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U.S. AGENCY FOR
INTERNATIONAL
DEVELOPMENT

SEP 8 1993

The University of New Mexico
Department of Biology
Attn: Eric S. Loker, Associate Professor
167 Castetter Hall
Albuquerque, NM 87131-1091

Subject: Grant No. HRN-5600-G-00-3023-00

Dear Associate Professor Loker:

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, and the Federal Grant and Cooperative Agreement Act of 1982, as amended, the Agency for International Development (hereinafter referred to as "A.I.D.") hereby provides to the University of New Mexico (hereinafter referred to as the "Grantee") the sum set forth in Section 1C.2. of Attachment 1 of this Grant to provide financial support for the program described in Attachment 2 of this Grant entitled "Program Description".

This Grant is effective as of the date of this letter and funds obligated hereunder shall be used to reimburse the Grantee for allowable program expenditures for the period set forth in Section 1B. of Attachment 1 of this Grant.

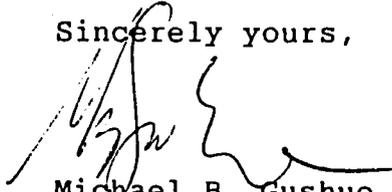
This Grant is made to the Grantee on the condition that the funds will be administered in accordance with the terms and conditions as set forth in the attachments listed under my signature below, which together constitute the entire Grant document and have been agreed to by your organization.

Please acknowledge receipt and acceptance of this Grant by signing all copies of this Cover Letter, retaining one copy for your files, and returning the remaining copies to the undersigned.

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If you have any questions, please contact Mr. Mike Atsalinos of my staff at (703) 875-1142.

Sincerely yours,



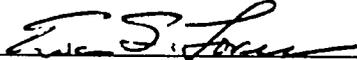
Michael B. Gushue
Grant Officer
Chief, HRN Branch
Office of Procurement

Attachments:

1. Schedule
2. Program Description
3. Standard Provisions
4. Special Provision entitled "Restrictions on Lobbying"

ACKNOWLEDGED:

The University of New Mexico

BY: 

TYPED NAME: Eric S. Loker

TITLE: Associate Professor

DATE: September 15, 1993

FISCAL DATAA. GENERAL

- A.1. Total Estimated A.I.D. Amount: \$150,000
- A.2. Total Obligated A.I.D. Amount: \$150,000
- A.3. Cost-Sharing Amount (Non-Federal): \$75,574
- A.4. Other Contributions (Federal): \$ 0
- A.5. Project No.: 936-5600
- A.6. A.I.D. Project Office: R&D/Research, M. Rechcigl
- A.7. Funding Source: A.I.D./W
- A.8. Tax I.D. No.: 85-6000-642
- A.9. CEC No.: 80884900E
- A.10. LOC No.: 72-00-1369

B. SPECIFIC

- B.1.(a) PIO/T No.: 936-5600-3692420
- B.1.(b) Project No.: 936-5600
- B.1.(c) Appropriation: 72-1131021.1
- B.1.(d) Allotment: 341-36-099-00-19-31
- B.1.(e) BPC: DDVA-93-16950-KG11
- B.1.(f) Amount: \$60,000

- B.2.(a) PIO/T No.: 936-5600-3692421
- B.2.(b) Project No.: 936-5600
- B.2.(c) Appropriation: 72-1131021.1
- B.2.(d) Allotment: 341-36-099-06-20-31
- B.2.(e) BPC: DDVA-93-16950-EG11
- B.2.(f) Amount: \$45,000

- B.3.(a) PIO/T No.: 936-5600-3692422
- B.3.(b) Project No.: 936-5600
- B.3.(c) Appropriation: 72-1131021.1
- B.3.(d) Allotment: 341-36-099-04-20-31
- B.3.(e) BPC: DDVA-93-16950-CG11
- B.3.(f) Amount: \$45,000

ATTACHMENT 1SCHEDULE1A. PURPOSE OF GRANT

The purpose of this Grant is to provide financial support for the program described in Attachment 2 of this Grant entitled "Program Description."

1B. PERIOD OF GRANT

The effective date of this Grant is the date of the Cover Letter and the estimated completion date is August 31, 1996. Funds obligated hereunder (see Section 1C.2. below) shall be used to reimburse the Grantee for allowable program expenditures incurred by the Grantee in pursuit of program objectives during such period. Funds obligated hereunder are anticipated to be sufficient for completion by the Grantee of the program described in Attachment 2 of this Grant by the estimated completion date.

1C. AMOUNT OF GRANT AND PAYMENT

1C.1. The total estimated amount of this Grant for its full period, as set forth in Section 1B. above, is \$150,000.

1C.2. A.I.D. hereby obligates the amount of \$150,000 for the purposes of this Grant during the indicated period set forth in Section 1B. above, thereby fulfilling A.I.D.'s funding requirements. A.I.D. shall not be liable for reimbursing the Grantee for any costs in excess of the obligated amount, except as specified in paragraph (f) of the Standard Provision of this Grant entitled "Revision of Grant Budget."

1C.3. Payment shall be made to the Grantee in accordance with procedures set forth in the Standard Provision of this Grant entitled "Payment - Letter of Credit," as shown in Attachment 3.

1C.4. The total estimated amount of the program described in Attachment 2 of this Grant is \$225,574, of which A.I.D. may provide the amount specified in Section 1C.1. above, and the

Grantee will provide \$75,574 in accordance with Section 1M. below.

1D. GRANT BUDGET

1D.1. The following is the Budget for the total estimated amount of this Grant (see Section 1C.1. above) for its full period (see Section 1B. above). The Grantee may not exceed the total estimated amount or the obligated amount of this Grant, whichever is less (see Sections 1C.1. and 1C.2., respectively, above). Except as specified in the Standard Provision of this Grant entitled "Revision of Grant Budget," as shown in Attachment 3, the Grantee may adjust line item amounts as may be reasonably necessary for the attainment of program objectives. Revisions to the budget shall be in accordance with 1C. above and the Standard Provisions entitled "Revision of Grant Budget" and, if applicable, "Cost Sharing (Matching)."

1D.2. Budget

<u>Cost Element</u>	<u>A.I.D.</u>	<u>Grantee/ Others (Non-Fed)</u>	<u>Total</u>
Salaries	\$ 28,850	\$ 70,774	\$ 99,624
Equipment	\$ 12,924		\$ 12,924
Materials & Supplies	\$ 6,481	\$ 4,800	\$ 11,281
Travel, Transportation & Per Diem	\$ 56,305		\$ 56,305
Other Direct Costs	\$ 20,436		\$ 20,436
Indirect Costs	\$ 25,004		\$ 25,004
Total	\$150,000	\$ 75,574	\$225,574

1D.3. Inclusion of any cost in the budget of this Grant does not obviate the requirement for prior approval by the Grant Officer of cost items designated as requiring prior approval by the applicable cost principles (see the Standard Provision of this Grant set forth in Attachment 3 entitled "Allowable Costs") and other terms and conditions of this Grant, unless specifically stated in Section 1I. below.

1E. REPORTING

1E.1. Financial Reporting

1E.1.(a) Financial reporting requirements shall be in accordance with the Standard Provision of this Grant entitled "Payment - Letter of Credit," as shown in Attachment 3.

1E.1.(b) All financial reports shall be submitted to A.I.D., Office of Financial Management, FA/FM/CMPD/DCB, Room 700 SA-2, Washington, D.C. 20523-0209. In addition, three copies of all financial reports shall be submitted to the A.I.D. Project

Office specified in the Cover Letter of this Grant, concurrently with submission of the Quarterly Technical Reports (See Section 1E.2. below).

1E.1.(c) The frequency of financial reporting and the due dates of reports shall be as specified in the Standard Provision of this Grant referred to in Section 1E.1.(a) above.

1E.1.(d) The Grantee's financial reports shall include expenditures of A.I.D. Grant funds provided hereunder, as well as non-federal matching funds and any other contributions in accordance with Section 1M. below.

1E.2. Program Performance Planning and Reporting

Technical reports must be sufficiently detailed to substantiate the findings and to permit a scientific evaluation of the research. Overseas collaborators shall be given fair credit for their participation in the research and a change to review and comment on the Final Report before it is submitted. The principal investigator will share a draft of the Final Report with the A.I.D. Project Officer for comments prior to the formal submission. Publication of results in scientific journals is encouraged. Additional guidance on report preparation is given in the "Interim Guidelines on Performance Report Preparation for PSTC and CDR Projects," available from A.I.D./R&D/R.

1E.2.(a) Performance Reports

Performance reports are required every six months. The principal investigator will submit reports stating what has been accomplished to date and detailing project management issues. A Financial Status Report will be attached to each report. Reports are due within sixty (60) days after the end of each six-month period. Four copies of each report are to be submitted to the Office of Research, Room 320 SA-18, Washington, DC 20523-1818; one copy to the Project Officer; one copy to the A.I.D. Mission (Nairobi, Kenya); one copy to the Center for Development Information and Evaluation (CDIE), Room 215C, SA-18, Washington, DC 20523-1802; and two copies to the National Academy of Sciences, BOSTID, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

1E.2.(b) Quarterly Reports

The Grantee shall submit five (5) copies of brief quarterly program performance reports, which coincide with the financial reporting periods described in Section 1E.1. above, to the A.I.D. Project Office specified in the Cover Letter of this Grant. In addition, two copies shall be submitted to A.I.D., POL/CDIE/DI, Washington, DC 20523-1802. These reports shall be submitted within 30 days following the end of the reporting period, and shall briefly present the following information:

1E.2.(b)(1) A comparison of actual accomplishments with the goals established for the period, the findings of the investigator, or both. If the output of programs can be readily quantified, such quantitative data should be related to cost data for computation of unit costs.

1E.2.(b)(2) Reasons why established goals were not met, if applicable.

1E.2.(b)(3) Other pertinent information including the status of finances and expenditures and, when appropriate, analysis and explanation of cost overruns or high unit costs. (See Section 1I.5 of this Grant.)

1E.2.(c) Special Reports

Between the required program performance reporting dates, events may occur that have significant impact upon the program. In such instances, the Grantee shall inform the A.I.D. Project Officer as soon as the following types of conditions become known:

1E.2.(c)(1) Problems, delays, or adverse conditions that will materially affect the ability to attain program objectives, prevent the meeting of time schedules and goals, or preclude the attainment of work units by established time periods. This disclosure shall be accompanied by a statement of the action taken, or contemplated, and any A.I.D. assistance needed to resolve the situation.

1E.2.(c)(2) Favorable developments or events that enable time schedules to be met sooner than anticipated or more work units to be produced than originally projected.

1E.2.(c)(3) If any performance review conducted by the Grantee discloses the need for change in the budget estimates in accordance with the criteria established in the Standard Provision of this Grant entitled "Revision of Grant Budget," the Grantee shall submit a request for budget revision to the Grant Officer and the A.I.D. Project Officer specified in the Cover Letter of this Grant.

1E.2.(d) Environmental Impact

If it appears that outputs of this project will result in an adverse environmental impact, the Grantee shall notify the A.I.D. Project Officer prior to implementation, in order to allow for orderly preparation of an environmental impact statement. The Grantee shall assure that appropriate U.S. Government, A.I.D., and/or host country procedures are followed.

