

International Trip Report

Instructions: Use additional pages as necessary. One report may be submitted by a group traveling to the same location. Reports must be transmitted to the Management Entity within 15 days of return to the United States.

Traveler(s): Steven Huckett

Departure and Return Dates: July 25 through August 24

Location(s): Njoro, Nakuru, Naivasha, and Nairobi, Kenya

Purpose of the Trip: As an active assessment team member, I worked on development and formation of the “Sustainable Management of Watersheds – Collaborative Research Project” (SUMAWA-CRP). This is a joint effort to build capacity within Egerton University and other collaborators in Kenya, to become a regional center of excellence in Watershed Management. SUMAWA-CPR is attempting to bring together physical, social, and economic sciences to produce a “complete” program to address natural resource management issues on a watershed scale. This project is funded by US AID through the Global Livestock CRSP and the Pond Dynamics CRSP programs. Please see attached supporting documents.

List of Persons Contacted: Please see attached list of participants.

Brief Summary: (include technical observations, suggestions and recommendations, and overall impressions of the site situation if appropriate. Use additional pages as necessary.)

Please see attached pages.

Signed _____

Date _____

3 September 2002

To: Whom it may Concern

From: Steve Hockett

Subject: International Trip Report for Travel to Kenya July 25th to August 24th, 2002

Thursday 25 & 26th July 2002: Travel from Logan Utah to Nairobi Kenya via Salt Lake City, Atlanta, and Amsterdam. I met with Dr. William Shivoga and Dr. Maina Muniafu of the United States International University in Nairobi that evening. We began discussions of the outline for the SUMAWA project workshop. Spend the night in Nairobi 26 July 2002.

Saturday 27 July 2002: Dr. Shivoga and I pick-up Drs. Scott Miller and Mimi Jenkins, the new American PI's for SUMAWA-CRP, at the Nairobi airport around 1100AM and begin our travel to the campus of Egerton University in Njoro. Upon arrival, we take rooms in Utifiti Hall and discuss the upcoming workshop to be held on campus and at the Kenya Wildlife Service Training Center at Lake Naivasha.

Sunday 28 July 2002: Leave for a morning tour of the lower portion of the River Njoro Watershed. Participants included Habel Mabinda (the driver), Drs. Miller, Jenkins, Shivoga, Gichaba, Mr. Lusenaka, and me. We visit several areas along the river that are directly impacted by urban, agriculture, grazing livestock, and industrial activities. Where possible local stakeholders are engaged in conversation where they were asked to comment on their perception of the condition of the River Njoro and surrounding lands. The tour culminates at Nakuru town and at the terminus of River Njoro in Lake Nakuru National Park. Here we observe evidence of direct impacts of various land uses and poor water quality on wildlife species, sensitive habitats, and the lake itself.

Monday 29 July 2002: Leave early morning for a tour of the upper portion (headwaters) of the west branch of River Njoro Watershed, upstream from Egerton University. Participant included Mabinda, Drs. Miller, Jenkins, Liti (from Moi U.), Gichaba, Mr. Lusenaka, and me. During our tour, we observe that the majority of the upper watershed (>200mi²) is deforested. This deforestation was reported to have occurred over the past 10 years or so due to political de-gazetting of national lands and distribution of these lands to landless peoples. There are many reasons given for such actions.

Various forms of subsistence agriculture now predominate, with corn and livestock production being the most common activities. Several local stakeholders were encountered and engaged in conversation regarding the future of their watershed resources. These discussions yielded some very interesting perspectives on land use, degradation of the natural resources, and on political forces were offered by stakeholders. Returned to Egerton University campus by 1330 for lunch and preparation for afternoon meeting with SUMAWA team members.

The primary purpose of this afternoon meeting was for introductions, to establish the primary goals and objectives for the workshop, and to set the schedule for the remainder of the week (30 July through 3 August).

Tuesday 30 July through 2 August 2002: SUMAWA-CRP Workshop. First day: Early departure on 30 July for Lake Naivasha and the Kenyan Wildlife Training Center. Arrive at training center around 900 and settle into rooms. Meet at 1000 with entire SUMAWA-CRP Assessment Team to begin workshop meetings. Dr. Shivoga provided the welcoming remarks and introductions, and then led the group through an outline of the workshop goals. The first order of business was to provide the details of the training center accommodations, establish meeting times, determine goals and objectives of the workshop, and to put in place the ground rules for the meeting.

