

## **Sample Professional Project Proposals**

Both these proposals are worth emulating. Amy Ewing's proposal deals with an office-based project, whereas Tara Putney's proposal is for a field-based project. Note that the Tara's proposal has a draft outline of the Professional Project report – a good idea.

# **Water Quality and Public Health Monitoring of Surface Waters in the Kura-Araks River Basin of Armenia, Azerbaijan and Georgia**

**by**

**Amy Ewing**

Committee

Dr. Michael E. Campana, Chair  
Dr. William M. Fleming  
Dr. Gregory Gleason

A Professional Project Proposal Submitted in Partial Fulfillment of the Requirements  
for the Degree of

**Master of Water Resources**

Water Resources Program  
The University of New Mexico  
Albuquerque, New Mexico  
March 2003

## Committee Approval

The Master of Water Resources Professional Project Proposal of Amy Ewing  
is approved by the committee:

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Chair

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Date

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Professional Project Proposal  
University of New Mexico  
Masters of Water Resources Program

Amy Ewing  
March 24, 2003

**Introduction**

The focus of this project is the Kura-Araks River Basin, an international river basin located in the South Caucasus. The watershed includes Turkey, Iran, Armenia, Georgia, and Azerbaijan, although the analysis of this project will be constrained to the three lower basin states of Georgia, Armenia, and Azerbaijan. The total area of the watershed is approximately 188,500 km<sup>2</sup>, with the percent of total area for each of the countries as follows: 18% Georgia, 16% Armenia, 31% Azerbaijan, and 35% for Iran and Turkey combined (USAID, 2002). The Kura River originates in Turkey, and flows southeast through Georgia into Azerbaijan (USAID, 2002). The headwaters of the Araks River are in Turkey, and it flows east through Turkey to the border with Armenia. The Araks marks the borders between Turkey and Armenia, and then Iran and Armenia, before flowing into Azerbaijan. The confluence of the Kura and Araks Rivers is in Azerbaijan, near the town of Sabirabad (USAID, 2002). The population of the basin exceeds 8 million people (European Commission, 2002), and there are currently no treaties between these countries concerning water rights or water quality in the basin (Wolf, 2003).

My interest in the Kura-Araks Basin stems from a NATO proposal entitled the South Caucasus River Monitoring Project, for which Michael Campana is the NATO representative. This NATO funded project aims to set in place a monitoring program developed and maintained by these countries, and will collect water discharge and quality parameter data monthly and quarterly, analyzing for a score of contaminants. The monitoring is scheduled to begin in the fall of 2003, and the project is planned to operate for a period of 3 years (NATO, 2002). This NATO project is exciting because scientists from Armenia, Azerbaijan, and Georgia are coming together in an effort to document a baseline of current basin conditions, with a look into the future at how best to manage the shared water resource.

The governments are aware of this project, but they are not involved in it. Scientists will brainstorm a transboundary management plan as a part of this project, with possible future implementation by governments who have historically been in conflict.

Other new monitoring programs are proposed in the basin, including one by the European Commission, and there are lists and lists of existing (or previously existing) monitoring stations available. During the Soviet era, water resource monitoring data was collected by region, and forwarded to Moscow at the end of each year. This practice stopped in 1989, and since then, former Soviet Republics have been developing monitoring programs of their own (DAI, 2002). There is very little actual water quality data available, which may perhaps be just as well, as the accuracy of laboratories is called into question in the project proposals of current date. Laboratory accuracy is an issue that is being dealt with currently, so as to validate the data to be collected by the NATO project beginning this fall.

### **Water Use and Quality**

Water use along the river is fairly well constrained, including municipal, agricultural, industrial, and mining uses. In Georgia there is a surplus of water, and surface water from the Kura River is used primarily for agriculture. In Armenia, there are shortages some of the time, however, they are primarily induced by the water resource management methods (European Commission, 2002). In Armenia, the primary use of surface water from the Araks River is for agriculture and industry, while further downstream in Azerbaijan, the Kura-Araks River is relied upon for drinking water as well as for agriculture and industry (European Commission, 2002). Azerbaijan is short on water, only allowing an average use of 1000 m<sup>3</sup> per person per year, which is one of the lowest rankings in the world (USAID, 2002).