1E.2.(e) Training Reports

1E.2.(e)(1) If the Grantee conducts participant training under this Grant, (see Standard Provision entitled "Participant Training" for the definition of participant training), the Grantee shall comply with reporting and information requirements of the Standard Provision entitled "Participant Training," as well as Chapters 5 and 24 of A.I.D. Handbook 10.

1E.2.(e)(2) The Grantee shall also provide five (5) copies of quarterly training reports to the A.I.D. Project Officer, covering this Grant. The report shall include the following information:

- Total number of new trainees during the period; and
- The following information for each LDC trainee:
 - name
 - citizenship
 - gender
 - training site
 - beginning and ending dates of training
 - purpose of training
 - type of training activities
 - source of funding

1E.2.(e)(3) The Grantee shall provide ten (10) copies of all training manuals produced under this Grant to the A.I.D. Project Officer.

1E.2.(f) Technical and Research Reports and Publications

The Grantee shall summarize technical and research activities of the project in reports, and distribute such reports to the appropriate USAID Missions, developing countries, and host country and international institutions in order to encourage use of the technology developed. Such reports will be completed within 60 days after completion of the activity. Journal articles and other publications are encouraged. See also the Standard Provision of this Grant entitled "Publications".

1E.2.(g) Final Report

Within 60 days following the estimated completion date of this Grant (see Section 1B. above), the principal investigator will submit four copies of the Final Performance Report to the Office of Research, Room 320 SA-18, Washington, DC 20523-1818; one copy to the Project Officer; one copy to the A.I.D. Mission (Nairobi, Kenya); one copy to the Center for Development Information and Evaluation (CDIE), Room 215C, SA-18, Washington, DC 20523-1802; and two copies to the National Academy of Sciences, BOSTID, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

It will cover the entire period of the Grant and include all information shown in Sections 1E.2., specifically including, but not limited to : (1) a summarization of the program's accomplishments or failings; (2) an overall description of the activities under the program during the period of this Grant; (3) a description of the methods of work used; (4) comments and recommendations regarding unfinished work and/or program/continuation and direction; and (5) a fiscal report that describes in detail how the Grant (and any matching) funds were used.

1E.2.(h) Annual Workplans

1E.2.(h)(1) The Grantee shall submit annual workplans for this Grant. Each annual workplan shall contain the following:

1E.2.(h)(1)(A) An action-oriented workplan describing planned activities during the next year, delineated by calendar quarter, and linked to the project goals and objectives, which describes the individuals to be involved, the activities to be conducted, and where and when they will be conducted. Planned activities shall be grouped by subject category, and then related to project objectives;

1E.2.(h)(1)(B) A projected budget, utilizing the same budget line items as are set forth in the budget of this Grant, for each calendar quarter, corresponding to the workplan; and

1E.2.(h)(1)(C) Publications, reports, workshops, seminars, and other information dissemination activities planned, by calendar quarter.

1E.2.(h)(2) The Grantee may develop the annual workplans in consultation with the A.I.D. Project Officer for this Grant.

1E.2.(h)(3) Five (5) copies of each annual workplan will be submitted to the designated A.I.D. Project Officer for this Grant and one copy submitted to the Grant Officer. The first annual workplan covering the first year of this Grant shall be submitted by the Grantee not later than sixty (60) days from the effective date of this Grant (see Section 1B. above). Thereafter, the annual workplan for each successive year of this Grant shall be submitted by the Grantee not later than sixty (60) days prior to the beginning of each year.

1E.2.(i) Trip Reports

Within 30 days following the completion of each international trip, the Grantee shall submit 3 copies of a trip report summarizing the accomplishments of the trip to the A.I.D. Project

Officer specified in the cover letter of this Grant. If several individuals are travelling together to one site, a single report representing the group will suffice. The report shall include the purpose of the trip, technical observations, suggestions and recommendations, overall impressions of the site situation (if appropriate), and a list of persons visited with their title and organization affiliation.

1E.2.(j) Annual Activity Reports

Within thirty (30) days following the annual anniversary date of this Grant, the Grantee shall submit to the A.I.D. Project Officer specified in the cover letter of this Grant five (5) copies of an annual technical progress report which will be a description of the past year's activities, including technical, scientific, managerial, and fiscal information. The report shall include, both for each field site or subcontractor/subrecipient individually and for project activities as a whole, a review of program and problems to date, and a discussion of technical and managerial issues significant to the success or failure of this Grant. The report will also address regulatory issues related to the project. Although principally a technical document, it nevertheless must include pertinent statistics or quantitative information regarding the project and its activities. The Annual Activity Report shall also include an annual expenditure report corresponding to each annual workplan (see Section 1E.2.[b] above). These expenditure reports will cover A.I.D. and, if applicable, cost-sharing amounts by budget line item (see Section 1D.2. above) and by estimated distribution amongst project components, e.g., research, training, technical assistance, technology transfer, information dissemination, or networking.

1E.2.(k) Project Implementation Plan

Not later than sixty (60) days from the effective date of this Grant (see Section 1B. above), the Grantee shall prepare and submit to the A.I.D. Project Officer specified in the Cover Letter of this Grant five (5) copies of a project implementation plan, with critical path indicators (as described in Appendix A of A.I.D. Handbook 3), for the full term of this Grant.

1F. TITLE TO PROPERTY

Title to property acquired hereunder shall vest in the Grantee, subject to the requirements of the Standard Provision of this Grant entitled "Title To and Use of Property (Grantee Title)" regarding use, accountability, and disposition of such property, except to the extent that disposition of property may be specified in Section 1I. below.

1G. PROCUREMENT AND (SUB)CONTRACTING

1G.1. Applicability

This Section 1G. applies to the procurement of goods and services by the Grantee (i.e., contracts, purchase orders, etc.) from a supplier of goods and services (see the Standard Provisions of this Grant entitled "Air Travel and Transportation," "Ocean Shipment of Goods," "Procurement of Goods and Services," "AID Eligibility Rules for Goods and Services," and "Local Cost Financing"), and not to assistance provided by the Grantee (i.e., a subgrant or [sub]agreement) to a subrecipient (see the Standard Provision of this Grant entitled "Subagreements").

1G.2. Requirements

1G.2.(a) In addition to other applicable provisions of this Grant, the Grantee shall comply with paragraph (b)(1) of the Standard Provision of this Grant entitled "AID Eligibility Rules for Goods and Services," concerning Grants funded under the Development Fund for Africa (DFA) and Grants with a total procurement value of less than \$250,000 under this Grant. However, paragraph (b)(1) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" does not apply to:

1G.2.(a)(1) The restricted goods listed in paragraph (a)(3) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services," which must be specifically approved by the Grant Officer in all cases, except to the extent that such approval may be provided in Section 1I.4. below;

1G.2.(a)(2) Paragraph (d) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" pertaining to air and ocean transportation, to which the Standard Provisions entitled "Air Travel and Transportation" and "Ocean Shipment of Goods" apply, respectively;

1G.2.(a)(3) Paragraph (c) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services;"

1G.2.(a)(4) Construction implemented by U.S. firms, regardless of dollar value, which requires that at least 50% of the supervisors and other specified key personnel working at the project site must be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the United States; and

1G.2.(a)(5) Engineering services, regardless of dollar value, which shall be limited to the United States (Geographic Code 000).

1G.2.(b) Paragraph (b)(2) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" does not apply.

1G.3. Approvals

Inclusion of costs in the budget of this Grant for the purchase of nonexpendable equipment obviates neither the requirement of Section J.13. of OMB Circular A-21 (for educational institutions) or Section 13 of Attachment B of OMB Circular A-122 (for nonprofit organizations other than educational institutions) for prior approval of such purchases by the Grant Officer, nor any other terms and conditions of this Grant, unless specifically stated in Section 1I.2. below.

1G.4. Title to Property

See Section 1F. above.

1H. INDIRECT COST RATES

1H.1. Pursuant to the Standard Provisions of this Grant entitled "Negotiated Indirect Cost Rates - Predetermined" and "Negotiated Indirect Cost Rates - Provisional (Nonprofits)," a predetermined indirect cost rate or rates shall be established for each of the Grantee's accounting periods which apply to this Grant. Payments on account of allowable indirect costs shall be made on the basis of such predetermined rates. The rate(s) for the initial period and the base(s) to which it is (they are) applied is (are) as follows:

<u>Type</u>	<u>Rate</u>	<u>Base</u>	<u>Period</u>
Off-Campus/Off-Site	26%	1/	07/01/92 - 06/30/94

1/ Base of Application: Total direct costs less items of equipment in excess of \$500, alterations and renovations, costs in excess of \$25,000 on each subgrant/subcontract, stipends and patient care costs.

1H.2. Rates for subsequent periods shall be established in accordance with the Standard Provision of this Grant entitled "Negotiated Indirect Cost Rates - Predetermined."

1I. SPECIAL PROVISIONS

1I.1. Limitations on Reimbursement of Costs of Compensation for Personal Services and Professional Service Costs

1I.1.(a) Employee Salaries

Except as the Grant Officer may otherwise agree in writing, A.I.D. shall not be liable for reimbursing the Grantee for any costs allocable to the salary portion of direct compensation paid by the Grantee to its employees for personal services which exceed the highest salary level for a Foreign Service Officer, Class 1 (FS-1), as periodically amended.

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11.1.(b) Consultant Fees

Compensation for consultants retained by the Grantee hereunder shall not exceed, without specific approval of the rate by the Grant Officer: either the highest rate of annual compensation received by the consultant during any full year of the immediately preceding three years; or the maximum rate of a Foreign Service Officer, Class 1 (FS-1) (as periodically amended), whichever is less. A daily rate is derived by dividing the annual compensation by 2,087 and multiplying the result by 8.

11.2. Publications

11.2.(a) The Grantee agrees to provide one copy of the manuscript of any proposed publication to the A.I.D. Project Officer not later than submission to the publisher, and to give serious consideration to any comments received from the A.I.D. Project Officer.

11.2.(b) In the case of publication of any of the reports described in Section 1E.2. of this Grant, A.I.D. reserves the right to disclaim endorsement of the opinions expressed. For other publications, A.I.D. reserves the right to dissociate itself from sponsorship or publication. In both cases, the Grantee will consult with the A.I.D. Project Officer as to the nature and extent of any A.I.D. disclaimer of endorsement or dissociation from sponsorship or publication.

11.2.(c) If A.I.D. does not choose to disclaim endorsement or dissociate itself from sponsorship or publication, the Grantee shall, in accordance with the Standard Provision of this Grant entitled "Publications," acknowledge A.I.D. support as follows:

"This publication was made possible through support provided by the Office of Research, Bureau of Research & Development, U.S. Agency for International Development, under Grant No. HRN-5600-G-00-3023-00."

11.2.(d) In addition to providing one copy of all published works and lists of other written work produced under this Grant to the A.I.D. Project Officer, as required by paragraph (b) of the Standard Provision of this Grant entitled "Publications," the Grantee shall also provide two copies of such publications and lists to A.I.D., POL/CDIE/DI, Washington, D.C. 20523-1802.

