Methods for the Development of Human Geographic Boundaries And Their Use

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June, 1999

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Introduction

In 1998, the Bureau of Land Management (BLM) and James Kent Associates (JKA) signed a cooperative Assistance Agreement for the purpose of furthering the emerging paradigm within BLM of ecosystem management. As the term ecosystem management has become interpreted broadly to include humans into the equation of public land management, and as the collaborative partnership movement has broadened and deepened throughout the country, additional resources for understanding and incorporating community interests into decision-making have been sought. Because of JKA's experience in the last thirty years related to these concerns, its success in the field, and its well-developed methodology of community assessment, mapping and management, JKA was asked to assist BLM in:
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> "refining and demonstrating community assessment methods to help the BLM and its partners address social and cultural criteria for more effective public participation and collaboration when making planning and other decisions - a key element in building capacity for community-based approaches to land and resource management."

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[*] The authors wish to acknowledge the contribution in the digitization of the JKA maps shown in this paper by Melinda Walker, Remote Sensing and GIS Specialist, Bureau of Land Management, National Applied Resource Sciences Center, Denver Federal Center.

JKA's methods for performing community assessments through The Discovery Process™ workshops, mapping human geographic units, and related management training can help local governments, federal agencies, and community organizations better understand and address social and cultural criteria. Also, JKA's methods add value to the human dimension of bio-social ecosystem management, strengthening social justice considerations while complementing more traditional, economics-based approaches. The BLM and JKA share a common commitment to helping communities and federal land management agencies work together in a more productive way.

This paper focuses on the mapping component of a larger process termed the Human Geographic Issue Management System (HGIMS). The system is designed to create productive harmony between land and people through cultural alignment between informal community systems and the formal institutions that serve them. The system has two phases:

1. The Discovery Process™ is the description of communities "from the inside out," that is, from the perspectives of people who live in those communities. By focusing on Cultural Descriptors (publics, informal networks, settlement patterns, work routines, support services, recreation routines and geographic features, defined more fully below), a fairly complete picture emerges of community life, communication patterns, important citizen issues, and social and economic trends affecting an area. One product of the Discovery Process is a human geographic map that shows, from a social and cultural perspective, where one area ends and another begins.

2. Issue Management™ is the process of identifying emerging issues in the community and including them in the management process of planning and implementing projects designed to maintain sustainability of people and the land. It is a method of minimizing surprise and disruption by creating a predictable, natural process of communication and action so that the well-being of both community and the landscape is addressed.

The balance of this paper will focus on the rationale for the creation of human geographic maps. It will outline the methodology used for their development, especially the seven cultural descriptors. It will close with our vision of how a GIS-based HGIMS offers a powerful tool for responsive management in regional, multi-jurisdictional, multi-species ecosystem projects.

Rationale for Human Geographic Mapping

Human geographic maps were developed to provide a context for implementation of the National Environmental Policy Act (NEPA). It was discovered early that town boundaries, county boundaries and regional planning boundaries did not provide the context needed for understanding and implementing the social/cultural aspects of NEPA.

NEPA is well known as the first piece of national legislation to declare a national policy on the environment. It has attracted most attention for Section 102 that calls for the completion of Environmental Impact Statements (EIS) for all "major federal actions." Most of the political conflict and court cases have invoked the procedural adequacy of the EIS. A report from the Council on Environmental Quality summarized twenty-five years of experience with NEPA by saying procedural adherence to Section 102 has led to a dynamic of "issue stacking" in which identified concerns become included in the EIS process for analysis, accumulating controversy as project review moves forward. The report, along with many NEPA professionals, have recently begun to advocate for using the NEPA process not only to identify issues early but to resolve them as the project is reviewed (CEQ 1996).