Dr. Scott Miller then discussed the Goals and Objectives of the workshop as perceived by himself and the funding agency (USAID). We discussed various options for research components within the project and established the primary structure of the project (see Power Point file attached). We then assigned team members to work within each of four research components, i.e., Stakeholder Involvement, Ecology, Watershed Characterization, and Socio-economics, based on their interests, expertise, and project need.

Once the framework of the workshop was established, we broke into our component groups to work on the individual component Goals & Objectives, activities, and methodologies for completing a full proposal to USAID for the SUMAWA-CRP project. Periodically we came together to present and discuss our findings/work for sub-tasks for each component, review each groups work toward completing an outline for the full proposal, and to summarize our progress as a whole. Throughout the week, much effort went into defining individual(s) roles, establishing good communications, and organizing the groups efforts to develop this program.

On Thursday 1 August, we adjourned for the afternoon to hear a presentation and to tour portions of Lake Naivasha where efforts have been underway to protect the fresh water resource(s) and lakeshore from encroaching agriculture and urban activities. Lake Naivasha is an internationally recognized RAMSAR site, approximately 300Km² in size, spread across many different administrative boundaries. It is located in the Great Rift Valley and is the highest (elevation) of the few freshwater lakes found within the “Rift.” This is an arid region where a population of approximately 250,000 persons is supported. The economy is supported by a thriving horticulture/floriculture industry, lake fishery, grazing livestock and growing tourism sector.

Ms. Sarah Higgins, Honorable Secretary of the Lake Naivasha Riparian Association (LNRA), led the discussion and field trip. The LNRA was established in 1929 by landowners (white settlers) holding lands contiguous to one another around Lake Naivasha to oversee land use activities on “shore lands” during times when the lake level dropped to expose these shallow shore lands, and in particular freshwater springs. Over

time, their focus has expanded to include the effects of urban and upland land uses. The LNRA identifies the primary threats to the Lake as; direct pollution (mostly from the horticulture and agricultural activities), siltation, habitat destruction, exotic (introduced) species, over-extraction of water, over fishing, grazing by livestock, and soil erosion. A review of LNRA work toward a regional management plan was discussed. The LNRA approach was unique in that they have focused on the lake shore(s) first and have only recently been moving into the catchment to address degradation of resources such as soil and loss of vegetation cover.

In addition to the work done by LNRA, Ms. Higgins discussed efforts in the area to develop a recycling program for plastics. The horticulture industry produces an enormous quantity of waste plastics in Kenya. This includes plastic sheeting used as cover on greenhouses, plastic pots/seedling carriers, fertilizer/pesticide containers, and shipping materials. She has initiated a recycling process on her farm that turns these “waste” materials into fence posts (10’ long) and building blocks for construction.

During our tour of these facilities, we heard from Sam Gitahi, Head of Monitoring for LNRA, about one application of this technology in the Aberdare Mountains, east of the Rift Valley. The Kenya Wildlife Service now uses these plastic fence posts to contain elephants within the forest. The posts prove to have very high utility in that they do not rot in soil, they do not break, and they provide a “natural” insulator for electric fence applications.

Additional materials concerning the Lake Naivasha Riparian Association efforts are available upon request.

Friday 2 August, the workshop team returned to the campus of Egerton University to continue work on the SUMAWA-CRP project. We continued on workshop activities until the late Saturday afternoon, 3 August, tying up procedural issues and working out many of the budgetary matters before Dr. Miller and Jenkins left that afternoon.

August 5 through 10, 2002. This week was spent meeting with university officials to establish a permanent office space for SUMAWA, to secure telephone and internet service, interview and hire of an Administrative Assistant for SUMAWA, and training the new assistant. I also completed development of equipment inventory forms, field report forms, accounts spread sheets, and set-up of several computer filing systems.

Most of my activities were aimed at establishing office and administrative activities, record keeping methods, and developing an infrastructure for the SUMAWA project.

