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TO PAVE OR NOT TO PAVE:
A SOCIAL LANDSCAPE ANALYSIS OF LAND USE DECISION-MAKING
IN THE LAMPREY RIVER WATERSHED

BY

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DISSERTATION

Submitted to the University of New Hampshire

in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

in

Natural Resources and Earth Systems Science

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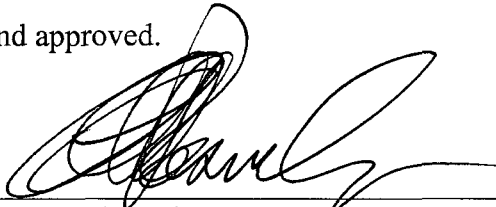
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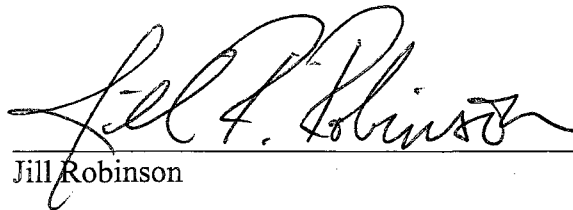
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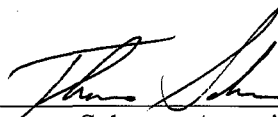
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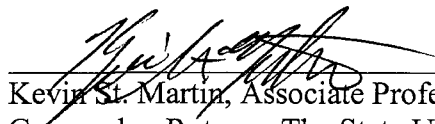
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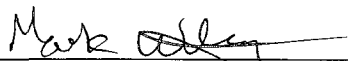
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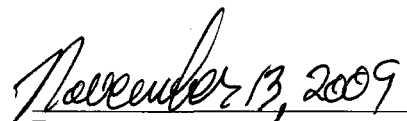
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DEDICATION



Reino 'Ray' Heikkinen (1916-2006)

minun isoisä ja ystävä kanssa rakastaa ja sisu

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ABSTRACT

TO PAVE OR NOT TO PAVE:

A SOCIAL LANDSCAPE ANALYSIS OF LAND USE DECISION-MAKING
IN THE LAMPREY RIVER WATERSHED

by

Erika L. Washburn

University of New Hampshire, December, 2009

Seacoast New Hampshire's population has quadrupled in four decades resulting in sprawl and increased impervious surfaces which threaten the ecological health of Great Bay. Calls for watershed-based strategies addressing growth and land use planning abound. This study addresses these challenges by examining the question of whether there is a potential for watershed based land use decision-making. Using constructivist grounded theory, this study explores the social landscape of land use decision-making in a case study of the towns of the Lamprey River watershed. The qualitative methods include semi-structured interviews with GIS based maps and content analysis in NVivo software. Results include a proposed theoretical framework which characterizes the social landscape of land use decision-making concerning community, conflict and temporo-spatial scaling. Challenges and opportunities are also identified in moving towards watershed based land use decision-making. Conclusions represent a mix of optimistic and pessimistic themes regarding current land use decision-making and suggested recommendations necessary to move towards watershed-scaled land use planning.

INTRODUCTION

The oceans, our coasts, and the Great Lakes provide jobs, food, energy resources, ecological services, recreation, and tourism opportunities, and play critical roles in our Nation's transportation, economy, and trade, as well as the global mobility of our Armed Forces and the maintenance of international peace and security. We have a stewardship responsibility to maintain healthy, resilient, and sustainable oceans, coasts, and Great Lakes resources for the benefit of this and future generations.

... To succeed in protecting the oceans, coasts, and Great Lakes, the United States needs to act within a unifying framework under a clear national policy, including a comprehensive, ecosystem-based framework for the longterm conservation and use of our resources.

