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Blazing the trail to ecotopia?: Demonstrating more sustainable ways of living in various urban settings

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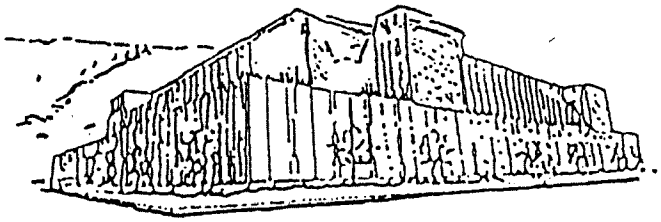

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BLAZING THE TRAIL TO ECOTOPIA?

DEMONSTRATING MORE SUSTAINABLE WAYS OF LIVING IN VARIOUS URBAN SETTINGS

by

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presented in partial fulfillment of the requirements

for the degree of

Masters of Science

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Blazing the Trail to Ecotopia? Demonstrating More Sustainable Ways of Living in Various Urban Settings

Chairperson: Bill Chaloupka

This study was designed to inform the strategic planning efforts of the Missoula Urban Demonstration Project (MUD), a small non-profit organization demonstrating "urban self-reliant" living skills. The study compares various characteristics and activities of MUD and five other groups involved in demonstrating more sustainable ways of living in urban settings. The other organizations are the Campus Center for Alternative Technology, the Center for Regenerative Studies, Los Angeles Eco-Village, Eco-Village Ithaca, and the Eco-Home Network.

The study attempts to answer a standard set of questions for each group. The questions fall into three categories: physical site characteristics and organizational characteristics; problems and mission descriptions, and efforts supporting the mission; as well as public outreach activities and organizational effectiveness.

Implications of the results for all questions are discussed. Significant conclusions suggest that the demonstration site size should greatly influence the nature of activities on which an organization focuses; that most of the groups should be clearer regarding the problems they are attempting to address, and define abstract concepts used in their informational materials in more tangible terms; and that none of the organizations have undertaken efforts to measure their effectiveness.

For MUD specifically, the study suggests that to continue to gain influence MUD will be forced to engage in extensive off-site initiatives due to the small size of its demonstration site; that it would be appropriate for MUD to seek involvement in affordable housing issues as well as local bartering or trade efforts, if there are no legal constraints; and that the possibility of exists for MUD to develop consulting roles to help fund the organization. The study also suggests that MUD is possibly very unique in is combined focus on demonstrating systems and methods that address both environmental and social issues.

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INTRODUCTION

THE MISSOULA URBAN DEMONSTRATION PROJECT

At first glance, the three lots in a low-income residential area on Missoula's Northside might not seem so different from neighboring lots. But some small item will likely strike you as different. It might be that the front lawn is not the ubiquitous blue-grass of residential lawns, or it might be the strange shaped structure on the center lot, the walls of which appear somewhat like adobe. If these initial anomalies sufficiently arouse your curiosity, you may wander onto and through the site. There you will find other differences. You'll discover that the adobe-like structure is actually a greenhouse. You'll note that garden beds cover most of the backyard, and that roof gutters funnel into large blue barrels. If it is late spring or early summer, you'll probably notice the mini-greenhouse like structures called cold frames for starting plants early. You might notice some panels covered with dark circular discs with wires leading from them, which are photo-voltaic cells for solar electricity generation. If someone is home, you might be find into the bathroom of one of the houses and shown a toilet with a small sink in its lid that fills with fresh water after every flush; you wash your hands in the clean water and then it funnels into the tank for use on the next flush.

By now you have probably figured out that you have found the site of the Missoula Urban Demonstration Project. However, unless you have talked to the Project's staff extensively, or happen to have

arrived during a workshop, school class, volunteer meeting or special event, the site belies the intensity of activities originating from this small area.

The Missoula Urban Demonstration Project (MUD) is a non-profit organization that manages a demonstration site featuring systems, methods and facilities that exhibit more sustainable ways of living, especially self-reliant living skills; and MUD conducts programs and projects that support understanding and use of such systems, as well as understanding of related issues.

In Missoula, MUD is probably most known for its management of the Northside Community Gardens. The Gardens provide plots -- at a minimal fee -- to community members interested in growing their own food. The Gardens also contain free plots for low-income people, produce food for various organizations helping the homeless and less-privileged, and provide gardening spaces designed for wheelchair-bound people.

In addition to running the Community Gardens, MUD staff and volunteers conduct, evaluate and implement projects at MUD's demonstration site located in the residential Northside Community. MUD also conducts workshops in self-reliant living skills at the demonstration site. In addition, MUD collects coffee grounds for composting from several coffee shops in Missoula and conducts an active environmental education program at one Missoula public school. And further, MUD is involved in collaborative arrangements with other organizations, government agencies and institutions to

promote community gardens, environmental education and sustainable agriculture.[1]

MUD HISTORY

A group of graduate students from the University of Montana's Environmental Studies Program (EVST) and their friends founded MUD in 1990. However, MUD's story really originates nearly a decade earlier with the creation of the Missoula Down Home Project (DHP).

In recognition of the connections between environmental problems, dependence on non-local resources and the resulting loss of local independence, several Northside residents formed DHP in the early 1980s as an non-profit organization to demonstrate urban self-reliant living skills. DHP acquired three adjacent houses in the Northside Community as a demonstration site. DHP members planted organic gardens in the backyards of the lots and built a greenhouse on the site. DHP also founded the Northside Community Gardens, and there initiated low-income/hunger assistance programs as well as educational programs for the local Head Start school. In addition,

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[1]Missoula Urban Demonstration Project, The. Missoula Urban Demonstration Project . . . working toward self-reliant urban living. The Missoula Urban Demonstration Project, (No date); Missoula Urban Demonstration Project, The. Missoula Urban Demonstration Project: 1996 Workshops, Special Events, Membership Information. The Missoula Urban Demonstration Project, 1996; Carroll, Steve, staff of Missoula Urban Demonstration Project. Interview by author, 22 February 1997; DeSilvey, Caitlin, staff of Missoula Urban Demonstration Project. Interview by author, 22 February 1997. General information regarding MUD obtained from combination of these sources.

DHP members established a company which grew and sold seeds selected for the short growing season of the Northern Rockies.

DHP's seed company, Garden City Seeds, became so successful that it outgrew the Northside site. Garden City Seeds relocated to the Bitterroot Valley in 1986, and with it went many of the primary people and their energy responsible for the development of projects and programs at the Missoula demonstration site. As a result, the Northside demonstration site went through a long period of instability. During this time, people at the "demonstration" site nominally continued to operate the Community Gardens, but in general the outreach and service efforts lessened and the facilities experienced significant decline.

MUD formed in 1990 as a branch of DHP in recognition of compatible goals shared by DHP and the EVST graduate students mentioned earlier. DHP wished to reinvigorate the Northside demonstration site and the EVST students wished to develop a living demonstration site. To address the new division in DHP's activities, DHP formed the Bitterroot Down Home Project (BDH) to manage efforts in the Bitterroot Valley. Eventually the governing structure of DHP also evolved to reflect these changes, resulting in a DHP board comprised of roughly even numbers of representatives from MUD and BDH.

The creation of MUD in 1990 signaled a renewal of energy and efforts at the demonstration site. Early efforts included restoring the demonstration site to livable conditions, and reestablishing effective

programs at the Northside Community Gardens. Initial site restoration included demolition of many unsafe and unsightly "shacks" in the backyards of the three main houses, and establishing new organic gardens. Later site modifications included the demolition of the middle of the three main houses for safety reasons and to make room for future projects. The initial MUD staff reestablished Food Bank plots and programs for the Northside's Head Start school, at the Community Gardens. Additionally, the original MUD staff started the Low-income Garden Project which supplied plots, tools, seeds and expertise to help low-income families produce some of their own food.

Despite significant staff turnover between 1990 and 1992, MUD's programs remained stable. From 1992 to 1995 MUD staffing stabilized and the Project significantly increased its fundraising efforts. The increased stability and funding allowed MUD to initiate new programs and projects. During this period MUD established environmental education courses at both Paxson and Target Range elementary schools. At the Community Gardens and at Eagle Watch, a housing complex for the handicapped, MUD staff constructed wheelchair-accessible gardening beds. MUD initiated a program to collect and compost coffee grounds from several Missoula establishments to enrich soil organically and save landfill space. MUD staff also continued to improve facilities at the demonstration site and added new projects demonstrating alternative technologies. In 1994 MUD staff began a native landscaping project to demonstrate a less water intensive option for residential landscaping and as a way

to maintain native species. Also in 1994, MUD commenced construction of a strawbale greenhouse to demonstrate this renewable construction technology and extend the growing season for the MUD gardens.

A significant staff change occurred in 1995 with the departure of the last remaining MUD founder, Mark Waltermire. Since then MUD has continued all the existing programs and projects with the exception of the Paxson and Target Range environmental education programs and has added new activities. Continuing the effort in public school environmental education, MUD initiated a new program at Lowell elementary school. MUD launched the Home Grown Neighborhood Network which replaced and expanded the services provided by the Low-income Garden Project. In addition, MUD has increased the number of demonstration site workshops, youth garden programs, and special events over the past few years. In the summer of 1996, MUD launched MUD Camp, a week long day camp for elementary age children focusing on environmental education. Also in 1996 MUD entered into a major collaborative agreement dubbed Garden City Harvest (GCH). One of MUD's more ambitious efforts in which MUD is involved, GCH's goal is to develop a city-wide system of community gardens and to promote sustainable agriculture enterprises and research.[2]

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[2]Carroll, Steve, staff of Missoula Urban Demonstration Project. Interview by author, 22 February 1997; DeSilvey, Caitlin, staff of Missoula Urban Demonstration Project. Interview by author, 22 February 1997; Waltermire, original staff member of Missoula Urban Demonstration Project. Interview by author, 22 February 1997. Sources for MUD History.

MUD TODAY

Today MUD finds itself in a period of assessment toward its future course and its role in the community. Due to increased and more stable funding, MUD finds itself able to engage in, and in need of, longer range planning than has been possible in the past.

As part of this planning effort, MUD staff is interested in identifying and examining other projects actively demonstrating and supporting more sustainable ways of living. MUD wishes to identify and investigate other such groups for both resource information and to assess MUD's efforts in a larger context. More specifically, MUD's staff is interested in identifying organizations, or activities of such organizations, that appear to be successful with respect to public outreach. Further, the MUD staff is interested in evaluating these organizations and their activities to determine if any of their methods or programs might be applied at or modeled by MUD.

This project is a partial response to MUD's interests in other demonstration projects. In support of the objectives cited above, this study will detail and compare selected characteristics and activities of MUD and five other organizations involved in promoting more sustainable ways of living.

CHAPTER 1

SELECTION OF ORGANIZATIONS

AND

STANDARD INFORMATION

SELECTION OF ORGANIZATIONS

As indicated, the primary purpose of this study evolved from MUD's interest in examining other projects demonstrating and promoting more sustainable ways of living. Of course, the number of organizations working on some aspect of sustainability is legion, and evaluating them all would be a Herculean challenge. The approach of this study, then, was to identify a few known organizations for comparison -- the initial goal was less than ten -- with significant similarities to MUD.

The original pool of possible groups for inclusion in this project was generated by searches of the Internet, as well as, available environmental and intentional community directories.[3] These

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[3]Alternative Farming Systems Information Systems Information Center. Educational and Training Opportunities in Sustainable Agriculture , by Gates, Jane Potter. National Agricultural Library, 1995; Fellowship of Intentional Communities, and Communities Publication Cooperative. Directory of Intentional Communities. Fellowship of Intentional Communities, 1991, 265; Katz, Linda Sobel, Sarah Orrick, and Robert Honig. Environmental Profiles: A Global Guide to Projects and People. Garland Publishers, 1993, 659; Rocky Mountain Environmental Directory. Rocky Mountain Environmental Directory, 1992; Sanzone, Susan J. , Jenny Burman, and Mary Agnes Hage, ed. Healthy Harvest II: A Directory of Sustainable Agriculture and Horticulture Organizations, 1987 - 1988. Washington: Potomac Valley Press,

searches identified hundreds of organizations. To narrow the field generated by these searches to organizations with aspects similar to MUD, criteria were developed to screen sites:

1) Organizations located in or adjacent to towns or cities
2) Organizations whose focus is not predominantly food production
3) Organizations managing sites with residential occupants
4) Organizations describing their sites as "demonstrations" of more sustainable ways of living

The first two criteria reflect the desire to examine groups that focus on a broad range sustainability issues, especially uniquely urban issues. Criterion three reflects the desire to examine organizations in which people are actually living with the solutions that they promote. The last criterion highlights the desire to include groups that view their efforts as demonstrations for those outside the organization, and therefore should conduct some public outreach efforts.

National Institute for Science, Law and Public Policy, 1987; Seredich, John. Your Resource Guide to Environmental Organizations. Irvine, California: Smiling Dolphins Press, 1991; U.S. Department of Energy. Bonneville Power Administration. Northwest Alternative Energy Directory , by Harter, Kimberly A. , and Foulkes, Gabrielle. [Washington] : U. S. Department of Energy, Bonneville Power Administration, 1980.

Information available on the Internet and from the directories was reviewed for compliance with the criteria. This review yielded five organizations:

1) The Campus Center for Appropriate Technology (CCAT) - a demonstration house and site at Humboldt State University
2) The Center for Regenerative Studies (CRS) - a residential and educational demonstration site at the California State Polytechnic University at Pomona
3) Eco-Village Los Angeles (EVLA) - an "ecological" intentional community in Los Angeles
4) Eco-Village Ithaca (EVI) - an ecological intentional community on the outskirts of Ithaca, New York
5) Eco-Home Network (EHN) - an organization managing a demonstration home and community resource center in Los Angeles

It should be noted that the term "organization" is used very broadly in this study. This is particularly important to the two eco-village sites which consider themselves more communities than organizations. For this study "organization" will be used to describe the affiliated people at these sites working toward the common goals of the group. The same definition can be used to include the more institutionally affiliated groups at CCAT and CRS.

STANDARD INFORMATION FOR EACH ORGANIZATION

To compare these organizations, it is necessary to obtain standard information on each organization. This was accomplished by attempting to answer a standard series of questions about each group, relating to the organizations' activities and effectiveness. These questions fell into three categories: questions regarding the physical characteristics of the sites and the sites' locations, as well as the organizational structures of the groups; questions regarding the motivation, goals, guiding principles and activities of the organizations; and questions specifically concerning public outreach and publicity activities. The questions are as follows:

Questions associated with physical and organizational characteristics:

1) Where is the organization located and what are the significant characteristics of the location, including city population, character of site setting (residential, mixed commercial, etc.?) and climatological characteristics?
2) What is the size of the demonstration site and what major facilities (e.g., greenhouses, residential homes, gardens, etc.) are located there?
3) What is residential population of the "demonstration" site?
4) What is the organizational structure and what is the organization's decision-making process(es)?
5) How is the organization funded (e.g., memberships, donations, fundraising events, commercial sales, grants)?

Questions regarding issues, mission and activities:

1) What are the problems and/or issues that the organization identifies that it is trying to address?
2) How does the organization describe its overall mission?
3) Does the organization identify any concepts or principles which guide its projects and activities?
4) In what specific projects and activities does (or has) the organization engage in support of its mission? (This includes the solutions the organization employs.)

