.

## **2. ADVISORY COMMITTEE**

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- Robert S. Anderson, Department of Earth Sciences, UC Santa Cruz
- Phillip E. Bickler, Department of Anesthesiology, UC San Francisco, **Committee Chair**
- James Hicks, Department of Ecology and Evolutionary Biology, UC Irvine
- Mary Droser, Department of Earth Sciences, UC Riverside
- Gary Ernst, Member-at-large, Department Geological & Environmental. Science, Stanford University
- Scott Hodges, Department of Ecology, Evolution and Marine Biology, UC Santa Barbara
- Joshua Kohn, Department of Biology, UC San Diego
- Mathias Kondolf, Department of Environmental Planning, UC Berkeley
- James McClain, Department of Geology, UC Davis
- Kenneth A. Nagy, Department of Organismic Biology, Ecology and Evolution, UC Los Angeles
- Edwin P. (Phil) Pister, Member-at-large, Calif. Dept. of Fish and Game, Emeritus
- John Smiley, Landells Hill Big Creek Reserve, UC Natural Reserve System
- Steven J. Wickler, Member at large, Department of Animal and Veterinary Science, Cal Poly Pomona.
- *ex officio* Cathy Magowan, Science and Technology Research Coordinator, UCOP
- *ex officio* Carol McClain, Director, Multicampus Research Planning & Programs, UCOP
- *ex officio* Frank L. Powell, Director, WMRS

### **3. ACTIVE WMRS FACULTY MEMBERS**

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**a. U.C. Faculty.** In 2001/2002, **four faculty from three UC campuses received WMRS support (see table on pg 7 for FTE) too:**

1. Mark Thiemens, Professor of Chemistry, UCSD - WMRS Research Scientist.
2. Philip Lubin, Professor of Physics, UCSB - WMRS Research Scientist.
3. Philip W. Rundel and Arthur C. Gibson - Professors of Biology, UCLA, - WMRS Research Scientist.
4. Frank L. Powell, Professor of Medicine, UCSD - WMRS Director.

**b. U.C. Professional Researchers:**

In 2002, seven professional researchers conducted research programs at WMRS:

1. Eric L. Berlow, Ph.D. – WMRS Assistant Research Scientist
2. Michael Morrison, Ph.D. - WMRS Academic Administrator
3. Joseph M. Szewczak, Ph.D. - WMRS Assistant Research Scientist
4. Susan M. Szewczak, Ph.D. - WMRS Academic Coordinator
5. Rob R. Ramey, Ph.D. – WMRS Assistant Project Scientist
6. John D. Wehausen, Ph.D. - WMRS Associate Research Scientist
7. Jeff Holmquist, Ph.D. – WMRS Associate Research Scientist

**c. Visiting Researchers:**

1. Angela Jayko, Ph.D. (USGS) maintains her field office at WMRS.

### **4. GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS**

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**a. Postdoctoral trainees.** Nancy Aguilar, Ph.D. received a 1-year extension (through January 2003, for 3 years total support) on her NSF Postdoctoral Research Fellowship with Professor James Hicks (UCI) and Frank Powell (UCSD) as co-mentors. Her primary appointment is in WMRS to study the effects of hypoxia on gene expression in fishes adapted to different patterns of environmental hypoxia. She is working on physiological studies at UCI and molecular regulatory studies at WMRS.

**b. WMRS graduate student Minigrants.** Graduate student research proposals were reviewed by the Advisory Committee. In 2002, sixteen awards were made for a total of \$24,029. \$6,175 was given as a cash award for travel and \$17,854 was given as a credit voucher for room and board, computer and GIS fees at the station.

The committee awarded support to the following applicants.

1. Linah Ababneh, University of Arizona, \$1140, “The response of high altitude subalpine pine forests to elevated CO<sub>2</sub> and elevated nitrogen deposition using  $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$  and  $\delta^{18}\text{O}$ : a case study

from the bristlecone and foxtail pines in the Inyo Range and the Sierra Nevada”, Advisor: Dr. Steven Leavitt.

2. Matt Aronson, Colorado State University, \$1500, “Process and complexity in Natural Resource Management: A sociological analysis of the lower Owens River project”, Advisor: Dr. Louis E. Swanson.

3. Ninad Bondre, Miami University, \$1400, “Morphology, geochronology, and chemostratigraphy of the Big Pine Volcanic Field, Owens Valley, California: Implications for the tectono-magmatic evolution of an incipient continental rift zone”, Advisor: Dr. Yildirim Dilek.