President Barack Obama, Memorandum, 12 June 2009

New Directions in Coastal Policy

The Presidential Memorandum quoted above was issued in recognition of increasing calls for action and new US policy formulation for our nation's coasts and oceans. Coastal management strategies and policies have changed over time, but the dominant approach today is ecosystem based management (EBM). A marine EBM approach is strongly considered to link the ability to achieve healthy, productive, resilient marine ecosystems with stable fisheries, abundant wildlife, clean beaches, vibrant coastal communities and healthy seafood (McLeod 2005). This EBM is further envisioned to allow for more coordinated and sustainable activities for management, a reduction in duplication of effort and fewer conflicts over resources. Both the US Commission on Ocean Policy (USCOP) and the Pew Oceans Commission (POC) called for a comprehensive, integrated and EBM approach to management of the oceans (POC 2003;

USCOP 2004). The Presidential Memorandum from June of this year established an Interagency Ocean Policy Task Force under the Council on Environmental Quality to develop a national policy for the oceans, coasts and Great Lakes, a framework for policy coordination and an implementation strategy (Obama, 2009). The work of this task force is on-going, but until this time, there was no national policy mandate to support an EBM approach and importantly, no comprehensive administration framework to support integrated ocean management (Rosenberg 2007).

The EBM approach for coastal and ocean management addresses anthropogenic pressures and ecological effects by including both natural and socio-cultural systems within an ecologically defined area. It differs from the earlier Integrated Coastal Zone Management (ICZM) approach in that it does not focus on a single sector or activity, but considers the cumulative impacts from all sectors. EBM emphasizes the protection of ecosystem functioning, processes and structure, is place-based, accounts for and acknowledges the interconnectedness among and within all systems, and integrates economic, ecological, social and institutional perspectives (McLeod 2005). A definition of EBM, intended as information for US policy-makers concerning the coasts and oceans, as prepared and signed by scientists and policy experts, is below (McLeod 2005):

Ecosystem based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors.

Coastal Conditions and Trends: Globally, Nationally, Regionally

Driving the call for a coastal EBM approach is the fact that coastal areas worldwide are suffering complex environmental problems, stemming from increasing anthropogenic pressures. Ecologically, the coasts function as critical habitat for fish, shellfish, birds and other wildlife, providing areas for shelter, resting, feeding and spawning grounds (Mitsch 2000). Estuaries provide services such as storm surge protection and water quality maintenance through sediment trapping. They also hold value as natural services in maintaining biodiversity and ecosystem functions. Ecosystem functions are thought of as the properties or processes of the ecosystem, and ecosystem services and goods are the benefits humans receive directly and indirectly from ecosystem functions, such as recreation and fisheries. Ecosystem services provide an important part of the total contribution to human welfare on the planet, with the entire biosphere contributing a minimum of \$33 trillion USD per year, although the monetary value of many cultural services cannot easily be determined (Costanza 1997; Claesson 2008; USCOP 2004; POC 2003; Farber 2002). This intersection of valuing society and culture as well as ecological diversity and function is at the crux of the challenge for modern coastal management. A significant difficulty arises in addressing anthropogenic pressures when one considers that nearly all impacts on the coastal environment originate upstream, magnified by the conditions of interior watersheds.

Of all the pressures exerted, human population growth is the most serious, evidence of which can be found the world over (UN 2004). More than half of the US population lives along the coasts and in the year 2000, coastal counties were responsible for over half of the nation's jobs, producing a similar proportion of the nation's GDP

(USCOP 2004; EPA 2004). Overall, the population along the northeastern US coast increased 52% from 1970 to 1990, mirroring global trends (EPA 2004; UN2004).

Population and related impacts affect land use patterns, agriculture, fisheries, aquaculture, recreation, tourism, transportation, military and industrial activities. The ecological results include the loss of coastal habitat and natural hazard protection, increased eutrophication and pollution, overfishing and decreased biodiversity (NAS 2000). Exploring strategies for sustainable coastal management inevitably, therefore, leads to discussions of social, cultural, political and economic concerns, for both inland and growing coastal communities.