The list of contaminants present in the river is also fairly well constrained. Over 8 million people live in the basin, and with little or no treatment for the municipal sewage, there is a great amount of contamination from coliform bacteria, and infectious diseases. Industry is diverse in the region, with copper mining common to all three countries. Heavy metal contamination includes copper, zinc, manganese, lead, mercury, and cadmium (European Commission, 2002). Chemicals are also a result of industry in the area – primarily phenols and carbon hydrates.

Runoff from agriculture yields nitrate contamination, and the introduction of pesticides into the river – most notably, DDT (European Commission, 2002).

### **Contaminant Exposure and Effects**

With the list of contaminants so well constrained, the potential risks to human health can also be evaluated. We know what the primary uses of water are for each country, and as Azerbaijan is the only one of the three that relies on surface water from the Kura-Araks for drinking water, it is there that the most serious impacts on human health are expected. The effects of these contaminants are well known in the medical community, and as I am interested in the effects of water quality on public health in this basin, I am researching their effects. I am interested in taking the list of known contaminants, and quantifying the amounts of each necessary to pose a threat to the regional public health (particularly in Azerbaijan, the country furthest downstream). Such an analysis could easily be applied to the data that will be collected in the future, with such analyses pointing out the water quality issues that if adequately addressed could eliminate threats to human health. Exposure effects applicable to the Kura-Araks River Basin include the effects of coliform bacteria and infectious disease from the lack of treatment for municipal waste, heavy metal contamination as a result of mining and industrial use, as well as chemical and pesticide introduction from industrial and agricultural runoff.

Public health monitoring is something that is not included in either the NATO monitoring project, or that proposed by the European Commission; however, I feel that it is an important aspect of defining baseline water quality. I expect for overall life expectancy to be lowered by the lack of infrastructure and water treatment, and for the rates of cancer to be high as a result of exposure to many of these contaminants. Life expectancy and cancer rates are difficult to quantify, as the number of people who would have to be monitored to accurately define these would be too great. It would be useful, however, to monitor any neurological effects present as a result of exposure to heavy metals, as well as the health of pregnant women and babies looking for increased infant mortality, birth defects, and developmental delays as a correlation to exposure to chemicals and pesticides such as DDT. A list of recommended public health monitoring could be better constrained after the exposure effects are more clearly understood.

By establishing a public health baseline, and by combining this information with the known effects of exposure to certain contaminants, a plan could then be formulated for the order in which contaminants might best be addressed, yielding the greatest impact on the betterment of the public health in the basin. Such an order could be applied in this basin, and in other basins around the world.

This area lacks money with which to address these issues; however, the international community is heavily involved in the funding of projects it sees as having potential, including those that will monitor water quality. I have no reason to expect that a project potentially limiting exposure to certain contaminants with known detrimental effects on public health would not elicit both international interest and financial backing.

### **Objectives**

My interest in this area originates with early work I was involved in just after college on the Aral Sea, and the effect its shrinkage has had on local climatology. I came into the water resource program with an interest in international water issues, and that interest has flourished. I wrote a paper on the Aral Sea myself as a part of this program, and it was from this research that I developed an interest in public health issues, especially as they relate to water quality. The issues of water quality are great in the former Soviet Republics of Central Asia, as well as those republics that together form the South Caucasus.