Questions regarding public outreach and publicity activities, as well as the effectiveness of activities:

1) Of the activities identified, which contain a significant public outreach component? These are activities (workshops, classes, tours, collaborative efforts, etc.) that engage populations external to the organization.
2) How does the organization publicize itself and its activities?
3) What is the perception of the organization's staff regarding the effectiveness of its public outreach efforts? Why do they consider these activities successful?
4) Does the organization attempt to measure the effectiveness of any of its activities? If so, how?

Answers to these questions were obtained by in a two-step process. First, public information materials provided by the

organization -- including Internet information -- were reviewed. Secondly, if data for a question was deemed insufficient from the initial sources, then more complete answers were sought through electronic mail questionnaires or telephone interviews.

It should be noted that some concerns qualify the results presented in this study. Funding did not allow for on-site visits to the sites investigated, so information was derived from very disparate sources, such as Internet sites, organization newsletters and informational materials, as well as interviews as indicated above. The manner in which data was presented in the informational sources was highly variable. The typology in this study attempts to present material gleaned from these differing sources in a comparable manner and should not be taken as detailed self-representations of the groups examined. Other methodological limitations also qualify the detailed results. Interviews were almost exclusively conducted with only one member of an organization, raising concerns that interviews with others may have provided slightly different results. In addition, material on one aspect of one organization may have come primarily type of source (i.e., the Internet) where as the same information for another site may have been derived from a very different source (i.e., an interview) or from a combination of various sources. Further complicating this situation is the dynamic nature of the groups and their activities. For example, during the study, CRS updated and significantly expanded its Internet site providing much additional data. Therefore, this study is really a snapshot of these groups' current activities and

plans, all of which may change rapidly.

CHAPTER 2: RESULTS

PHYSICAL AND ORGANIZATIONAL CHARACTERISTICS

The physical characteristics associated with the demonstration sites and the organizational features of the groups examined in this study vary widely. The sizes of the urban areas in which the organizations are located vary from a metropolitan area of millions to a small town of only 15,000 people and the demonstration site settings from a metropolitan inner-city neighborhood to a former farm site on the urban fringe of a small town. Though three of the sites are located in mild and sunny Los Angeles, the other three sites represent other very distinct climatic regions. The site sizes range from less than one-fifth of an acre to 176 acres and display a wide array of facilities and land-use patterns. As with site size, residential population varies greatly, from a minimum of three to a maximum of 500. Finally, though not as varied as some of the other characteristics addressed here, significant differences exist in organizational structure, decision-making processes and funding methods of the organizations examined in this study.

THE CAMPUS CENTER FOR ALTERNATIVE TECHNOLOGY

LOCATION

The first sight to be examined is the Campus Center for Alternative Technology (CCAT). CCAT is located in the town of

Arcata, located along the northern reaches California coast. With a population of 15,000[4], Arcata is the smallest town for a site in this study. Further, CCAT is located on the campus of Humboldt State University. University land surrounds the site somewhat isolating CCAT physically from the surrounding community.[5]

Like most of coastal Northern California, CCAT experiences a cool, wet climate much of the year with very limited temperature extremes. The lowest average monthly temperature for the year is 41.6° F in January, and the monthly average high temperatures peak out at 63.1°F in August and September. The average number of frost-free days ranges between 210 and 240 days.[6] The area receives more that 36 inches of annual rainfall, with seventy percent falling between November and March but only a trace amount falls as snow.[7] Cloud cover is significant through much of the year resulting in an average annual solar radiation reception of twenty-five percent less than the Los Angeles sites.[8] Further, wind is not a consistent factor, leading to the lowest possible wind energy

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[4]U.S. Bureau of the Census, County City Data Book; (Washington, D.C., U.S. Government Printing Office, 1994), CD-ROM Database.

[5]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat", (Arcata, California); Papke, Dana, co-director Campus Center for Alternative Technology, interview by author, 31 March 1997.

[6]U.S. Department of Agriculture, Atlas of American Agriculture: Physical Basis including Land Relief, Climate, Soils, and Natural Vegetaion, supervised by O.E. Baker, ([Washington] : U.S. Department of Agriculture, 1936), 38-39.

[7]Toucan Valley Publications, Inc., Weather America: The Latest Detailed Climatological Data for Over 4,000 Places, (Toucan Valley Publcations, Inc., 1996), 125.

[8]Ametek, Inc., Solar Energy Handbook, 2d ed. , (Radnor, Pennsylvania: Chilton Book Company, 1984), 251-255.

potential ranking for the area.[9]

SITE SIZE AND FACILITIES

CCAT facilities occupy a one acre site on the Humboldt campus that originally contained a degenerating single-family residence. Shelter structures now at the site include the renovated residential house, an attached greenhouse and a yurt used as a classroom. The site also contains energy producing structures, including photovoltaic panels and a wind turbine. CCAT waste management and water conservation structures include a greywater marsh and a rainwater catchment system. The site contains food production areas comprised of organic herb and vegetable gardens.[10]

RESIDENTS, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

CCAT site projects, programs, and maintenance are organized by a group of three residential co-directors who are Humboldt students. In addition to the co-directors , CCAT programs and projects rely heavily on volunteers, both student and community, for initiation, direction, and implementation. The "co-directors are appointed yearly by a steering committee comprised of university administrators, faculty, community members and past co-directors."

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[9]U.S. Department of Energy, Pacific Northwest Laboratory, Wind Energy Resource Atlas, Vol. 9, (Pacific Northwest Laboratory, 1980), 38.

[10]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat"; Colby, Chelsea, volunteer Campus Center for Alternative Technology, interview by author, 31 March 1997.

Decision-making at the co-director level and the steering committee level is by consensus.[11]

FUNDING

Most of CCAT's funding comes from the state of California since it is part of a state supported university. More specifically, CCAT applies to Humboldt's student body government for this funding. In addition, CCAT raises funds through donations which are solicited during a "phone-athon" event and other CCAT events, fees from a campus lecture series and some CCAT events. Also, CCAT offers memberships to those interested in CCAT activities -- there are approximately 200 members at this time -- for which members receive a newsletter containing articles on CCAT projects and schedules of events. Further, CCAT also generates funds by grant writing though this is not a very significant contribution at this time.[12]

THE CENTER FOR REGENERATIVE STUDIES

LOCATION

The second site examined in this study is the Center for Regenerative Studies (CRS). Though located in California like CCAT,

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[11]Ibid.

12Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat"; Papke, Dana, interview, 31 March 1997.

CRS is located in Los Angeles County area along the Southern California coast. More specifically, CRS is located in the city of Pomona, part of the 9 million strong Los Angeles metropolitan area.[13] Like CCAT, though, CRS is part of a California state university, the California State Polytechnic University (CSPU). CRS is similar to CCAT, also, in that it is physically isolated from the surrounding community; in CRS's case, it is bounded by the CSPU campus and the Spadra Landfill.[14]

The climate in the CRS area, typical of Southern California, is extremely mild. The highest average daily high temperature for any month is near 80°F. On average the number of frost-free days exceeds 240.[15] The harshest part of this mild climate is the lack of rainfall. Yearly precipitation is approximately fifteen inches with eighty-five to ninety percent falling during the rainy season from November through March.[16] As a result of the dry climate, CRS receives significantly more solar radiation than the CCAT site, as mentioned in CCAT's weather description.[17] But as with CCAT,

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[13]U.S. Bureau of the Census, County City Data Book.

[14]Center for Regenerative Studies, The, CRS Tour, (Pomona, California: The Center for Regenerative Studies, California State Polytechnic University, undated); Center for Regenerative Studies, The, The Center for Regenerative Studies, (Pomona, California: The Center for Regenerative Studies, California State Polytechnic University, undated); Center for Regenerative Studies, The, The Center for Regenerative Studies: A New Model for Sustainability, (Pomona, California: The Center for Regenerative Studies, California State Polytechnic University, Undated); Center for Regenerative Studies, The, "http//:www.csupomona.edu/crs/"; DeChaine, Cindy, staff of Center for Regenerative Studies, interview by author, 31 March 1997.

[15]U.S. Department of Agriculture, Atlas of American Agriculture, 38-39.

[16]Toucan Valley Publications, Inc., Weather America, 137.

[17]Ametek, Inc., Solar Energy Handbook, 251-255.

absence of consistently strong winds results in a very potential wind-energy class ranking.[18]

SITE SIZE AND FACILITIES

CRS manages a sixteen acre site comprised of a small valley opening east to west up to the tops of the confining ridges. Unlike CCAT, the CRS site originally contained no structures, so all the current structures and land developments are the result of planning. Major facilities at the site include residential housing for twenty people, a classroom/seminar building, a "solar" park with various energy producing equipment and recreational facilities, aquaculture ponds for food-fish production, a human-developed wetland marsh for various wastewater treatment applications, extensive agricultural production areas, and intentional "natural areas" including restored California walnut groves.[19]

RESIDENTS, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

The CRS site currently hosts a residential population of twenty college students and directs its own graduate program. The Center's day-to-day activities are directed by four staff members; the director, the resident manager, the secretary and the facilities/farm

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[18]U.S. Department of Energy, Wind Energy Resource Atlas, Vol. 9, 66.

[19]Center for Regenerative Studies, The, CRS Tour; Center for Regenerative Studies, The, The Center for Regenerative Studies; Center for Regenerative Studies, The, The Center for Regenerative Studies: A New Model for Sustainability.

technician, of which only the resident manager lives on-site. Overall management and direction of the Center is the responsibility of faculty members who teach and conduct research at the site. Beyond the faculty and staff just mentioned, CRS limits input into site activities and programs to students enrolled in classes at the Center. Surprisingly, considering the scope and budget of CRS's development plans, staff members state that there is no formal decision-making process employed by the staff and directing faculty.[20]

FUNDING

Though total budget figures were not solicited from the other groups in this study, it is clear that CRS has been the most successful organization in terms of fundraising. Donations from the private sector almost completely funded the construction of CRS. From a projected $10 million budget, the state of California contributed a little more that $600,000. This success is due in large part, undoubtedly, to the CRS's formal position as a graduate school at CSPU. CRS continues its donation fundraising efforts and is beginning to solicit grants.[21]

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[20]Center for Regenerative Studies, The, CRS Tour; Center for Regenerative Studies, The, The Center for Regenerative Studies; Center for Regenerative Studies, The, The Center for Regenerative Studies: A New Model for Sustainability; DeChaine, Cindy, interview , 31 March 1997.

[21]Center for Regenerative Studies, The, The Center for Regenerative Studies; DeChaine, Cindy, interview , 31 March 1997.

LOS ANGELES ECO-VILLAGE

The Los Angeles Eco-Village is connected with the "eco-village" movement. Though the concept of the eco-village may have been around previously, the idea began to receive much greater support after the 1992 Earth Summit in Rio de Janeiro. After the Summit a small group of communities formed the Global Eco-Village Network (GEN). GEN designated "node" Villages to be the central organizing agents for general global regions. For North America, this site is The Farm in Tennessee, and they created Eco-Villages of North America (ENA). LAEV is not currently listed on the Internet directories for either GEN or ENA. However, LAEV is at least informally connected to these groups as is evidenced by their joint tele-conference with The Farm and Eco-Village Ithaca, another site in this study.

LOCATION

A second site located in the Los Angeles area is Los Angeles Eco-Village (LAEV) and thus experiences many of the same metropolitan influences as CRS. In stark contrast to CRS, though, LAEV is located about three miles west of downtown Los Angeles in an inner-city neighborhood of which the LAEV site is an integral part, at least physically. This inner-city location makes LAEV unique among all the sites considered in this study. The neighborhood in which LAEV is located is diverse in a number of ways. Land-use includes single unit residential, dense multi-unit residential, commercial and light manufacturing. More specifically, LAEV's neighborhood contains 12

multi-family residential units, a K-2 public school, an auto-repair shop, and an alcohol and drug recovery center among the other facilities mentioned. The area in which LAEV is located is also diverse economically, with average family incomes varying from low to moderate. The area is also racially and ethnically diverse.[22]

Clearly the climatological atmosphere is nearly identical to that of CRS.

SITE SIZE AND FACILITIES

LAEV's coordinating non-profit organization, the Cooperative Resources and Services Project (CRSP), actually owns one 40-unit apartment building in the neighborhood described above. This is the only residential structure that is actually controlled by LAEV. In addition to managing this apartment building, LAEV established and manages community gardens in the neighborhood.[23]

RESIDENTS, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

As LAEV is starkly different from the previous groups with respect to its location in the inner-city, it is also dramatically unlike the earlier groups with respect to its organization. Though LAEV considers itself a demonstration site for sustainability, demonstration

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[22]Arkin, Lois, staff of Los Angeles Eco-Village and Cooperative Resources and Services Project, Response to author's questions via electronic mail, 28 February 1997; Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

[23]Arkin, Lois, Response via electronic mail, 28 February 1997; Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

is only one part of LAEV's attempt to form an "ecological" neighborhood. As founding member Lois Arkin states, LAEV residents consider themselves "a neighborhood with livelihood opportunities."[24] Still, demonstration appears important to LAEV since it is mentioned prominently in their literature.[25]

Five-hundred people live in the LAEV neighborhood. However, the great majority of these people are not formally associated with LAEV formally; in actuality, the neighborhood residents are the public that LAEV attempts to influence. Of these 500 people, a core group of six actually direct and coordinate most Eco-Village activities, and other area residents are involved to a lesser degree. These core six people have no official titles and are presently assessing their official roles. In addition, as suggested previously, CRSP has a significant voice in LAEV decisions. A sixteen member board of directors governs CRSP, of which, five are LAEV representatives.[26]

Decision-making within the LAEV "directors" group is very informal, and this group is very open to input and participation by other neighbors. Area residents involved with LAEV projects and activities make decisions regarding those activities with input solicited from residents informally and as available time and resources allow. More formally, the CRSP board employs a consensus

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[24]Arkin, Lois, Response via electronic mail, 28 February 1997.

[25]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

[26]Arkin, Lois, Response via electronic mail, 28 February 1997; Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

decision-making process in its procedures.[27]

FUNDING

LAEV employs a unique and diverse funding scheme that provides capital for major facilities acquisitions, development, and repair; as well as capital for business creation and operation. Most of this major funding comes through CRSP. These funds come from many sources including grants; private and corporate donations; as well as loans from private, corporate and governmental agencies. In particular, the loans are usually low-interest and "pretty soft and flexible" as Lois Arkin describes them. These loans become part of LAEV's Ecological Revolving Loan Fund (ELF). LAEV continues to raise loan money for ELF and currently has sufficient revenue from rents to cover loan debts and maintain a growing fund surplus.[28]

In addition to these larger loans and donations, LAEV raises funds from fees or donations for the sale of various publications, tours of the neighborhood, workshops, seminars, information services and special events. In particular, LAEV information services include a library, video rentals and an information line; and LAEV conducts a "telecommute" seminar with The Farm, an Eco-Village community in Tennessee.[29]

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[27]Arkin, Lois, Response via electronic mail, 28 February 1997.

[28]Arkin, Lois, Response via electronic mail, 28 February 1997; Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

[29]Ibid.

ECO-VILLAGE - ITHACA

Like LAEV, the fourth site examined in this study, Eco-Village of Ithaca (EVI), employs the "Eco-Village" approach to demonstrating sustainability. EVI's activities and projects, however, contrast sharply with LAEV, highlighting the breadth of possible strategies within the Eco-Village movement.