Coastal pressures and strategies can be highlighted in a regional perspective for this study, starting with trends in the larger Gulf of Maine ecosystem. The Gulf of Maine itself is a complex, dynamic and biologically productive ecosystem within an 111,369 km² watershed, which crosses the borders of the US states of Maine, Massachusetts and New Hampshire and the Canadian provinces of Nova Scotia and New Brunswick. The coastal ecosystem includes diverse habitats such as salt marshes, mudflats, sandy beaches, rocky intertidal and islands. Habitat loss and degradation are increasing due to sprawling development, overharvesting, pollution and other anthropogenic effects, many of which happen far inland. The collapse of fisheries and the effects on coastal communities have made the Gulf of Maine the subject of extensive study and popular interest (Dobbs 2000).

Anthropogenic impacts on the Gulf of Maine are highlighted in the US EPA's National Coastal Condition Report (NCCR) as well as the Heinz Center's State of the Nation's Ecosystems report and are strongly focused on estuarine systems (EPA 2001;

Heinz Center 2002, 2008). The northeastern part of the US is characterized by important Atlantic fisheries, commercial and tourism centers, critical habitats for birds and fish, as well as a high population density. The NCCR summarized the health of the nation's coasts, region by region, for water clarity, dissolved oxygen, eutrophic conditions, sediment conditions, benthos conditions, fish tissue toxin contamination and coastal wetland loss. According to the NCCR, the "estuaries of the northeast coast are among the most threatened in the country." Forty percent of wetlands were lost between 1780 and 1980. In this report, 23% of sediments in the northeast were characterized as degraded and 30% had impaired human uses. Of the assessed estuaries, there were 10,360 km² impaired for fish consumption and 5,180 km² impaired estuaries for shellfish consumption. In addition, 60% of the estuarine areas were given a high potential for increased eutrophication and 10% of the fish catch had elevated tissue contaminant levels. The population pressure along the northeastern coast explains why these results, unchanged in NCCR III, look bleak (EPA 2001, 2004, 2008).

The need to address Gulf-wide ecosystem based planning and sustainability drove the two Canadian provinces and three US states to form the Gulf of Maine Council on the Marine Environment (GOMCME) in 1989. This followed years of informal cooperation such as planned responses to oil spills. In the Gulf of Maine, there is no legally binding agreement between the states and provinces, but the dominant management framework is a watershed-based approach (Hildebrand 2002; GOMCME 2007). This is a partnership of government and NGOs at all levels, with the federal entities listed as partners rather than signatory to the agreement. The Council organizes conferences and workshops, offers grants, conducts and coordinates environmental monitoring, provides science translation

to management and raises public awareness about the Gulf, connecting people, organizations and information. EBM and public participation are two of the Council's primary operating principles.

As the Council has taken the watershed approach to the Gulf of Maine, it is echoing a larger trend in watershed and bioregional based ecosystem management and monitoring promoted by the US Environmental Protection Agency (EPA) and National Oceanic and Administration Agency (NOAA). Although most programs are voluntary, this approach is one of the most important policy changes in the last few decades and is characteristic of the EPA's Association of National Estuary Programs (ANEP) (EPA 2003). The ANEP was established by Congress in 1987 to improve the quality of estuaries of national importance and since then has added dozens of critical estuaries to its program. The ANEP's watershed approach dictates public stakeholder involvement and strong, joint local-state-federal partnerships. Each National Estuary Program is tasked with developing comprehensive management plans for attaining or maintaining water quality, protecting public water supplies and the propagation of a balanced, indigenous population of shellfish, fish, and wildlife, allowing recreational activities in and on the water, and requiring the control of point and nonpoint sources of pollution (EPA 2003).