The purpose of this project is to identify and list the contaminants that are present in the Kura-Araks River Basin, identify the routes of exposure to each as well as the populations affected, and evaluate the effects of exposure to each of the known contaminants. The analysis will quantify the amount of each contaminant that is a risk to human health for easy application to the results of monitoring that will come from the NATO South Caucasus River Monitoring Project. In addition, I intend to design a more extensive monitoring project both with respect to lists of monitoring stations, and water quality parameters in need of monitoring (i.e. are not a part of a current monitoring program). In summary, this project will define a list of known contaminants and their effects on human health, and also will develop a public health based water quality monitoring plan. An implementation of this monitoring plan, followed by actions resulting in a reduction in exposure to those contaminants with the most significant impacts would have a positive impact on the health of the people in this basin.

### **Timeline**

March 27, 2003	Proposal to be approved and signed by full committee
March 27, 2003	Turn in OGS Notice of Intent to Graduate Form (summer 2003)
May 5, 2003	Paper draft to Bill Fleming, Greg Gleason, and Michael Campana
week of May 5	Turn in OGS Announcement of Examination Form
week of May 19	Project Defense
May 29, 2003	Paper turned in

### **References**

European Commission Draft Inception Report, 2002, Joint River Management Programme of the Kura River Basin, Armenia, Azerbaijan, and Georgia, dated April 18; report accessed via Paul Dreyer, Development Alternatives, Inc., and was obtained from the European Commission office in Tblisi, Georgia.

NATO South Caucasus River Monitoring, NATO Science for Peace Project Plan, Project Number SfP 977991, adopted version dated July 22, 2002.

U.S. Agency for International Development Mission for the South Caucasus, 2002, Water Management in the South Caucasus Analytical Report: Water Quantity and Quality in Armenia, Azerbaijan, and Georgia, dated February 27; report prepared by Development Alternatives, Inc. for USAID, obtained from Paul Dreyer, DAI, Inc.

Wolf, Aaron, 2003, Transboundary Freshwater Dispute Database, a project of the Oregon State University Geosciences Department, Available at <http://www.transboundarywaters.orst.edu/>

# **Planning for the Sustainable Restoration and Development of the Parque Landeta Wetland Through Effective Community Participation: The Rio Laja Watershed, Guanajuato, Mexico**

**by**

**Tara Putney**

Committee

Dr. Michael Campana, Chair

Dr. Claudia Issac

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The Parque Landeta Area, Rio Laja Watershed

A Professional Project Proposal Submitted in Partial Fulfillment of the Requirements  
for the Degree of

**Master of Water Resources**

Water Resources Program

The University of New Mexico

Albuquerque, New Mexico

August 2005

## Committee Approval

The Master of Water Resources Professional Proposal of **Tara Putney** is approved by the committee:

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Chair

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Date

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## **Introduction**

This project will focus on the Rio Laja Watershed, located in the western portion of the state of Guanajuato, Mexico. The 1,250,000 acre watershed is a tributary of the Rio Lerma that supports an eco-region considered globally outstanding by the World Wildlife Fund and supports one of Mexico's largest agricultural areas where produce is grown for North American export. The Rio Laja flows through numerous small communities and the larger towns of Dolores Hidalgo and San Miguel de Allende. Water resources are scarce within the vast watershed. The climate is arid and the landscape resembles that of central New Mexico, with an average temperature of 19 degrees Celsius and 700-900 mm precipitation throughout most of the watershed (Swanson, 2000). Yet, the river and its tributaries provide precious habitat for large populations of migratory birds and a diverse collection of fauna and flora.

Severe erosion in the watershed due to the abstraction of riparian area vegetation and trees and poor upland management has caused a large amount of international attention. The water quality is suffering from sedimentation, which is augmented by municipal sewage that enters the stream at San Miguel, the town of Dolores Hidalgo, and many small villages. In addition, intensive grazing practices and deforestation have exacerbated the situation, creating devastating flood events and runoff that sweep away agricultural lands and property. The severe compaction of the landscape has led to decreases in aquifer recharge in an area that relies on groundwater for 85% of its agricultural water usage. It is estimated that the water table is declining 2-5 meters a year (Salvemos al Rio Laja, A.C., 2005). Fortunately, there has been international interest in restoring this unique, desert watershed.