LOCATION

EVI lies on the outskirts of Ithaca, New York, a city of 29,000[30] located in the Finger Lakes region in central New York. EVI's location about two miles from downtown Ithaca, places the site in the "rural--urban" fringe, which makes it unique among the sites examined here. It is located about two miles from the city center. Currently most of the land around EVI is undeveloped.[31]

EVI's climatic conditions are significantly different than the other sites in this study. Seasonal changes are extreme, and winters in particular are harsh. Ithaca's lowest daily average temperature of 13.1°F occurs in January and in July the area achieves its highest daily average at 79.6°F. At 36.13 inches per year, the total precipitation at EVI is much like that for CCAT, however, the distribution for EVI is much more even through the year with a

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[30]U.S. Bureau of the Census, County City Data Book.

[31]Eco-Village Ithaca, "http://www.cfe.cornell.edu/ecovillage/"; Bokaer, Joan, Response to author's questions via electronic mail, 24 April 1997.

slightly higher proportion falling between late spring and early autumn. A significant portion of the precipitation falls as snow, totaling 67.7 inches annually.[32] The average growing season lasts only 150 days.[33] Also like CCAT, EVI's weather patterns result in relatively low reception of solar energy.[34] Unlike CCAT, though EVI has a moderate wind-energy potential ranking.[35]

SITE SIZE AND FACILITIES

Much like CRS, EVI started with a mostly undeveloped site with respect to human shelter structures, a 176 acre abandoned farm. (West Haven Farms operated, and still operates, a small Community Supported Agriculture (CSA) farm on a portion of the site.) So like CRS, EVI has the opportunity to design the physical layout of the community from scratch.

When research on this study began, EVI literature indicated that housing for the first community group would be complete and occupied by the end of 1996. A fire at the site, however, delayed completion of this first phase; it is now scheduled for completion in the summer of 1997. At this time, one cluster of seven duplexes has been completed in the first neighborhood and is occupied. The second cluster and community common house are under

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[32]Toucan Valley Publications, Inc., Weather America, 844.

[33]U.S. Department of Agriculture, Atlas of American Agriculture, 38-39.

[34]Ametek, Inc., Solar Energy Handbook, 251-255.

[35]U.S. Department of Energy, Wind Energy Resource Atlas, Vol. 4, 158.

construction. Along with the facilities of West Haven Farm, these first neighborhood facilities represent the existing development of the site.

EVI has extensive plans for future development. These plans call for four additional co-housing neighborhoods similar to the first neighborhood; a central village complex including commercial establishments and a visitors center; an education and research center including classrooms, dining facilities, offices, and possibly including laboratories, dormitories, and an auditorium; and a cooperative food cannery. Infrastructure development plans call for the development of a road and trail system, groundwater supply, a rainwater collection system, a biological wastewater treatment facility, and a storm water collection and filtering system.[36]

RESIDENTS, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

The EVI site currently houses approximately fourteen households, equaling roughly forty people in the partially completed first neighborhood. EVI plans call for the site to eventually contain residential housing for 500 people.

Organizationally, EVI appears to have a rather loose structure. This probably reflects the transition phase in which the community is now involved, going from planning to implementation. EVI has two distinct organizational entities. EVI, Inc. handles the financial

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[36]Bokaer, Joan, Response to author,s questions via electronic mail, 26 February 1997; Eco-Village Ithaca, "http://www.cfe.cornell.edu/ecovillage/".

aspects of developing the site, whereas the Eco-Village Co-housing Cooperative (EVCC) is more involved with on-site operations. In addition, EVI has an educational arm that is affiliated with the Center for Religion, Ethics and Social Policy (CRESP) at Cornell University named Eco-Village/CRESP.

EVI literature indicates intentions for the community to employ a consensus decision-making process. However, responses to questions to Joan Bokaer indicate that this is not an absolute policy and that the decision-making process is still in an embryonic state. Bokaer states: "I don't know how decisions will work when all is up and running. We'll be working on it for a long time, I'm sure. This decision making stuff is hard."[37]

FUNDING

Most of EVI's current activities are currently directed toward development of community facilities. All of the funding for these efforts has come through loans. Funding for future activities such as education and public outreach are only in the planning phases. In addition, funds for other EVI activities are raised through membership fees and publication sales, primarily the EVI newsletter.[38]

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[37]Bokaer, Joan, Response to author,s questions via electronic mail, 26 February 1997; Eco-Village Ithaca, "http://www.cfe.cornell.edu/ecovillage/"; Bokaer, Joan, Response to author's questions via electronic mail, 24 April 1997.

[38]Bokaer, Joan, Response to author,s questions via electronic mail, 26 February 1997; Eco-Village Ithaca, "http://www.cfe.cornell.edu/ecovillage/".

ECO-HOME NETWORK

LOCATION

Like CRS and LAEV, the fifth site in this study, the Eco-Home Network (EHN), also lies in Los Angeles. The neighborhood in which the EHN site is located is a discreet residential neighborhood, of which the demonstration site is an integral piece. However, the surrounding area has mixed-use characteristics in the sense that commercial areas are very close.[39] Climatological influences are certainly nearly identical to those for CRS and LAEV.

SITE SIZE AND FACILITIES

EHN occupies a typical urban size lot of approximately one-fifth of an acre. The lot contains one fairly standard size residential home, a meeting building made from a converted garage and a small studio. The remaining land on the site is primarily allotted to food gardens and lawn space.[40]

RESIDENTS, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

The residential occupancy of the EHN demonstration site normally totals three. One of these, Julia Russell, originally owned

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[39]Russell, Julia, executive director of Eco-Home Network, interview by author, 31 March 1997.

[40]Russell, Julia, interview, 31 March 1997; Eco-Home Network, The, Eco-Home: A Demonstration of New City Living, (Los Angeles: The Eco-Home Network, undated).

the house, which is still owned by her family. Ms. Russell therefore maintains a controlling position with respect to projects at the site. Despite this overall concentration of control at the site, the other residents have significant input into the activities there.

The demonstration site, though very important, is just one part of EHN as an organization. The EHN organization is an official non-profit group with a significant membership base and is engaged in a wide variety of activities that will be detailed in a later section. As usual for such a group, EHN has a board of directors. (Interestingly, Julia Russell serves as EHN's executive director, but does not serve on the board.) The board of directors employs a consensus process in its decision-making process.[41]

FUNDING

Eco-Home has a fairly diversified funding base. The organization raises money through product and service sales (primarily book sales and demonstration site tours), memberships, donations and grants. EHN provided a partial breakdown of its funding sources. The contributions from various categories are: 50% from contributions/donations/memberships, 30% from product and service sales including tours, and 6% from grants.[42]

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[41]Russell, Julia, interview, 31 March 1997.
[42]Ibid.

THE MISSOULA URBAN DEMONSTRATION PROJECT

LOCATION

As indicated earlier, the final site of this study, MUD, is located in a low-income neighborhood of Missoula, Montana, a city of approximately 43,000[43] people. The area in which MUD is located is almost exclusively residential, except for the railroad corridor that abuts the MUD property. The site is located approximately one mile from Missoula's central business district.

MUD's geographical location presents significant climatological challenges with respect to MUD's sustainability efforts. First, the Missoula area experiences significant variations in seasonal temperatures. The average daily high temperature peaks in July at 83.6°F, and plummets to an average daily minimum of 16.2°F in January. Precipitation averages under thirteen inches per year.[44] The average number of frost-free days averages between 90 and 120 days.[45] In addition, despite low rainfall, Missoula experiences significant cloud cover and fog during much of the year resulting in low average solar energy reception comparable to the CCAT and EVI sites.[46] And, as with most of the other sites, overall wind conditions place Missoula in the lowest wind-energy potential class.[47]

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[43]U.S. Bureau of the Census, County City Data Book.

[44]Toucan Valley Publications, Inc., Weather America, 695.

[45]U.S. Department of Agriculture, Atlas of American Agriculture, 38-39.

[46]Ametek, Inc., Solar Energy Handbook, 251-255.

[47]U.S. Department of Energy, Wind Energy Resource Atlas, Vol. 1, 68.

SITE SIZE AND FACILITIES

The three lots that comprise the MUD site total approximately one-quarter of an acre. The site contains two small residential houses, two greenhouses -- one strawbale and a smaller, more conventional structure -- a small building that functions as intern housing, and a conventional storage shed. The site also supports extensive organic gardens and a native landscaping area.[48]

RESIDENTS, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

MUD operates with two "permanent" residential staff positions and one residential intern position. These three staff members plan projects for and maintain the demonstration site. This staff also plans and organizes MUD programs and activities, and actively participates in conducting most of these programs. MUD also relies on a large staff of volunteers and interns to help develop, plan, organize and conduct projects, programs and activities.

The MUD staff is responsible to the six-member MUD board of directors. As described earlier, MUD is part of the Down Home Project (DHP) non-profit organization, and the MUD board makes up roughly half of the DHP board.

The MUD staff employs a consensus decision-making process in its planning. The MUD and DHP boards' also adhere to consensus

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[48]DeSilvey, Caitlin, staff of Missoula Urban Demonstration Project, interview by author, 18 March 1997.

decision-making processes.[49]

FUNDING

MUD receives funding from a diverse base. Current funding breakdown is as follows: 28% grants, 25% donations, 21% product sales and service fees, 10% membership fees and 16% miscellaneous. The primary grant contributor is the Bullit Foundation. Donations are solicited at various MUD special events and through minor campaigns. Product and service sales are comprised mainly of proceeds from the annual llama manure sale and MUD's summer youth education camp. Memberships come mainly from an annual phone solicitation campaign. The primary source in the "miscellaneous" category is Montana Shares, a federation of Montana non-profits joined to collect payroll deduction contributions.[50]

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[49]Carroll, Steve, staff of Missoula Urban Demonstration Project, interview by author, 18 March 1997.

[50]Carroll, Steve, and DeSilvey, Caitlin, staff of Missoula Urban Demonstration Project, Informal written responses to author's written questions, 2 April 1997.

CHAPTER 3: RESULTS

PROBLEMS, MISSIONS, CONCEPTS AND SOLUTIONS

As indicated earlier, all of the projects involved in this study claim to be demonstrating, in some manner, sustainable methods of living. They clearly operate at different scales, in different climatological conditions, and with different organizational arrangements. This section examines what problems or issues the organization indicates that it is attempting to address, how each organization defines its mission or goals, and what significant concepts or principles guide the organization's efforts. The section also examines activities in which the organization engages in support of its mission.

The alternative solutions employed by the organizations in support of their missions can be broken down roughly into two main categories: technological and "social" solutions. Technological initiatives focus on the use of alternative equipment and methods, usually to achieve a goal related to environmental concerns. For example, technological initiatives might demonstrate the use of photovoltaic panels to produce energy, thus lessening the environmental impact of current methods of energy production; or the employment of organic gardening techniques, which avoid much of the pollution of current farming techniques. Social initiatives, on the other hand, will include efforts such as community building

activities, public service programs, organizational initiatives and economic efforts.

With respect to the technological solutions employed at the various sites, review of these activities suggested several categories for detailing these efforts. These categories are energy production and conservation, water resource conservation, waste management, food production, shelter design and organization, and land-use planning. Not all of these categories apply to every site in a significant manner and many of the initiatives overlap these categories reflecting integrated approaches.

It should also be noted that the distinction between social initiatives often contain significant public outreach aspects. For example, MUD's management of the Northside Community Gardens is primarily a public service activity, but it definitely promotes the values which MUD espouses. In cases like this, the activity will be described in the section ("social initiatives" or "public outreach activities") that reflects its primary function.

THE CAMPUS CENTER FOR ALTERNATIVE TECHNOLOGY

PROBLEMS, MISSION, AND CONCEPTS

In its literature, CCAT does not explicitly describe any general or specific problems which it is attempting to address. In its statements of purpose, however, CCAT implicitly identifies the principle problems to which it is responding as depletion and degradation of

natural resources. For example, CCAT Web site information states that its purpose "is to demonstrate technologies which contribute to a healthy environment." This same statement adds that another purpose is "to examine the ethical and social consequences of the use of technology,"[51] at least alluding to consideration of ethical and social issues. Review of its available information also implicitly indicates that CCAT addresses a host of more specific problems associated with energy consumption, water resources, waste management, and food production. This information does not, however, mention any specific actions related to the social and ethical issues, indicating that, as is name implies, CCAT is primarily focused on "technological" solutions.

CCAT states its purposes in a variety of ways. The mission statement reads:

> The mission of CCAT is to demonstrate appropriate technology in a residential setting, to provide hands on experiential learning opportunities to the University and larger community, to collect and disseminate information on appropriate technology, to examine the ethical and social consequences of technology and to dispel the myth that living lightly on Earth is difficult and burdensome. CCAT is dedicated to sustainability and self-reliance and seeks to help others empower themselves to live likewise.52

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[51]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat/".

[52]Campus Center for Alternative Technology, The, The Appropriate Technology Transfer, (Arcata, California: The Center for Alternative Technology, Fall 1996).

Somewhat more specifically, "CCAT seeks to explore and develop innovative solutions to the problems caused by the use of certain technologies." And one more specific goal emerges in information that states that the CCAT "demonstration home (is) dedicated to resource and energy-efficient living."[53]

From the mission statement above, three significant guiding concepts emerge: appropriate technology, self-reliance and sustainability. However, none of these concepts are developed further in CCAT's literature.

SOLUTIONS

Technological Initiatives

Energy Production and Conservation

With respect to energy consumption, CCAT facilities demonstrate both power generating alternative technologies and energy conserving technologies. This combination of technologies has allowed CCAT disconnect itself from the local electric utility power grid.

Many of CCAT's alternative technologies are heavily reliant on solar energy. For example, heating for the Buck House, the residential structure, is primarily the result of a passive solar design involving an attached greenhouse; heat rising from the greenhouse

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[53]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat/".

heats the Buck House. Also, much of CCAT's electrical power needs are met through the use of a photo-voltaic array and battery storage system. The photovoltaic array converts sunlight into electrical energy which is used directly or stored in batteries for later use. Other solar assisted equipment includes a solar heated outdoor shower for use in summer months, a solar oven and a solar water heating system.

Technologies that are not directly solar related are also employed for energy production and conservation. In addition to the photo-voltaic array, CCAT also employs a wind turbine and a "human-powered energy converter" (HEC) to generate electricity. The HEC is powered by fourteen peddlers and is also used for off-site events. As backup to all these systems, CCAT uses a natural gas generator. Also, the solar water heater is not the sole source of hot water. It supplies water for the large demand jobs. For smaller jobs, the system employs a "flash" water heater which uses quick burst of high energy. In combination with the solar water heater, the overall water heating energy consumption is reduced. Other energy reducing technologies include a super-insulated refrigerator designed with its heat producing motor on top, and insulated curtains.[54]

Water Resource Conservation

Water resource protection and conservation measures at CCAT demonstrate various systems and equipment. CCAT employs two

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[54]Ibid.

types of greywater systems. Both of these systems filter water from sinks, tubs and showers for reuse in non-food production irrigation. CCAT facilities also include a rainwater catchment system that collects water runoff from the roof of the Buck House for use in irrigation. In addition, Buck House facilities employ various water saving devices including low-flow showerheads and a low-flush toilet.