Section 101 of NEPA, by contrast, has been under-emphasized. It contains the clearest policy intent of the law. It first acknowledges people's impact on the land through population growth, high-density urbanization, industrial expansion, resource exploitation, and technological advances. It then declares that it is the continuing policy of the federal government, in cooperation with State and local governments, and other concerned public and private organizations to
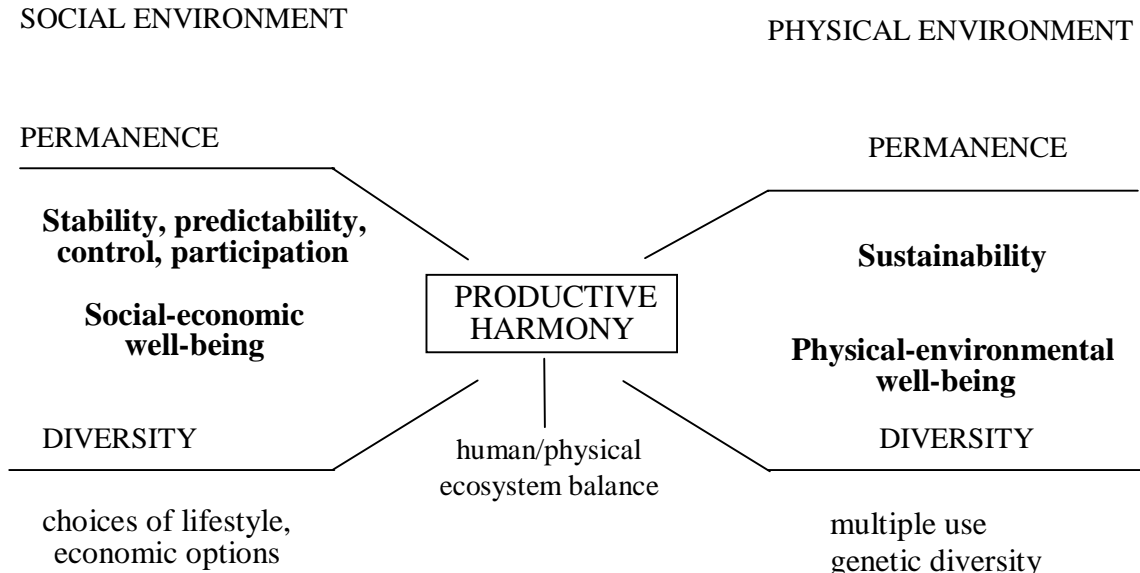
> "…create and maintain conditions under which man and nature can exist in **productive harmony**, and fulfill the social, economic, and other requirements of present and future generations of Americans" (emphasis added).

The Bio-social Ecosystem Management Model (Figure 1) is a way to conceptualize the productive harmony described in NEPA. Based on the long-standing observation that the well-being of people and the land are inextricably tied together, the figure makes the case that permanence and diversity are valued characteristics for both physical and social environments (Preister and Kent 1997). Sustainability is created when land use decisions are shaped around the question, "How can we enhance the permanence and diversity of this physical ecosystem in ways that promote the permanence and diversity of the human communities?"

It is our view that the same level of effort used to understand physical ecosystems must be applied to understanding social ecosystems and to integrating the two in a holistic management system. Moreover, in understanding

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Figure One

The Bio-Social Ecosystem Management Model

SOCIAL ENVIRONMENT   PHYSICAL ENVIRONMENT

PERMANENCE   PERMANENCE

Stability, predictability,
control, participation
                                                                         Sustainability
                          PRODUCTIVE
Social-economic   HARMONY
well-being   **Physical-environmental**
                                                               well-being

DIVERSITY   DIVERSITY
                          human/physical
                          ecosystem balance

choices of lifestyle,   multiple use
economic options   genetic diversity

(Source: Preister and Kent 1997)

social ecosystems, it is not enough to understand the formal level of communities, i.e. the macro-level data, the county commissions, and state government. Rather, it is important that research methods reflect the social reality of everyday people--their routines, traditions, beliefs and issues. We call this the informal level of community. The Discovery Process™, the major methodology developed by JKA, is used to make the informal systems visible in order to create culturally-appropriate action.

Our experience has shown that most proposed projects that run into trouble, fall behind schedule, and generate community opposition may technically comply with the legal and regulatory requirements of their various local, state, and federal regulations. However, they often fail to discover the real issues existing in the community that are held by people who don't come to public meetings and are therefore excluded from the project design and review. One of the major framers of NEPA, Lynton Caldwell, in a recent review of NEPA effectiveness, stated that if NEPA is to achieve its intent, it must be used "to bring the active political will closer to what appears to be the nation's latent preference" (1998:216).

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Human geographic mapping allows a resource manager to know where the culture borders are in relation to management decisions. For instance, the Roaring Fork Valley between Independence Pass and the confluence of the Roaring Fork and Colorado Rivers (Aspen and Glenwood Springs) has three county governments and four town governments with various jurisdictions associated with each government. If the resource manager recognizes the Roaring Fork Valley as one social/cultural unit and manages within the informal networks, the chances for program and project success increase dramatically. The resource manager can then easily distinguish the difference between place-based communities and regional or national publics of interest and interact with them in a specific, appropriate manner.

In the case of Environmental Justice Guidelines (EJG), necessitated by Executive Order 12898 to which federal agencies must comply, human geographic mapping provides the cultural boundaries so that the resource manager knows where the resource management decision, or impact, ends culturally. Until human geographic mapping was created, managers had no idea how far they had to reach to include the people affected by EJG. Seldom, if ever, would it include a complete county. However, it could include two towns depending on the human geographic boundaries involved.