11.3. Equipment and Other Capital Expenditures

11.3.(a) Requirement for Prior Approval

Pursuant to Sections 1D.3. and 1G.3. above and the Standard Provisions of this Grant entitled "Allowable Costs" and "Revision

of Grant Budget," and by extension, Section J.13. of OMB Circular A-21, the Grantee must obtain A.I.D. Grant Officer approval for the following:

11.3.(a)(1) Purchase of General Purpose Equipment, which is defined as an article of nonexpendable tangible personal property, the use of which is not limited only to research, medical, scientific, or other activities [e.g., office equipment and furnishings, air conditioning equipment, reproduction and other equipment, motor vehicles, and automatic data processing equipment, having a useful life of more than two years and an acquisition cost of \$500 or more per unit);

11.3.(a)(2) Purchase of Special Purpose Equipment, which is defined as an article of nonexpendable tangible personal property, which is used only for research, medical, scientific, or other technical activities, and which has a useful life of more than two years and an acquisition cost of \$1,000 or more per unit); and

11.3.(a)(3) Other Capital Expenditures, which is defined as the cost of the asset, including the cost to put it in place).

11.3.(b) Approvals

In furtherance of the foregoing, the Grant Officer does hereby provide approval for the following purchases, which shall not be construed as authorization to exceed the total estimated amount or the obligated amount of this Grant, whichever is less (see Section 1C. above):

- 1) A 486 Compaq laptop computer, including carrying case, printer cable, mouse, and basic software package;
- 2) A HP Laser Jet Printer;
- 3) Two Leica Microstar Microscopes;
- 4) and One Leica Stereozoom-4 Dissecting Microscope.

11.3.(c) Exception for Automation Equipment

Any approval for the purchase of automation equipment which may be provided in Section 11.3.(b) above or subsequently provided by the Grant Officer is not valid if the total cost of purchases of automation equipment (e.g., computers, word processors, etc.), software, or related services made hereunder will exceed \$100,000. The Grantee must, under such circumstances, obtain the approval of the Grant Officer for the total planned system of any automation equipment, software, or related services.

11.3.(d) Compliance with A.I.D. Eligibility Rules

Any approvals provided in Section 11.3.(b) above or subsequently provided by the Grant Officer shall not serve to waive the A.I.D. eligibility rules described in Section 1G. of this Grant, unless specifically stated.

11.4. Restricted Goods

Pursuant to Section 1G. above, paragraph (a)(3) of the Standard Provisions of this Grant entitled "AID Eligibility Rules for Goods and Services," the Grant Officer's approval is required for purchase of the restricted goods described therein. In furtherance thereof, the Grant Officer does hereby provide such approval to the extent set forth below. The Grant Officer's approval is required for purchases of such restricted goods if all of the conditions set forth below are not met by the Grantee. Any approval provided below or subsequently provided by the Grant Officer shall not serve to waive any terms and conditions of this Grant unless specifically stated.

11.4.(a) Agricultural Commodities

Agricultural commodities may be purchased provided that they are of U.S. source (generally, the country from which the commodities are shipped) and origin (generally, the country in which the commodities are mined, grown, or produced) and purchased from a U.S. supplier, except that wheat, rice, corn, soybeans, sorghums, flour, meal, beans, peas, tobacco, hides and skins, cotton, vegetable oils, and animal fats and oils cannot be purchased under any circumstances without the prior written approval of the Grant Officer. However, if this Grant is funded under the Development Fund for Africa (DFA) (see Section 1G.2.[b][4] above), procurement of agricultural commodities from Special Free World countries (Geographic Code 935) is authorized, except that procurement of agricultural commodities outside the United States must have the advance written approval of the Grant Officer when the domestic price of the commodity is less than parity, unless the commodity cannot reasonably be procured in the U.S. in order to meet the needs of the project.

11.4.(b) Motor Vehicles

Motor vehicles, if approved for purchase under Section 11.3.(b) above or subsequently approved by the Grant Officer, must be of U.S. manufacture and must be of at least 51% U.S. componentry. The source of the motor vehicles, and the nationality of the supplier of the vehicles, must be in accordance with Section 1G.2. above. Motor vehicles are defined as self-propelled vehicles with passenger carriage capacity, such as highway trucks, passenger cars and busses, motorcycles, scooters,

motorized bicycles, and utility vehicles. Excluded from this definition are industrial vehicles for materials handling and earthmoving, such as lift trucks, tractors, graders, scrapers, and off-the-highway trucks. However, if this Grant is funded under the Development Fund for Africa (DFA) (see Section 1G.2.[b][4] above), procurement of motor vehicles from Special Free World countries (Geographic Code 935) is authorized; provided, however, that procurement of non-U.S. vehicles shall be held to an absolute minimum.

1I.4.(c) Pharmaceuticals

Pharmaceuticals may be purchased provided that all of the following conditions are met: (1) the pharmaceuticals must be safe and efficacious; (2) the pharmaceuticals must be of U.S. source and origin (see Section 1G. above); (3) the pharmaceuticals must be of at least 51% U.S. componentry (see Section 1G. above); (4) the pharmaceuticals must be purchased from a supplier whose nationality is in the U.S. (see Section 1G. above); (5) the pharmaceuticals must be in compliance with U.S. Food and Drug Administration (FDA) (or other controlling U.S. authority) regulations governing United States interstate shipment of pharmaceuticals; (6) the manufacturer of the pharmaceuticals must not infringe on U.S. patents; and (7) the pharmaceuticals must be competitively procured in accordance with the procurement policies and procedures of the Grantee and the Standard Provision of this Grant entitled "Procurement of Goods and Services."

1I.4.(d) Pesticides

Pesticides may only be purchased if the purchase and/or use of such pesticides is for research or limited field evaluation by or under the supervision of project personnel. Pesticides are defined as substances or mixtures of substances: intended for preventing destroying, repelling, or mitigating any unwanted insects, rodents, nematodes, fungi, weeds, and other forms of plant or animal life or viruses, bacteria, or other micro-organisms (except viruses, bacteria, or other micro-organisms on or living in man or other living animals); or intended for use as a plant regulator, defoliant, or dessicant.

1I.4.(e) Rubber Compounding Chemicals and Plasticizers

Rubber compounding chemicals and plasticizers may only be purchased with the prior written approval of the Grant Officer.

1I.4.(f) Used Equipment

Used equipment may only be purchased with the prior written approval of the Grant Officer.

11.4.(g) Fertilizer

Fertilizer may be purchased if it is either purchased in the U.S. and used in the U.S., or if it is purchased in the cooperating country with local currency for use in the cooperating country. Any fertilizer purchases which do not comply with these limitations must be approved in advance by the Grant Officer. However, if this Grant is funded under the Development Fund for Africa (DFA) (see Section 1G.2.[b][4] above), procurement of fertilizer from Special Free World countries (Geographic Code 935) is authorized; provided, however, that procurement of more than 5,000 tons of non-U.S. fertilizer must have the advance written approval of the Grant Officer.

11.5. Limitation on Use of Funds

11.5.(a) The Grantee shall not utilize funds provided by A.I.D. for any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference or training in connection with the growth or production in countries other than the United States of an agricultural commodity for export which would compete with a similar commodity grown or produced in the United States.

11.5.(b) The reports described in Section 1E.2. shall contain a statement indicating the projects or activities to which United States funds have been attributed, together with a brief description of the activities adequate to show that United States funds have not been used for the purpose in Section 11.6.(a) above.

11.5.(c) The Grantee agrees to refund to A.I.D. upon request an amount equal to any United States funds used for the purposes prohibited by Section 11.5.(a) above.

11.5.(d) No funds provided by A.I.D. under this Grant shall be used to provide assistance, either directly or indirectly, to any country ineligible to receive assistance pursuant to the Foreign Assistance Act as amended, related appropriations acts, or other statutes and Executive Orders of the United States (also see the Standard Provision of this Grant entitled "Ineligible Countries").

(If the Grantee proposes to purchase any nonexpendable equipment with a unit price of \$1,000 or more, and if the Grantee proposes, and the Project Officer and FA/AS concur in, the disposition of such equipment, add the following)

11.6. Disposition of Property

With reference to Sections 1G.4. and 11.3.(b) above, disposition of nonexpendable property acquired hereunder shall be as follows:

The property requested for this grant shall be donated to the host institution, KEMRI, at Grant termination.

11.7. Compliance with Federal Guidelines and Regulatory Procedures

- 11.7.(a) The grantee will implement this research activity in accordance with all relevant guidelines for U.S. Government funded research such as :
- (1) The National Institutes of Health (NIH) guidelines for the ethical treatment of human subjects;
 - (2) Guidelines for the handling of radioactive materials;
 - (3) NIH and USDA guidelines for the handling of pathogenic microorganisms;
 - (4) USDA-APHIS procedures for animal and plant health inspection;
 - (5) The National Institutes of Health Guidelines for Research Involving Recombinant DNA Molecules;
 - (6) Procedures issued by the USDA, EPA, or other appropriate Federal agency, regarding testing of genetically engineered organisms;
 - (7) State Department's and A.I.D.'s environmental procedures; and
 - (8) Such other Federal guidelines and procedures as may apply during the course of research.

11.7.(b) All existing comparable guidelines of the host country in which the research is actually located must be followed also.

11.7.(c) Reports submitted under this activity to A.I.D. will address the cited regulatory issues. All modifications of protocols affecting these regulatory concerns must be reported. The investigators are responsible for reporting any difficulties encountered in implementing these protocols.

1.1.8. Laboratory Safety and Hazard Containment

Research will be conducted following the protocols described in Attachment 2 (which is the original proposal or subsequent amendments or letter from the Principal Investigator), which insure the safety of persons involved in the research. Notwithstanding, the research must be conducted following procedures issued by the U.S. Government and those issued by the government of the host country for the containment of these hazards.

If the protocols involving laboratory safety and hazard containment are revised, they must be re-reviewed by the investigator's institutional review committee(s) that approved the original protocol, and the Project Officer and Office of Research must be informed in writing before the revised protocols are used. The revised procedures must be consonant with the guidelines of the country in which the laboratory is located and of the United States. Copies of the approval of the revised protocols by the investigator's institutional review committee(s) should also be provided the Project Officer and the Office of Research.

Similarly, the research will be conducted in the facilities described in Attachment 2. If the research is moved to new facilities, or the facilities are modified in such a way to affect safety or hazard containment, a description of the new facilities must be provided to the Project Officer and to the Office of Research before the research is affected. Any applicable institutional reviews of the facilities must be repeated, and the re-certification must be provided to the Project Officer and the Office of Research

11.9. Human Subjects

Research will be conducted following the protocols described in Attachment 2 (which is the original proposal or subsequent or letter from the Principal Investigator), which insures the well-being and informed consent of human subjects. It will also be conducted in accord with the applicable procedures issued by the U.S. Government to insure ethical treatment of human subjects, and by those issued by the government of the host country in which the human subjects are to be involved.

If the protocol(s) involving human subjects is revised, it must be re-reviewed by the investigator's institutional ethical review committee, and the Project Officer and Office of Research must be informed in writing before the revised protocol(s) is used. The revised procedures must be consonant with the guidelines of the host country and of the United States. If the patient's informed consent form is revised, a copy of the new form must be submitted to both the Project Officer and the Office of Research. A copy of the approval of the revised form by the investigator's institutional ethical review committee must also be provided to the Project Officer and the Office of Research.

In addition and prior to commencement of any experimentation involving human subjects, the Grantee shall make a judgment and communicate the same to A.I.D. as to whether the

regulations, procedures or facilities of the country in question are adequate to ensure the safety and free and informed consent of the human subjects. In the event such judgement is that they are not, the Grantee and A.I.D. will consult and agree on the protocol to be applied to insure the safety and free, informed consent of the subjects.