Waste Management

Alternative waste management technologies employed by CCAT include the greywater marsh system described earlier, composting and vermiculture systems to process vegetable wastes and a composting toilet. Also, the Buck House is painted with a water based, non-toxic paint and a kitchen linoleum floor made primarily from natural materials including cork. Further measures to reduce the volume and toxicity of the normal waste stream include recycling of glass, paper, cardboard, plastic, aluminum and tin; and the use of biodegradable cleaning products.[55]

Food Production

Problems associated with current methods of food production include consumption of non-renewable resources in production and distribution, pollution of resources and human health threats. In response to these issues, CCAT grows food on-site using organic

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[55]Ibid.

farming techniques. As noted earlier, CCAT's agricultural areas include vegetable and herb gardens.[56]

Social initiatives

CCAT conducts many on-site community building social initiatives such as, potlucks and special events. Special events of note included celebrations of the solstices and equinoxes. In addition, CCAT's use of consensus decision-making processes could be considered a social initiative, despite that neither CCAT's staff or informational material mentions it as an intentionally demonstrated feature.[57]

THE CENTER FOR REGENERATIVE STUDIES

PROBLEMS, MISSION, AND CONCEPTS

CRS literature is very explicit in identifying the overall problems to which it is responding. One leaflet states:

> It becomes increasingly clear that our cities of the late 20th Century are not sustainable. They depend for their basic life support functions on continuing inputs of energy (mostly fossil fuels) and materials (largely nonrenewable) from distant landscapes that are rapidly being depleted and on waste outputs to sinks in the air, water and land that are being

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[56]Ibid.
[57]Ibid.

> overloaded and thus polluted. This degenerative system of one-way flows, which is responsible for most of our problems of resource depletion and environmental pollution, is the direct result of the way we have designed the human habitat through the industrial era.[58]

In another statement, CRS more specifically details the resource depletion and degradation issues:

> Technologies applied at [CRS] address the difficult ecological issues facing the earth's inhabitants today: to provide an ecosystem to support the physical and biological needs of a society faced with the reality that traditional sources of energy, food, shelter, and the means of water management and waste disposal are not sustainable.[59]

The purposes of the Center are expressed in a variety of different terms, reflecting the variety of concepts attributable to issues of sustainability. A broad encompassing statement of purpose is: "The Center is the shared vision of designers, scientists, and educators dedicated to restoring and preserving the planet."[60] More specifically, CRS information publications indicate that the Center's

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[58]Center for Regenerative Studies, The, The Center for Regenerative Studies: A New Model for Sustainability, (Pomona, California: The Center for Regenerative Studies, California State Polytechnic University, undated), 1.

[59]Center for Regenerative Studies, The, The Center for Regenerative Studies, (Pomona, California: The Center for Regenerative Studies, California State Polytechnic University, undated), 2.

[60]Ibid.

purpose is "education, demonstration, and research in regenerative technologies"[61] or "the education, demonstration and research of sustainable systems and technologies."[62] Perhaps the most practical statement of CRS's mission, though, is the following:

> The Center for Regenerative Studies is an educational and research facility designed to demonstrate ways the physical needs of a community can be met in a sustainable fashion while minimizing negative impacts on their surroundings.[63]

As with CCAT, the concept of sustainability emerges in CRS's literature, but is only developed implicitly. Much more explicitly, CRS employs the concept of "regenerative technologies" as an overall guide for the activities it undertakes. CRS defines regenerative technologies as "the collective means of using solar energy, reusing water, maintaining the fertility of soils, growing a variety of foods without pesticides or chemical fertilizers, recycling wastes, and providing shelter compatible with existing environments."[64] More specific concepts emerge in descriptions of specific solutions employed, specifically, the idea of "integrated waste management" for waste management solutions and "permaculture" principles in

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[61]Ibid.

[62]Center for Regenerative Studies, The, "http//:www.csupomona.edu/crs/"

[63]Center for Regenerative Studies, The, The Center for Regenerative Studies: A New Model for Sustainability, 1.

[64]Center for Regenerative Studies, The, The Center for Regenerative Studies, 2.

some of the food production activities.[65]

SOLUTIONS

Energy Production and Conservation

CRS demonstrates many solutions involving to energy production and conservation. Like CCAT, CRS employs active solar power generation devices. These technologies include concentrating photo-voltaic arrays, an electric generator (a "Dish-Sterling") that uses reflective parabolic mirrors to concentrate sunlight onto solar cells, and heliostatic (maintaining constant angle to the sun) solar collectors. A unique feature at CRS is the Solar Park where much of the alternative energy producing technology is on display. Both photo-voltaic arrays and the Dish-Sterling generator are located in this hilltop park. Solar panels are also located atop many buildings at CRS, and at appropriate locations around the site. As with most such systems, power generated from these sites are stored in a battery system. These technologies currently produce electricity for a wide variety of uses, including all of the site's hot water use. In the future, CRS plans to produce sufficient power to function independently of the local electric utility power supply.[66]

CRS also demonstrates energy conserving techniques in addition to its active solar conversion equipment. CRS's solar park includes a

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[65]Center for Regenerative Studies, The, "http//:www.csupomona.edu/crs/", 26 February 1997.

[66]Center for Regenerative Studies, The, The Center for Regenerative Studies, 1-4.

wind generator. And like CCAT, though on a much larger scale, CRS employs passive solar designs to reduce energy consumption. Further, to evaluate the impact of all these efforts, CRS has an extensive energy monitoring program to track the energy use associated with various activities and equipment.[67]

Water Resource Conservation

At CRS, alternative solutions to water resource conservation issues are intricately connected to waste management and food production facilities. CRS employs aquaculture as a primary component of its food production system. Water from the local municipal wastewater plant, treated to remove pathogens, supplies the aquaculture ponds. This water is further treated on-site to lower pH levels by a regime using water hyacinths and "flushing." In addition to utilizing wastewater from off-site, the aquaculture ponds also reuse greywater from on-site. Currently water from the aquaculture ponds flows into an artificial wetlands for filtering before seeping into groundwater sources. However, future plans call for the addition of a reservoir with filter-feeding fish at the bottom of the wetlands to allow the water to be recycled.[68]

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[67]Center for Regenerative Studies, The, "http//:www.csupomona.edu/crs/", 26 February 1997; Center for Regenerative Studies, The, The Center for Regenerative Studies: A New Model for Sustainability, 2.

[68]Center for Regenerative Studies, The, "http//:www.csupomona.edu/crs/", 26 February 1997

Waste Management

As indicated, CRS's water resource efforts are closely connected with its waste management efforts. The aquaculture ponds and the wetland area mentioned earlier are a key parts of the waste management system. Future plans call for utilization of these systems in a "natural" sewage treatment system on-site.

CRS also attempts to reduce solid waste generation. As with CCAT these efforts include composting of organic materials, recycling of inorganic materials and the use of non-toxic products. CRS literature specifically mentions the use of non-toxic and renewable building materials and indicates that CRS recycles 75% of its inorganic material. This latter statistic reflects another component of CRS's waste management efforts; as with its energy use, the Center strictly monitors material flows into and off the site.

Food Production

CRS demonstrates several alternative food production schemes on-site. As indicated earlier, aquaculture -- the domestic "farming" of fish -- is a central element in CRS food production plans. The Center also employs agroforestry, intensive agriculture, organic farming, integrated pest management (IPM) and permaculture techniques in its production of fruits and vegetables.

Shelter Design and Organization

Shelter design and organization is a primary focus at CRS and the foremost consideration in the designs is energy conservation. CRS

employs three passive solar "archetypes" forms in its buildings. A "raised" structure located in the valley bottom and by an aquaculture pond takes advantage of evaporative cooling effects from the ponds. "Earth-sheltered" forms burrow into the steep middle slopes to utilize the insulating properties of the surrounding ground. And "sunspace" forms, two-story high and oriented toward the south, terrace the upper slopes and employ plants to shield the structure from excessive heat gain. The earth-sheltered and sunspace buildings rely on the thermal mass of concrete floors and the earth for heat storage. All the buildings are designed to channel air movement for energy conservation and comfort.[69]

Building design and the "built form" layout also focuses on human and social considerations. Both the designs and layout reflect the need for gathering of different size groups and varying degrees of privacy. Some individual buildings include varied size spaces while others -- including the Commons building and the amphitheater -- address the need for larger social gatherings. The buildings are arranged to created this same diversity of spaces in the outdoor spaces.[70]

Land-use Planning

Due to the larger scale on which CRS is operating, land-use planning is a much more significant issue with respect to

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[69]Center for Regenerative Studies, The, "www.csupomona.edu/crs", 26 February 1997.

[70]Ibid.

demonstration than at a smaller site such as CCAT. Much of the land-use design is connected to food production issues and is best detailed by the words in CRS literature:

> The acreage is a microcosm of the global human-shaped landscape, providing a diverse terrain. This will include six types of agricultural production areas: bottom lands, planting beds, terraced slopes, forested slopes, upland grain production areas, and human use areas. Its valley will include integrated agriculture, aquaculture, and livestock production as a fundamental means of recycling nutrients in animal wastes. The bases of the knolls will include diversified vegetable production. The hillsides will include various combinations of food plant species, intermixed and occupying different vertical layers. The steep slopes will include fruit and nut trees interplanted in different patterns and densities with various annual and perennial crop species. The hilltops will include diverse grain crops.

Another significant aspect of CRS's land-use plans is the preservation of natural areas, primarily the re-establishment of native walnut woodlands.[71]

Social initiatives

With respect to social initiatives, CRS identified one public

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[71] Center for Regenerative Studies, The, The Center for Regenerative Studies, 2-3.

service activity, the distribution of excess foods from the CRS gardens to area food banks. CRS also engages in community building activities, namely, nightly community dinners and regular meetings of students, staff, and faculty.[72]

LOS ANGELES ECO-VILLAGE

PROBLEMS, MISSION, AND CONCEPTS

LAEV literature identifies many of the same problems with human activities as the previous sites. These include environmental degradation associated with energy production, use of water resources, waste management and food production. Reflecting closer immediate connections to the surrounding community and facilities, LAEV also details problems associated with our current transportation choices.

LAEV literature also details more human and social aspects of the issues it attempts to address. With respect to energy use, LAEV points out the economic burden energy waste can impose. Concerning waste management, LAEV literature states that "residents are paying for the waste many times over, for example when they purchase it (often as unnecessary packaging), when the waste hauler picks it up, when the city leverages taxes to maintain the landfill, and when taxes are used to clean up the pollution which results from

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[72]Center for Regenerative Studies, The, "www.csupomona.edu/crs", 26 February 1997.

the waste." In addition to pollution problems normally identified with transportation issues, LAEV also mentions the impact of commuting time on family life, the community dividing impact of highways, and the high cost of automobile ownership and maintenance. Food production issues are even more detailed, identifying a host of social, economic and ethical issues in addition to the environmental issues:

> On average our food has traveled 1500 miles to get to our tables, leaving a trail of waste and pollution in its wake--from the chemical fertilizers, pesticides, antibiotics and hormones which contaminate air, soil, water and our bodies to the oil dependent packaging and transportation. In this neighborhood, most of us buy our food from two chain supermarkets, which because they are not locally owned and staffed drain money from the community. Most food is grown and harvested by underpaid laborers working in unhealthy conditions. Factory farming of animals is inhumane; animal based diets require many times the water and land area that plant based diets do, and pose more health risks.[73]

LAEV also identifies a host of social and economic problems in a position that make them seem as significant to the group as the environmental problems more typically considered part of sustainability issues. LAEV names lack of affordable housing as a

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[73]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

key issue for the organization and discusses the significance various social issues including crime, racial strife, social isolation, lack of community cohesiveness and support, child raising and drug use. In addition to these issues, and with unusual candidness, LAEV identifies the nature of employment opportunities as an problem of concern; the LAEV web site states:

> Many jobs are unhealthful and contribute overall to waste, pollution, and stress. Many are engaged in employment that does not feel meaningful and contributes to the degradation of society overall.

Reflecting the "meta-environmental" scope of the issues just discussed, LAEV indicates that its overarching mission is "to demonstrate a healthy and regenerative urban community in which the ecological, economic and social systems in the neighborhood are integrated for long term health and sustainability."[74] More specifically, LAEV details a set of goals in response to all the specific issues identified above.

Much like the previous organizations examined, LAEV's statements of missions and goals feature the concept of sustainability. However, as with the previous groups, LAEV does not explicitly attempt to define or develop this concept. In addition, LAEV mentions the idea of "regenerative" urban community, much

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[74]Ibid.

akin to CRS's concept of regenerative technologies. Like its use of the sustainability idea, LAEV does not explicitly attempt to define or develop the term regenerative.

SOLUTIONS

Technological initiatives

Energy Production and Conservation

With respect to energy consumption, LAEV plans on gradually "eco-retrofitting" buildings in the neighborhood with solar hot water systems and solar panels for generating electricity. Some plans include the replacement of incandescent bulbs with much more efficient compact fluorescent bulbs. LAEV literature also mentions creating incentives to reduce consumption.[75]

Water Resource Conservation

To address water conservation issues, LAEV plans to install household water saving devices such as low-flow faucets and toilets and has stopped watering lawn around the apartment building. LAEV also intends to develop greywater and blackwater (sewage) treatment systems to filter water so that much of its wastewater may be recycled.[76]

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[75]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html"; Arkin, Lois, Telephone interview by author, 8 April 1997.

[76]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

Waste Management

In addition to the planned grey and blackwater systems just mentioned and like most other sites, LAEV employs waste reduction, reuse and recycling strategies; as well as composting to reduce waste generation. LAEV's waste management strategies also includes initiatives to collect compostable vegetable matter from off-site businesses.[77]

Food Production

To address food production issues, LAEV has established organic gardens which required restoring soil that had not been maintained for agricultural purposes. LAEV also encourages vegetarian diets.[78]

Transportation

LAEV is attempting to implement several solutions to address transportation problems. One solution is to provide for a resident automobile co-op, preferably an electric car co-op. Another project is to implement "traffic calming" methods on surrounding streets. Further efforts include improvements to pedestrian and bicycle facilities.[79]

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[77]Ibid.

[78]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html"; Arkin, Lois, Telephone interview by author, 8 April 1997.

[79]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

Social initiatives

LAEV's social initiatives include both public service and community building activities, as well as one economic initiative. In response to affordable housing problems, LAEV (through CRSP) has purchased one apartment building that functions as a "permanently affordable resident controlled cooperative housing." In addition, LAEV is working to acquire 40 unit and 72 unit apartment buildings for conversion to the same type of affordable co-housing. At present, LAEV's only community building activities are celebratory events: namely solstice and equinox celebrations. In addition to these efforts, LAEV has been closely associated with a Local Exchange Trading System (LETS) though at present this LETS is not operating.

To address various other social and economic issues, LAEV developed a set of goals, as follows:

- Establish new eco-business development sufficient to support 12 persons who reside in the two block neighborhood.
- Acquisition of buildings for a variety of earth friendly neighborhood businesses.
- Opening a training and resource center for sustainable neighborhood development.
- Hold weekly community potluck dinners for up to 50 persons.
- Establish conflict resolution processes which are regularly used by all ethnic groups in the neighborhood.
- Develop a teen center, and teen activities.

- Establish three artists in residence with daily interactive performance, craft and visual arts accessible to all neighbors and passers-by in the neighborhood.[80]

ECO-VILLAGE ITHACA

PROBLEMS, MISSION, AND CONCEPTS

EVI is very explicit regarding the general problems it is attempting to address. EVI literature states that "past societal, economic and political choices are effectively destroying the environmental balance of the planet necessary to sustain life."[81] As with previous organizations, the overriding concern is expressly environmental degradation. One of the prime causes of the environmental problems identified by EVI is the use of "linear-systems." The EVI web page states: "Today's developments are based on linear systems -- most goods and materials are shipped in, used, and then waste is shipped out. With linear systems natural resources are depleted and a waste problem created."[82]

As with most of the other organizations, EVI's activities and plans implicitly reflect more specific problems associated with energy use, water use, and waste management, food production and shelter design. Further, as with LAEV, EVI's solutions also directly

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[80]Los Angeles Eco-Village, "alumni.caltech.edu/~mignon/laev"; Arkin, Lois, Response via electronic mail, 28 February 1997

[81]Eco-Village Ithaca, "http://www.cfe.cornell.edu/ecovillage/".