August 11 and 12 2002. Drs. Gichaba and Chiuri enlisted my help in setting up internet services and to download/set-up of new software programs in their offices. In addition to my continued work towards developing the Stakeholder Involvement component of the SUMAWA project, the Ecology and Watershed Characterization research component teams also engaged me to assist in developing their research programs for inclusion in the full proposal.

August 14 2002. Dr. Shivoga and I traveled to Lake Nakuru National Park to meet with the Kenya Wildlife Service (KWS) District Park Warden and Bernard Kuloba (SUMAWA team member and park research scientist). Our meeting with the Park Warden was geared towards developing our relationship with Park administration, to provide an overview of the past weeks activities, and to inform her of our time-frame for developing the full proposal and how KWS would fit into the overall project. She received us and the efforts of SUMAWA with open arms and indicated her willingness to develop a long-term relationship with Egerton University and the SUMAWA effort.

After our morning meeting, Kuloba, Shivoga, and I toured the park to identify, record locations of, and photograph several of the sensitive habitats protected within the park boundaries. During our preliminary scouting, we cross-referenced current conditions to past research literature to identify large scale changes within the park. Digital photographs and GPS coordinates were recorded as well. Additional information is available upon request.

15 August 2002. Drs. Shivoga, Gichaba, Mr. Rohrstitch, Mary Ndivo, and I visited each of 14 bore-holes and water storage/treatment facilities on the campus of Egerton University. Mr. Rohrstitch is the water supply facilities manager for Egerton University. The primary purpose of this exercise was to locate each of the boreholes, assess their condition (working/not working), and to train each person how to use Global Position System (GPS) technology.

Several of the bore-holes were not functional because they had either dried up or, the mechanical equipment had failed. In addition, while in the field, we discovered a freshwater spring, on campus grounds, that were previously unknown. One of the objectives of the SUMAWA proposal is to investigate the potential for aquaculture in the River Njoro Watershed. At present, it appears that this spring has potential of supplying a steady source of clean water for a demonstration project on the applicability of aquaculture and possibly to develop a quasi-artificial wetland for habitat enhancement.

16 and 17 August 2002. I utilized this time to work on development of the Stakeholders Involvement component, and to help the Administrative Assistant to tie up several “loose” ends in the SUMAWA office before my departure. I met with Mr. Mungai of the Computer Science Department of Egerton to put together a shopping list of equipment needed for the SUMAWA office for internet service. This equipment would be purchased in Nairobi.

19 and 20 August 2002. Departed for Nairobi early Monday morning with Dr. Shivoga and Mr. Lusenaka. We had many errands to do for the SUMAWA project including:

- shopping at ScienceScope for electronic equipment,
- meeting with Ms. Barbie Allen, SUMAWA project accountant,
- visit with Dr. Bruce Scott at ILRI in Nairobi to discuss future collaboration opportunities with SUMAWA,

- met with Dr. Maina Muniafu to discuss research linkages between USU and his program at the US International University in Nairobi

I planned to conclude my stay in Nairobi by having dinner with Dr. Francis Lelo to discuss the development of the Stakeholder Involvement component for the full SUMAWA proposal. Unfortunately, Dr. Lelo's flight from Tanzania was cancelled therefore we did not meet as planned.

24 August 2002. Arrive back in Logan Utah around 8:30PM after leaving Kenya on the 21st. I took one day of leave to stay over in Amsterdam Netherlands for a short vacation.

Additional Activities: During my stay at Egerton University, I reviewed several graduate student research proposals and letters of intent to assist them with the content of their proposals as well as with their use of the English language. I also gave several *im promptu* training sessions in how to use MS Word, Excel, a Magellan GPS unit, and basic computer file management to students and the Administrative Assistant.