Similar interest in estuarine health, monitoring and management can be found in NOAA's National Estuarine Research Reserve System (NERRS) (NOAA 2005). This reserve network consists of 27 programs nationwide comprising state owned and managed protected areas, which focus on stewardship, education and research. These reserves are set aside for long-term research and management based on biogeographic

conditions. The NERRS mission is to promote management through linked programs of stewardship, public education and scientific understanding. The reserves conduct long-term monitoring and work with local and regional groups to address management issues such as nonpoint source pollution and invasive species. The Gulf of Maine contains two reserves, which enhance watershed and ecosystem based approaches, public stewardship, education and scientific research. As the approaches within NOAA and the EPA illustrate, there are increasing calls for watershed efforts in US coastal regions, including for the area of this case study.

New Hampshire's Great Bay

Great Bay is located in the southern portion of the Gulf of Maine ecosystem. It comprises the bulk of New Hampshire's coastal estuarine system, and is one of the largest estuaries on the east coast with 370 km of sensitive inland tidal shoreline, draining 2,409 km² (930 miles²). This drowned river valley is a tidally dominated estuary with inflow from seven rivers, three of which flow straight into Great Bay - the Lamprey, Squamscott and Winnicut Rivers (Short 1992). The Lamprey River, draining 543 km², is the largest tributary with a mean discharge of 278 cubic feet per second (NHEP 2000). Great Bay's significant habitats include mudflats, eelgrass meadows, salt marsh, channel bottoms and rocky intertidal. The tidal range is dramatic, exposing over half of the sediment as mudflats at low tide. One significant hydrologic feature is Great Bay's slow flushing rate, at approximately 36 tidal cycles, or 18 days (NHEP 2000; Short 1992). Great Bay is the location of both a NEP and a NERRS site, and with proximity to the state's research university, much biological, chemical and physical analysis has been

performed over the decades, making this one of the best studied estuaries in the nation (NHEP 2000, 2006, 2006, 2000; PREP 2008, 2009; Short 1992).

Great Bay also exemplifies many of the anthropogenic environmental issues present in the larger Gulf of Maine. Great Bay's watershed contains 40 communities and is situated within the larger coastal watershed, Piscataqua-Salmon Falls, spanning New Hampshire, Maine and Massachusetts. Contaminated shellfish beds, loss of eelgrass, poor water clarity, shoreland development, habitat loss, hazardous waste and pollution have plagued Great Bay for decades and are a direct result of the population growth in the region. Contaminants include microorganisms from improperly treated sewage, stormwater runoff and other nonpoint sources, nutrients (point and nonpoint sources), toxic contaminants and sediments (NHEP 2000).

NOAA's Great Bay National Estuarine Research Reserve (GBNERR) is located here as is the EPA National Estuary Program, the Piscataqua Region Estuaries Partnership (PREP). Formerly known as the NH Estuaries Project (NHEP), PREP was established in Great Bay in 1995 with the goal of "safeguarding the environmental quality of the estuarine system by identifying, abating, and preventing non-point source pollution in New Hampshire's estuaries," (EPA 2006). Plans to reach these goals are defined in the comprehensive management plan approved in 2001 and updated in 2005 (NHEP 2005, 2000). The plan includes a comprehensive characterization of New Hampshire's estuaries based on existing scientific, historic, economic, and regulatory information. The management plan specifically lists action items addressing the consequences of population growth in this coastal area, including stormwater, impervious cover, sprawl, habitat protection and restoration, and public outreach and education.

GBNERR was established in 1989 and both it and PREP have established outreach and education programs and initiatives. One of GBNERR's priority goals is land use, with a strategy to "enhance people's ability and willingness to make informed decisions and take responsible actions that affect coastal communities and ecosystems" (NOAA 2005).