[82]Ibid.

address transportation issues, and, though less specifically, more socio-political-economic issues. And as with CRS, EVI's development of a relatively large site raises land-use planning issues to a very prominent position.

Like LAEV, Eco-Village of Ithaca (EVI) is involved in the process of creating an environmentally-oriented community. Though EVI has no formal "mission statement," its informational literature states its purpose as "developing a new kind of community-oriented and ecologically sensible neighborhood."[83] And in response to questions regarding EVI's mission, Joan Bokaer and Liz Walker state:

> The ultimate goal of Eco-Village at Ithaca is nothing less than to redesign the human habitat. We are creating a model community of some five hundred residents that will exemplify sustainable systems of living -- systems that are not only practical in themselves, but reproducible by others. The completed project will demonstrate the feasibility of a design that meets basic human needs such as shelter, food production, energy, social interaction, work and recreation while preserving natural ecosystems.[84]

EVI's mission, though similar to the others in this study, is significantly different in one important aspect: EVI's desire to demonstrate alternative development in the suburban environment.

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[83]Ibid.

[84]Bokaer, Joan and Walker, Liz, to author, 16 January 1997, Electronic mail.

EVI's web page explicitly states that one of EVI's purposes is "to demonstrate an alternative development model to 'suburban sprawl.' "[85]

The mission statement above clearly mentions the concept of sustainability, but as with the other organizations, EVI does little to define or develop the term. Much more specifically, EVI literature indicates that the organization will employ "permaculture" principles in its food production activities. And in discussing permaculture, the idea of "self-sufficiency" emerges as a goal, but its inconspicuous placement indicates that it is probably not a primary guiding concept for EVI.[86]

SOLUTIONS

It should be noted that EVI has developed a set of goals and objectives to guide the selection of processes and technologies employed to address the categories detailed below. EVI's organization of categories varies only slightly from those in used here, and the goals and objectives could be easily assigned to a category used here.[87]

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[85]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat/".

[86]Ibid.

[87]Ibid.

Technological initiatives

Energy Production and Conservation

Energy conservation was a paramount issue in the design of EVI's first residential neighborhood, the Eco-Village Co-housing Cooperative (EVCC). Design of the residential duplexes and the common house includes passive-solar features such as large south-facing windows. These houses will also be "super-insulated" and air-tight, and employ the latest in energy-efficient appliances and electrical fixtures.

Energy conservation was also a key consideration in the use "shared" facilities to meet EVCC's demands. One of the shared facilities is a common energy center for each cluster of six to eight duplexes. The energy centers contains a boiler, heated by natural gas at this time, that supplies both heat and hot water to each home. The duplexes have also been designed to allow the addition of solar hot water systems, photovoltaic panels for the generation of electricity, and pellet-burning wood stoves to alleviate the dependence. Another shared facility, the EVCC common house, also has a energy conservation element. The use of the common house's kitchen and dining facilities is much more energy efficient than the use of individual kitchens.

Another energy conservation initiative employed by EVI is the development of energy standards to guide the design and outfitting of houses. In addition to these energy conservation efforts, EVI also intends to extract methane from a planned biological wastewater

facility.[88]

Water Resource Conservation, Waste Management, and Transportation

Most of EVI's water conservation, waste management and transportation efforts are only in the planning phase. As with most other sites, water conservation solutions include rain collection and greywater systems. Waste management alternatives include composting and recycling. Some of the transportation efforts anticipated are the limitation of automobile areas to the periphery of the site, development of a bike and pedestrian trail system, development of a commercial center to the need for off-site trips, establishment of a bus stop, development of a computerized ride-sharing system, and possibly a city shuttle.[89]

Food Production

Alternative food production efforts employed at EVI include the support of West Haven Farm, the Community Supported Agriculture (CSA) on the EVI site. West Haven and EVI promote organic gardening techniques. EVI also plans to employ permaculture and agroforestry techniques in future agricultural endeavors. Future plans also call for the development of a cooperative cannery.[90]

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[88]Ibid.
[89]Ibid.
[90]Ibid.

Shelter Design and Organization

Many of the initiatives regarding shelter design and development relate to energy conservation concerns and have been noted earlier. One specific design feature, not noted earlier but worthy of note, is the large root cellar in the common house. Though not a "new" technology from an ecological perspective, this is certainly an appropriate technology.[91]

In addition to energy conservation, the co-housing scheme employed by EVI addresses other issues. In general, sharing of facilities decreases overall demand for material resources. Also, EVI literature reflects a belief that co-housing and shared facilities in general promote tighter social bonds in the neighborhood.[92]

Land-use Planning

With respect to land-use planning, EVI's design efforts focus primarily on the preservation of open space, including agricultural and natural areas. Also, a somewhat related plan calls for the development of a natural resource archive for the site.[93]

Social initiatives

EVI's initiatives also attempt to address some socio-economic issues. For example, EVCC members intend to hold regular

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[91]Ibid; Bokaer, Joan and Walker, Liz, to author, 16 January 1997, Electronic mail.

[92]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat/".

[93]Ibid.

community dinners in the common house, and the first common house was designed with eight office spaces to promote on-site business. In addition, though clearly as much public relations as public service, EVI plans to allow access to some of its land by non-EVI area residents for recreational purposes.[94]

THE ECO-HOME NETWORK

PROBLEMS, MISSION, AND CONCEPTS

EHN literature prominently and explicitly identifies the general "man-made environmental problems" with which it is concerned in a passage opening a leaflet describing EHN's mission and general history. The passage by Tom Van Sant of the Eco-Home Advisory board states:

> Increasing population. Decreasing resources. Depletion of the ozone. Increase of carbon dioxide. Global warming. The destruction of nature. These are the fundamental issues of the 21st century.

As with several of the other organizations, EHN does not explicitly identify problems on a more specific level, rather these issues are implicitly reflected in alternative initiatives employed by the organization.[95]

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[94]Ibid.

[95]Eco-Home Network, The, Eco-Home Network, (Los Angeles: The Eco-Home Network, undated). An EHN leaflet detailing EHN's mission, general history and activities.

In the same circular mentioned above, EHN describes its mission as follows:

> Eco-Home Network is committed to making a difference in the individual quality of life and planetary well-being through three principal areas of activity: demonstration, education, and building a constituency for sustainable urban living. By raising environmental consciousness, creating a sense of personal responsibility and inspiring lifestyle changes, Eco-Home hopes to make "Every Home An Eco-Home."[96]

With the commitment concerning "quality of life," EHN clearly stretches its mission beyond purely traditional environmental concerns in to the realm of human issues. And further, though much like the mission statements of the other organizations in this study, the explicit statement of the political goal of "building a constituency" is rather unique. In addition, in the Eco-Home Credo, EHN states "that the purpose of Eco-Home is to demonstrate a lifestyle based on ecological and spiritual values" [Emphasis added] adding a religious component to its goals. Interestingly too, the phrases "making a difference in the individual quality of life" and "creating a sense of personal responsibility" imply a more individualistic orientation than the other groups under examination, particularly the Eco-Villages.[97]

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[96]Ibid.

[97]Eco-Home Network, The, Eco-Home Network; Eco-Home Network, The, Eco-Home Credo for Residents, (Los Angeles: The Eco-Home Network, undated).

EHN literature features no prominent overall guiding concepts or principles for the solutions it demonstrates and promotes. The ideas of "sustainability" and "self-reliance" do appear, but rather inconspicuously.

SOLUTIONS

Technological initiatives

Specific efforts to address issues of concern to EHN mirror many of the solutions employed by other organizations.

Energy Production and Conservation

Energy generation and conservation efforts include the use of photovoltaics for lighting and a passive solar retrofit of the demonstration site's meeting house; these efforts are also the only "shelter design" initiatives identified.[98]

Water Resource Conservation

Water conservation initiatives include a xeriscaped area, a drip irrigation system for the gardens and orchard, a low-flow toilet in the house and a greywater system employed for waste management and irrigation.[99]

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[98]Eco-Home Network, The, Eco-Home: A Demonstration of New City Living, (Los Angeles: The Eco-Home Network, undated).

[99]Ibid.

Waste Management

EHN composts vegetable wastes and recycles to reduce waste volume and impacts. In a more unique integrated energy and waste management initiative, EHN uses tree trimmings as firewood for heating.[100]

Food Production

In response to food production issues, EHN grows vegetables and fruits organically in their gardens and orchards.[101]

Social initiatives

In social issues arena, EHN engages in both public service and community building activities. In the public service area, EHN works with the Los Angeles Housing Department and the U.S. Department of Housing and Urban Development on the Home Rehabilitation program; here EHN attempts to "introduce cost-effective environmental system and products" into a housing rehabilitation project for low and moderate income Los Angeles residents. In a community building effort, EHN requires residents at the demonstration site to sign the "Eco-Home Credo." Many of the requirements of the credo simply reflect the testing social issues which must be addressed when people live in the same household. Some of the requirements, though, are at least partially necessitated

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[100]Ibid.
[101]Ibid.

by dedication to demonstrating sustainable alternatives. These requirements include the commitment of time to garden work, work days and meetings; as well as commitment to all EHN conservation efforts.[102]

THE MISSOULA URBAN DEMONSTRATION PROJECT

PROBLEMS, MISSION, AND CONCEPTS

MUD's literature implicitly indicates that environmental concerns are a primary focus of the organization, such as in its proposed mission statement, "working to meet basic needs in less resource intensive ways." MUD explicitly details more specific issues, such as food and energy consumption issues, but in much less conspicuous manners.

MUD details its focus on social issues, both explicitly and implicitly, much more prominently. One passage that expresses MUD's focus on a host of social concerns is the following:

> In building a healthy community, we work to create sustainable solutions to persisting social problems such as hunger, poor shelter, inadequate heat sources, rising electrical bills and contaminated water sources. We hope to augment and enhance the work of direct service agencies by teaching skills that build self-sufficiency.[103]

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[102]Eco-Home Network, The, Eco-Home Credo for Residents, (Los Angeles: The Eco-Home Network, undated).

MUD's original mission stated that its purpose was "to achieve and promote urban self-reliant living through community gardening, education, and experimentation."[104] This contains at least two of the same elements as the EHN mission statement, education and demonstration -- if one takes "experimentation" and "demonstration" to be interchangeable. At this writing, though, MUD is in the midst of a planning process that will likely alter the mission statement to something more like the statement mentioned above: "Working to help people and communities meet basic needs in less resource intensive ways." This change in mission is a result of the realization that self-reliance, though a vital component of MUD's mission, is basically a part of the larger mission in which MUD is involved.

As mentioned, the notion of self-reliance holds a key position in MUD's approach to issues. As with "sustainability" and other such terms, self-reliance is a difficult idea to define. One MUD leaflet states that "self-reliance in an urban setting means: growing your own food...building and maintaining your own shelter [and] saving energy or generating your own."[105] From MUD's literature and my own personal experience with the organization and its efforts, it seems accurate to say the MUD's self-reliance means freedom from

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[103]Missoula Urban Demonstration Project, The, MUD: What Are We About, Working paper attempting to define MUD's vision and mission, (Missoula, Montana: The Missoula Urban Demonstration Project, undated).

[104]Missoula Urban Demonstration Project, The, Missoula Urban Demonstration Project . . . working toward self-reliant urban living, (Missoula, Montana: The Missoula Urban Demonstration Project, undated).

[105]Ibid.

dependence on both remote resources, and resources controlled by entities -- such as multi-national corporations -- whose social and ecological values do not reflect those for which MUD stands. And as MUD's incomplete "manifesto" states:

> The goal is not an isolated, self-sufficient existence. Individuals take responsibility for their own lives, but it is understood that 'urban self-reliant living' is meaningless unless it is coordinated with the collaborative efforts and relationships in a community working towards similar goals.[106]

Another factor influencing MUD's solutions is its desire to effect proposed solutions in the area where the organization is located. For MUD this means generating solutions pertinent to the low-income, Northside community in which they are located. This mainly means attempting to find low-cost ways of implementing MUD's alternative solutions and examining critically proposed solutions from the point of view of low-income people.[107]

One further factor influencing MUD's activities is its focus on promoting actual reduction in consumption of resources through attention to activities and use, not just substitution of technologies that do not require the examination of human activities. Again, MUD's manifesto states: "we stress pro-active solutions rather than complex technological fixes -- our first priority is to reduce

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[106]Missoula Urban Demonstration Project, The, MUD: What Are We About.

[107]Ibid.

consumption in order to conserve energy and resources."[108]

SOLUTIONS

Technological initiatives

Many of the solutions employed in support of MUD's mission are generally the same as those used at the other sites under consideration.

Energy Production and Conservation

MUD models a small-scale solar panel and battery system, as well as thermal curtains in energy conservation efforts. Future MUD projects possibly include passive-solar remodeling of the houses on-site.

Water Resource Conservation

Water conservation efforts include a rainwater catchment system for irrigation and the sink-toilet and native plant landscaping. These efforts also include low-flow water fixtures, and toilets with low-flush and built-in sink features.

Waste Management

MUD recycles and compost organic wastes, including vermiculture composting, to manage waste. In addition, MUD

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[108]Ibid.

composts off-site wastes from several Missoula coffee shops and food scraps from select businesses.

Food Production

As with other sites, MUD produces and preserves much of its own food on-site, using organic gardening techniques.

Shelter Design and Organization

MUD focuses on one strategy not explicitly emphasized by other organizations with respect to conservation of materials. In development of facilities, MUD emphasizes the use of salvaged materials. For example, the framing materials, and much of the other materials, used in the strawbale greenhouse were salvaged. This is a conscious choice and supports MUD's low-income appropriate goals as well.

Social initiatives

MUD engages in both public service and community building social initiatives, many of which were mentioned in the introduction. Many of MUD's public service efforts are directly associated with its management of the Northside Community Gardens. The Gardens provide gardening space to low-income people and people without access to land. The Gardens also provide food to a local food bank and a homeless shelter through a collaborative effort with the Retired Services Volunteers Program, a Missoula non-profit. In addition, MUD provides wheelchair-accessible gardening beds at the Gardens

as well as at Eagle Watch a housing complex for the disabled. Further, in a collaborative effort that includes the Northside Gardens, MUD is working with the organizations of The Garden City Harvest Project to develop a city-wide system of community gardens.

In addition to activities tied to the Northside Gardens, MUD conducts other community service activities. MUD directs the Home Grown Neighborhood Network which matches low-income and beginning community gardeners with people knowledgeable about gardening. MUD is also implementing a tool-sharing program with the North Missoula Housing Partnership. Further, though not currently working on a joint project, MUD has a close relationship with the Missoula Family Resource Center, a non-profit working on family and low-income issues.

MUD's community building activities include a summer garden party (featuring music, food and an auction) and a harvest festival consisting of Community Gardens' cleanup followed by dinner. In addition to these two major events, MUD sponsors a fall musical festival named MUD Stock.

CHAPTER 4: RESULTS

PUBLIC OUTREACH AND PUBLICITY AND PERCEPTION AND MEASUREMENT OF EFFECTIVENESS

This section details the public outreach and educational activities, those activities that spread the organization's message, as well as those activities that simply involve other community agencies, organizations or people. This incudes workshops and public educational programs, as well as publicity for these events. Further, this section presents the opinions of those active in the organizations in this study about the effectiveness of their activities with respect to public outreach, and details any attempts to measure the effectiveness these activities.