The form of management required is clearly one of "participatory communication," in which the proponent of the action engages the community within its cultural boundary system in a manner consistent with its own cultural beliefs, traditions, stories and approaches to the environment, including cultural stewardship.

Human-geographic boundaries represent the informal systems of communities. They reflect the boundaries within which people conduct their lives. Day to day interactions, talks with neighbors and co-workers, shopping, visiting and family ties operate within predictable geographic patterns.

In our experience, human-geographic maps represent a resource to land use managers and others involved in experiments in ecosystem management and restoration. Based as they are on how people actually live their lives, and how people mobilize their social and physical resources to meet life's challenges, the maps provide an inside view of the local terrain of a place-based culture.

Specifically, the advantages of human-geographic mapping for bio-social ecosystem management are these:

- Natural resource managers now have the capability to staff the land base, with its attendant social and physical capital, as an integral unit, rather than staffing programs structured with artificial administrative boundaries. This capability of "staffing the culture" is a key strategy

when coordinating or integrating federal land management administration.

- The maps reveal natural lines of mobilization and inclusion of local residents, revealing limits of social ties;

- Maps allow sensitivity in siting facilities and programs that reflect how people actually identify with and use the land;

- The mapping further promotes a bio-social model of productive harmony, providing a rationale for including issues of community health and well-being into considerations of natural resources management;

For the first time, a tool is available for decision-makers committed to aligning community culture with project outcomes. For the increasing number of practitioners who believe community and ecological health to be inextricably tied, the maps provide a physically defined, cultural-based arena within which decisions are made and resources are allocated to enhance permanence and diversity in the bio-social ecosystem.

The Methodology of Creating Human Geographic Maps

The Discovery Process yields five scales of human geographic boundaries:

1. Neighborhood Resource Units (NRU)
2. Human Resource Units (HRU);
3. Social Resource Units (SRU);
4. Cultural Resource Units (CRU); and
5. Global Resource Units (GRU).

The figures below show two of these five scales, the Human Resource Unit (HRU) and the Social Resource Unit (SRU). HRUs are the smaller units and are shown in blue, while SRUs are larger units and are shown in red. It is best to visualize blue lines under the red lines, so that SRUs are rightly seen as the aggregations of the HRUs within them.

Human Resource Units are roughly equivalent in size to a county but seldom correspond to county boundaries. HRU boundaries are derived from the seven cultural descriptors defined below and by self-reporting by residents living in these areas.

HRUs are characterized by frequent and customary interaction. They reveal face-to-face human society where people could be expected to have personal knowledge of each other and informal caretaking systems are the strongest.

People's daily activities occur primarily within their HRU including work, school, shopping, social activities and recreation. Health, education, welfare and other public service activities are highly organized at this level with a town or community almost always as its focal point.

A sense of place; a sense of identity with the land and the people, a sense of a common understanding of how the resources of their Unit should be managed, and a common understanding of how things are normally done characterize this territorial level.

The regularity of interaction within an HRU reinforces a recognition and identification by the residents of natural and man-made features as "home". Because of this familiarity, boundaries between Human Resource Units are clearly defined in the minds of those living within them. Human Resource Units aggregate to form Social Resource Units in the JKA mapping system (Figure Two) (Quinkert et.al. 1986).

Social Resource Units are the aggregation of HRUs on the basis of geographic features of the landscape, often a river basin, for example, and on the basis of shared history, lifestyle, livelihood, and outlook. At this level, face-to-face knowledge is much reduced. Rather, social ties are created by action around issues that transcend the smaller HRUs and by invoking common values ("We are ranching country around here.").

SRUs are best characterized by a sense of belonging. These are rather large areas and one's intensity of perception as to the Unit's boundary is much more general than at the Human Resource Unit level. Those hold a general feeling of "oneness" who are a part of this regional Unit, and a general understanding and agreement on values and the attributes of being a part of the Unit.

The physical and biological environments play a large role in the development of the cultural pattern at this level of the progression. To a large degree, these environments determine the kinds of basic industries available for people to develop their culture around, and how the industries function in the most effective manner to preserve and strengthen the cultural pattern of the Unit.

Population density is also a factor that defines and delineates Social Resource Units. Large areas of high population density separate Social Resource Units from surrounding areas of lesser population, but they still reflect in their cultural pattern the broad physical and biological environment within which they occur.

Figure Two
Human Resource Units in the
Four Corners SRU of Utah, Colorado, New Mexico and Arizona

Figure Three
Social Resource Units of Colorado

Social Resource Units (Figure Three) are usually larger than single cities (the Front Range SRU, for example, is larger than the metropolitan area of Denver), but are smaller than most states. However, a Social Resource Unit will sometimes include portions of several states as is the case with the Four Corners SRU which includes portions of Colorado, New Mexico, Arizona and Utah. The megalopolis of New York City, which includes portions of New Jersey and Massachusetts, is another example of how Social Resource Units are not confined by administrative or legal boundaries. Social Resource Units aggregate to Cultural Resource Units in the JKA mapping system.