4. Doug Bruce, Sonoma State University, \$1997, “Physiology and fitness consequences of phosphoglucose isomerase genotype and heat shock protein expression on cold and heat tolerance in *Chrysomela aeneicollis*”, Advisor: Dr. Nathan Rank.

5. Tom Catron, UC San Diego, \$834, “Arterial Blood Composition at Extreme Altitude”, Advisor: Dr. John West.

6. Ian Gillespie, UC Riverside, \$1580, “Impacts of climate change on the recruitment niche of pinon pine seedlings (*Pinus monophylla*)”, Advisor: Dr. Edith Allen.

7. Stacie Hooper, UC Davis, \$1900, “Use of individual acoustic variation in alarm calls to estimate genetic relatedness and dispersal patterns in Belding’s ground squirrels”, Advisor: Dr. Brenda McCowan.

8. Heather Johnson, University of Arizona, \$1755, “Antler breakage in tule elk, Owens Valley, California”, Advisor: Dr. Paul R. Krausman.

9. Alan Levy, UC Santa Barbara, \$1000, “Measuring the polarization of the cosmic microwave background radiation”, Advisor: Professor Philip Lubin.

10. Jeffrey Oliver, University of Colorado, \$789, “Effects of introduced plants on the population genetics of native insects”, Advisor: Dr. M. Deane Bowers.

11. Nathan Stebor, UC Santa Barbara, \$1000, “Using the Sunyaev-Zeldovich effect to measure cosmological parameters”, Advisor: Professor Philip M. Lubin.

12. Walter Sullivan, Virginia Tech, \$2000, “Geometry, kinematics and age of the White Mountain shear zone, eastern California”, Advisor: Dr. Richard D. Law.

13. Heather Swartz, UC Berkeley, \$2000, “Sagebrush (*Artemisia rothrockii*) expansion in meadows of the Kern Plateau, Sierra Nevada, CA”, Advisor: Dr. Carla D'Antonio.

14. Quentin Vandal, Southern Illinois University, \$1575, “Mapping the Plio-Pleistocene deposits of the White/Inyo Mountains Range Front, Inyo and Mono counties, CA”, Advisor: Dr. Nicholas Pinter.

15. Elizabeth Wenk, UC Berkeley, \$1559, “The effect of diverse substrates on alpine plant species physiological ecology in the Sierra Nevada, California”, Advisor: Dr. Todd Dawson.

16. Ji Yong Yang, UC Santa Barbara, \$2000, “Assessing patterns of hybridization in *Aquilegia* hybrid zones using paternity analysis”, Advisor: Dr. Scott Hodges.

## **5. STUDENT AND FACULTY PARTICIPATION FROM OTHER CAMPUSES OR UNIVERSITIES**

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In 2002, WMRS hosted 9,259 “user nights” at all sites, including 4,137 from the University of California and 5,122 from other institutions. 102 different institutions used WMRS in 2002. The relative usage by UC researchers and classes has stabilized at about 50% of the total number of users, although it is not clear if the decrease last year reflects budget cuts in the University of California or not. Growth in total user nights is coming from inside and outside UC over the past several years.

### **User nights by institution**

	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>UC</b>	25%	47%	52%	40%	56%	54%	45%
<b>non-UC</b>	75%	53%	48%	60%	44%	46%	55%

There were 14 classes, field trips, symposia and workshops for the University of California, from UCD, UCI, UCLA, UCR and WMRS (compared to 17 last year). There were 6 extension classes from UCB, UCLA, UCSC and UCSD (compared to 5 last year). There were 27 classes, field trips, symposia and workshops from non-UC institutions in 2002 (same as in 2001).

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**6. NUMBERS AND FTE OF ACADEMIC RESEARCH PERSONNEL, TECHNICAL STAFF AND ADMINISTRATIVE PERSONNEL**

		<b>FTE</b>
<b>Director</b>		
Powell, Frank	Director	0.49
<b>Asst. Res. Sci. 11-mos <sup>2</sup></b>		
Thiemens, Mark (UCSD)	WMRS Res. Scientist	0.33
Rundel, Phil and Arthur C. Gibson (UCLA)	WMRS Res. Scientist	0.33
Lubin, Phil (UCSB)	WMRS Res. Scientist	0.33
<b>Academic Subtotal (Sub 00)</b>		<b>1.48</b>
<b>Campus Office Staff</b>		
Fager, Barbara	MSO	1.00
Jamous, Cecilia	Admin. Asst. II	0.53
<b>Campus Subtotal (Sub 01)</b>		<b>1.53</b>
<b>Station Staff</b>		
Anderson, Kathy	Admin. Asst. I	1.00
Hetzler, Scott	Lead Groundskeeper	1.00
Milender, Gary	Carpenter	1.00
Masters, Richard	Automotive Technician	0.75
Patrick, Cecil	Principal Cook	0.75
Shinn, Donna	Admin. Asst. III	1.00
Trydahl, David	PPS Sr. Superintendent	1.00
<b>Station Subtotal (Sub 01)</b>		<b>6.50</b>
<b>Total FTE</b>		<b>9.52</b>