THE CAMPUS CENTER FOR ALTERNATIVE TECHNOLOGY

PUBLIC OUTREACH ACTIVITIES AND PUBLICITY

CCAT public outreach and educational activities include general public efforts directed toward both the Humboldt State University campus and the Arcata public, and more specific initiatives that are directed toward primarily either the University or Arcata community. Outreach activities oriented toward the general public include regular scheduled site tours, workshops, off-site tours of sites involved with alternative/appropriate technologies, special events,

the development and maintenance of informational displays and materials, and the maintenance of a library. Workshops cover topics such as gardening, electricity production by human power, and even menstrual pad construction; special events include the "Renewable Energy Fair" held near Earth Day, a harvest fair, and a "Bioregional" conference. CCAT also serves as resource center on sustainable living techniques.

CCAT's campus related public outreach activities include the Sustainable Campus Task Force, a planned system appropriate technology information display boxes, "experiential learning" activities on-site for University credits, operation of a coffee stand and involvement in a wide variety of campus political activities. The Sustainable Campus Task Force promotes the use of appropriate technologies by campus institutions, faculty and students. For example, the Task Force works with Campus Food Services to compost their vegetable wastes.

CCAT's off-campus activities are somewhat limited at the present. The main activity directed toward the non-University public is the Urban Bridges program. Urban Bridges educates regarding appropriate technologies in a local public school located in a low-income area.[109]

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[109]Campus Center for Alternative Technology, The, "http://sorrel.humboldt.edu/~ccat/"; Colby, Chelsea, interview by author, 31 March 1997; Papke, Dana, interview by author, 31 March 1997; Campus Center for Alternative Technology, The, Events: March 1997, (Arcata, California: The Center for Alternative Technology, March 1997); Campus Center for Alternative Technology, The, Projects at CCAT for Spring 1997, (Arcata, California: The Center for Alternative Technology, 1997).

CCAT publicity for its events and activities within the local community include the production of a newsletter -- The AT Transfer -- the maintenance of a kiosk at the Center, and the distribution of flyers for special events. To publicize its activities beyond the local community, CCAT maintains a site on the Internet and advertises in at least one directory, Healthy Harvest II.[110]

PERCEIVED EFFECTIVENESS AND MEASUREMENT

CCAT staff identified a few initiatives that they felt were fairly effective from the public outreach perspective, though they did not provide clear reasons for these perceptions. CCAT staff stated that the campus coffee stand, their workshops and the Urban Bridges program were perceived as particularly effective.

CCAT staff also indicated that no efforts to measure the effectiveness of its public outreach activities has been undertaken.[111]

THE CENTER FOR REGENERATIVE STUDIES

PUBLIC OUTREACH ACTIVITIES AND PUBLICITY

Academic classes and programs at CSPU operate as the primary vehicle for CRS's public outreach/education efforts:

> The Center for Regenerative Studies, an interdisciplinary educational unit of Cal-Poly Pomona, serves the entire campus

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[110]Colby, Chelsea, interview by author, 31 March 1997

[111]Ibid.; Papke, Dana, interview by author, 31 March 1997.

> community. Students from all disciplines are welcome to participate in the program in either the resident or nonresident courses. The Center can also serve as a place for advanced and graduate students to prepare environmental/sustainable design projects.[112]

CRS also serves as a research laboratory for faculty from various disciplines at the University, allowing them design and implement relevant projects. In addition, classes at CRS appear to be open to a wide variety of non-university people; as CRS literature puts it: "participation at the Center extends to visiting scholars and students, individuals, business and governmental organizations who attend classes, seminars and continuing education programs." Currently CRS offers a 30-unit minor and is developing a graduate program.

In addition to their formal educational programs, CRS conducts a few other outreach activities. These efforts include scheduled site tours as well as occasional programs on sustainability issues in local high schools and churches. Further, in a collaborative effort, CRS is working with the County Sanitation Districts of Los Angeles, and Los Angeles County on an initiative named LandLab. LandLab is a project to utilize the Spadra municipal landfill, located adjacent to CRS, for interdisciplinary research and demonstration.[113]

With respect to publicity efforts, CRS is listed in CSPU's

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[112]Center for Regenerative Studies, The, The Center for Regenerative Studies.

[113]Ibid.; Center for Regenerative Studies, The, "http//:www.csupomona.edu/crs/"; DeChaine, Cindy, interview by author, 31 March 1997.

informational materials. In addition CRS maintains an Internet site and plans to start an electronic newsletter.

PERCEIVED EFFECTIVENESS AND MEASUREMENT

The only activity CRS staff identified as particularly effective was the CRS site tours. The staff indicated that this perception was based on the popularity of the tours, which are requested almost daily.

CRS staff also indicated that no efforts to measure the effectiveness of its public outreach activities has been undertaken.[114]

LOS ANGELES ECO-VILLAGE

PUBLIC OUTREACH ACTIVITIES AND PUBLICITY

LAEV currently has limited public outreach efforts in place, but several activities are planned for the future. At this time, LAEV offers tours of the neighborhood, and is working to improve the organization and content of these tours. In addition, LAEV offers a tele-conference workshop with EVI and the Eco-Village Training Center (a center at The Farm, a rural Eco-Village in Tennessee) on developing Eco-Villages.

In the future, LAEV plans to initiate programs with the local K-2 public school. LAEV also plans to conduct workshops and courses: in

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[114]DeChaine, Cindy, interview by author, 31 March 1997.

particular, a two-week permaculture course. Other planned initiatives include the development of a library, as well as information and referral services.[115]

In more publicity oriented efforts, CRSP occasionally publishes a newsletter about LAEV, and LAEV hopes to establish a multilingual newsletter. For publicity to a broader audience, LAEV maintains an Internet site.[116]

PERCEIVED EFFECTIVENESS AND MEASUREMENT

LAEV's responses regarding the effectiveness of their efforts was vague and did not specifically identify any activities which stood out as particularly effective. LAEV's staff also indicated that no efforts to measure the effectiveness of its public outreach activities has been undertaken.[117]

ECO-VILLAGE ITHACA

PUBLIC OUTREACH ACTIVITIES AND PUBLICITY

EVI conducts or has conducted a number of public outreach initiatives. As EVI literature states: "EcoVillage has sponsored a

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[115]Los Angeles Eco-Village, "http//:alumni.caltech.edu/~mignon/laev.html".

[116]Ibid.; Arkin, Lois, Response to author's questions via electronic mail, 28 February 1997.

[117]Response to author's questions via electronic mail, 28 February 1997.

variety of educational programs including speakers, seminars, conferences and hands-on youth programs."[118] EVI also produced a slide show on "Ecological Cities." Currently EVI conducts charged tours of the site by request. In the future, EVI plans to develop an educational and research center on-site.[119]

EVI has also engaged in collaborative efforts. For the past three years sixty elementary school children have explored the site as part of the Natural Resources Appreciation Program, and thirty-six children from a city summer camp grow vegetables and flowers at Eco-Village. EVI also helped organize the Third International EcoCity Conference held in Yoff, Senegal. Further, EVI is closely affiliated with CRESP at Cornell University and works with various Cornell classes. With respect publicity efforts, EVI produces quarterly newsletter and maintains an Internet site.[120]

PERCEIVED EFFECTIVENESS AND MEASUREMENT

Though not currently conducting this program, EVI personnel indicated that they believed the youth gardening program was particularly successful. This program brought inner city youth to garden at the EVI site, and EVI staff felt that this program generated a lot of enthusiasm among its participants. However, EVI has not undertaken any efforts to measure the effectiveness of any of its

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[118]Bokaer, Joan and Walker, Liz, to author, 16 January 1997, Electronic mail.

[119]Ibid.

[120]Ibid.

activities.[121]

THE ECO-HOME NETWORK

PUBLIC OUTREACH ACTIVITIES AND PUBLICITY

EHN is involved in a wide range of public outreach efforts. EHN conducts regular weekly tours at the demonstration site and special arranged tours for requesting groups. In addition, in a unique initiative, EHN has established a publishing entity, Eco-Home Media. To date Eco-Home Media has published two books, Sustainable Cities: Concepts and Strategies for Eco-City Development and Los Angeles: A History of the Future which deal with sustainability issues. Further, EHN operates a hotline for information "on environmental issues and referrals for various systems and products involving resource conservation, renewable energy, and non-toxic alternatives."[122]

In addition to these EHN efforts, EHN has been involved in a number of collaborative initiatives. EHN co-produced the Los Angeles Ecological Cities project with the Cooperative Resources and Services Project, the non-profit closely associated with LAEV. With the American Energy Society, EHN conducts the Southern California

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[121]Bokaer, Joan, Response to author's questions via electronic mail, 24 April 1997.

[122]Eco-Home Network, The, Eco-Home Network; Eco-Home Network, The, Eco-Home: A Demonstration of New City Living; Russell, Julia,, interview by author, 31 March 1997.

Tour of Solar Homes.[123]

EHN employs various publicity strategies. The organization undoubtedly receives significant publicity through the collaborative efforts mentioned earlier. In addition, EHN publishes a quarterly newsletter, Ecolution, which is distributed to Los Angeles public libraries. EHN also has a celebrity spokesperson, Ed Begley, Jr. Further, EHN is listed in at least two directories, the Directory of Intentional Communities and Environmental Profiles: A Global Guide to Projects and People, and maintains an Internet site.[124]

PERCEIVED EFFECTIVENESS AND MEASUREMENT

Executive director Julia Russell identifies one EHN initiative that she perceives as particularly effective in a public outreach sense; this is EHN's information hotline which provides answers or referrals to people seeking information on a variety of environmental or community issues. Ms. Russell feels this effort is effective because of its service oriented nature, and more precisely, because it helps people when they want to be helped, which probably implants a positive attitude toward the organization.[125] EHN has undertaken no efforts to determine the effectiveness of its activities, though it had originally planned to do a follow-up survey of attitudes after the

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[123]Eco-Home Network, The, Eco-Home Network.

[124]co-Home Network, The, Eco-Home Network; Russell, Julia,, interview by author, 31 March 1997.

[125]Russell, Julia,, interview by author, 31 March 1997.

Tour of Solar Homes mentioned above.[126]

THE MISSOULA URBAN DEMONSTRATION PROJECT

PUBLIC OUTREACH ACTIVITIES AND PUBLICITY

Many of MUD's public outreach efforts were mentioned briefly in the introduction. Currently, MUD conducts approximately weekly environmental education programs at Lowell Elementary School. These programs cover topics such as urban ecology, composting, recycling, and seed planting, presenting eight lessons to four classes. MUD is working actively to develop the lessons from this program into a formal curriculum and to expand programs to other Missoula schools. MUD's youth education efforts also include programs at the Northside Community Gardens and the demonstration site for Head Start and local elementary school students. In particular, MUD conducts a week-long urban ecology day camp during the summer.

In addition to the public school efforts, MUD also conducts a series of workshops on self-reliant living skills and other pertinent topics. These workshops extensively cover various aspects of gardening activities, composting, native landscaping, non-toxic lawn care, herb growing and use, food preservation, home weatherization, home medicinal remedies, and even beer brewing. In addition MUD conducts scheduled site tours and holds an annual project open house.

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[126]Eco-Home Network, The, Eco-Home Network.

MUD is also involved in various outreach efforts with other organizations and agencies. Agencies involved in significant collaborative outreach initiatives with MUD include:

- Montana Natural History Center: participates with MUD in conducting MUD's summer youth day camp.
- University of Montana Cooperative Education Department: provides university credits for MUD's internship program.

MUD is also involved with the following groups in various relationships: Montana Shares, a non-profit fundraising organization; the Head Start School; and the Alternative Energy and Resources Organization, a Montana non-profit.[127]

PERCEIVED EFFECTIVENESS AND MEASUREMENT

MUD staff indicated that two youth education activities were particularly effective in the public outreach sense. These efforts are the environmental education program at Lowell Elementary School and MUD Camp, the week long environmental education day camp. MUD staff indicated that both the Lowell School program and MUD camp were deemed effective due to a subjective impression of a positive response from the children involved in these activities. In addition, MUD camp was also considered successful due to its popularity (numbers of participants was limited by staff numbers

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[127]Carroll, Steve, and DeSilvey, Caitlin, staff of Missoula Urban Demonstration Project, Informal written responses to author's written questions, 2 April 1997.

not lack of interest) and the media attention it attracted.

MUD staff also indicated that Northside Community Garden activities were very successful in a community outreach sense, since they seem to be fairly well known in Missoula. Their success probably has much to do with the number of people involved at the gardens and the community-service nature of many of the efforts there.[128]

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[128]Ibid.

CHAPTER 5

DISCUSSION AND CONCLUSION

The organizations reviewed in this study represent a diverse sample of organizations involved in promoting sustainability. They can generally be grouped into three categories: ecological intentional communities, EVI and LAEV; post-secondary education institutions, CCAT and CRS; and private non-profit organizations. Significant differences exist within these categories, so much so that in many ways, organizations from different categories are more similar than they are to one in their own category. For example, CCAT is much more like MUD than like CRS largely due to less formal organizational structure and educational programs. And in many ways, LAEV is more like MUD than EVI due to its position in an established neighborhood. This diversity means that implications for MUD come from not only the other private non-profit, EHN, but also from the others.

PHYSICAL AND ORGANIZATIONAL CHARACTERISTICS

Location

The most significant aspects of the locations of the sites in this study are the climatological features. These features create specific challenges to meeting the resource needs of the sites and should influence the focus of the solutions employed. This is especially true with respect to energy use and food production. For example the Los

Angeles area sites, despite enjoying an endless growing season, must contend with a shortage of water resources for growing food. This should make water conservation a more important consideration at these sites than at the sites with greater water resources. Another example of climatological considerations, is the relatively low solar radiation reception for the CCAT, EVI and MUD sites. This argues that active solar technologies cannot be relied on to produce the energy resources at these sites as for the Los Angeles sites.

The MUD site probably experiences the most challenging climatological conditions of any of the sites in this survey. Although the EVI site experiences slightly cooler average extremes than the MUD site, cooler weather holds sway for more of the year in Missoula shortening the growing season to near ninety days versus at least 120 days for the EVI area. In addition to this, MUD experiences the lowest annual precipitation of any of the sites. These factors clearly present a significant challenge to MUD's efforts toward self-reliance with respect to food production efforts, with the implication that food production efforts should consume a greater amount of site resources, human and natural, than the other sites in this study. This is already reflected in MUD's construction of two greenhouses to extend the growing season, addressing the short growing season, and the use of rain catchment barrels, for stretching water resources.

As with food production, the climate in the MUD area makes energy use a primary concern. Although not the worst of the sites with respect to winter low temperatures, Missoula's winters are cold enough to make heating a high priority item compared to all the

other sites except EVI. Again, this focus is already reflected in MUD's efforts to extensively improve the insulation of the residential structures and the addition of thermal curtains. Significant possibilities remain for improvements and some of those will be discussed later in examination of various initiatives .

The climatic conditions also have significant implications for the various technologies to be employed at the MUD demonstration site. These, however, will be discussed with in the "solutions" section.

Site Size and Facilities

The other physical site characteristic, site size, is also extremely significant. The influence of site size on food production seems obvious and will not be discussed here. Site size, however, has implications other than for food production. The possibility of these limitations seem most apparent in the waste management area. For example, one of the schemes most mentioned and employed by the sites in this study is the use of a marsh system for treatment of greywater for reuse. These systems are modeled on natural systems that cleanse impurities from water. In a natural setting, these systems are usually quite large compared to the scales of urban living areas. It seems likely, then, that these systems are much more effective and efficient in places where their size is less limited. Arguments regarding biological wastewater treatment would be much the same.