I have been interested in this particular region of Mexico for quite some time, having resided in the city of Guanajuato in 1999 with subsequent visits. Even without a broad understanding of watershed dynamics at that time, I was impacted by the visual qualities, both poor and aesthetic, of the watershed. The diversity of landscapes was impressive, but so was the garbage in the streams and evidence of poor water quality and bank erosion. Since that time, I have gained a well-rounded water resources education and have researched the fundamentals of integrated watershed management, which is now becoming internationally recognized and practiced. One of the key components of integrated watershed management and sustainable water resource projects is *community participation* from the planning through to the monitoring phases. Thus, I hope to use my knowledge of effective community participation methods and watershed management to develop a plan for the sustainable development and restoration of Parque Landeta, a nature preserve and wetland area just outside of San Miguel de Allende, Guanajuato.

## **The Management History of Parque Landeta**

Parque Landeta, located near the small community of Landeta, is about a 20-minute walk from the main square of San Miguel de Allende. Adjacent to the underdeveloped park is the well-developed and popular botanical garden of El Charco del Ingenio (refer Appendix map). Parque Landeta has always been property of the City of San Miguel. However, due to its proximity to El Charco del Ingenio, the botanical garden organization has temporarily maintained the park and has undertaken small development projects such as native tree planting, picnic area development, some terracing and the construction of

two dry latrines. El Charco's status as a non-governmental organization has not allowed them to fully carry out development because they must focus on the maintenance of their own area. Recently the City of San Miguel de Allende modified their plan for Parque Landeta- the designated land use was changed from park status to protected nature reserve. This has had important implications because the nearby areas are of great interest to real estate businesses. It is in the above context that five non-governmental organizations in the San Miguel area have united to restore the area in full. These groups plan to focus directly on the development of the protected area named Parque Landeta. The participating organizations are the following:

- El Charco del Ingenio, <http://www.laneta.apc.org/charco/reserve.htm>
- Centro para los Adolescentes de San Miguel de Allende (C.A.S.A.), [www.sanmiguel-casa.org](http://www.sanmiguel-casa.org)
- La Fundacion de Apoyo Infantil Guanajuato (F.A.I.), [www.faighto.com](http://www.faighto.com)
- Sociedad de Audubon, Mexico, A.C., <http://www.audubonmex.org/index.htm>
- Salvemos al Rio Laja, A.C., <http://www.rio-laja.org/>
- The City of San Miguel de Allende, <http://www.sanmiguelallende.gob.mx/>

Although each of these organizations and the City are willing to contribute their labor and expertise, all of them have historically incorporated and pursued varying levels of community support and participation in their projects. For example, El Charco del Ingenio's website reports that they have a wide range of community events, volunteer opportunities and an active environmental education program. On the other hand, the Board of Directors of the Sociedad de Audubon has expressed that they feel they involve very few community members in projects and do not have a well-developed educational component (Carruth, 2005). The San Miguel population is comprised of a very large expatriot community. Organizations like the Sociedad de Audubon fear that community involvement does not include the native, Mexican residents of the watershed.

### **Issues of Concern**

#### *Community Participation*

In the past foreign environmental scientists and engineers would commonly arrive in small communities with their plans basically formulated and would not engage in a sufficient amount of interaction with communities to assess their legitimate needs or concerns. This trend was not necessarily a complete disregard for marginalized groups, but rather an underestimation of the potential stock of socioeconomic and environmental information that could be gained through community participation. The lack of information acquisition on the part of the science community often resulted in water projects constructed in bad locations, help to fewer citizens than anticipated, inappropriate and unnecessary technology and the communities' inability to maintain complex structures or restoration projects due to the lack of training. Consequently, watershed management in Mexico has been plagued with inappropriate technology transfers, lack of stakeholder responsibility and unsustainable projects.