<sup>1</sup> Casual employees; office help, seasonal cooks, carpenters, building maintenance workers, laborers are essential for support during heavy research use in the summer season but are not shown here.

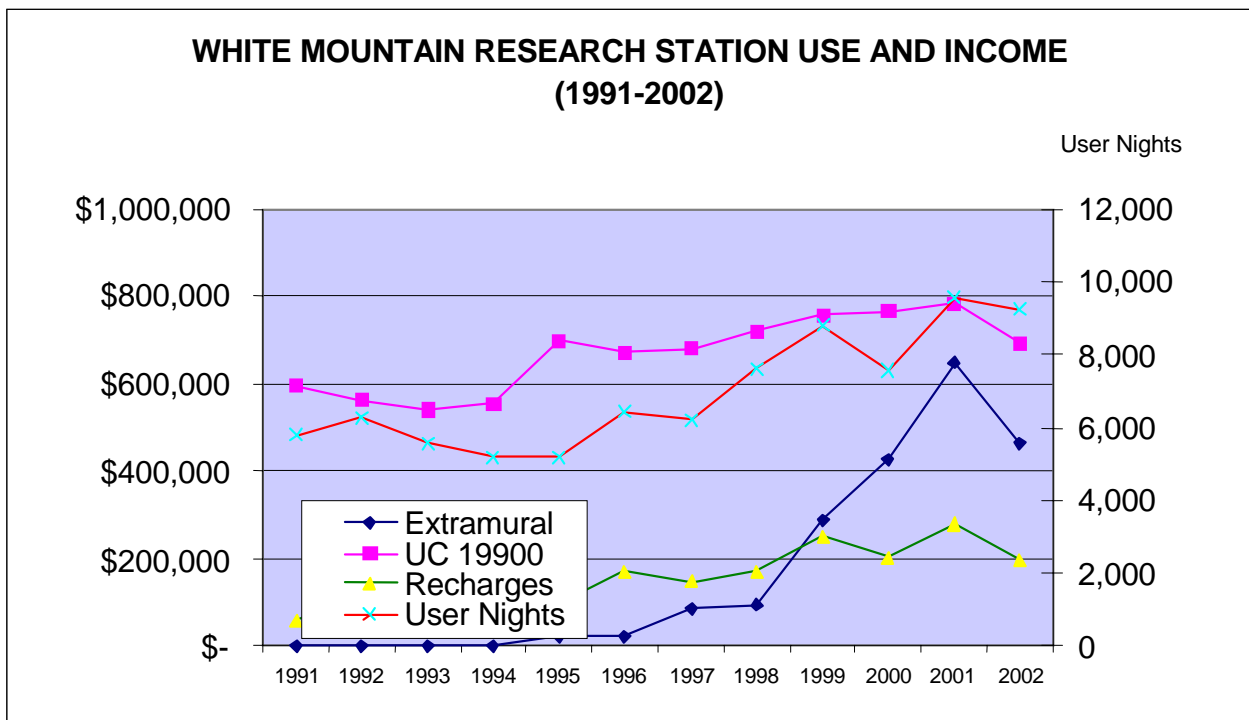
<sup>2</sup> The Assistant Research Scientist (1) FTE is an unfilled position used for rotating support of UC faculty to seed long-term research programs at WMRS.

## 7. PUBLICATIONS

Publications based on research done at a field station are a traditional measure of research productivity. The WMRS bibliography includes 1,338 publications from its inception in 1950 through 1999. This number includes 81 Master's or Doctoral theses, 177 papers or chapters from WMRS Symposia and over 850 original research articles or book chapters. 819 publications have been added over the last 15 years with 300 just since 1995. This bibliography is still being updated as a database to be available in a searchable format on the WMRS web site. New publication information is not being collected from users to update the bibliography until the existing publications are entered in the database.