These site size implications indicate that smaller sites such as MUD should be very thorough in evaluating the overall ecological

impact of methods that have various scales of application. This does not mean that a greywater system should not be developed at MUD, but it may well be that its function is primarily educational -- informing people about the technology -- and should not really be promoted as a sound model for replication on individual residential sites throughout the city. Neither does this argument mean that "industrial-scale" solutions that appear more ecologically efficient on paper should be promoted. Here there are trade-offs in the social goals MUD promotes. These large-scale solutions usually require technical expertise beyond the scope of a neighborhood or small community and result in more centralized administration, both of which lessen control by local people. They also distance people from the impacts of their activities.

These size limitations have additional implications. Clearly, small demonstration sites cannot demonstrate all the significant methods or technologies that the organization espouses for creating urban sustainability. This argues for either expansion or movement to a larger site, involvement in and support of other activities demonstrating these larger-scale initiatives, and/or additional focus on educational efforts supporting these ideas. MUD's extensive involvement in activities beyond the demonstration site already reflects movement in these directions; particularly its collaboration in the Garden City Harvest, a city-wide food production effort, and youth environmental education initiatives.

This is not to lessen the importance of the demonstration site. Its role is vital as a resource in many ways that support the

organization, such as providing a living classroom for the MUD Camp students. Further, the demonstration site is perceived as a physical manifestation of MUD's mission and somehow seems a glue for MUD's divergent interests. Therefore, maintenance and improvement of the demonstration site facilities is still very important.

Residents, Organizational Structure and Decision-making

The implications of organizational structure and decision-making are unclear. More detailed information on the structures of the governing/directing bodies would be helpful with organizational classification. None of the organizations reviewed in this study seem to have a highly specialized organizational structure. Probably the most formal is CRS with its distinct titles for demonstration site positions and its direction by faculty; compared to CCAT, the other university site, it seems a much more formal unit of the university structure. In this sense, it seems to be the organization that leans most toward the "bureaucratic" side of organizational structure. EHN, CCAT and MUD, though they too have titled positions, do not seem nearly as formalized in their positions as CRS. And at an even less structured state, LAEV and EVI identify no official organizational structures, with the exception of LAEV's close connection with the CRSP board.

Within the various organizational structures of the groups in this study, consensus was the only decision-making process identified. CCAT, EHN and MUD all employed consensus decision-making; and EVI's meeting guidelines include consensus processes.

Some research on organizational structure suggests differences based on whether organizations are more "bureaucratic" or "collectivist." With the exception probably of CRS these organizations seem to fall clearly on the collectivist side of this spectrum. Research further suggests that bureaucratic organizations are more effective at lobbying and fundraising, while collectivist organizations are more effective in directly changing institutional patterns.

> What this observation suggests is that characteristics of bureaucratic organization facilitate goal achievement and access polity, whereas collectivist organization facilitates the mobilization of consensus, recruitment, direct changes in life-style, and so on.[129]

For MUD this argues for remaining on the collectivist side of the spectrum. MUD's goals clearly fall more within the realms described as more effectively addressed by collectivist organizations. This is not to say MUD would not benefit from some additional formalization and clarification of roles, especially if the number or scope of projects in which they are involved continues to increase, rather that too strict a structure would probably be detrimental to their goals.

Funding

Despite their differences in other areas, there is significant overlap in the in the nature of funding for the groups in this study. All the groups solicit donations. All except EVI indicate that they

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[129]Klandermans, Bert, "Introduction: Organizational Effectiveness." International Social Movement Research 2 (1989): 385.

apply for grants. All of the sites except the state supported sites, sell some services or products. The only uncommon method of funding, loans, reflects the difference in nature of the two Eco-Village groups, where significant capital was required for private acquisition and development.

MUD's fundraising patterns clearly resemble those the other organizations, with funding coming from grants, donations -- of various types -- and sales. MUD's grant writing initiatives are more developed than most of the other organizations; most of the other groups indicated that grant writing efforts were minimal or just being initiated. Information on product sales and services also seems pertinent for MUD. LAEV, EVI, and EHN all charge for site tours. Further, they offer pertinent books, publications and/or videos for sale. MUD does not currently conduct formal site tours, and its informational materials are free. These two areas, site tours and sale of informational materials, appear to be activities that could increase MUD's funding. This may conflict somewhat with MUD's desire to be a resource for low-income populations. However, methods probably exist by which income from these sources could be increased without seriously jeopardizing this objective. For instance, instead of having a firm price for a tour, a guide could just make it plain that donations are requested if possible. It should be noted that attempts to increase funding from tours and sale of informational materials would probably require some improvements from the current status at the site, especially with respect to tours. For tours to be an effective fundraising tool, detailed interpretive programs would need

to be developed and various site improvements would be necessary.

PROBLEMS, ISSUES, MISSIONS, AND CONCEPTS

Other than LAEV, the organizations in this study do not attempt to detail the problems they are attempting to address, other than at a very general level. Perhaps those working in the organizations feel these issues are too obvious to mention or put too negative a spin on their public information. However, it seems that detailing these problems in some depth is important. For those who probably are not as knowledgeable about many of the issues of concern, the audience these organizations want to influence, detailing the problems explains why an organization is engaged in the activities it is publicizing.

This represents a surprising finding in this study. "Problem identification" is so familiar a political activity that it may usually be regarded as an obvious prerequisite for fundraising, political mobilization, and resolving internal organizational issues. In terms of political strategy, clearly defining problems to be addressed also seems significant in influencing people's opinions, at least intuitively. After all, if a group is promoting change, it needs to define a problem with the manner in which things are done currently. Some research on the environmental movement would seem to indicate that clear identification of problems with the existing systems is a key component in the formation of social movements. As one scholar argues:

> The development of a social movement's identity originates in the de-legitimization of the dominant model of reality. This results in an expression that takes the form or a rhetoric of discontinuity that justifies a need for a dramatic change in society due to a problem situation. [Emphasis added][130]

From this it seems that without a clear definition of problem or problems, a social change organization seems much like the "rebel without a cause."

Currently MUD's publicity focuses almost exclusively on what the organization does. The suggested significance of identifying problem situations indicates that it would be worthwhile for MUD to work some clear information of situations it is trying to alter into its literature.

Statements of purpose by the organizations in this study tend to be vague with respect to providing useful guidelines for determining appropriate organizational activities and defining useful goals by which to assess an organization's effectiveness. This results primarily from the use of undefined, abstract concepts in the mission statements. CCAT's mission statement, for example, revolves primarily around the abstract concept of appropriate technology, and to a lesser degrees, the concepts of sustainability and self-reliance. The goal of demonstrating "appropriate technology in a residential setting" leaves one needing to define the term "appropriate

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[130]Brulle, Robert J., "Environmental Discourse and Social Movement Organizations: A Historical and Rhetorical Perspective on the Development of U.S. Environmental Organizations;" Social Inquiry 66(1) (February 1996): 62.

technology" to assess the appropriateness of a potential initiative for the organization. Admittedly, mission statements walk a fine line between ethereal abstraction and cumbersome wordiness or excessive restriction. However, statements such CRS's establish much more tangible objectives, such as "[demonstrating the] ways the physical needs of a community can be met."

MUD's recent proposed revision to its mission statement is a move in this direction. The original statement indicated that MUD's purpose was to "achieve and promote urban self-reliant living." MUD's previous informational material reflects the vagueness of the term "urban self-reliant living" because a definition of the term usually followed. The significant terms in MUD's new proposed mission statement, "meeting basic needs" and its qualifier, "in less resource intensive ways" are clearly more tangible than those in the earlier material. In addition, the proposed new mission statement reflects more accurately the scope of MUD activities.

The most prominent guiding concepts used in the informational materials of the organizations in this study are sustainability, self-reliance, regenerative technologies/systems or communities, and appropriate technology. However, in most cases, as alluded to in the discussion of mission statements, these concepts are not developed sufficiently to provide guidance to the groups or impart a tangible idea to the public. By this development it is not meant that in depth arguments and details of what these concepts mean should be presented; that would take books. However, development of some

brief definitions or illustrative examples would give more meaning to their usage. CRS for example, as mentioned previously, defines regenerative technologies as "the collective means of using solar energy, reusing water, maintaining the fertility of soils, growing a variety of foods without pesticides or chemical fertilizers, recycling wastes, and providing shelter compatible with existing environments." This gives much more concrete meaning to the otherwise abstract "regenerative technologies."

MUD's informational material thus far demonstrates awareness of and efforts to avoid the use of abstract terms without adequate development. For example, in its membership solicitation circular, MUD uses the term "self-reliance" and then states that "self-reliance means evaluating our basic needs like food, housing and transportation, and finding less energy and resource intensive ways of meeting those needs."[131] This particular term will likely be deleted from MUD's current mission statement and other changes to its materials seems probable in association with the current planning initiative. MUD staff should continue to work to be as clear in its publicity information as it has been in the past.

SOLUTIONS

Technological Initiatives

The most significant finding in examination of the technological

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[131]Missoula Urban Demonstration Project, The, Missoula Urban Demonstration Project . . . working toward self-reliant urban living, (Missoula, Montana: The Missoula Urban Demonstration Project, 1997).

systems employed by the organizations in this study was how similar they were. All the groups either have, plan or are considering photovoltaic solar panels, greywater systems and organic gardens. Five of the groups are at least seriously considering or have passive solar designed shelters and five employ composting for waste reduction. And most utilize water saving devices in their residences.

The similarities in selection of technologies for all groups implies that MUD is not committing any obvious errors in its selection of demonstration technologies. However, MUD does utilize a small photovoltaic array to generate electricity, and there are concerns about the appropriateness of this technology for the Missoula area. The combination of low temperatures and cloud cover in Missoula implies that photovoltaics' contribution to the overall energy reduction effort will be minimal. This assertion is supported by EVI's finding, at their climatologically similar site, that the payback period for solar panels from energy savings was economically prohibitive for initial installation. Therefore, active-solar systems should receive very critical assessment and probably will be a low priority as far as site improvements.

Passive solar design, on the other hand, has more promise, since it uses the diffuse winter sunlight directly instead of having to go through the conversion to electricity. EVI's choice of passive solar designs for its co-housing units confirms the appropriateness of this technology for a climate like that experience by MUD. The greenhouse attachment style of solar design, such as at CCAT, seems particularly appropriate for buildings at the MUD site. The potential

of this design has already been partly confirmed by MUD. The strawbale greenhouse at the MUD site maintains above freezing temperatures throughout the winter.

As indicated earlier site size plays an important role in the appropriateness of various technological systems at MUD, especially the greywater and sewage waste systems and concerns were noted earlier. Aquaculture systems, because of their integration with greywater systems, probably fall into this category.

Social Initiatives

The groups in this study, despite showing a strong focus on technological initiatives, are involved in socially oriented initiatives and activities. These efforts include community service initiatives such as food production for low-income people, community building activities such as regular community meals and special social events or celebrations.

All but one of the groups engages in or has plans for some community service activity. However, no type of community service initiative is underway or planned by more than two groups. Types of activities associated with two organizations include hunger, affordable housing, community compost retrieval, and resource sharing efforts such as tool sharing.

All the organizations conduct or plan community building activities. All the groups host or plan for regular community dinners or potlucks. Three of the groups conduct social events or celebration, with nature-centered events such as the equinoxes being particularly

popular. And CRS identifies some regular meetings as community building events, but it is not clear whether the primary function of these meetings is to address social issues or simply to conduct general planning meetings.

Critical thought on the implications of these organizations' mission statements makes it clear that social issues are unavoidably important. Three of these groups mention "meeting basic human needs" in their mission statements. Though some aspects of goals such as this can be evaluated in quantitative terms, it is pretty clear that meeting such objectives runs headlong into social issues, such as food distribution, when considered for society at large.

In addition, concern with social issues is important in another sense. As one scholar states: "Because there are great uncertainties about how far technology can reduce environmental impacts, it would not be prudent to count on "technological fixes" alone to reduce those impacts."[132]

And as another researcher notes:

> Sustainability is often treated as something to be attained simply by quantitative assessments, technological improvements, plus whatever behavioral adjustments are need to "bring us back to sustainability." But we place too great an emphasis on the first two, ignoring reasons for our current "misbehavior."[133]

These observations imply that addressing social issues is at least as

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[132]Olson, Robert L. , "Sustainability as a Social Vision," Journal of Social Sciences 51(4) (1995): 34-35.

[133]Clark, Mary E., "Integrating Human Needs into Our Vision of Sustainability," Futures 26 (2) (1994): 180.

important as addressing technological issues.

MUD already demonstrates a strong tendency toward addressing social issues in its programs, particularly with the community garden hunger-assistance programs, the Home Grown Neighborhood Network, and their facilities for people with disabilities. However, from examination of the activities other groups in this study, two additional areas of possible MUD involvement emerge. First, both LAEV and EHN are involved in affordable housing issues, and this seems an area appropriate for MUD interest and involvement. MUD's definition of "urban self-reliance" indicates that part of this concept involves the "construction and maintenance of one's shelter." Also, if forms of sustainable housing are to be implemented on any large scale, they must be affordable to the general populace. In addition, affordable housing efforts may offer the opportunity for the use of recycled materials. Further, affordable housing efforts often include the substitution of labor for capital as part of their plans. Many of MUD's past projects have employed these strategies. Therefore, it seems appropriate for MUD to investigate the possibility of some collaborative effort with an organization such as Habitat for Humanity.

The other area for possible MUD involvement to emerge from the "social initiatives" results is the area of bartering/trade agreements. LAEV at one time was associated with a Local Exchange Trading System (LETS). Initiatives are underway to develop such a LETS in Missoula. There is the possibility of legal restrictions on such initiatives -- particularly with respect to IRS regulations -- and any

group considering participation in a LETS should investigate these thoroughly. If the legal regulations permit, though, MUD should examine ways in which it could support such a systems, such as accepting LETS currency for tours or workshops.

PUBLIC OUTREACH AND EFFECTIVENESS

Public Outreach Activities and Publicity

The most striking features of the data on public outreach efforts for groups in this study is the ubiquity of site tour and environmental education activities. All the sites conduct tours and five of the six either conduct or plan to establish environmental education programs. This finding is not surprising given that all the organizations consider their sites demonstration areas and that they focus on environmental concerns.

The other striking result is that CCAT and MUD engage in significantly more types of activities than the other organizations. It is not immediately clear why this is the case, but it seems plausible that close connections to university populations and not very rigidly defined areas of operations play some part. In any event, this breadth of involvement implies the possibility that resources might not be sufficiently focused. It certainly calls for close attention to maintaining adequate resources for current activities and critical consideration of additional initiatives.

As with public outreach efforts, the data on publicity activities

shows two methods employed by the vast majority of the organizations in this study. Five of the groups publish a newsletter and the same number maintain an Internet site. From this it may be significant to MUD that it is the only group without an Internet site, and this tool is certainly an option to consider. In consideration of employing this as a publicity tool, though, MUD must evaluate whether it reaches a desired and sufficiently different audience to make the investment of the resources it requires worthwhile. Some of MUD's constituents may find a an Internet site convenient and utilize such a resource. It seems probable, though, that a large part of MUD's constituency, low-income people, are not as likely to find this technology particularly accessible or useful since they may have neither access to computers nor expertise in computer usage. Maintenance of an Internet site, then, may divert resources from other activities more useful to low-income constituents. Resources could be diverted both by the maintenance or updating of the Internet site, as well as by response time for associated electronic mail, if the e-mail address is presented at the site. The possibility of more resources being diverted by e-mail than anticipated seems particularly plausible. Two of the groups in this study indicated that queries via e-mail often ran into the hundreds per week, and slow responses to e-mail questions in this study seem to support this assertion. So it seems imperative that if MUD opts for establishing an Internet site, which would undoubtedly mean they would also have electronic mail capability, that they either allow for the staff time to handle the likely e-mail deluge, or publicize it only to a select group.