Just as there are professional coastal management programs monitoring the conditions in the Gulf of Maine, there are many local groups doing the same for Great Bay. These organizations span areas of work from volunteer monitoring, to education, to reconstruction and habitat restoration. In the Piscataqua-Salmon Falls coastal watershed there were recently as many as 23 adult volunteer and citizen groups and nine volunteer programs engaged in monitoring, education and citizen science initiatives (Washburn 2006). The plethora of programs, both within a single watershed as well as Gulf-wide, requires communication, joint efforts and common indicators, as well as agreed upon goals and a regional discourse on sustainability. Gulf-wide efforts have begun to develop indicators to measure the social forces behind such trends as land use, but these have yet to be successfully implemented (GOMCME 2004). In the meantime, coastal watershed communities in New Hampshire are concerned with managing growth and protecting natural resources within their communities, but will be increasingly called upon to consider Great Bay's health, as well (Peterson 2006).

The ecological health of Great Bay is deteriorating. Anthropogenic impacts from coastal watershed communities are evident in the indicators measuring the health of the estuary, as reported every three years by PREP. Anthropogenic forces have resulted in degraded and lost habitat (especially wetlands), decreased biodiversity and the loss of many species including anadromous fish. All six contributing watersheds are under

population pressure which has expanded with the population's quadrupling over the last four decades. As a result, and as reported in the New Hampshire State of the Estuaries Conference, impervious surface areas are added each year to Great Bay's watershed at the current rate of approximately 1,500 acres per year (NHEP 2006). In 2005, this trend was exhibited in all but one of the 42 coastal communities, indicating increased sprawl and land consumption. As of 2009, the watershed contained over 50,000 acres of impervious surfaces, amounting to nearly 8% of the land area (PREP 2009). It is important to note that increased population, sprawling development patterns and the resulting increased impervious surfaces lead directly to the decline of water quality (Daley 2009; CWP 2003). There are many studies and habitat restoration efforts underway through partnerships with various organizations and University of New Hampshire (UNH) scientists (Zankel et al. 2006). These efforts, however, will be challenged should conditions not improve. Given the recent filing of nutrient criteria for aquatic life support in Great Bay, it appears the estuary's contributing watersheds will be headed towards a Total Maximum Daily Load (TMDL) process for violation of water quality standards mandated by the federal Clean Water Act (Trowbridge 2009; *Federal Water Pollution Control Act 1972*).

Efforts in Great Bay's Watershed

Due to the trends and indicators reported above, coastal managers are increasingly concerned about anthropogenic pressures and impacts on Great Bay's ecosystem (NHEP 2006, 2006; PREP 2009). As a result, GBNERR, PREP and other organizations are working to specifically address issues of coastal community growth. The Coastal Training Program (CTP), for example, provides EBM and science based training to locals

about issues that affect estuarine sustainability (GBNERR 2004). The decision-makers targeted include Select Boards, Planning Boards, Conservation Commissions, Zoning Boards and Regional Planning Commissions. While training and increasing the use of information for land use planning are both important, expanding stakeholder participation in this process and identifying additional social resources are equally critical tasks.

Another group modeled on the national NEMO program, the Natural Resource Outreach Coalition (NROC), offers coastal New Hampshire towns assistance in natural resource based planning through education and guidance (NROC 2006; NEMO 2009). NROC has identified challenges affecting local decision-makers including a lack of time to gather information, a lack of a network of contacts familiar with estuarine issues and the lack of ability to sustain local involvement due to volunteer burnout (Eisenhauer 2005).

The coastal management efforts outlined above tend to focus on Great Bay's watershed. The Land Conservation Plan for New Hampshire's Coastal Watersheds identified 75 conservation focus areas, within the coastal watersheds, to guide communities in building a functional network of conservation land and waters (Zankel et.al. 2006). PREP promotes a coastal watershed approach and over the last few years underwent a name change and expansion in program area to include the relevant communities in Maine. One of the most significant on-going efforts by PREP is a compilation and comparison of consistencies in local land use ordinances and environmental regulation (PREP 2008). Finally, GBNERR's mapping, characterization and ecosystem needs emphasize studies of impervious surface area, management strategies and cumulative impact of local land use planning decisions on Great Bay watersheds (Smith 2004; NOAA 2005).