Seven Cultural Descriptors Used in The Discovery Process and to Determine Human Resource Unit (HRU) Boundaries

ONE   Describe the publics and their interests

Definition

A public is any segment of the population that can be grouped together because of some recognized demographic feature or common set of interests. A public may exist currently or at some future date; it may reside permanently in a geographic area, or may live elsewhere and have an interest in the management of natural resources. Sample publics include ranchers, loggers, tourists, small businesses, industries, miners, senior citizens, minorities, homemakers, youth, preservationists and governmental bodies.

By identifying publics and characterizing each public's interests, a resource manager can understand how segments of a population will be affected differently by resource decision making. Also, predictions can be made about how changing public interests will influence management in the future.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- What publics are within the immediate sphere of influence of resource management and decision making activities? What are the ongoing interests of each identified public? Which of the publics have specific resource-related interests? Are there any public interests or activities that affect resource management activities?

- Is there any public that is directly affected by the resource decision making process? Which publics currently benefit from jobs generated

by the resource outputs? Are there any individuals, businesses or industries that are dependent upon a specific output?

- Which publics could potentially benefit from resource use and development activities? Which publics could potentially be affected from a change in current management activities?

- What publics are outside the immediate sphere of influence of resource management activities, but use the resource or are involved in the decisionmaking process? Do these publics have a relationship to the resource because they affect or are affected by resource management activities?

TWO   *Describe the networks*

Definition

A network is comprised of individuals who support each other in predictable ways and have a shared commitment to some common purpose (Figure Four). Networks may be informal arrangements of people tied together for cultural, survival, or caretaking reasons. Networks may also be formal arrangements of people who belong to an organization, club or association, which has a specific charter or organizational goals. Networks may function in a local geographic area or may influence resource management activities from regional or national levels. Examples of informal networks include ranchers who assist each other in times of need, miners who work on the same shift, grass-roots environmentalists, or families who recreate together. Examples of formal organizations include a cattlemen's association, coal mining union, preservationist or snowmobile club.

A knowledge of networks citizens form to express their interests is essential for identifying public issues relating to management activities and for monitoring the effectiveness of resource decisionmaking.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- What informal networks do each of the identified publics form to express their interests? What is the function of each network? When and where does each informal network gather to share information or services? How do the members of each network communicate with each other?

- Which networks function in an ongoing manner for cultural, caretaking or survival reasons? Which networks are temporarily involved around particular events or issues?

- What is the informal leadership in each network or who is respected and why?   Are any networks more effective than others in addressing the issues that concern them?

- Which networks extend beyond the local level and function on a regional or national scale? Are there any regional or national networks that influence resource management activities?

- What formal organizations, associations or clubs do the identified publics form to express their interests? What is the purpose of each group? When and where does each formal organization meet to share information or provide services? How do the members of each group communicate with each other? Which organizations operate in an ongoing manner and which operate temporarily?

- What is the formal and informal leadership in each organization or who is respected and why? Are any groups more effective than others in addressing the issues that concern them?

- Which organizations have a membership that extends beyond the local level and operates on a regional or national level? Are there any regional or national organizations that influence resource management activities?

Networks are contacted through program and action development to:

- Monitor changing public attitudes and activities

- Identify and evaluate public issues

- Dispel rumors about management activities

- Inform public of current and future plans

- Discuss opportunities available to address issues

- Prepare for formal public participation and news releases

THREE   *Describe the settlement pattern*

Definition

A settlement pattern is any distinguishable distribution of a population in a geographic area, including the historical cycles of settlement in an area. This cultural descriptor identifies where a population is located and the type of settlement categorized by its centralized/dispersed, permanent/temporary, and year-round/seasonal characteristics. It also describes the major historical growth/non-growth cycles and the reasons for each successive wave of settlement.

Knowledge of settlement patterns provides a resource manager with a basis for predicting the significance of probable population changes associated with resource management and development activities.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- Where do people live and how is the population distributed in the immediate geographic area? Are the settlement areas dispersed throughout the countryside and/or centralized in towns and cities?

- What is the history of settlement? What types of people came with each successive wave of settlement? Why did people settle in the area? Are there any particular characteristics of the settlement pattern that make it unique?

- Have there been any significant increases or decreases in population in the past? What caused these? Is the current settlement stable or on the increase or decrease? What is causing this trend?