## 8. INCOME & 9. EXPENDITURES (BUDGET)

The figure below illustrates the long-term trends in funding for WMRS operations and research programs for the past ten years. The trends evident in the 15-Year Review (2000) remain intact although numbers appear to have reached a plateau. External funding is projected to be over \$600,000 again in 2002, which appears to be a new steady-state with fluctuations based on the date of funding new programs. The UC appropriation was cut 10% as part of a uniformed UC budget reduction to all MRUs and ORUs in FY02/03.



The Table above shows the WMRS budget for fiscal year 2001/2002. Not included are the federal and state contracts and grants awarded to individual investigators who use WMRS but who do not run their grants through the unit. The 2002 annual total for such WMRS-related awards was \$1,220,186. This includes \$1,066,708 to UC faculty and \$153,478 to non-UC faculty for research directly involving WMRS (*i.e.* the work would be impossible without the Station).



UCOP provided 42% of the funding for WMRS and 58% came from user fees (recharge income) and extramural funding; these percentages are calculated from a total income of \$2.1M, which does not include gifts and endowments that are mainly funds being carried forward at this time. Recharge income, and the interest it earns, is absolutely critical to operate the infrastructure at WMRS and assumes a much more important role than at most MRUs, so we added it as a separate category (15%). The UCOP funding increased for merit/range adjustments of career employees but there are no cost increases for non-career (seasonal) employees, utilities or inflation.

Extramural funding grew to almost \$900,000, or another 73% relative to FY 2000-01 as WMRS continues to develop an in-house research portfolio; this was virtually non-existent in 1994.

Gifts and endowments grew primarily by interest and there was a \$3,000 opportunity fund from UCOP to help sponsor travel to a workshop at the station on renewable energy.

Historically, we have divided expenses into those occurring at the campus headquarters and those occurring at the station, which correspond closely to “administration” and “research”, respectively. Using this algorithm, 75% of the total expenses are for “research” and 75% of the UCOP funding goes to research. This algorithm considers all of the costs for basic infrastructure at WMRS as research expenses, which may not be the case on a campus where basics such as electricity, buildings, insurance, etc. are provided. We are working on a budget model that will use the UCSD financial tools to better segregate administrative, infrastructure and operational expenses at every site, including the individual laboratories at the Station.

The balance being carried forward includes \$38,000 for operations in the next fiscal year, which is already spent at the time this report is written; we’ve leased a new snowcat for safe and efficient winter access to the Barcroft Station, and had some expenses, for repairing our electrical supply after the lightning strike in June 2002, to Barcroft and Crooked Creek that were not covered by the University’s self insurance policy. The rest of the balance being carried forward consists of contract and grant awards for periods of performance that do not match the UC fiscal year and gifts and endowments (\$160,000), which are still being “grown”.