Thus far, coastal and natural resource management efforts in New Hampshire have been focused on bringing scientific information and training to land use decision-makers in coastal and inland communities (Eisenhauer 2005). Although efforts by coastal managers have resulted in improvements in the indicators for Great Bay's health, impervious surface area and sprawl are not yet among them. While there is a standard suite of recipients for education and outreach efforts, coastal management might achieve greater results by targeting a broader range of groups and doing so with the knowledge of the social landscape in a watershed perspective. This social landscape, in which local land use decisions are made, has not been fully explored, leaving coastal managers with an important information gap. In the meantime, land use decisions continue to lead to anthropogenic pressures further challenging the ecological health of Great Bay.

The Evolving Role of Social Science

Although EBM includes both natural and socio-cultural systems in its approach, it has only been recently that socio-cultural information began to be directly explored and included in the planning for the management of coastal environments and communities. This development occurred alongside the growth of interdisciplinary fields of research and major international research and monitoring efforts such as the Census of Marine Life and History of Marine Animal Populations (CoML 2007; HMAP 2007). In Europe's North Sea region, for example, coastal managers are actively assessing and incorporating maritime cultural resource management into coastal management plans (CWSS 2007; Vollmer 2001). Critically, the ecological history of the region has been extensively studied (Reise 1989; Lotze 2005). These efforts help link coastal and inland communities and further the idea of a regional coastal identity which promotes coastal ecosystem and

community sustainability (Syddansk 2005). In the Gulf of Maine, there are likewise ongoing research efforts in ecological history, and a growing interest in including socio-cultural information within an EBM approach (GOMCME 2004; HMAP 2007; Rosenberg 2005).

A coastal EBM approach recognizes that people play an important role, and so these social science efforts are critical since they link coastal and inland communities, expand spatial awareness and promote a regional coastal identity (Syddansk 2005). Social considerations are usually limited to political issues, some decision-making processes and environmental education, but EBM needs to include greater public involvement in decision-making and the integration of social considerations with the science of understanding ecosystems (Endter-Wada 1998). This is where the analysis of social characteristics and concerns across a landscape, or a social landscape analysis, can be of value when examined at the watershed scale (Field 2003). Finally, there are increasingly strong arguments that social science analysis in general (anthropology, sociology, etc.) should be on an equal basis with ecological science inquiry to support the EBM approach (USCOP 2004; JOCI 2006; Claesson 2008; Tress 2003).

It is through interdisciplinary efforts, within an EBM context, that coastal management is progressing in both Europe and North America. By using social science methods to draw in social and cultural components, coastal managers can begin to address interior watershed decisions such as land use, which affect coastal ecology from a broader watershed perspective. As recent efforts in history and archaeology will attest, social science has paved the way for new insights in marine science, climate and fisheries management (Jackson et al. 2001; Harvell et al. 1999; Rosenberg 2005). The importance

of involving local people within EBM strategies and understanding the social landscape in which they reside, further dictate the need for more social science research within coastal communities (St. Martin 2007). Similarly, strategies for Great Bay coastal management call for further efforts within coastal watersheds, specifically related to growth, development and land use planning - all of which must be addressed through social science.

Research Question and Case Study

Whereas European spatial planning and landscape architecture already have a history of including the social dimension within an underlining framework for spatial planning based on natural water systems, a social landscape analysis in Great Bay's case study area can be a useful first step (van Buuren 1997; VROM 1998, 1998, 1995; Verweij 1995). A social landscape, in its simplest characterization, relates communities of people to the land. The social landscape can be understood as the assemblage of communities, practices and knowledge varying across space (St. Martin 2007). Landscape ecologists refer to social landscape analysis in the context of applied demography, human ecology, community attachment and rural community studies, which serve to characterize people, social organizational structure and social relations on the land over spatial and temporal scales. Social landscape analysis within this field can be more specifically defined as the study of the spatial distribution of interrelated social variables in a given biophysical setting, with particular attention to the social patterns on the land and the underlying characteristics of the natural resource base and ecological processes (Field 2003).