REGISTER OF SUMAWA WORKSHOP PARTICIPANTS (30/07/02)

<i>NAME</i>	<i>INSTITUTION</i>	<i>ADDRESS</i>
Frank W. Luseneka	Egerton University	Po Box 536, Njoro
Simon Macharia	Fisheries Department	Po Box 12912, Nairobi
Bernard Ngoda	Egerton University	Po Box 536, Njoro
C. Maina Gichaba	Egerton University	Po Box 536, Njoro
Robert Ndetei	KWS	Po Box 539, Nakuru
David Liti	Moi University	Po Box 1125, ECD
William Shivoga	Egerton University	Po Box 536, Njoro
Gilbert Obwoyere	Egerton University	Po Box 536, Njoro
A. A. Aboud	Egerton University	Po Box 536, Njoro
Simon K. Cheruiyot	Egerton University	Po Box 536, Njoro
Shadrack K. Inoti	Egerton University	Po Box 536, Njoro
Lois Chiuri	Egerton University	Po Box 536, Njoro
Francis K. Lelo	Egerton University	Po Box 536, Njoro
Steve Hockett	Utah State University/EU	5230 Old Main Hill, Logan, UT
Scott Miller	University of Wyoming	Laramie, Wyoming
Mimi Jenken	UC-Davis	Davis, California

THE NJORO RIVER WATERSHED PROJECT: MOBILIZING COMMUNITIES TO REHABILITATE AND MANAGE CRITICAL WATER RESOURCES IN THE CENTRAL RIFT VALLEY OF KENYA

Project Concept Note

The Great Rift Valley is world-famous for its geological and archaeological attributes. In East Africa the Rift Valley lakes and their associated watersheds are recognized as key resources in the maintenance of global biodiversity. Home to unique aquatic life and serving as the breeding grounds for millions of resident and migratory waterfowl, the Rift Valley lakes and their inflowing rivers have been recently challenged to a high degree by land use changes that threaten their ecological integrity. In the semi-arid and sub-humid areas the main challenges have come from increasing human pressure on watersheds. This has occurred as a result of urban expansion at Njoro, Nakuru, and Naivasha as well as settlement and exploitation of rural landscapes. Urban pollution, uncontrolled livestock grazing, wood harvesting, and unregulated cultivation have led to extensive watershed degradation, destruction of rivers and streams, high rates of lake siltation, and lowered quantity and quality of water. This affects welfare of people in many direct and indirect ways. Ecosystem effects include the threat of environmental desertification for agriculture as well as an undermining of wildlife species that generate tourist income via national parks. Water issues thus critically affect a broad spectrum of urban and rural stakeholders. Improvements in the situation can only be made through an organized and collective effort of all stakeholders, and to our knowledge such an effort has not been previously attempted in Kenya.

The Njoro River watershed provides an excellent test case. The Njoro River is 50 km in length and the watershed covers about 200 km². It originates at over 3,200 m elevation on the east face of the Mau escarpment and passes down through forested and agricultural lands before serving the cities of Njoro and Nakuru—the latter is one of the largest cities in Kenya. It eventually empties into the saline Lake Nakuru at about 1,000 m elevation. Lake Nakuru is enclosed within Lake Nakuru National Park. The park is best known for its very large population of lesser flamingo's and also provides a fenced sanctuary for two species of endangered rhinoceros as well as a broad spectrum of other East African wildlife. The park serves as an International Heritage Site. The lesser flamingo's depend on algae for their diet, and the algae is very sensitive to changes in water quality and quality. When the algae is diminished the flamingo's (and tourists) depart.

The upper catchments of the Njoro River watershed have been recently exposed to rampant human exploitation. This has resulted in marked declines in water quality and quantity throughout the watershed that have been noticed by civic leaders. This situation has arisen from a government effort to transplant landless people to the watershed over the past 20 years. The main problem is unregulated clear-cutting of high-elevation forest over the past five years for agriculture, human settlement, and harvest of wood products. The pronounced loss of tree cover has reduced prospects for deep infiltration of rainfall in the system, hence lowering rates of water harvest in streams and rivers. Associated

growth of cities and settlements and road construction has also contributed to resource degradation. Industrial and urban pollution of waterways occurs at lower elevations.

This situation for the Njoro River watershed is not sustainable. The current *laissez faire* approach neither protects the environment nor involves or protects the public. There is a lack of awareness among citizens, policy-makers, and planners of the importance of the ecological health of the river and surrounding environment. There has been no practical research or outreach which has attempted to link water, environmental sanitation, and hygiene with development, public health, or poverty alleviation in the Njoro River watershed. Urban and rural people alike will suffer as a result of the shortsightedness that allows such unbridled resource exploitation to continue. A new approach for catchment-scale water and resource management is clearly needed.