## 8. & 9. (BUDGET, CONTINUED)

<b>MRU BUDGET REPORT, FY 01/02 (7/1/01-6/30/02)</b>	<b>UC appropriation</b>	<b>Income &amp; Recharge</b>	<b>Extramural Funds</b>	<b>Gifts &amp; Endowment</b>	<b>TOTAL</b>
<b>I. Funding</b>					
A. Carryforward from 2000-2001	\$199,821	\$50,741	\$256,783	\$163,376	\$670,721
B. Current Year Funding 2001-2002	\$701,448	\$0	\$642,277	\$3,782	\$1,347,507
C. Station Income/Recharge 2001-2002	\$0	\$254,097	\$0	\$0	\$254,097
<b>Subtotal - Funding</b>	<b>\$901,269</b>	<b>\$304,838</b>	<b>\$899,060</b>	<b>\$167,158</b>	<b>\$2,272,325</b>
<b>II. Expenditures</b>					
<b>A. Campus (Administration)</b>					
1. Salary	\$128,165	\$0	\$0	\$0	\$128,165
2. Benefits	\$20,063	\$0	\$0	\$0	\$20,063
3. Supplies/Equip./Travel	\$10,745	\$0	\$0	\$0	\$10,745
4. Other Expenses	\$0	\$0	\$0	\$0	\$0
<b>subtotal</b>	<b>\$158,973</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$158,973</b>
<b>B. Station (Research)</b>					
1. Salary	\$307,858	\$0	\$170,203	\$0	\$478,061
2. Benefits	\$83,887	\$0	\$36,639	\$0	\$120,526
3. Supplies/Equip.	\$287,857	\$248,795	\$197,312	\$0	\$733,964
4. Other Expenses	\$0	\$0	\$0	\$0	\$0
<b>subtotal</b>	<b>\$679,602</b>	<b>\$248,795</b>	<b>\$404,154</b>	<b>\$0</b>	<b>\$1,332,551</b>
<b>C. Other Functions</b>					
1. Conferences & Travel (IME)	\$15,748	\$13,710	\$0	\$0	\$29,458
2. Advisory Committee(s)	\$0	\$0	\$0	\$1,239	\$1,239
3. Publications	\$0	\$0	\$3,485	\$0	\$0
4. Development	\$0	\$0	\$0	\$0	\$0
5. Director's Opportunity Funds	\$0	\$0	\$0	\$0	\$0
6. Other (specify) Liens	\$0	\$0	\$26,937	\$0	\$0
<b>subtotal</b>	<b>\$15,748</b>	<b>\$13,710</b>	<b>\$30,422</b>	<b>\$1,239</b>	<b>\$30,697</b>
<b>D. Distributions (xfers to other UC's)</b>					
Grants awarded - Faculty	\$45,000	\$0	\$50,000	\$0	\$95,000
Grants awarded -Graduate Students	\$6,060	\$0	\$0	\$0	\$6,060
Grants awarded -Other (specify)	0	\$0	\$0	\$0	\$0
<b>subtotal</b>	<b>\$51,060</b>	<b>\$0</b>	<b>\$50,000</b>	<b>\$0</b>	<b>\$101,060</b>
<b>Subtotal - Expenditures</b>	<b>\$905,383</b>	<b>\$262,505</b>	<b>\$484,576</b>	<b>\$1,239</b>	<b>\$1,623,281</b>
<b>Balance (Income - (Expenditures + Distributions)</b>	<b>(\$4,114)</b>	<b>\$42,333</b>	<b>\$414,484</b>	<b>\$165,919</b>	<b>\$649,044</b>

## 8. & 9. (BUDGET, CONTINUED)

The carry forward from FY 2001-02 will be spent in FY 200203 with the second 10% cut in the appropriation, as shown below.

<b>BUDGET PROJECTION FY 02/03 (7/1/02-6/30/03)</b>	<b>UC appropriation</b>	<b>Income &amp; Recharge</b>	<b>Extramural Funds</b>	<b>Gifts &amp; Endowment</b>	<b>TOTAL</b>
<b>III. Funding, projected</b>					
A. Carryforward from 2001/2002	(\$4,114)	\$42,333	\$414,484	\$165,919	\$649,044
B. FY2002/2003 funding	\$693,893	\$280,000	\$808,958	\$0	\$1,782,851
<b>Subtotal - Funding</b>	<b>\$689,779</b>	<b>\$322,333</b>	<b>\$1,223,442</b>	<b>\$165,919</b>	<b>\$2,431,895</b>
<b>IV. Expenditures, projected</b>					
Campus (Administration)	\$217,245	\$0	\$0	\$0	\$217,245
Station (Research)	\$730,455	\$19,412	\$890,076	\$0	\$1,639,943
Distributions (xfrs)	\$45,000	\$0	\$0	\$0	\$45,000
<b>Subtotal - Expenditures</b>	<b>\$992,699</b>	<b>\$19,412</b>	<b>\$890,076</b>	<b>\$0</b>	<b>\$1,902,187</b>
<b>Balance</b>	<b>(\$302,921)</b>	<b>\$302,921</b>	<b>\$333,366</b>	<b>\$165,919</b>	<b>529,708</b>

## 10. SPACE

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<b>Owens Valley Laboratories</b>	<b>Square Feet</b>
Dining/office	2,475
Sleeping dorms	4,231
Manis lab	716
Molecular lab complex	300
Classroom	864
Library	400
Shop	1,250
Lecture hall	960
Classroom & computer lab	960
Caretaker's housing	900
Bathroom	320
Temporary housing	1,695
Long term housing	1,440
<i>subtotal</i>	<i>16,511</i>
<b>Crooked Creek</b>	
Hall lodge	6,600
4 Cabins	3,200
Quonset/Storage	1260
Bathroom	320
Shop	960
Lab	1,300
<i>subtotal (square feet)</i>	<i>13,640</i>
<b>Barcroft</b>	
Pace lab	9,400
Quonset/Storage huts	300
Animal lab	476
Outer lab	392
Garage/Shop	672
<i>subtotal</i>	<i>11,240</i>
<b>Summit Laboratory</b>	
<i>subtotal</i>	<i>450</i>
<b>TOTAL</b>	<b><i>41,841</i></b>