1.I.10. Containment and Safe Disposal of Animal or Plant Pathogens or Pests

Research will be conducted following the protocols described in Attachment 2 (which is the original proposal or subsequent amendments or letter from the Principal Investigator), which insure the containment and safe disposal of animal or plant pathogens. Notwithstanding, the research must be conducted following procedures issued by the U.S. Government and those issued by the government of the host country for the containment of these pathogens or pests.

If any protocol is revised, it must be re-reviewed by the investigator's institutional review committee(s) that approved the original protocol, and the Project Officer and Office of Research must be informed in writing before the revised protocols are used. The revised procedures must be consonant with guidelines of the country in which the laboratory is located and of the United States. Copies of the approval of the revised protocols by the investigator's institutional review committees should also be provided the Project Officer and the Office of Research.

Similarly, the research will be conducted in the facilities described in Attachment 3. If the research is moved to new facilities or the facilities are modified in such a way to affect safety or hazard containment, a description of the new facilities should be repeated, and the re-certification should be provided to the Project Officer and the Office of Research.

11.11. Environmental Hazards

Research will be conducted following the protocols described in Attachment 2 (which is the original proposal or subsequent amendments or letter from the Principal Investigator), which insure that there are no unacceptable environmental hazards incident to the research. Notwithstanding, the research must be conducted following A.I.D. environmental guidelines and those issued by the government of the host country.

If any protocol involving environmental hazards is revised, it must be re-reviewed by the investigator's institutional

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review committee(s) that approved the original protocol, and the Project Officer and Office of Research must be informed in writing before the revised protocols are used. The revised procedures must be consonant with guidelines of the country in which the research is located and of the United States. Copies of the approval of the revised protocols by the investigator's institutional review committees should also be provided the Project Officer and the Office of Research.

In addition, however, and prior to commencement of any such activity which may create an environmental hazard, the grantee shall make a judgment and communicate the same to A.I.D. as to whether the regulations, procedures or facilities of the country in question are adequate to ensure the protection of the environment. In the event such judgement is that they are not, the grantee and A.I.D. will consult and agree on the conditions to be applied to the activity which will ensure environmental protection.

1J. Closeout Procedures

1J.1.

This paragraph prescribes uniform closeout procedures for A.I.D. grants and cooperative agreements with recipients.

1.J.2.

The following definitions shall apply for the purpose of this paragraph.

1.J.2.(a) Closeout The closeout of a grant or cooperative agreement is the process by which A.I.D determines that all applicable administrative actions and all required work of the grant or cooperative agreement have been completed by the recipient and A.I.D.

1.J.2.(b) Date of completion The date of completion is the date on which all work under grants and cooperative agreements is completed or the date on the award document, or any supplement or amendment thereto, on which A.I.D. sponsorship ends.

1.J.2.(c) Disallowed Costs Disallowed costs are those charges to a grant or cooperative agreement that A.I.D. or its representatives determines to be unallowable, in accordance with the applicable Federal cost principles or other conditions contained in the grant or cooperative agreement.

1.J.3. A.I.D. closeout procedures include the following requirements:

1.J.3.(a) Upon request, A.I.D. shall make prompt payments to a recipient for allowable reimbursable costs under the grant or cooperative agreement.

1.J.3.(b) The recipient shall immediately refund any balance of unobligated (unencumbered) cash that A.I.D. advanced or paid and that is not authorized to be retained by the recipient for use in other grants or cooperative agreements.

1.J.3.(c) A.I.D. shall obtain from the recipient within 90 calendar days after the date of completion of the grant or cooperative agreement all financial, performance, and other reports required as the condition of the grant or cooperative agreement. A.I.D. may grant extensions when requested by the recipient.

1.J.3.(d) When authorized by the grant or cooperative agreement, A.I.D. shall make a settlement for any upward or downward adjustments to A.I.D.'s share of costs after these reports are received..

1.J.3.(e) The recipient shall account for any property acquired with A.I.D. funds, or received from the Government in accordance with the provisions of paragraph 1T of A.I.D. Handbook 13.

1.J.3.(f) In the event a final audit has not been performed prior to the closeout of the grant or cooperative agreement, A.I.D. shall retain the right to recover an appropriate amount after fully considering the recommendations on questioned costs resulting from the final audit.

1K. RESOLUTION OF CONFLICTS

Conflicts between any of the Attachments of this Grant shall be resolved by applying the following descending order of precedence:

- Attachment 1 - Schedule
- Attachment 3 - Standard Provisions
- Attachment 4 - Special Provision entitled "Restrictions on Lobbying"
- Attachment 2 - Program Description

1L. STANDARD PROVISIONS

The Standard Provisions set forth as Attachment 3 of this Grant consist of the following Standard Provisions denoted by an "X" which are attached hereto and made a part of this Grant:

1L.1. Mandatory Standard Provisions For U.S., Nongovernmental Grantees

- (X) Allowable Costs (November 1985)
- (X) Accounting, Audit, and Records (August 1992)
- (X) Refunds (September 1990)
- (X) Revision of Grant Budget (November 1985)
- (X) Termination and Suspension (August 1992)
- (X) Disputes (August 1992)
- (X) Ineligible Countries (May 1986)
- (X) Debarment, Suspension, and Other Responsibility Matters (August 1992)
- (X) Nondiscrimination (May 1986)
- (X) U.S. Officials Not to Benefit (November 1985)
- (X) Nonliability (November 1985)
- (X) Amendment (November 1985)
- (X) Notices (November 1985)
- (X) Metric System of Measurement (August 1992)

1L.2. Additional Standard Provisions For U.S., Nongovernmental Grantees

- (X) OMB Approval Under the Paperwork Reduction Act (August 1992)
- (X) Payment - Letter of Credit (August 1992)
- () Payment - Periodic Advance (January 1988)
- () Payment - Cost Reimbursement (August 1992)
- (X) Air Travel and Transportation (August 1992)
- (X) Ocean Shipment of Goods (August 1992)
- (X) Procurement of Goods and Services (November 1985)
- () AID Eligibility Rules for Goods and Services (June 1993)
- (X) Subagreements (August 1992)
- (X) Local Cost Financing (June 1993)
- (X) Patent Rights (August 1992)
- (X) Publications (August 1992)
- (X) Negotiated Indirect Cost Rates - Predetermined (August 1992)
- () Negotiated Indirect Cost Rates - Provisional (Nonprofits) (August 1992)
- () Negotiated Indirect Cost Rates - Provisional (For-Profits) (August 1992)
- (X) Regulations Governing Employees (August 1992)
- () Participant Training (August 1992)
- () Voluntary Population Planning (June 1993)
- () Protection of the Individual as a Research Subject (August 1992)
- () Care of Laboratory Animals (November 1985)
- () Title To and Use of Property (Grantee Title) (November 1985)

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- () Title To and Care of Property (U.S. Government Title) (November 1985)
- () Title To and Care of Property (Cooperating Country Title) (November 1985)
- () Cost Sharing (Matching) (August 1992)
- (X) Use of Pouch Facilities (August 1992)
- (X) Conversion of United States Dollars to Local Currency (November 1985)
- (X) Public Notices (August 1992)
- (X) Rights in Data (August 1992)

IM. COST SHARING AND OTHER CONTRIBUTIONS

IM.1. The Grantee agrees to expend an amount not less than (a) the amount shown in the budget of this Grant for financing by the Recipient and/or others from non-federal funds (see Sections 1D. and/or 1H.), and (b) the amount shown in the budget of this Grant for financing by the Recipient and/or others from other federal funds.

IM.2. The Standard Provision of this Grant entitled "Cost Sharing (Matching)" makes reference to project costs. "Project Costs" are defined in Attachment E of OMB Circular A-110 as all allowable costs (as set forth in the applicable cost principles [see the Standard Provision of this Grant entitled "Allowable Costs"]) incurred by a Grantee and the value of in-kind contributions made by the Grantee or third parties in accomplishing the objectives of this Grant during the program period.

IM.3. The restrictions on the use of A.I.D. funds provided hereunder, as set forth in this Grant, do not apply to cost-sharing (matching) or other contributions unless such restrictions are stated in the applicable federal cost principles and/or imposed by the source of such cost-sharing (matching) funds or other contributions.

ATTACHMENT 2

PROGRAM DESCRIPTION

The Grantee's proposal number 13.113 entitled "The Impact of Crayfish on Schistosomiasis Transmission and Non-Target Organisms in Man-Made Habitats in Central Kenya" and dated January 6, 1993 (Principal Investigator: Assoc. Prof. Eric S. Loker) is attached hereto as the Program Description (Attachment 2) and is made a part of this Grant.

A. OVERALL AIM AND SPECIFIC OBJECTIVES

Our long-term goal is to develop safe, technically feasible, and sustainable methods of controlling schistosomiasis by using biological agents to eliminate the intermediate host snails of these parasites. Previous work has indicated that the crayfish Procambarus clarkii is able to control or eliminate populations of schistosome-transmitting snails. We propose to test the hypothesis that crayfish are able to significantly reduce actual transmission of Schistosoma mansoni to people in selected man-made habitats in central Kenya.

B. TECHNICAL WORK PLAN

Given that P. clarkii is already well-established in Kenya, and is likely to persist and increase its present range, further studies should focus on how to best manage this resource, and how to maximize its beneficial attributes while minimizing any negative attributes. In our opinion, the following topic is the most deserving of study:

1. Interruption of Transmission with Crayfish

Can the introduction of P. clarkii into selected waterbodies reduce or eliminate transmission of Schistosoma mansoni to people living adjacent to these waterbodies? Can crayfish reduce snail populations to a sufficiently low level to significantly diminish or block transmission?

a. Overall Strategy and General Considerations

The overall strategy to test this hypothesis is as follows. A six to nine month pre-intervention phase will be initiated in which control and experimental habitats are selected, baseline data on the ecology of relevant waterbodies are collected, and water contact patterns and foci of transmission identified. Regular sampling of snails to assess their relative abundance will commence and continue throughout the study. Prevalence of schistosome infections in snails will also be determined. A subset of children known to be infected with S. mansoni will be selected for further study. An intervention phase will begin with the introduction of crayfish into experimental sites. Once crayfish have established (estimated to require 6-12 months), the children specified will be treated to eliminate infection and then will be monitored on a regular basis for 18 months to determine if they become reinfected. Control and experimental sites will then be compared with respect to snail densities and prevalence of infected snails and, most importantly, rates of reinfection in the selected population of children. During a post-intervention stage, all infected individuals in all study sites will be offered treatment. If the use of crayfish was successful in the experimental sites, they will also be introduced into the control sites.

A copy of the consent form required of each selected participant is presented in appendix D of the original proposal. All procedures involving

these children have been subject to review by the Committee for the Use of Human Subjects at the University of New Mexico, and found to be in compliance with guidelines specified by the U.S. Department of Health and Human Services. Our protocols have also been reviewed and approved by the appropriate committee at KEMRI (see also Appendix E of original proposal).