We propose that such a new approach include a combination of technical research, stakeholder buy-in, public education, and community outreach and mobilization to prioritize and implement critical interventions to rehabilitate the ecological and hydrological integrity of the system. These interventions will primarily focus on the restoration of water quantity and quality.

We propose that the Faculty of Environmental Studies and Natural Resources (FESNARE) at Egerton University in Njoro lead a watershed-scale research, education, and outreach project in partnership with interested American universities. The FESNARE brings interdisciplinary strengths to the table in the areas of aquatic science, human ecology, natural resource management, Participatory Rural Assessment (PRA) and community mobilization. Key research and training inputs are sought in terms of various aspects of landscape and watershed analysis and watershed technical intervention.

At a global scale water resources—defined in terms of water quantity and quality—are becoming the primary factors limiting sustainable development of human societies in the drier regions of the world. Experience elsewhere has shown that given the critical nature of water—activities to improve water, sanitation, and hygiene can lead to other developments and serve as entry-points to improved governance. Conversely, inadequate water and poor sanitation can significantly contribute to human illness and persistent poverty.

Egerton University is located near the town of Njoro in the Njoro River watershed and will therefore be one of the key stakeholders in the project. Egerton administrators are already viewing the decline in water resources for the university campus as a potential crisis situation. Egerton University is the traditional agricultural college of Kenya. Established over 60 years ago, Egerton is strategically placed to deal with the current threats to the water resources and human welfare in the Central Rift Valley of Kenya. Overall, we want to use the Njoro River Watershed Project as the first step in creating a sustainable, interdisciplinary model to improve water resources throughout central Kenya and elsewhere via technical, social, and policy means. In short, we aspire that FESNARE of Egerton University becomes a regional center of excellence in watershed analysis and rehabilitation. We know of no similar entity in East Africa to undertake such an important task.

This is the product of a week long workshop held at the Kenya Wildlife Service Training Center at Lake Naivasha to lay the foundation of the new SUMAWA-CRP.

Planning Activities August 1 – 28 2002

Needs: GIS/Water Quality laboratory (600K in budget/400K committed by EU-VC), vehicle (3.2M Ksh), three GPS units, 4 PC's, monthly SUMAWA-CRP meetings to review accomplishments and way forward, identify talents and interests, identify pot. Graduate students, staff development

New Equipment Priorities

- Internet connection (\$3500/245000Ksh/yr)
- 1 additional GPS (\$300/22500Ksh)
- 3 PC's (\$4,500/337500Ksh)
- 1 Laptop PC (\$2,500/187500Ksh)
- 6 APC battery back-up unit (\$100/45000Ksh)
- Vehicle (\$43,000/3.2Ksh)

Required Products for next 3 weeks 3 Aug – 20 Aug

1. Develop inventory database of all equipment
 - a. attach to responsible party
 - b. develop check in/out system
 - c.
2. Create budget request forms (see Lusenaka)
 - a. \$in/\$out forms/process
 - b. Create budget justification forms
3. Develop Field note forms
 - a. Data collection
 - b. Researcher activities → where, when, why and what
 - i. Pay is dependant on productivity, i.e., accountability
4. Obtain permanent identification tags for all equipment
5. Find Management training for team leaders
 - a. Administrative officer should be included in functional support training

Activities for August - September 2002

- Pre-Proposal
- Capacity building
- Poster Preparation
- Collect/compile/analyze secondary data
- Exploratory household survey (SE + WC + E)
- 1st Baraza w/ SH, WC
- MOU w/ KWS, Moi, Fisheries

Products for August & September

1. Draft Proposal
2. Poster production for Washington DC visit
3. Revised Work plan
4. REPORT on activities for July to September 2002

