Conclusions

This work provides support to individual owners, communities, institutions, private and public sector organizations who are seeking to construct sustainable housing and settlements in the U.S.-Mexico border region. The primary focus of this work is on ways to improve housing conditions in colonia settlements which are responsive to the economic, social and cultural needs of the community. The benefit of successfully doing this accrues not just to the communities receiving improved housing but to the general population in the region as the negative environmental impact of rapid growth of informal settlements is reduced. To have an increasing proportion of a population living without decent housing, infrastructure, sanitation and water diminishes the quality of life for those caught in these conditions and those who coexist with them. This work provides technical information and a conceptual approach which is useful to individuals and communities who are engaged in housing and community development, with lower income people who are living in *colonia*-like conditions.

Ways to reduce the environmental impact of rapidly growing informal housing and settlements in the U.S.-Mexico border region in the particular context of Tecate, Baja California, Mexico are presented. The primary body of research which informs this monograph was supported by the Southwest Center for Environmental Research and Policy (SCERP) and culminated in a technical report, Housing and Sustainable Communities in Rapidly Urbanizing Border Regions. In this an analysis of housing in informal communities and the technical options for building sustainable housing are presented. The research team of three faculty and four graduate assistants aspired to implement the concepts and approaches to creating sustainable housing in a prototype colonia in El Rincon, city of Tecate, Baja California, Mexico. Although

this became untenable as the political support for the undertaking diminished during the time the research was executed, the effort has yielded some useful information which is broadly useful beyond the specific context. Described here are the concepts and technical choices related to settlement layout, housing design and building construction which can result in sustainable, environment-friendly, human settlements for lower-income people living in this region.

Sustainable housing is context and site specific, derived from local factors of climate, natural resources, culture, history, community, economy, productive capacity, skills, structures of governance and regulation and distribution of power. Given a supportive context, sustainable housing can be attained through judicious choices in the design of the housing units themselves; in their orientation and configuration of layouts; in the materials of construction and their assembly and finish; and in the choice and location of landscaping and ground cover. Choices which can lead to sustainable housing are made by institutions in both the private and the public sectors and by individuals and the community. In short, building sustainable housing requires multiple actors and multiple commitments.

This research intended to introduce sustainable housing approaches into an informal community or *colonia* settled on the railroad right of way in El Rincon, city of Tecate, Baja California, Mexico. It identified a number of challenges to providing housing for the very lowest-income workers in border areas. Chief among these are a lack of: a reliable income and low income; the secure tenancy or ownership rights to land for homes; political support from the larger community and decision makers for providing this; and services and amenities. A number of principles and approaches were identified, however, that can serve as a basis for future projects which aim to improve housing and build housing which is sustainable over the longer term.

These include:

1. Developing communities and a sense of belonging to the region that will promote the development of a border identity and commitment to the region. Developing a sense of permanence, of being rooted, of community well-being.

2. Providing technical choice of materials, layout, design and construction of housing in the context of the particular climate, local materials and skills available of the region and within the prevailing cultural/historical affinities and desires.

3. Designing for passive heating and cooling strategies that minimize energy costs and are low maintenance.

4. Selecting materials so as to optimize for passive climate control. In particular to reduce the use of wood, especially second-hand, low quality salvage wood, and increase the use of materials which enhance passive climate control.

5. Forging creative partnerships between individuals and the community needing housing and non-profit agencies, financial institutions, and local and regional governments to provide finance and land rights.

6. Involving the community needing housing in efforts to design and construct the housing units. Educating the community and introducing sustainable housing principles and design elements so that they are embraced and maintained if not enhanced by the residents and the community..

Over the long term the problems associated with rapid urbanization and housing growth particularly in colonia settlements will persist in the U.S.-Mexico border region. Delineating an approach to intervening in this process needs to elicit the collaboration of public and private actors who are associated with the system of housing construction and involve the residents of the housing. This will make it possible to create housing that is “green”, sustainable, and has a gentler, smaller footprint on the environment. As the economic and cultural pressures along the U.S.-Mexico border spur rapid urbanization and growth of *colonias* it is critical that members of both the private and public sectors, together with members of the communities involved, work together to see that this housing provides the basics of health, safety and quality of life. With the use of proper materials and design tailored to the local climate, this can be achieved, to the betterment of the entire region.