- What major changes have occurred during past settlement cycles? How rapidly have these changes occurred? How have people handled or accepted change in the past? Are these changes easily recalled by people?

- What new publics have settled in the area in recent years? How have long-term residents accepted newcomers? Is the area settled with diverse or homogenous publics? Which settlement areas are integrated with diverse publics and which are not and why?

- What future publics can you anticipate residing in the immediate geographic area? What will be the possible causes of the future settlement patterns? How rapidly will the settlement occur?

FOUR   *Describe the work routines*

Definition

A work routine is a predictable way in which people earn a living, including where and how. The types of employment, the skills needed, the wage levels and the natural resources required in the process are used to generate a profile of an area's work routines. The opportunities for advancement, the business ownership patterns, and the stability of employment activities are also elements of the work routine descriptor.

A knowledge of work routines can be used to evaluate how alternative uses of natural resources will affect the ways people earn a living and how changes in work routines, in turn, will impact future natural resource uses.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- What are the ways in which the people in the immediate geographic area earn a living? Are people self-employed or employed by small business or large corporations? What are the primary employment activities and the approximate percentage of people involved in each sector?

- What kinds of skills are required of people in the various types of employment? What level of pay is received? Has there been any significant shift in employment activities or income levels in recent years? If so, has the shift influenced resource use or management activities?

- Are the majority of businesses owned locally or by corporations and people from outside the area? Are generational cycles of families in the same employment typical?

- Are there any work routines that are seasonal in nature? Are the seasonal jobs taken by residents of the area or from outside the area? Do many people work two jobs or is it common for families to have two wage earners? Is the unemployment significant? If so, among which publics?

- What is the average age of the labor force? Are youth able to find employment in the area? Are there adequate opportunities for advancement? Do people change jobs frequently or work in the same activities most of their lives? Which publics have a strong cultural identity associated with their work?

- Is there a compatible mix of employment activities? Which activities are aggravating each other? How do current resource management practices maintain the mix of activities? How could future changes in resource management stabilize or enhance the current employment mix?

FIVE *Describe the supporting services*

Definition

A supporting service is any arrangement people use for taking care of each other. Support services occur in an area in both formal and informal ways. Examples of formal support services include the areas of health, education, law enforcement, fire protection, transportation, environment and energy. Examples of informal support activities include the ways people manage on a day-to-day basis using family, neighborhood, friendship or any other support system.

A resource manager can use the supporting services descriptor to evaluate how alternative uses of resources will affect the ways people take care of each other and how changes in supporting services, in turn, will impact future natural resource management.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- Where are the formal support services such as the commercial, health, education, transportation, protective, energy facilities located? What is the geographic area that is serviced? Which services are used routinely by people in the area? Which services do people have to leave the area to obtain?

- How are the services operated? Are the facilities and services provided adequate for the area? Which are inadequate and for what reasons?

- What informal supporting activities occur in the area? How do people care for each other on a day-to-day basis and in times of crisis? Do families, friends, church or volunteer organizations provide support?

- How much do people take care of each other on an informal basis and how much do people rely on formal services? Do people still trade for services or almost always pay cash for services?

- How are the elderly, single parents, youth, poor and others taken care of? Are informal systems used such as neighborhoods, or are formal

organizations used for assistance? To what degree do people take care of their own problems or rely on government agencies and formal services? Do all people have access to the supporting services and activities?

- Has the amount or type of supporting services changed in recent years? How has the provision of support services and activities changed? What has contributed to these changes?

SIX   *Describe the recreational activities*

Definition

A recreational activity is a predictable way in which people spend their leisure time. Recreational opportunities available, seasonality of activities, technologies involved, and money and time required are aspects of the recreational descriptor. The frequency of local/non-local uses of recreational resources, the preferences of local/non-local users, and the location of the activities are also included.

A manager can use this cultural descriptor to evaluate how alternative uses of resources will affect the ways people recreate and how changes in recreational activity, in turn, will impact future resource management.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- What are the principal types of recreational activities of people in the area? Which activities, sites or facilities are most preferred? Are certain activities seasonal?

- What is the orientation of the leisure time activities? Are the activities of individual, family, team, church or school related? Are there significant recreational activities in which a wide range of individuals participate? How do groups like youth and senior citizens recreate?

- How much time is spent in recreational activities? How much money is spent on recreational activities? What kinds of recreational vehicles or equipment are used? Do the majority of activities occur on public or private lands and facilities?

- Are there recreational opportunities in the area that attract people on a regional or national scale? What activities, sites or facilities are most preferred? Are certain activities seasonal? Is there a significant number of businesses that rely on the income from these recreational

activities? Which activities relate to natural resource uses and management?