Activities for October – December

- Define Watershed boundary!! *WC*
- Complete Baraza w/*SH WC, E*.
- Establish Admin. Boundaries *WC, SH*
- Preliminary Watershed Characterization (LC, LU, **livestock**, ag., etc.), topography, soils, precipitation,??) *WC, SH*
- Establish sample regime, i.e., veg. aquatic, terrestrial components *E*
- ID Sample locations *WC, E*
- Identify precipitation sample sites (community monitoring??) *WC, E*
- Report on preliminary survey of households *SE*
- Selection of appropriate SE model
- Prepare for baseline survey construct questionnaire *SE, SH*
- Establish database, date sets for SE → collection protocols for all fields *SE*
- GPS use training & preparation of field data logs for team members *WC*
- Basic computer training *All*
- Basic GIS training *All*
- Exposure seminar in PRA, GIS, WC, Ecology, SE techniques
 - 2 days in November *All*
- Completed Baraza's across Watershed (6 communities) *SH, WC, E*
- Selection of appropriate model for each component of study *All*
- REPORTS *All*
- Washington DC presentation *Aboud, Lusenaka, Shivoga, Lelo, Gichaba,*

Products for October to December

1. Preliminary dbase for *SE*
 - a. Prepare questionnaire for households
 - b. Preliminary reports from focus groups and key informants
2. Preliminary dbase for Biophysical components *WC, E*
 - a. Maps (Land use, Land cover, precipitation, boundaries, sample locations), statistics, matrix of resources
3. Poster and presentation for Washington DC *All*
4. Synthesis reports from SH activities (information, maps, synthesis) by communities/district *SH, WC*
 - a. inventory of stakeholders in the watershed
 - b. inventory of institutions in the watershed

January – March 2003

- Dry season samples *E, WC*
- ID runoff plots *WC, E*

- Establish precipitation monitoring sites *WC, E*
- Field data collection and entry *SE*
- GPS data collection and link to spatial information *SE & SH*
- Re-visit computer training → needs *All*
- Longitudinal community visits/exchanges *SH, WC, SE*
- Acquire existing WQ² data *WC*
- Establish d-base of water resources *WC, E*
- Writing REPORTS *All*

Products for January – March 2003

1. Database of WQ²
2. Preliminary index (document) of watershed characteristics (maps, issue ID, SH perception, SE condition of household)
3. Quarterly REPORT of activities???

April – June

- Wet Season scheduled sampling *E, WC*
- Sample runoff plots *WC*
- Data analysis & report writing *SE*
- Evaluation of the four model(s) used by each component of the assessment process and evaluate modifications as appropriate *ALL*
- Creation of CAP's in 6 communities *SH*
- Interaction w/policy makers (tiered survey - workshops) *SH, SE*
- Initial policies met? *SE, SH*
- Site visit to Tanzania, Uganda *All*
- Populate water resource (WQ²) database *E, WC*
- Establish/develop comprehensive SUMAWA-CRP library *ALL*
- Prioritization of issues important to stakeholders and biophysical conditions *ALL* (*marriage of information sets*)

Product for April – June

1. Report on activities for each component and on initial prioritization of potential interventions from SH perception, SE condition and biophysical findings *All*
2. Report on meeting with policy makers and whether policy are being observed *All*
3. Report on findings from Tanzania/Uganda site visits *All*
4. Report on CPA's developed *SH*
5. Describe progress on SUMAWA-CRP library *PI & AA*

July – September

- Initial assessment of SH needs, potential interventions *SH*
- 2nd wet season sampling *E, WC*
- Capacity building activities have begun *SH & SE*
- Review of report *SE*
- Available results back to SH through PRA *All thru SH*
- Evaluate impact of database on activities of each component group *All*

- Application of WQ² models *E, WC*

Product for July – September Activities and end of year Report

1. Produce global CAP for River Njoro WS? *SH, WC*
2. Evaluation and report of the four specific models selected to evaluate watershed characteristics, ecologic conditions, SH & SE issues, etc. *All*
3. Produce report describing watershed characteristics, identify & prioritize problem areas, and detail potential interventions *All*
 - a. Stakeholder empowerment/capacity built
 - b. Biophysical areas of concern
 - c. Socioeconomic constraints, local income opportunities, resource allocation, and leverage opportunities
 - d. Policy constraints/support for stakeholder well being
4. Develop and present working Model of Sustainable Management of Watersheds through integration of stakeholder concerns and priorities with biophysical characteristics/conditions → SUMAWA-CRP Model! *ALL*
5. **End of year report on ALL activities due October??** *ALL*

End Products and Results *All*

- Pre-publication for peer reviewed journal(s)
 - One paper per group
 - Regional expertise is being developed and recognized
- End of year activity workshop for collaborators, partners, stakeholders, SUMAWA team
- Develop aptitude to leverage resources for sustaining stakeholder involvement and to promote/implement rehabilitation of watershed resources

As a member of the Stakeholder Involvement working group within the overall SUMAWA program, the following is a direct product of my efforts during this trip.