Seasonal trends in rainfall have to be considered in the general timing and planning of our activities. We hope to initiate our pre-intervention phase during the late dry season (September/October) and have it continue through the short and long rainy seasons, until approximately May/June. The intervention phase will be timed to coincide with the end of the rainy season, when habitats should be filled with water and relatively stable and most conducive for crayfish establishment. The treatment of children would commence approximately 12 months later, at the end of the long rains. The 18 months allotted for the monitoring period should provide plenty of time to measure an effect of our intervention as previous studies have indicated that an interval of 6 months is sufficient to observe a plateau in the number of reacquired infections following treatment (Sturrock et al., 1987). See the time chart of activities below for additional details.

b. The Pre-Intervention Phase

i. Study Site Selection

The sites selected for study will have the following characteristics: 1) be small man-made impoundments or polluted feeder streams (see criteria mentioned above); 2) contain thriving populations of Biomphalaria pfeifferi and be known Schistosoma mansoni transmission sites; 3) be within drainage basins known to be occupied by P. clarkii; 4) be shown to lack crayfish at the start of the study; 5) be in locations where the local authorities are amenable to undertaking an experimental program of schistosomiasis control using crayfish. This experiment will be undertaken with the cooperation of the Ministry of Health and the Department of Fisheries, the latter having the responsibility for enforcing laws pertaining to introductions of aquatic organisms in Kenya.

Preliminary reconnaissance has identified habitats with the general characteristics specified in the Rift Valley (northeast of Lake Baringo in a location called Churo), near the town of Makuyu in the Muranga district, and in the Machakos region. An ideal study site may be envisioned as a man-made dam with small adjacent waterbodies such as seepage areas beneath the dam. People living adjacent to the dam should be dependent on it for their domestic water use. Although it is possible we will encounter Schistosoma haematobium in these locations and if necessary will incorporate urine exams of the selected children into our design, it is most likely this project will involve only S. mansoni which is known to be endemic in the areas specified.

Initially, at least six study sites of the type specified above will be selected. Two will be designated as control sites and will not receive crayfish; the remainder will serve as experimental sites and will receive crayfish. The number of sites to be used is difficult to specify precisely depending on ease of access, willingness of local chiefs to comply with our program, and other factors out of our control such as prolonged drought.

Initially, it will be desirable to ensure that control and experimental sites are roughly comparable with respect to intensity of S. mansoni transmission. Criteria to be used to assure preliminary comparability of

control and experimental sites will be prevalence and intensity of infection in samples of children (approximately 100 per site) of 10-19 years of age. Children in this age bracket are generally available for examination and are among the most heavily infected of all age groups, thus providing a convenient measure of transmission intensity. Techniques used to assess infection will be as detailed below. It is conceivable that we may have to categorize particular control or experimental sites as "moderate" or "high" transmission sites using criteria similar to those of Arap Siogok et al. (1976) and Smith et al. (1979). We will also undertake preliminary estimates of *B. pfeifferi* relative abundance using techniques outlined below to further ensure that control and experimental sites are comparable.

The control sites fulfill an important function. Treated children from control sites will provide a measure of how fast reinfection occurs in the absence of control interventions. The control sites will also allow us to check for fluctuations in snail populations. Without such controls, concomitant fluctuations at the experimental sites might erroneously be attributed to the presence of crayfish.

ii. Initiation of Project Activities

The purpose and methods of the control program will be explained in their native language to people living at the site, with the cooperation and involvement of local authorities. The local people will be informed as to the appearance and characteristics of crayfish and given a full chance to voice any concerns they might have. The residents will be asked to respond to a questionnaire presented in the local language (Table 1) designed to reveal key water contact points that may also be foci of infection. The study population of children (see below) will be among the individuals filling out this questionnaire. This information will be supplemented by direct observations of water use during wet and dry seasons, following Dalton (1976) as modified by Wilkins et al. (1987) and Butterworth et al. (1984, 1985). The number of contacts and mean duration of contacts occurring at specific key points will be determined, to the extent possible with active assistance from local villagers. This information, in combination with results from snail surveys (see below), will allow us to identify likely foci of transmission.

TABLE 1. Information Requested in the Questionnaire

Name (to be coded and held in confidence)
Sex
Age
School (if student)
Contact person (parent or school authority)
Location of dwelling in relation to water bodies
Duration of habitation in dwelling and village
Source of domestic water
Specific points where domestic water is obtained
Indicate activities requiring water contact (swimming, bathing, clothes washing, fishing, obtaining water for use at home, defecation or urination) and the specific location of each such activity
Frequency with which other waterbodies outside the study site are contacted
Duration, location, and timing of any prolonged visits away from present location

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Regular monthly snail sampling will begin at these foci and at other locations around the perimeter of each relevant waterbody (an estimated six sampling stations per waterbody, each of approximately 10m of shoreline). It should be noted here that it is important for the study design that these water contact points continue to be used by the local people just as they were prior to the onset of the study. These sites will not be fenced nor in any way modified by our activities; they must be freely accessible to the local people and to their domestic animals. Disturbances by children, particularly trapping of crayfish, are likely. Such activities will by no means be encouraged but also will not be actively discouraged either, unless it becomes apparent that concerted efforts are being made to deliberately eliminate crayfish. The justification for this "laissez-faire" approach is that such disturbances, particularly by children, would probably be encountered in any future attempt to use crayfish for control. Therefore, it is important to determine if our intervention will still succeed despite such disturbances.

Standard sampling procedures will begin in the morning hours (8:00-11:00), prior to the daily emergence of schistosome cercariae, when snails will be collected from each station for 5 minutes using a standard snail scoop. The same team of experienced field workers will make all collections. Snails will be identified to species using available keys, categorized with respect to size, and enumerated. They will be isolated in small vials, held for 1-2 hours in brightly-lit locations, and the vials will be examined for the presence of cercariae using a dissecting microscope; logistics may dictate that a random sample of all collected snails be examined in this way. Cercariae will be preserved in 70% ethanol and retained for further microscopical study to establish their identity (e.g. Loker et al., 1979). The size of schistosome-infected snails will be recorded. All snails will be returned to the habitat. Relative snail abundance will be recorded as the number collected per hour of effort. Prevalence of infection in snails will also be recorded. These sampling protocols will be continued throughout all phases of the study.

An argument could be made that application of cercariometric techniques would also provide us with a useful measure of the likely intensity of schistosome transmission to humans. However, those members of our team with the greatest experience in this regard, namely Drs. Mkoji and Ouma, have found the available filtration-dependent techniques to be a tedious, labor-intensive task. It is our belief that monitoring numbers of infected snails provides a much more cost-effective estimate of the potential abundance of cercariae in a transmission focus. We are aware of development of innovative new methods utilizing sticky glass slides to measure cercarial density in waterbodies (Shiff, personal communication), and remain receptive to the possibility of using these techniques once they have been perfected.

At each sampling station, traps will also be placed in the water for at least one hour to check for the presence of crayfish. These crab traps (dimensions 18" x 18") are baited with meat and have been used successfully in our previous studies. Initially, intensive trapping will be carried out to confirm that crayfish are lacking from all the study sites. A similar protocol for collecting crayfish will be used for the duration of the study. Crayfish captured in traps will be sexed, measured, and returned to the habitat. Relative abundance will be estimated as number of crayfish captured per trap hour.

Predation upon crayfish by birds or mammals (including children!) may

occur and could impede colonization by crayfish. We will estimate the extent of predation in the following ways. As part of the normal survey operations, field workers will identify and enumerate potential predators noted to be foraging at the sampling sites. The predators will be observed to determine if they actually kill or consume crayfish. Dead crayfish or parts thereof that are found at the sampling sites and that may have been victims of predation will be removed and enumerated. If predation of crayfish appears to be a significant problem, we will employ the same observers used in water contact studies to provide a more accurate estimate of predation. Basically, each observer will examine selected sampling sites to provide estimates of the numbers of foraging predators and their rates of intake of crayfish.

At each sampling location, a single pre-intervention sample of representative macro-invertebrate and vertebrate species present will be collected and saved for future reference. The invertebrates will be collected during the first of the monthly snail collections; representatives of all macro-invertebrates encountered during the 5 min quantitative snail scoop collections at each sampling station will be preserved in 70% ethanol. Department of Fisheries personnel will assist us in collecting fish using standard seining procedures (a 10' seine with 1/8" mesh size) and in preservation (initially in 10% formalin, then 40% isopropyl alcohol) and identification of fish specimens (see references cited in original proposal). Representatives of aquatic plants will also be identified. Estimates will be made of the percentage of the shoreline of each habitat that is occupied by emergent, submergent, or no vegetation. Percent cover of habitat surface with floating macrophytes will also be determined. Such estimates of plant composition and cover will be made on a monthly basis.

At this time, following general protocols and quality control measures routinely undertaken at the Division of Vector Borne Diseases (specified by Sturrock et al., 1987), we will examine schoolchildren from the ages of 5-15 for the presence and abundance of eggs in fecal samples using the modified Kato technique (Katz et al., 1972). Briefly, for each child, two egg counts will be taken from each of three separate fecal samples, and intensity assayed as the number of eggs per gram of feces (see Sturrock et al., 1987, for details). We will select a sample of no less than 100 children at each study site to serve as "sentinels" to assess the effects of crayfish introductions on transmission. Children will be selected on the basis of having a high intensity of infection (for example, see criteria of Arap Siogok et al., 1976) as this indicates they are likely to become reinfected. In both control and experimental sites, these children will eventually be treated with praziquantel (see intervention stages below). Here it should be noted that the choice of a sample size for this sentinel group has to be made carefully. It is important to have a group large enough to provide an accurate measure of rates of reinfection yet not too large such that transmission at the site would be drastically modified by treatment of all the children in the group. As we are trying to measure an effect of crayfish on transmission, it is important that the overall level of transmission at the study site is not altered by treatment of the sentinel group with praziquantel. It should be reiterated that children selected for further study will also have filled out the questionnaire specified above, and those living at the experimental sites, will have water contact patterns associated with the bodies of water selected for introduction of crayfish.

We have specified children aged 5-15 as possible subjects for further study because previous work in Kenya has shown them to have a high prevalence

and intensity of infection with *S. mansoni* (e.g. Ouma et al., 1985; Sturrock et al., 1987). Assuming sufficient numbers are available at our study sites, we will preferentially select children less than 13 years of age; previous studies have shown that they exhibit very high rates of reinfection in study areas quite likely to be similar to our own (Sturrock et al., 1987). Such children therefore provide the most sensitive barometer by which to measure the success of our intervention.

Older children would be expected to have lower rates of reinfection, either because of developing immunity or reduced water contact patterns (Sturrock et al., 1987). However, it may prove to be necessary to include such children for lack of sufficient numbers of <13 year-olds. Also, by exhibiting a slower rate of reinfection, the older children may provide us a chance to measure a successful intervention that we might miss by only studying younger children. Individuals >15 years old are more difficult to repeatedly contact as they are often not at school and detailed studies of water contact patterns suggest that older males acquire infections while engaged in economic activities at remote sites. Further, prevalence and intensity increase little if at all beyond the early teen years (Arap Siogok et al., 1976; Fulford et al., 1991).