- Have there been any major changes in recreational activities in recent years? What events caused the change? What types of sporting goods or recreational license sales have been on the increase? What recreational sites or facilities have experienced an increase of decrease in use and why? Do current recreational sites and facilities accommodate the demands? What changes in recreational activities are anticipated in the future and why?

- What written and unwritten rules do people use when recreating? Is there much of a difference between the recreational activities of residents in the area and those who temporarily visit the area? How does the type of recreation differ?

SEVEN — *Describe the geographic boundaries*

Definition

A geographic boundary is any unique physical feature with which people of an area identify. Physical features separate the activities of a population from those in other geographic areas such as a valley that people identify as being "theirs" or a river that divides two towns. Examples of geographic boundaries include topographic and climatic features, distances, or any unique characteristic that distinguishes one area from another. Geographic boundaries may be relatively permanent or short-lived; over time, boundaries may dissolve as new settlement patterns develop and as work routines and physical access to an area change.

By knowing the geographic boundaries of a population, a manager can identify and manage the effects of natural resource use and development that are unique to a particular geographic area.

Questions Used to Complete Human Resource Unit (HRU) Characterization

- How do people relate to their surrounding environment? What geographic area do people consider to be a part of their home turf? Within what general boundaries do most of the daily activities of the area occur? How far do the networks people use in their routine activities extend throughout the area?

- What is the area people identify with as being "theirs"? Are there any particular characteristics, social or physical that people think are

unique to the area? What features attracted people to the area or provide a reason to stay?

- Are there any physical barriers that separate the activities of a population from those in other geographic areas? Are there any evident social barriers?

- What are the predominant uses of the land and what topographic or climatic features support such activities? What percentage of the geographic area is in the private and public sector? Is most of the private land owned by year-round residents or by people from outside the area?

Have there been any significant changes in the use of the land and its resources in recent years? What has caused the changes? How have these short- or long-term changes affected people and their ways of life? How accessible is the area to external influences? What kind of influences? Are these beneficial or negative impacts on the area?

Toward a GIS-Based Human Geographic Issue Management System (HGIMS)

Human Geographic Issue Management is the process of creating productive harmony at the project level by assisting change agents in integrating resource decision-making with considerations of community health. Issue management is the ability of an organization to identify and respond to public issues in a timely and appropriate fashion in order to culturally align land management agencies with the informal community systems which they serve. It is a way to achieve bio-social ecosystem management because it allows a balance to be created between biophysical and human habitats.

The theory of issue management is that issues, or citizen statements which can be acted upon, present the greatest range for responsive options if issues are identified in the emerging stage of development. Issues that are allowed to become disruptive, by definition, are resolved at higher levels of formal society. To identify emerging issues, it is necessary to have direct contact at the informal level of community. It is at this level where people are just beginning to become concerned about real or perceived changes in their environment and to mobilize their networks for action. Issues that are resolved at the emerging stage increase community resilience that in turn provides local support for agency projects. Moreover, issues resolved at this stage cannot be appropriated at regional and national levels for political purposes. Figure Four displays the issue management process.

The issue management process provides social, cultural and economic information through face-to-face interaction that is essential for day-to-day operations, baseline community studies, environmental documents, as well as for planning and analysis. It is a means to develop relationships that foster community partnering and collaborative issue resolution. The JKA Group has been successful in applying these concepts at all levels and scales of agency and community operations.