A new holistic approach is badly needed, in which all stakeholders are clearly identified, are encouraged to participate and eventually take ownership and responsibility for projects like Parque Landeta and the successful results. According to the International Food Policy Research Institute, only eight out of seventeen projects even incorporate

some level of participation, and in most cases the involvement is not intensive enough to promote a community feel of ownership (Johnson, et al., 2001). Similar statistics all demonstrate that the success rates of water projects depend on the participation of users.

### *Female Participation and Gender Analysis*

Advocates of integrated watershed management and community participation also focus on the importance of socioeconomic and cultural challenges that have historically limited women's participation in watershed management. Most international organizations have recently placed extensive emphasis on female involvement. The common obstacles women in Latin America confront are lack of time and mobility due to family obligations, political and legal constraints because of the inability to enter contractual agreements, and cultural constraints when there are imbedded female roles and traditions in a community. The following are important research and planning actions that may increase women's participation: 1) outreach to women's groups in the rural community and soliciting direct involvement, 2) gender analysis during the research, design and monitoring phases of projects, and 3) the facilitation of gender-sensitive consultations and meetings to gather ideas and information (WB, 1996).

### *Monitoring and Maintenance*

A risky aspect of many conservation projects is the absence of follow-up, or the reliance on a monitoring system that is limited to annual progress reports. Without the evaluation of projects during and after development, the community and researchers are unable to make crucial improvements that encourage the projects long-term benefits. To foster participatory monitoring, methods for keeping track of economic and social benefits must be decided upon as well as a set of project indicators. Unfortunately budget constraints, especially toward the end of the development phase of a project, limit the amount of evaluation and monitoring that may occur on behalf of the organizations themselves. Hence, upkeep and assessment depends on the local community most often.

## **Purpose**

The purpose of my professional project is to develop a plan for the restoration of the wetland located in Parque Landeta that promotes its sustainability. My intention is that community stakeholders will feel a sense of ownership and participate in the management of these natural resources within the park. The development of Parque Landeta is an ideal opportunity to create open dialog and healthy relationships between the five organizations, the City of San Miguel and the local community. A plan for high levels of participation should lead to community responsibility and empowerment, which is ideal because of the sustainability factor and the goal of self-perpetuating activities within a watershed.

## **Audience**

My primary audience will be the organizations involved in the Parque Landeta restoration and development project (C.A.S.A., F.A.I., Salvemos el Rio Laja, Sociedad de Audubon, Mexico, El Charco del Ingenio); the City of San Miguel de Allende; community members of San Miguel de Allende and the surrounding towns located in the Rio Laja watershed. My secondary audience would consist of interested NGOs and cities in Mexico, and Water Resources/Community and Regional Planning students and professionals

interested in the topic of community participation and empowerment in water resource planning.

### **Research Objectives**

Seven objectives are outlined below, which describe in more detail the purpose of my research and the basic activities related to my primary objectives.

#### **1- Identify stakeholders in the Parque Landeta restoration project**

- Gender analysis and priority group identification tools used in focus group settings, in addition to structured interviews with local community members and stakeholders, will allow me to successfully identify stakeholders of the project
- Informal communication with local community members, the city and organizations' staff and volunteers will be documented in field notes and used to identify stakeholders

#### **2- Identify current and potential upstream resource management problems that will threaten the sustainability of the wetland restored at Parque Landeta**

- Structured interviews and focus group activities related to resources management will allow me to evaluate the communities' concerns and their knowledge of potential threats to the successful restoration of the wetland
- Communication with the participating organizations through informal interviews and meetings will allow me to gather information and data pertaining to upstream, environmentally degrading activities occurring in the watershed

#### **3- Evaluate potential socio-environmental impacts on downstream communities resulting from the Parque Landeta restoration project**

- Structured and informal interviews with the downstream communities will allow me to evaluate personal concerns about social or environmental impacts resulting from the restoration of the wetland and park area.
- Potential environmental impacts, if any exist, may also be evaluated using the information and data provided by scientists and staff of participating organizations through informal interviews and meetings

#### **4- Assessment of current levels of community participation and the communities' *knowledge and perceptions* of the individual organizations involved in the restoration project and the city-owned Parque Landeta unit**