To minimize variables in our design, it would also be best to select children of the same sex. As males, particularly those <12 years old, have higher water contact rates than females (Sturrock et al., 1987), it would be preferable to use boys only. However, we may need to include children of both sexes if insufficient numbers of a single sex are available.

c. The Intervention Phase

i. Introduction of Crayfish

The intervention phase will begin with the introduction of crayfish into experimental sites. Crayfish for introduction will be obtained from dams in the Nairobi or Eldoret areas. It is possible to collect several hundred crayfish in a few hours at these sites. They can be easily transported to the experimental sites in wet sisal bags, during the cooler hours of the day. It is difficult to specify how many crayfish will be required to ensure colonization of a habitat. Huner (1988) suggests stocking densities of 25-100 kg crayfish/ha to maximize production in commercial ponds; he notes that smaller numbers can be used in ponds where cover exists to protect crayfish. Based on the high rates of crayfish feeding on snails we have observed in the laboratory, we are of the opinion that one or two orders of magnitude fewer crayfish per ha will be sufficient to achieve our goals of effective snail control. Crayfish breed year round under tropical conditions (Lowery and Mendes, 1977a,b; Oluoch, 1990), so it is reasonable to expect them to establish self-perpetuating populations within 6-12 months. Our practical experience with crayfish in Kenyan waterbodies suggests that small numbers (e.g. 200) of adult crayfish can successfully colonize small reservoirs in six months. We have followed advice of reviewers of our preproposal in establishing contact with the International Association of Astacology, members of which will be contacted for additional advice on stocking densities.

The criteria used to determine if crayfish have established in a particular waterbody will be the continued presence of colonizing stock and, more importantly, collection of juvenile crayfish at at least one sampling

station in that habitat. If no evidence for establishment is obtained after four to six months, additional crayfish will be introduced into the habitat.

It is likely that crayfish will not colonize all parts of a particular waterbody with equal facility. Although this would seem to present a problem in terms of gauging the impact of crayfish on transmission, it actually creates an opportunity to measure with more precision the impact of crayfish on reacquisition of infection (see analysis section below).

ii. Coordination of Crayfish Introduction with Praziquantel Treatment

In both control and experimental sites, we will treat the selected population of children who will be monitored for evidence of reacquisition of infection. The timing of praziquantel treatment relative to the introduction of crayfish into experimental habitats is critical to our success in demonstrating an effect for crayfish.

At a particular site, we propose to initiate treatment of the children only after crayfish are considered to have become established (see criteria above). This delay in treatment to our sentinel human population until after the crayfish population has become established may cause us to underestimate the rate at which crayfish can achieve a measureable effect on transmission to people. However, by simultaneously monitoring relative snail density and the prevalence of infection in snails at our sampling stations, we can obtain independent estimates of the beneficial effects of crayfish. At the same time, it is important to note that considerations of when to initiate treatment of the children must be made independent of information regarding snail densities. We could easily bias the results in favor of a positive conclusion regarding the effects of crayfish if time of praziquantel treatment was selected on this basis.

The alternative approach of treating the children at the same time as application of crayfish to the habitat would unfairly bias the results against the control intervention; the children would likely acquire new infections in the interval required for the crayfish population to become established. As stated above, several months will probably be required for crayfish to reproduce and begin to exert an effect on snail populations.

Owing to such difficulties, there is a temptation to eliminate the use of treated human subjects from our design and to simply monitor abundance and prevalence of infection in snails. We feel however that to do so could leave the most vital part of the story untold. The ultimate question is, "has our control agent truly altered the dynamics of infection in a way that significantly reduces the number of parasites entering the human body?"

iii. Treatment of Children

We will eliminate or reduce egg output in the children mentioned above by providing them a standard course of praziquantel (40mg/kg), a widely-used anti-helminthic effective against *S. mansoni* in a single oral dose (Marshall, 1987). Our therapeutic dosage will be prepared and presented according to Davis (1982). A protocol for use of praziquantel appears in Appendix D of the original proposal. KEMRI physicians well-familiar with the side effects associated with this drug have been enlisted to help us to ensure safe and effective treatment (see accompanying letters in appendix E of original proposal).

We assume that prevalence will be reduced by about 75% and intensity by over 90% at five weeks post-treatment (e.g. Sturrock et al., 1987). These workers showed that prevalence tended to rise steadily to a plateau about six months post-treatment; intensity of egg output also rose over this interval but remained low as compared to pre-treatment levels. We will monitor both prevalence and intensity in our treated population, using techniques described above, starting at five weeks post-treatment and then at intervals of no longer than three months thereafter, for a period of no longer than 18 months. It may take longer than the six months observed by Sturrock et al. (1987) for reinfection to occur if our treatment has to be administered at a time when transmission is not occurring.

At each sampling time, for each individual, intensity will be recorded and a percentage reduction in egg counts as compared to pre-treatment values calculated. Prevalence (% infected), mean intensity, and mean percentage of reduction in egg counts will be calculated. At the end of the sampling period we will again administer our questionnaire to the assay population to check that water contact sites have not changed.

d. The Post-Intervention Phase

After the intervention phase has been concluded, with the cooperation of local officials, we will offer to examine fecal samples from every individual at each study site. All individuals found to be infected with S. mansoni will be offered a course of treatment with praziquantel. Protocols specified above will again be followed for treating infected people.

If successful results have been obtained, we will offer to introduce crayfish into waterbodies of the control sites, assuming permission is obtained from local and national officials.

i. Analysis - Snails and Crayfish

For each study site and sampling station, the relative abundance of snails will be plotted at monthly intervals throughout the study. Crayfish abundance (and crayfish predator abundance if necessary) will be similarly plotted for experimental sites. The time of introduction of crayfish and the designated time of crayfish establishment at each site will be recorded on each plot. For each site and for each month, across sampling station totals and means for each of these parameters will also be computed. To normalize data for statistical hypothesis testing, it may prove necessary to log transform values for both snail and crayfish relative abundance.

In consultation with statisticians available to us in our respective departments and following guidelines provided by standard statistics texts (e.g. Zar, 1984; Shott, 1990), several types of statistical comparisons will be made. For example, within a particular habitat, for a particular month or season of the year, mean abundance of snails during the pre-intervention phase, the crayfish establishment phase, and the crayfish post-establishment phase will be compared using parametric analysis of variance procedures or if necessary, comparable nonparametric procedures such as the Kruskal-Wallis test. We predict that the relative abundance of snails (and infected snails) will decline in the establishment phase and their densities will be significantly lower in the post-establishment phase compared with the pre-intervention phase. Post-establishment densities are also predicted to be

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significantly lower than densities at control sites. We also predict the mean size of snails to decline during the establishment phase and remain low in the post-establishment phase as crayfish will consume larger snails first. The ANOVA will be stratified by site, date and experimental treatment.

The abundance of crayfish and snails in experimental sites will vary between sampling stations. At particular points in time, across sampling stations, we will examine correlations between these variables. We predict that crayfish abundance will have a significant negative correlation with snail abundance, as assessed by either the Pearson or Spearman rank correlation coefficients.

ii. Analysis - Rates of Reinfection

At each three month interval, fecal egg count data will be available for all treated children from control and experimental sites. This data will be log transformed to normalize variance and analyzed in a variety of ways, again with the assistance provided by our departmental statisticians. We will compare mean individual egg counts for children from control and experimental sites using ANOVA. Egg counts are predicted to decrease significantly for children from experimental sites whereas control site counts would not be expected to change.

Another approach will be to plot, for both control and experimental groups, the increase in prevalence or intensity of infection with increasing time post-treatment. Analysis of covariance would then be used to compare the slopes of regression lines calculated for both control and experimental groups. Slopes for control regression lines would be predicted to be significantly larger than for experimental groups.

Another method of analysis to measure the effects of our interventions will be to plot for each child from experimental sites egg counts against crayfish or snail abundance (or a ratio of snail/crayfish abundance) at the water contact points used predominantly by that child. The abundance of crayfish or snails is expected to vary between such points. Information regarding water contact sites for each child will be available from the questionnaires. Correlations between egg counts and abundance of snails, or crayfish, will then be calculated. A significant positive correlation between snails and egg counts would be expected. Conversely, egg counts and crayfish abundance would be expected to be inversely correlated.

As this study progresses, it will be important to anticipate certain factors that could work against our success in demonstrating a significant effect for crayfish. These might include 1) use by children at experimental sites of other infective waterbodies of which we are unaware and which did not receive crayfish; 2) the presence of heavily used contact points that serve as refugia for snails owing to a failure of colonization by crayfish (perhaps due to human disturbance or pollution); 3) extraneous reductions in transmission in control sites that would preclude any meaningful comparisons with experimental sites; 4) failure of crayfish to maintain populations following their initial establishment. As we become more familiar with the sites, these factors will all be considered carefully. To comply with the reviewers' requests to measure disease reduction, we will include children who may use alternative, untreated waterbodies (see point #1 in this paragraph) in our analyses.

2. Time chart

Year One Activities

1. Initiate project activities in September with Loker's trip to Kenya.
2. Initiate pre-intervention phase (select study sites, discuss project with villagers, administer questionnaire, commence snail sampling) in September/October. This phase will last 6-9 months.
3. Also during pre-intervention phase, examine children for infection and select group for further study. Review procedures in place. Dr. Kuris will visit in December/January to facilitate these processes.
4. At beginning of intervention phase (May/June, at end of rainy season), introduce crayfish into experimental habitats. Dr. Hofkin will travel to Kenya to help with this process.
5. Continue with regular surveys to check for snail/crayfish abundance.

Year Two Activities

1. Continue regular monitoring of habitats, check for crayfish establishment.
2. Dr. Loker will visit Kenya for approximately one month near the beginning of year two to monitor all aspects of the program.
3. When crayfish have established (May/June, at end of rainy season, or possibly earlier), treat selected children with praziquantel. Dr. Kuris will again visit at this time to help out, reexamine study designs and check procedures.
4. Do post-treatment fecal exam for signs of infection in treated children. Initiate regular tri-monthly fecal exams of treated children.
5. Attend meetings and disseminate results of project activities.

Year Three Activities

1. Continue tri-monthly fecal exams.
2. At 18 months following praziquantel treatment, discontinue fecal exams of sentinel children. Readminister questionnaire to children. Analyze results of the transmission interruption experiment. Dr. Loker will make his third visit to Kenya at about this time, to monitor progress in general and to coordinate efforts in analyzing data and in preparing final report.
3. Offer treatment to all infected people at our study sites.
4. Attend meetings and disseminate results. Submit final report.

ATTACHMENT 3

STANDARD PROVISIONS

Note: Only those Standard Provisions indicated in Section 1L. of this Grant apply to this Grant.

RESTRICTIONS ON LOBBYING

Subpart A - General

Sec.

- 227.100 Conditions on use of funds.
- 227.105 Definitions.
- 227.110 Certification and Disclosure.

Subpart B - Activities by Own Employees

- 227.200 Agency and legislative liaison.
- 227.205 Professional and technical services.
- 227.210 Reporting.

Subpart C - Activities by Other than Own Employees

- 227.300 Professional and technical services.

Subpart D - Penalties and Enforcement

- 227.400 Penalties.
- 227.405 Penalty procedures.
- 227.410 Enforcement.

Appendix A to Part 227 - Certification Regarding Lobbying
Appendix B to Part 227 - Disclosure Form to Report Lobbying

Authority: Section 319, Public Law 101-121 (31 U.S.C. 1352); [citation to Agency rulemaking authority].

Cross reference: See also Office of Management and Budget notice published at 54 FR 523-6. December 20, 1989.

Subpart A - General

§227.100 Conditions on use of funds.

(a) No appropriated funds may be expended by the recipient of a Federal contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) Each person who requests or receives from an agency a Federal contract, grant, loan, or cooperative agreement shall file with that agency a certification, set forth in Appendix A, that the person has not made, and will not make, any payment prohibited by paragraph (a) of this section.