Perceived Effectiveness and Measurement

Environmental education was the type of activity identified by the most groups, CCAT, EVI and MUD, as particularly effective. Reasons given for considering these activities effective were all subjective and no formal measurements of effectiveness were conducted by any group. However, environmental education seems an area where MUD could conduct some evaluation of effectiveness. For example, MUD could survey their environmental education clients regarding the clients perceived effectiveness of MUD programs.

Though not mentioned by any other organization, Julia Russell of EHN touted one initiative enthusiastically: EHN's information hotline. Ms. Russell's general observation was that providing this service in a time of need left callers in a very positive frame of mind toward EHN. In general, it seems such service-oriented initiatives have high potential for effectiveness, at least with respect to the group providing the service. The hotline also seems like an activity for MUD to consider.

The possibility of an information hotline also hints at another possible activity for MUD, the possibility of acting as a consulting business for individual and neighborhood sustainability efforts. The MUD staff already possess extensive expertise in organic gardening, community garden management and organization, development and implementation of urban related environmental education programs, as well as some expertise in more technological areas such as energy and water conservation. Enhancement in these areas of expertise,

could position MUD to act as consultants for various community projects, which in turn could provide additional financial support and stability to the organization.

CONCLUSIONS

The findings of this study generally support the evolving directional focus of the MUD project. Perhaps the most significant point of this research is the influence of site size on the focus of organizational activities. As has been indicated, smaller sites such as MUD do not have the room to demonstrate on-site all the systems -- technological or human -- as they might wish. Over the past few years, MUD's activities have taken on much more of an off-site focus. These initiatives include MUD's public school education programs and various collaborative efforts with various organizations and agencies. This partially reflects staff interests. However, these off-site initiatives reflect an evolution that is both appropriate and probably inevitable if MUD wishes to continue to expand its influence.

With respect to more specific organizational characteristics and activities, findings from this study also generally support MUD's efforts. The study indicates that MUD's organizational structure and fundraising efforts are appropriate and similar to many of the other organizations examined. Findings also indicate that MUD is much clearer than most of the organizations in presenting informational materials about MUD in tangible terms. In addition, results from this study indicate that MUD is demonstrating many of the same

technologies as other groups and is focusing on the more appropriate ones. Findings also support MUD's focus on social initiatives. Finally, results of this report indicate that MUD's public outreach activities are as developed as any group examined.

Despite reinforcing the appropriateness of many of MUD's efforts, this study also identifies some additional considerations and suggests some possible initiatives. This is especially true with respect to demonstration site initiatives. One of MUD's main goals from its three-year strategic plan is to "improve demonstration opportunities on-site" and includes of strategic objective to "assess current alternative technologies for possible incorporation at the MUD site." For possible alternative technologies, the plan mentions, among others, greywater systems, solar energy systems, and facilities design. This study indicates that focus on the facilities design, especially passive solar retrofitting and an attached greenhouse design, should be the focus of MUD's efforts in this area. This research also suggests that MUD investigate human-powered energy systems at least as avidly as active solar systems. And as previously discussed, a greywater system as reproducible model is probably not appropriate.

Activities associated with demonstration site improvement also have ramifications for suggested efforts in other areas. Most significant is the implication that demonstration site improvements are a prerequisite to generating funding from site tours. This is particularly relevant to MUD's strategic objectives regarding site maintenance. If MUD is to collect fees for site tours as part of its

fundraising strategy, this will increase the importance of developing presentable demonstration models on the site and maintaining a adequate appearance.

In addition to demonstration site improvements, this study also has implications for other aspects of MUD's strategic plan. Another main strategic goal of the plan is to increase funding. One suggestion of this study is the site tour just mentioned. Another study suggestion, relates to MUD's strategic objective under funding that indicates that MUD should pursue barter/trade agreements. Apparently efforts are underway in Missoula to develop a Local Exchange Trading System (LETS), and this study identifies this as an activity with which other organizations have been involved and probably appropriate for MUD.

MUD's strategic plan also focuses on possible collaborations. This study specifically suggests that investigate possible collaborations on affordable housing issues, an area in which MUD is not currently involved.

And finally, MUD's strategic plan calls for development of MUD as a "community clearinghouse for informational materials and services." This report's suggestion to develop an information "hotline" seems to be an appropriate tactic for this goal.

There are also some suggestions from this study which are not specifically addressed in MUD's strategic plan. Perhaps most surprisingly, since these efforts consume much of MUD's resources, the strategic plan does not specifically detail any objectives regarding MUD's various youth educational efforts other than

funding considerations. MUD's shift of focus from developing reproducible demonstration models to educational activities indicates that these educational initiatives deserve more specific attention in the plan.

A further important implication of this report concerns MUD's publicity and informational materials. The strategic plan mentions increasing the distribution of such information, but does not speak to the content. The results of this report strongly suggest that MUD examine such materials for possible inclusion of information more clearly defining the problems MUD is attempting to address.

A very significant suggestion of this study is that MUD is an extremely unique organization among those that are attempting to demonstrate more sustainable methods of living. Of the groups in this study, only LAEV has the same focus on environmental and social issues, especially considerations for low-income populations. This implication of uniqueness is worthy of further investigation by MUD as it could bolster future MUD grant applications.

RESEARCH EVALUATION

The objectives of this study were to identify organizations demonstrating more sustainable ways living in order to assess MUD's efforts in a larger context; to identify organizations, or activities of such organizations, that appear to be "successful" at promoting sustainable living; and to evaluate these organizations and their

activities to determine if any of their methods or programs might be applied at or modeled by MUD.

With respect to assessing MUD's efforts in a larger context, the results of this study provided much information to support MUD's efforts in a general sense, as indicated above. However, this study seems less effective at identifying successful organizations and activities. As far as identifying "successful" organizations, a much greater population of groups and a clearer criteria for success would have been required. In particular, the criteria would need to address the differing possible measurements of success. For example, there is success in fundraising, which can be quite separate from success in altering values or behavior. With respect to identifying successful activities, again, a more definite criteria would be required. In addition, much more detailed data on specific initiatives would be required. For example, information regarding the number of people attracted by particular workshops and the specific publicity methods employed for it is information that would further help assess at least potential effectiveness. This observation applies to almost all of the technological and social initiatives, as well as the public outreach efforts. Finally, despite not being able to clearly identify particularly successful activities, this study did identify some possible activities that MUD might employ.

With respect to determining effective activities and identifying appropriate initiatives for MUD, on-site visits would undoubtedly have been more effective than soliciting information via e-mail and telephone. Further, if the more detailed level of information

discussed is desired, an on-site visit may well be the most effective, if not the only, way to obtain such focused information.

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APPENDIX

TABLES

TABLE 2.1: DEMONSTRATION SITE LOCATIONS

SITE/ ORG.	CITY/SIZE	SURROUNDING AREA	CLIMATOLOGICAL CHARACTERISTICS
CCAT	•Arcata, CA • ~15,000	•University campus	Avg. Mo. Low: 41.6°F Avg. Mo. High: 63.1°F Days Frost-free: 240 Annual Precip: 36 in Solar radiation: low Wind-energy: low
CRS	•Pomona, CA •> 100,000 (LA > 3 mill)	•University campus	Avg. Mo. Low: > 32°F Avg. Mo. High: 80°F Days Frost-free: >240 Annual Precip: 15 in Solar radiation: high Wind-energy: low
LAEV	•Los Angeles • >3 million	•Mixed-use: residential, commercial, light manufacturing •Low/middle income	Avg. Mo. Low: > 32°F Avg. Mo. High: 80°F Days Frost-free: >240 Annual Precip: 15 in Solar radiation: high Wind-energy: low
EVI	•Ithaca, NY • ~29,000 •rural-urban fringe	•Undeveloped or agricultural •Middle/upper income	Avg. Mo. Low: 13.1°F Avg. Mo. High: 79.6°F Days Frost-free: 150 Annual Precip: 36 in Solar radiation: low Wind-energy: moderate
EHN	•Los Angeles • >3 million	•Residential •Middle income	Avg. Mo. Low: > 32°F Avg. Mo. High: 80°F Days Frost-free: >240 Annual Precip: 15 in Solar radiation: high Wind-energy: low
MUD	•Missoula, MT • ~43,000	•Residential •Low income	Avg. Mo. Low: 16.2°F Avg. Mo. High: 83.6°F Days Frost-free: ~90 Annual Precip: 13 in Solar radiation: low Wind-energy: low

TABLE 2.2: SITE SIZE & FACILITIES

SITE/ ORG.	SITE SIZE	FACILITIES
CCAT	1 acre	•Renovated residential house •greywater marsh •rainwater catchment •gardens
CRS	16 acres	•residential housing for 20 •solar energy park •greywater marsh •gardens •aquaculture ponds •natural areas - California walnut groves
LAEV	40 unit apt. building	•40 unit apartment building •gardens
EVI	176 acres	•15 co-housing duplexes •common house •3 acre CSA farm •planned: residents for 500 plus other supporting facilities
EHN	1/5 acre	•renovated residential home •meeting building (converted garage) •gardens/orchards
MUD	1/4 acre	•2 renovated residential houses •1 small residential structure •2 greenhouses, 1 strawbale •gardens

TABLE 2.3
STAFF, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

SITE/ ORG.	ON-SITE STAFF	ORGANIZATIONAL STRUCTURE	DECISION-MAKING
CCAT	◦ 3 residential co-directors ◦ heavy dependence on volunteers	◦ steering committee - Humboldt faculty & administrators, community members, & former co-directors	◦ consensus at all levels
CRS	◦ 20 student residents & resident manager	◦ off-site: director, resident manager, farm/facilities tech, secretary ◦ oversight by faculty teaching at site	◦ no formal decision-making process
LAEV	◦ 6 "core" LAEV proponents in neighborhood	◦ oversight by CRSP - 16 member board	◦ consensus by CRSP board ◦ no formal method on-site - input sought from interested parties

TABLE 2.3 (continued)
STAFF, ORGANIZATIONAL STRUCTURE AND DECISION-MAKING

SITE/ ORG.	ON-SITE STAFF	ORGANIZATIONAL STRUCTURE	DECISION-MAKING
EVI	∘ ~90 residents currently	∘ no formal structure	∘ no formal decision-making process
EHN	∘ 3 residents (usually)	∘ board of directors for organization activities ∘ executive director has final input on demonstration site activities	∘ EHN board - consensus decision-making
MUD	∘ 2 resident "permanent" staff, 1 intern resident ∘ heavy input from volunteers	∘ 6 member MUD board, ~ 1/2 DHP board	∘ consensus - both boards

TABLE 2.4
FUNDING SOURCES

SITE/ ORG.	GRANTS	DONATIONS	SALES	OTHER
CCAT	◦ new and small contribution	◦ phone-athon ◦ requested at events ◦ memberships	◦ lecture series fees	◦ student body government - majority
CRS	◦ new and small contribution	◦ large contributions from corporations, foundations, and gov. agencies		◦ state funding of activities and small portion of initial construction
LAEV[1]	◦ through CRSP	◦ through CRSP ◦ special events	◦ publications ◦ workshops ◦ information services ◦ site tours ◦ video rentals ◦ seminars	◦ low-interest loans - facilities purchase and improvement ◦ Ecological Revolving Loan Fund

TABLE 2.4 (continued)
FUNDING SOURCES

SITE/ ORG.	GRANTS	DONATIONS	SALES	OTHER
EVI[2]	• none currently	• memberships	• publications	• loans for facilities construction
EHN	• new and small contribution	• memberships	• publications - 2 books • site tours	
MUD	• primarily Bullit Foundation	• annual telephone solicitation • special events	• llama manure sale • MUD Camp - youth education summer camp	• Montana Shares - payroll deductions

[1] Much of LAEV's fundraising is through CRSP.

[2] EVI fundraising activities for planned programs beyond site construction were not detailed.

TABLE 3.1: PROBLEMS, MISSIONS AND CONCEPTS

SITE/ ORG.	PROBLEM/ISSUE IDENTIFICATION	MISSION/GOAL STATEMENTS	CONCEPTS MENTIONED
CCAT	Implied environmental degradation	Uses abstract concept: "appropriate technology."	◦ appropriate technology ◦ sustainability ◦ self-reliance
CRS	Environmental degradation: general acknowledgment	Uses fairly tangible concept: "[meeting] the physical needs of a community" and less tangible: "sustainable way."	◦ regenerative technologies ◦ sustainability
LAEV	◦ Environmental degradation: energy use, water use, transportation, & food production ◦ Social problems: affordable housing	No official mission statement	◦ sustainability
EVI	Environmental degradation: general acknowledgment	Uses fairly tangible concept: "[meeting] basic human needs...while preserving natural ecosystems," but less tangible concept "sustainable systems of living."	◦ sustainability ◦ self-reliance ◦ permaculture
EHN	Environmental degradation: general acknowledgment	Uses abstract concepts: "individual quality of life and planetary well-being."	◦ sustainability ◦ self-reliance
MUD	◦ Environmental degradation: general acknowledgment ◦ Social problems: general acknowledgment	Uses fairly abstract concept of "urban self-reliance."	◦ self-reliance

TABLE 3.2
"TECHNOLOGICAL" INITIATIVES

INITIATIVES		CCAT	CRS	LAEV	EVI	EHN	MUD
Energy Conservation	Photovoltaics	•	•	o	o	•	•
	Solar hot water heater	•	•		o		
	Flash water heater	•					
	Thermal curtains	•					•
	Energy conserv. appliances						•
Water Use	Rainwater catchment	•					•
	Greywater	•	•	o	o	•	
	Water saving devices	•				•	•
Waste Management	Biological waste treatment		•*	o	o		
	Composting	•	•	•	•		•
	Vermiculture						•
Food Production	Organic gardens	•	•	•	•	•	•
	Aquaculture		•				
Shelter Design	Passive solar shelters	•	•		•	•	
	Shared facilities		•	•	•		
Land Use	Planning		•		•		

• Current initiative
o Planned initiative

* CRS treats and uses already treated sewage sludge from a local wastewater treatment facility.

TABLE 3.3
SOCIAL INITIATIVES

INITIATIVES		CCAT	CRS	LAEV	EVI	EHN	MUD
Community Building	Special Events[1]	•		o			o
	Regular Community Meals		•	o	•		
	Commitment Agreement[2]					•	
Community Service	Food Assistance		•				o
	Affordable Housing			•		•	
Organization	Ride sharing				•		
	Tool sharing						•
Economic Initiatives	LETS			•			

• Current initiative
o Planned initiative

[1]Special events include celebrations and other social events.
[2]EHN requires demonstration site residents to sign a commitment agreement which includes requirements regarding conservation practices.

TABLE 4.1
PUBLIC OUTREACH INITIATIVES

INITIATIVES	CCAT	CRS	LAEV	EVI	EHN	MUD
Workshops	•		o			•
Site Tours	•	•	•	•	•	•
Environmental Ed.	•	•	o	o		•
Formal Education		•				
Internships	•	•				•
Library	•					•
Publications	•				•	•
Conferences				•		
Site Display	•					o
Off-site Tours	•					

• Current initiative
o Planned initiative