STAKEHOLDER INVOLVEMENT COMPONENT (SHI)
Working Draft – KWS Lake Naivasha Training Centre – 21 Aug. 2002

Hypothesis:

Overview of METHODS:

Involvement of stakeholders (SH) will be based on participatory appraisal, active learning, and experiential methods, tools, and processes. The application of PRA will be adapted along the course of the project to incorporate emerging stakeholder and scientific issues and concerns regarding the watershed resources. Scientists from WC, SE, and E will participate with the SH team in communities at key steps along the way so that they will be aware of SH interests and concerns.

1. Conduct SH analysis to identify the community composition in the different sections of the watershed (see Figure 1)
 - a. Conduct meetings and “Barazas” to introduce the project and identify different institutions, leaders, Admin, NGO’s, CBO’s, industries (e.g., timber harvesters), extension staff, in each of the 6 target communities in the watershed
 - b. Conduct community-wide meetings
 - c. Write summary report
 - d. Produce an inventory of stakeholders in the watershed by each section
2. Orient scientific research team to PRA and provide an overview of how it will be used to support stakeholder involvement and integration into scientific research for this project (possible topics: what is it? philosophy? what are the different kinds of tools, activities and methods? how can each of these tools be used in this project?)
3. Modify and adapt PRA tools, guides, and approaches to support stakeholder involvement in analysis and empowerment to improve watershed resources.
4. Carry out first set of PRA tools in each of 6 target communities in the watershed to identify history, problems, issues, perspectives, priorities, and knowledge base of watershed, on a gender basis. PRA tools targeted: historical time lines, sketch map, transect route, problem analysis, trend analysis
 - a. Project scientists participate in these activities with PRA team
 - b. Write detailed reports of information from each activity

5. Synthesize and translate results of step 4 for scientists and discuss/brainstorm with them interventions, opportunities for action, and exposure and awareness-raising ideas, demonstrations, trials, and activities.
6. Identify individuals/stakeholders in the watershed (farmers, households, others??) who are using better/best management practices for soil, land, vegetation, water, etc., and investigate performance (benefits, disadvantages, farm budget, resources, etc.)
7. Develop and implement exposure and educational activities and materials (seminars, field trips, demonstrations, community monitoring of watershed conditions, exposure visits, etc.) with scientific team. Examples:
 - a. School activities to collect data, monitor conditions in watershed
 - b. Get volunteer community/school precipitation/temperature monitoring gages set up
 - c. Set up exposure visits to farmers/stakeholders or others inside or outside (neighboring) watershed who are practicing best practices
 - d. Develop “information, education, and communication” materials, methods, and activities
8. Conduct tiered-level meetings from the ground-up to facilitate communication and exchange perspectives across communities, stakeholder groups, and government officials in the watershed.
9. Conduct community discussions across the watershed to introduce, explain, and discuss natural resources government policies and recent acts, legal rights, laws, and institutional frameworks
10. Incorporate scientific (biophysical) research information in the formulation of community action plans (CAPS) within and across communities and stakeholder groups
 - a. Volunteer experimental trials with help/direction of extension staff and scientists
 - b. Demonstration technologies with communities/stakeholders
11. Develop and carry out training sessions to offer institution leaders and community members with leadership skills, accounting, monitoring and evaluation, proposal writing, and project implementation

DATA AVAILABILITY

1. Case study PRA with several communities in Njoro area in recent years
2. PRA with communities in watershed in 1991?
3. Summary of Baraza’s conducted in the Spring of 2002 in three communities
4. Recent (2002) Personal contact with community members in Nessuit and Njoro

RESOURCE NEEDS (human, equipment, what you need to do your work)

1. Digital camera
2. PRA teams??
3. \$\$ for fuel for travel
- 4.

Figure 1. Target Communities and Sections in the River Njoro Watershed