(c) Each person who requests or receives from an agency a Federal contract, grant, loan, or a cooperative agreement shall file with that agency a disclosure form, set forth in Appendix B, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under paragraph (a) of this section if paid for with appropriated funds.

(d) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a statement, set forth in Appendix A, whether that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

(e) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a disclosure form, set forth in Appendix B, if that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

§227.105 Definitions.

For purposes of this part:

(a) Agency, as defined in 5 U.S.C. 552(f), includes Federal executive departments and agencies as well as independent regulatory commissions and Government corporations, as defined in 31 U.S.C. 9101(1).

(b) Covered Federal action means any of the following Federal actions:

- (1) The awarding of any Federal contract;
- (2) The making of any Federal grant;
- (3) The making of any Federal loan;
- (4) The entering into of any cooperative agreement; and,
- (5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

Covered Federal action does not include receiving from an agency a commitment providing for the United States to insure or guarantee a loan. Loan guarantees and loan insurance are addressed independently within this part.

(c) Federal contract means an acquisition contract awarded by an agency, including those subject to the Federal Acquisition Regulation (FAR), and any other acquisition contract for real or personal property or services not subject to the FAR.

(d) Federal cooperative agreement means a cooperative agreement entered into by an agency.

(e) Federal grant means an award of financial assistance in the form of money, or property in lieu of money, by the Federal Government or a direct appropriation made by law to any person. The term does not include technical assistance which provides services instead of money, or other assistance in the form of revenue sharing, loans, loan guarantees, loan insurance, interest subsidies, insurance, or direct United States cash assistance to an individual.

(f) Federal loan means a loan made by an agency. The term does not include loan guarantee or loan insurance.

(g) Indian tribe and tribal organization have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B). Alaskan Natives are included under the definitions of Indian tribes in that Act.

(h) Influencing or attempting to influence means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

(i) Loan guarantee and loan insurance mean an agency's guarantee or insurance of a loan made by a person.

(j) Local government means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

(k) Officer or employee of an agency includes the following individuals who are employed by an agency:

- (1) An individual who is appointed to a position in the Government under title 5, U.S. Code, including a position under a temporary appointment:

(2) A member of the uniformed services as defined in section 101(3), title 37, U.S. Code;

(3) A special Government employee as defined in section 202, title 18, U.S. Code; and,

(4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, title 5, U.S. Code appendix 2.

(l) Person means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

(m) Reasonable compensation means, with respect to a regularly-employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

(n) Reasonable payment means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

(o) Recipient includes all contractors, subcontractors at any tier, and sub grantees at any tier of the recipient of funds received in connection with a Federal contract, grant, loan, or cooperative agreement. The term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

(p) Regularly employed means, with respect to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement or a commitment providing for the United States to insure or guarantee a loan, an officer or employee who is employed by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract, grant, loan, cooperative agreement, loan insurance commitment, or loan guarantee commitment. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

(q) State means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State, regional, or interstate entity having governmental duties and powers.

§227.110 Certification and Disclosure.

(a) Each person shall file a certification, and a disclosure form, if required, with each submission that initiates agency consideration of such person for:

- (1) Award of a Federal contract, grant, or cooperative agreement exceeding \$100,000; or
- (2) An award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

(b) Each person shall file a certification, and a disclosure form, if required, upon receipt by such person of:

- (1) A Federal contract, grant, or cooperative agreement exceeding \$100,000; or
- (2) A Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000, unless such person previously filed a certification, and a disclosure form, if required, under paragraph (a) of this section.

(c) Each person shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under paragraphs (a) or (b) of this section. An event that materially affects the accuracy of the information reported includes:

- (1) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
- (2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,
- (3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(d) Any person who requests or receives from a person referred to in paragraphs (a) or (b) of this section:

- (1) A subcontract exceeding \$100,000 at any tier under a Federal contract;
- (2) A sub grant, contract, or subcontract exceeding \$100,000 at any tier under a Federal grant;
- (3) A contract or subcontract exceeding \$100,000 at any tier under a Federal loan exceeding \$150,000; or,
- (4) A contract or subcontract exceeding \$100,000 at any tier under a Federal cooperative agreement, shall file a certification, and a disclosure form, if required, to the next tier above.

(e) All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the person referred to in paragraphs (a) or (b) of this section. That person shall forward all disclosure forms to the agency.

(f) Any certification or disclosure form filed under paragraph (e) shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared by any tier to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification or disclosure, respectively. If a person fails to file a required certification or disclosure, the United States may pursue all available remedies, including those authorized by section 1352, title 31, U.S. Code.

(g) For awards and commitments in process prior to December 23, 1989, but not made before that date, certifications shall be required at award or commitment, covering activities occurring between December 23, 1989, and the date of award or commitment. However, for awards and commitments in process prior to the December 23, 1989 effective date of these provisions, but not made before December 23, 1989, disclosure forms shall not be required at time of award or commitment but shall be filed within 30 days.

(h) No reporting is required for an activity paid for with appropriated funds if that activity is allowable under either Subpart B or C.

Subpart B - Activities by Own Employees

§227.200 Agency and legislative liaison.

(a) The prohibition on the use of appropriated funds, in §227.100(a), does not apply in the case of a payment of reasonable compensation made to an officer or employee -of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(b) For purposes of paragraph (a) of this section, providing any information specifically requested by an agency or Congress is allowable at any time.

(c) For purposes of paragraph (a) of this section, the following agency and legislative liaison activities are allowable at any time only where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency (including individual demonstrations) the qualities and characteristics of the person's products or services, conditions or terms of sale, and service capabilities; and,

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(d) For purposes of paragraph (a) of this section, the following agencies and legislative liaison activities are allowable only where they are prior to formal solicitation of any covered Federal action:

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and,

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Public Law 95-507 and other subsequent amendments.

(e) Only those activities expressly authorized by this section are allowable under this section.

§227.205 Professional and technical services.

(a) The prohibition on the use of appropriated funds, in §227.100(a), does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement or an extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal contract, grant, loan, or cooperative agreement or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal contract, grant, loan, or cooperative agreement.

(b) For purposes of paragraph (a) of this section, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior

to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(c) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation, or reasonably expected to be required by law or regulation, and any other requirements in the actual award documents.

(d) Only those services expressly authorized by this section are allowable under this section.

§227.210 Reporting.

No reporting is required with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

Subpart C - Activities by Other than Own Employees

§227.300 Professional and technical services.

(a) The prohibition on the use of appropriated funds, in §227.100 (a), does not apply in the case of any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action, if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal contract, grant, loan, or cooperative agreement or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal contract, grant, loan, or cooperative agreement.

(b) The reporting requirements in §227.110 (a) and (b) regarding filing a disclosure form by each person, if required, shall not apply with respect to professional or technical services rendered directly in the preparation, submission, or negotiation of any commitment providing for the United States to insure or guarantee a loan.

(c) For purposes of paragraph (a) of this section, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting or a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered

Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(d) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation, or reasonably expected to be required by law or regulation, and any other requirements in the actual award documents.

(e) Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(f) Only those services expressly authorized by this section are allowable under this section.

Subpart D - Penalties and Enforcement

§227.400 Penalties.

(a) Any person who makes an expenditure prohibited herein shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure.

(b) Any person who fails to file or amend the disclosure form (see Appendix B) to be filed or amended if required herein, shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

(c) A filing or amended filing on or after the date on which an administrative action for the imposition of a civil penalty is commenced does not prevent the imposition of such civil penalty for a failure occurring before that date. An administrative action is commenced with respect to a failure when an investigating official determines in writing to commence an investigation of an allegation of such failure.

(d) In determining whether to impose a civil penalty, and the amount of any such penalty, by reason of a violation by any person, the agency shall consider the nature, circumstances, extent, and gravity of the violation, the effect on the ability of such person to continue in business, any prior violations by such person, the degree of culpability of such person, the ability of the person to pay the penalty, and such other matters as may be appropriate.

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(e) First offenders under paragraphs (a) or (b) of this section shall be subject to a civil penalty of \$10,000, absent aggravating circumstances. Second and subsequent offenses by persons shall be subject to an appropriate civil penalty between \$10,000 and \$100,000, as determined by the agency head or his or her designee.

(f) An imposition of a civil penalty under this section does not prevent the United States from seeking any other remedy that may apply to the same conduct that is the basis for the imposition of such civil penalty.

§227.405 Penalty procedures.

Agencies shall impose and collect civil penalties pursuant to the provisions of the Program Fraud and Civil Remedies Act, 31 U.S.C. sections 3803 (except subsection (c)), 3804, 3805, 3806, 3807, 3808, and 3812, insofar as these provisions are not inconsistent with the requirements herein.

§227.410 Enforcement.

The head of each agency shall take such actions as are necessary to ensure that the provisions herein are vigorously implemented and enforced in that agency.

BEST AVAILABLE DOCUMENT

Appendix A to Part 227 - Certification Regarding Lobbying

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Appendix B to Part 227 - Disclosure Form to Report Lobbying.
[See attached.]

BEST AVAILABLE DOCUMENT

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

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This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.
(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

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DISCLOSURE OF LOBBYING ACTIVITIES
CONTINUATION SHEET

Reporting Entity: _____

Page _____ of _____

BEST AVAILABLE DOCUMENT

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PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES (PIO/T) *

1. Cooperating Country Worldwide	2. PIO/T No. 936-5600 3692420	3. PIO/T Amend No. Original
4. Project/Activity No. and Title R&D/R Project 936-5600, Innovative Scientific Research II, Grant 13.113, "The Impact of Crayfish on,..."	5. Appropriation Symbol(s) 72-1131021.1	
7. Pro Ag No. or Project Authorization Date Action Memo Approved 4/30/93	6. Budget Plan Code(s) DDVA-93-16950-KG11 (341-36-099-00-19-31)	
9. Project Assistance Completion Date (Month, Day, Year) 12/31/99	8. Obligation Status <input checked="" type="checkbox"/> Administrative Reservation <input type="checkbox"/> Implementing Document	
	10. Authorized Agent FA/OP/A/HRN	

11. Type of Action and Governing A.I.D. Handbook [B] A. A.I.D. Contract (HB14) C. PASA/RSSA (HB 12) B. A.I.D. Grant or Cooperative Agreement (HB 13) D. Other	12. Contract/Grant/Cooperative Agreement/Reference Number (if this PIO/T is for an order or a modification to an award) TBD
--	--

13. A.I.D. Funding (Attach a detailed budget in support of column (2) as Attachment A.				
	(1) Previous Total	(2) Increase	(3) Decrease	(4) Total to Date
A. Dollars		60,000		60,000
B. U.S.-Owned Local Currency				0

14. Mission References
Mission concurs per two-way memo from USAID/Kenya received 03/19/93

15. Instructions to Authorized Agent:
Request that you negotiate a Grant with the University of New Mexico in support of its unsolicited research proposal, "The Impact of Crayfish on Schistosomiasis Transmission in Man-Made Habitats in Central Kenya (13.113)". The funds in this PIO/T partially covers the full cost of the Grant (\$150,000). This PIO/T is in conjunction with two other funding requests of \$45,000 and \$45,000 funded from Project 936-5600 BPC DDVA-93-16950-EG and BPC DDVA-93-16950-GG, respectively. This PIO/T is issued in conjunction with PIO/T numbers 3692421 and 3692422. Voucher identification: in each instance of Voucher (SF-1034) submission for payment hereunder, the following identification data must appear on the face of the voucher:
Project No. 936-5600, R&D/R Project No. 13.113
Project Office: R&D/R
Budget Plan Code: DDVA-93-16950-KG11
Obligation Number: 3692420

ACTIC Reserved
DATE: 5/3/93 INITIALS: HT

16. Address of Voucher Paying Office Agency for International Development
FA/FM/CMP/DC, Room 700, SA-2, Washington, D.C. 20523

17. Clearances - Include typed name, office symbol, and date for all clearances

A. The Project Officer certifies (1) that the specifications in the statement of work or program description are technically adequate, and (2) that (for contract actions only) all program personnel who are defined as procurement officials under 41 U.S.C 423 have signed the Procurement Integrity Certification (OF-333).