Figure Four
Issue Management at the Project Level
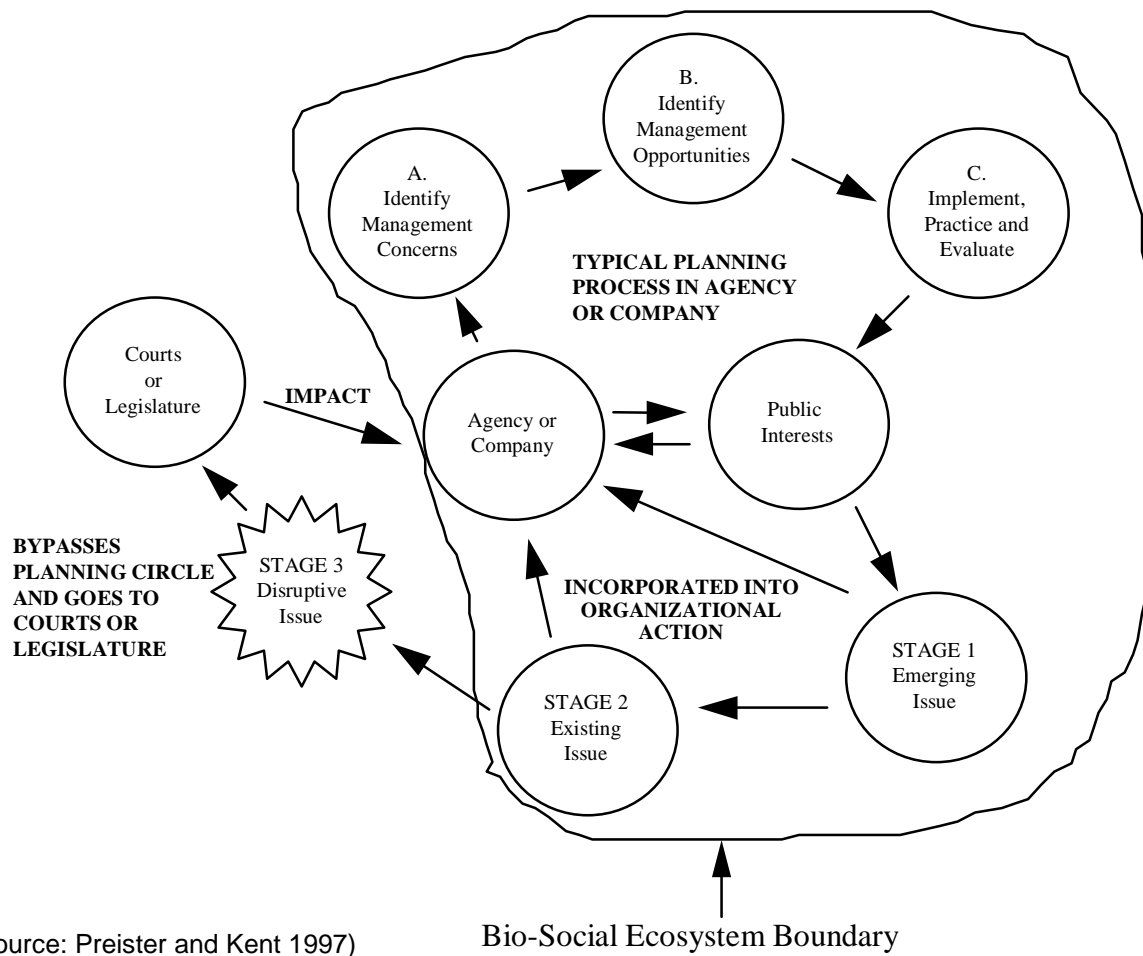
(Source: Preister and Kent 1997)

Practitioners of Issue Management:

1. Describe communities in social, economic, and cultural terms.

2. Identify and map informal networks and major communication pathways.

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3. Identify the issues related to the community and to land management in a systematic way and incorporate them into agency decision-making.

4. Institute "issue-tracking" mechanisms within the agency in order to enhance responsiveness and stable decision-making.

Geographic Information Systems (GIS) provide the technical capability of applying this kind of responsiveness to regional, multi-disciplinary and multi-jurisdictional efforts currently underway, such as:

- The Mojave Desert Ecosystem Program,
- Watershed coordination efforts in the Central Valley of California,
- The Southwest Strategy in Arizona and New Mexico to coordinate collaborative ecosystem recovery.

These and other efforts are characterized by increasing sophistication in the collection and display of biological data and in the monitoring of such data for planning and management purposes. However, the sophistication on the social and cultural side has been very low. At best, census data and other social and economic information are displayed with no context of process within which to use and provide value to the information. Nowhere are displayed citizen issues, trends affecting local communities, key communication pathways, or the beliefs, traditions, values, aspirations and visions of local communities.

The danger of this limitation is that ecosystem decisions are driven too much by biological and physical science, technical considerations and agency interests. Science, of course, is valued and necessary but when its application is not tempered by the context of human considerations, the "tyranny of the expert" syndrome can dominate, with disastrous biological, political, cultural and economic costs.

The concept of Social Resource Unit (SRU) was first used in relation to work with the U.S. Forest Service Region 2 and is described in Kent and Greiwe (1978). Our regional efforts stem from work we did with the City and County of Honolulu in the late 1970s in which we geographically mapped the island of O'ahu into human resource units. The island of O'ahu had a population of about 800,000. Community fieldwork identified informal networks, emerging issues, key caretakers, communicators, and opportunities, for use by the city in dealing with intense development pressures (Kent and Ryan 1980, 1981). This work pre-dates GIS capability.

In 1991, we assisted Washoe County, Nevada with the implementation of their Issue Management program in which county staff performed similar human geographic mapping. The result was a map showing neighborhood boundaries

identified by residents and a system for monitoring emerging, existing and disruptive issues. Their system has the ability to call up issues either by geographic location or by type of issue. The system also allows for the tracking of issues and their resolution over time. Staff print "Issue Alerts" for their county commissioners so that action can be taken in a timely manner and costly disruptive issues prevented from occurring (Kent 1993). The Washoe County system has not yet integrated the data files of description and issues with the GIS mapping.