- The current levels of community participation for each organization may be evaluated through the structured interview process with community members and stakeholders; interview questions will be related to the perception and knowledge of the park as it is today and the perception and knowledge of the organizations involved

- The organizations' perceptions of their levels of community support and participation will be evaluated through informal interviews with staff, executive directors or board members
  
- 5- Provide a plan for the involvement all stakeholders and interested community members during the planning, development and monitoring/maintenance phases of the project**
  - Objectives and related activities #1-#4 lead to the development of a plan to incorporate high levels community participation during all phases of the restoration process; structured interviews, focus groups and workshops will allow me to assess the communities goals, visions and personal needs related to the project and the greater watershed
  
- 6- Design an initial plan for the monitoring and maintenance of the restored wetland at Parque Landeta**
  - Through focus group activities and the information and data gathered from stakeholders and participating organizations, I will develop a rough outline of social and environmental indicators for monitoring and maintenance purposes
  - Refer to objective #5
  
- 7- Facilitate communication and develop alliances between the five organizations and help create a successful coalition that can unite to problem solve, develop policies and successfully involve the local community**
  - Through structured meetings with volunteers, staff and board members of the participating organizations and the City of San Miguel, I will be able to evaluate each groups goals, visions and needs and begin to develop a plan for continued cooperation and joint management of Parque Landeta
  - Research objectives #1-#6 will guide these groups in the formation of a solid relationship with the community and open doors of communication

### **Anticipated Results**

- Qualitative and quantitative data resulting from data collection methodology
- Determination of the stakeholders of the Parque Landeta project within the Rio Laja watershed
- An analysis of the gender issues and subsequent constraints on female participation in natural resource management activities and wetland restoration activities
- Increased interest, support and participation from the community and key stakeholders in the planning, development and monitoring/maintenance phases of Parque Landeta
- Development of an short-term or long-term coalition between the primary organizations and the city with improved dialog, frequency of communication and joint decision making
- An analysis of the relationship the five participating organizations have with the community and each other
- A description of the needs, expectations, goals the organizations, city and community have for the park and restored wetland area

- Determination of downstream impacts from the restoration of the wetland and upstream impacts from natural resource management activities
- Determination of appropriate indicators to be used for the monitoring and maintenance of the wetland and park to be used by the community, volunteers, and staff
- Recommendations

## Methodology

### *Methods*

The methods I will be utilizing to collect both qualitative and quantitative data are the following:

- Unstructured interviews and communication with executive directors, staff and board members of the five participating organizations to help with the delineation of the wetland, the evaluation of past and current levels of community participation in watershed activities, and ideas/goals for Parque Landeta
- Photographic documentation of the site
- Structured Interviews with upstream and downstream community members from the Parque Landeta area and wetland
- Participatory research methods include:
  - Delineation of wetland site through visual appraisal and oral histories
  - Workshop activities with local school children:
    - Discussion of watershed and wetland dynamics and services
    - Solicit ideas for the park and their involvement in the planning, development and monitoring
  - Focus Group Potential Activities (*Thomas-Slater, B, et al, 1995*):
    - Collection of oral histories of Parque Landeta and the Rio Laja Watershed
    - Problem trees- ranking of issues, causes and opportunities
    - Timeline exercises
    - Priority group identification
    - Stakeholder identification activities (Institutional Venn Diagrams)
    - Community landscape mapping
    - Project planning and design activities

### *Tools*

The following are tools used for qualitative and quantitative research methods and data collection:

#### Extensive Field Notes

Materials and drawings collected from focus group and workshop participants

Audio record of all structured interviews and focus group sessions- to be transcribed

Documents and quantitative data pertaining to the wetland and park from experts, stakeholders and organizations

Qualitative information pertaining to the wetland and park from community, stakeholders and organizations

Library, University of Guanajuato

Internet

Literature already obtained

### *Equipment*

The following is equipment needed for data collection:

Tape Recorder  
Field Notebook  
Digital Camera  
GPS Unit  
Computer  
Pens and Drawing Materials  
Research Materials and Literary Resources

### **Timeline**

August 30, 2005	Professional Project Proposal Submitted to Committee
September 15, 2005	Arrive in San Miguel de Allende, Guanajuato
September 17, 2005	Begin Internship with Sociedad de Audubon, Mexico, A.C.
November 15, 2005	Develop Interview Questions and Workshop/Focus Group Formats and Locations
December 8, 2005	Submit the Deliverable to WRP for Internship Credits
December 10, 2005	Begin Interviews and Focus Groups
January 13, 2006	Completion of All Interviews and Focus Groups
January 15, 2006	Depart Mexico
February, 2006	Finish Project Research and Writing
February 28, 2006	Project Defense
March 8, 2006	Final Paper Submitted

## **Draft Report Outline**

Title Page

Acknowledgments

Abstract

List of Tables, Figures and Appendices

Table of Contents

- 1.0 Introduction
- 2.0 Description of the Rio Laja Watershed
- 3.0 Description of the Parque Landeta Area
- 4.0 Methodology
  - 4.1 Quantitative Data Collection
  - 4.2 Qualitative Research Activities
- 5.0 Identified Stakeholders and Connections to the Parque Landeta Project
  - 5.1 Primary Organizations
  - 5.2 Community Organizations and Groups
  - 5.3 Schools
  - 5.4 City of San Miguel de Allende
- 6.0 Qualitative Analysis of Interviews, Focus Groups and Workshops
  - 6.1 Gender Analysis- Constraints, Perceptions and Interests
  - 6.2 Upstream Natural Resources Management Activities
  - 6.3 Potential Impacts on Downstream Communities
  - 6.4 Community Perception and Knowledge of Participating Organizations
  - 6.5 Needs, Visions and Expectations for Parque Landeta and Restored Wetland A
- 7.0 Planning for the Sustainable Development of Parque Landeta and Restored Wetland Area
  - 7.1 Temporary or Long-Term Coalition of Participating Organizations
  - 7.2 Support and Participation from the City of San Miguel
  - 7.3 Monitoring and Maintenance of Parque Landeta
- 8.0 Community Participation, Responsibility and Empowerment
  - 8.1 Female Participation
  - 8.2 Youth and School Participation in Planning and Monitoring Phases
  - 8.3 Self-Perpetuating Practices and Information Transfers
- 9.0 Additional Recommendations

Appendices

References

## **References**

Carruth, Bruce. Personal Communication. July 2005.

Denzin, Norman, and Lincoln, Yvonna (Eds.). Handbook of Qualitative Research, Thousand Oaks, CA: Sage, 1994.

Johnson, Nancy, Ravnborg, Helle M., Westermann, Olaf, and Probst, Kirsten, 2001. User Participation in Watershed Management and Research. International Food Policy Research Institute, CAPRI Working Paper No. 19

Salvemos al Rio Laja, A.C., 2005, <http://www.rio-laja.org/>

Slocum, R., Wichhart, L., Rocheleau, D., and Thomas-Slayter (Eds.). Power, Process and Participation: Tools for Change. London: Intermediate Technology Publications, 1995.

Swanson, Kent, 2000. Assessment of the Middle and Lower Rio Laja Watershed and Community-Based Watershed Restoration in Guanajuato, Mexico. University of New Mexico, Community and Regional Planning Department, Professional Project Paper.

Thomas-Slater, B., Polestico, R., Esser, A.L., Taylor, O., and Mutua, E.. A Manual for Socio-Economic and Gender Analysis: Responding to the Development Challenge. Ecology, Community Organization (ECOGEN), Clark University, 1995.

The World Bank, 1996. The World Bank Participation Source Book. The International Bank for Reconstruction and Development/The World Bank.

## **Appendix- Map Parque Landeta and El Charco del Ingenio**