Signature R&D/R, Miloslav Rechcigl *MR* Date: 4/30/93 Phone No:

B. The statement of work or program description lies within the purview of the initiating office and approved agency programs.

Signature: R&D/R, Wayne W. P. Chang *WPC* Date: 4/30/93
Signature: R&D/PO/AE, G. Standrod *GS* Date: 5/3/93

D. Funds for the services requested are available

Signature: FA/FM/A/NPA, Rose Anderson Date:
Signature: R&D/AGR, L. Trott *LT* Date: 4/30/93

18. For the Cooperating Country: The terms and conditions set forth herein are hereby agreed to:

Signature: Title: Date:

19. For the Agency for International Development:

Signature: Elizabeth P. Roche, Chief, R&D/PO/PR *ERoche* Title: Date: 5/3/93

FOR CONTRACT ACTIONS ONLY: SOURCE SELECTION INFORMATION--SEE FAR 3.104. THIS DOCUMENT, OR PORTIONS THEREOF, CONTAINS PROPRIETARY OR SOURCE SELECTION INFORMATION RELATED TO THE CONDUCT OF A FEDERAL AGENCY ACQUISITION, THE DISCLOSURE OF WHICH IS RESTRICTED BY LAW (41 U.S.C. 423). UNAUTHORIZED DISCLOSURE OF THIS INFORMATION MAY SUBJECT BOTH THE DISCLOSER AND RECIPIENT TO CONTRACTUAL, CIVIL, AND/OR CRIMINAL PENALTIES AS PROVIDED BY LAW.
FOR OTHER ACTIONS: UNAUTHORIZED DISCLOSURE OF PROPRIETARY OR SOURCE SELECTION INFORMATION MAY SUBJECT AN EMPLOYEE TO DISCIPLINARY ACTION.

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PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES (PIO/T)
RCM-55-93 Page 1 of 3 Pages

1. Cooperating Country Worldwide	2. PIO/T No. 9365600 3692422	3. PIO/T Amend No. Original
4. Project/Activity No. and Title R&D/R Project 936-5600, Innovative Scientific Research II, Grant 13.113, "The Impact of Crayfish on...."	5. Appropriation Symbol(s) 72-1131021.1	6. Budget Plan Code(s) DDVA-93-16950-CG11 (341-36-099-04-20-31)
7. Pro Ag No. or Project Authorization Date Action Memo Approved 4/30/93	8. Obligation Status <input checked="" type="checkbox"/> Administrative Reservation <input type="checkbox"/> Implementing Document	
9. Project Assistance Completion Date (Month, Day, Year) 12/31/99	10. Authorized Agent FA/OP/A/HRN	
11. Type of Action and Governing A.I.D. Handbook A. A.I.D. Contract (HB14) C. PASA/RSSA (HB 12) B. A.I.D. Grant or Cooperative Agreement (HB 13) D. Other		12. Contract/Grant/Cooperative Agreement/Reference Number (if this PIO/T is for an order or a modification to an award) TBD

13. A.I.D. Funding (Attach a detailed budget in support of column (2) as Attachment A.

	(1) Previous Total	(2) Increase	(3) Decrease	(4) Total to Date
A. Dollars		45,000		45,000
B. U.S.-Owned Local Currency				0

14. Mission References
Mission concurs per two-way memo from USAID/ Kenya received 03/19/93

15. Instructions to Authorized Agent:
 Request that you negotiate a Grant with the University of New Mexico in support of its unsolicited research proposal, "The Impact of Crayfish on Schistosomiasis Transmission in Man-Made Habitats in Central Kenya (13.113)". The funds in this PIO/T partially covers the full cost of the Grant (\$150,000). This PIO/T is in conjunction with two other funding requests of \$45,000 and \$60,000 funded from Project 936-5600, BPC DDVA-93-16950-EG and BPC DDVA-93-16950-KG, respectively. This PIO/T is issued in conjunction with PIO/T numbers *3692421* and *3692421*. Voucher identification: in each instance of Voucher (SF-1034) submission for payment hereunder, the following identification data must appear on the face of the voucher:
 Project No. 936-5600, R&D/R Project No. 13.113
 Project Office: R&D/R
 Budget Plan Code: DDVA-93-16950-CG11
 Obligation Number: *3692422*

16. Address of Voucher Paying Office **Agency for International Development
 FA/FM/CMP/DC, Room 700, SA-2, Washington, D.C. 20523**

17. Clearances - Include typed name, office symbol, and date for all clearances

A. The Project Officer certifies (1) that the specifications in the statement of work or program description are technically adequate, and (2) that (for contract actions only) all program personnel who are defined as procurement officials under 41 U.S.C 423 have signed the Procurement Integrity Certification (OF-333).

Signature R&D/R, Miloslav Rechcigl <i>MR</i> Date: <i>4/30/93</i>	Phone No:
B. The statement of work or program description lies within the purview of the initiating office and approved agency programs. Signature: R&D/R, Wayne W. P. Ching <i>WPC</i> Date: <i>4/30/93</i>	C. Signature: R&D/PO/AE, G. Standrod <i>GS</i> Date: <i>5/1/93</i>
D. Funds for the services requested are available Signature: FA/FM/A/NPA, Rose Anderson Date:	Signature: R&D/AGR, L. Trott <i>LT</i> Date: <i>4/30/93</i>

18. For the Cooperating Country: The terms and conditions set forth herein are hereby agreed to:

Signature: _____ Title: _____ Date: _____

19. For the Agency for International Development:
Elizabeth P. Roche
 Signature: Elizabeth P. Roche, Chief, R&D/PO/PR Title: _____ Date: *5/3/93*

FOR CONTRACT ACTIONS ONLY: SOURCE SELECTION INFORMATION--SEE FAR 3.104. THIS DOCUMENT, OR PORTIONS THEREOF, CONTAINS PROPRIETARY OR SOURCE SELECTION INFORMATION RELATED TO THE CONDUCT OF A FEDERAL AGENCY ACQUISITION, THE DISCLOSURE OF WHICH IS RESTRICTED BY LAW (41 U.S.C. 423). UNAUTHORIZED DISCLOSURE OF THIS INFORMATION MAY SUBJECT BOTH THE DISCLOSER AND RECIPIENT TO CONTRACTUAL, CIVIL, AND/OR CRIMINAL PENALTIES AS PROVIDED BY LAW.
FOR OTHER ACTIONS: UNAUTHORIZED DISCLOSURE OF PROPRIETARY OR SOURCE SELECTION INFORMATION MAY SUBJECT AN EMPLOYEE TO DISCIPLINARY ACTION.

Resubmitted

DATE: *5/3/93* INITIALS: *HT*

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PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES (PIO/T) *

1. Cooperating Country Worldwide	2. PIO/T No. 4365600 3692421	3. PIO/T Amend No. Original
4. Project/Activity No. and Title R&D/R Project 936-5600, Innovative Scientific Research II, Grant 13.113, "The Impact of Crayfish on..."	5. Appropriation Symbol(s) 72-1131021.1	
7. Pro Ag No. or Project Authorization Date Action Memo Approved 4/30/93	6. Budget Plan Code(s) DDVA-93-16950-EG11 (341-36-099-06-20-31)	
9. Project Assistance Completion Date (Month, Day, Year) 12/31/99	8. Obligation Status <input checked="" type="checkbox"/> Administrative Reservation <input type="checkbox"/> Implementing Document	
10. Authorized Agent FA/OP/A/HRN		
11. Type of Action and Governing A.I.D. Handbook [B]		
12. Contract/Grant/Cooperative Agreement/Reference Number (if this PIO/T is for an order or a modification to an award) TBD		

13. A.I.D. Funding (Attach a detailed budget in support of column (2) as Attachment A.)				
	(1) Previous Total	(2) Increase	(3) Decrease	(4) Total to Date
A. Dollars		45,000		45,000
B. U.S.-Owned Local Currency				0

14. Mission References
 Mission concurs per two-way memo from USAID/Kenya received 03/19/93

15. Instructions to Authorized Agent:
 Request that you negotiate a Grant with the University of New Mexico in support of its unsolicited research proposal, "The Impact of Crayfish on Schistosomiasis Transmission in Man-Made Habitats in Central Kenya (13.113)". The funds in this PIO/T partially covers the full cost of the Grant (\$150,000). This PIO/T is in conjunction with two other funding requests of \$45,000 and \$60,000 funded from Project 936-5600, BPC DDVA-93-16950-CG and BPC DDVA-93-16950-KG, respectively. This PIO/T is issued in conjunction with PIO/T numbers **3692422** and **3692421**. Voucher identification: in each instance of Voucher (SF-1034) submission for payment hereunder, the following identification data must appear on the face of the voucher:
 Project No. 936-5600, R&D/R Project No. 13.113
 Project Office: R&D/R
 Budget Plan Code: DDVA-93-16950-EG11
 Obligation Number : **3692421**

16. Address of Voucher Paying Office **Agency for International Development**
FA/FM/CMP/DC, Room 700, SA-2, Washington, D.C. 20523

17. Clearances - Include typed name, office symbol, and date for all clearances

A. The Project Officer certifies (1) that the specifications in the statement of work or program description are technically adequate, and (2) that (for contract actions only) all program personnel who are defined as procurement officials under 41 U.S.C 423 have signed the Procurement Integrity Certification (OF-333).

Signature R&D/R, Miloslav Rechcigl <i>MR</i>	Date: 4/30/93	Phone No:
B. The statement of work or program description lies within the purview of the initiating office and approved agency programs.		
Signature: R&D/R, Wayne W. P. Ching <i>WPC</i>	Date: 4/30/93	Signature: R&D/PO/AE, G. Standrod <i>GS</i> Date: 5/3/93
D. Funds for the services requested are available		
Signature: FA/FM/A/NPA, Rose Anderson <i>RA</i>	Date:	Signature: R&D/AGR, L. Trott <i>LT</i> Date: 4/30/93

18. For the Cooperating Country: The terms and conditions set forth herein are hereby agreed to:

Signature: _____ Title: _____ Date: _____

19. For the Agency for International Development:

Signature: *Elizabeth P. Roche* Title: _____ Date: **5/3/93**
 Signature: Elizabeth P. Roche, Chief, R&D/PO/PR

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FOR OTHER ACTIONS: UNAUTHORIZED DISCLOSURE OF PROPRIETARY OR SOURCE SELECTION INFORMATION MAY SUBJECT AN EMPLOYEE TO DISCIPLINARY ACTION.

AID 1350-1 (11/91)

ACTION: **Reserved**

DATE: **5/3/93** **HT**

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