Our vision for a GIS-based Human Geographic Issue Management System presumes that baseline social, economic and cultural data have been gathered, and human geographic boundaries displayed through maps are generated. Data sets capable of being displayed spatially that we feel are important in promoting a bio-social ecosystem approach include:

- Cultural description (settlement patterns, publics, networks, work routines, support services, recreation activities, geographic features);
- The range of public issues related to community life and to resource management;
- Social and economic trends reported by residents (often pre-dating statisticians by as much as five years) that present pro-active opportunities;
- Communication pathways (gathering places, informal networks, the who, where, and when of communicating);
- Identification of essential and effective civic protocols citizens use to manage their relationships with each other and the land;
- Opportunities identified by citizens for resolving current community and resource management challenges.

When this information is paired and layered with biological and physical data, a powerful tool has been created for anticipating the effects of decisions and for fostering collaboration in considering possible courses of action.

Issue management focuses clearly on the use of federal lands to address the social benefits, issues and impacts created by use of the federal resource. Hence, poverty, underemployment, growth rates, sector changes (agricultural, industrial, services), affordable housing, transportation, recreation, and urbanization are related to community health. These factors are the concerns of federal land use management agencies to the extent that they impact public lands and to the extent that federal decisions, within the bounds of sustainable ecosystems, can contribute to addressing them. Indeed, we are entering an era where urban policy in the western United States is imperative for land use agencies if resource quality and availability is to be assured in the future.

Earlier in this paper we have made the case that NEPA's Section 101 permits and encourages, through its productive harmony clause, the scrutiny of and

response to social and cultural considerations. It is the authors' experience that ample legal justification exists in Section 101 for agencies to consider "off site" impacts, including those listed above. At M~kua Beach, Hawaii, working through the Department of Defense, off-site considerations permitted by NEPA and Environmental Justice guidelines sustained the military use of the beach for training purposes and accomplished several social objectives as well (James Kent Associates and Institute for Sustainable Development 1998a, 1998b).

A broader perspective, such as we are suggesting, has resulted in successful resolution of community concerns regarding federal actions and the creation of productive harmony at the local level. For the first time, managers can determine how far "off-site" they have to go with various issues—either to the line of the Human Resource Unit or to the line of the Social Resource Unit. In addition, the maps provide a geographic context for "staffing projects through the culture" rather than imposing projects "on the culture."

References Cited

Caldwell, Lynton K.
  1998   Beyond NEPA: Future Significance of the National Environmental
          Policy Act. The Harvard Environmental Law Review 22(1): 203-239.

Council on Environmental Quality
  1996   The National Environmental Policy Act: A Study of Its Effectiveness
          After Twenty-five Years. CEQ, Executive Office of the President,
          November.

James Kent Associates
  1993   Issue Management Handbook, Washoe County Issue Management
          System, Washoe County Department of Comprehensive Planning,
          Reno, Nevada; June.

James Kent Associates & Institute for Sustainable Development
  1998a   APPENDIX G: Decision Support Document: Community Resources
          Summary and Recommendations, Marine Corps Amphibious Training
          at M~kua Beach. Prepared for Commanding General, Marine Corps
          Base Hawaii, *Environmental Assessment for Marine Corps
          Amphibious Training in Hawaii,* June.

James Kent Associates & Institute for Sustainable Development
  1998b   Guidelines for Community Interaction: Developed as Part of an
          Expanded Culture Assessment, Environmental Assessment Project
          for the Marine Corps Amphibious Training in Hawaii, July.

Kent James A. & John Ryan
   1980   Documentation of the Methodology Used in Developing Guidelines for a Social Impact Management System for City and County of Honolulu. Honolulu, HI: Honolulu Department of General Planning, March.

   1981   A Social Impact Management System for Honolulu: Final Phase Two Report. Honolulu, HI: FUND Pacific Associates, July.

Kent, James A. & Richard J. Greiwe
   1978   The Social Resource Unit: How Everyone Can Benefit from Physical Resource Development. Mining Year Book, National Western Mining Conference and Exhibition, The Colorado Mining Association.

Preister, Kevin and James A. Kent
   1997   Social Ecology: A New Pathway to Watershed Restoration. IN Watershed Restoration: Principles and Practices, by Jack E. Williams, Christopher A. Wood and Michael P. Dombeck (eds.), Bethesda, MD.: American Fisheries Society.

Quinkert, Anthony K., James A. Kent & Donald C. Taylor
   1986   The Technical Basis for Delineation of Human Geographic Units. Denver, Colorado: SRM Corporation for U.S. Department of Agriculture, April.