Using constructivist grounded theory, and a postmodern perspective, this study seeks to explore the social landscape of decision-making by the land use groups within a watershed's municipalities. Interviewing members of Planning Boards and other local land use groups will provide an understanding of how decisions are made regarding land use in their towns, and in this way, describe some of the knowledge and practice pertaining to land use decision-making in general within and across these communities. Do these communities see themselves within a watershed? Do they take into account issues of Great Bay and the coastal ecosystem? Answering these types of questions will lead to some understanding of community attachment and social relations within this landscape, providing a finer lens from which to view coastal EBM frameworks.

For the purpose of this study, the social landscape will be defined by the Lamprey River watershed, one of the major contributing watersheds of Great Bay. This study will examine the social landscape to investigate what might constitute a watershed-based land use decision-making framework, by identifying existing components that might support this development. The intent is to derive a theoretical framework describing how the people who make land use decisions in these communities relate to the land and to each other within the watershed. This research addresses the calls for further efforts within coastal watersheds regarding land use, as well as the integration of social sciences into EBM development. This, in turn, can inform coastal managers about the underlying challenges and opportunities of moving local land use planning into a watershed framework that could, in turn, blend with the developing national EBM policy for coastal and ocean management.

CHAPTER II

THEORETICAL FOUNDATIONS AND CONCEPTS

This case study draws upon literature, theory and practice from a number of different fields. Some literature overlaps more than others, and by no means an exhaustive, in depth, review of all potentially pertinent fields, this chapter offers a review of key concepts and theories that support the underlying research question. It also provides a perspective from which to view the results of data analysis in chapters four through seven. The concept review begins with the development and definition of EBM and applications within the marine, terrestrial and coastal environments. Next, land use planning as currently practiced in New Hampshire is summarized, along with themes in ecological planning and key state legislative challenges pertaining to this issue. Following this, the theory of social capital will be discussed with an emphasis on key contributing concepts. Finally, public participatory geographic information systems (PPGIS) and spatial scaling challenges will be examined as background to part of the employed methodology discussed in chapter three.

Ecosystem Based Management

EBM has undergone significant domestic and international development in the field of ocean policy. This section offers a description of the development and definitions of EBM, how coastal watershed management might be affected by the adoption of this approach, and a description of the challenges and opportunities for local watershed

management groups. Issues related to marine and coastal EBM are discussed, followed by a description of the challenges within the terrestrial ecosystem and the social and local challenges related to land use planning, watersheds and spatial scales for management.

EBM: Development and Definitions

EBM first developed in the terrestrial world, growing from underlying concepts in ecology during the 1960s and 1970s. Literature initially accumulated about managing ecosystems with reference to agriculture, forests, federal parks, wilderness areas and other lands. Alongside sustainability, this concept migrated into the marine sciences with studies on fisheries management, marine protected areas and ocean governance.

Discussions over the somewhat ambiguous definition of sustainability, led to tensions between thinking of ecology and thinking of ecological functions and services. The latter perspective brought humanity and our sociocultural fields, economics, valuation practices and politics into EBM. In fact, the Brundtland Commission report focused clearly on the need to manage natural ecosystems and species together, for the welfare of humanity, by making strong links to the economy (Brundtland 1987).

The definition of ecosystem has multiple components (McLeod 2005).

Ecosystems are defined as dynamic complexes of plants, animals, microbes and physical environmental features that interact with one another, where humans are included as a part. They can come in many sizes and are spatially identified in different ways (i.e. Large Marine Ecosystems vs. estuarine systems). Core knowledge about ecosystems includes the facts that: key interactions among species are essential to maintain if ecosystem services are to be delivered, the dynamic and complex nature of ecosystems requires a long-term focus, and abrupt, unanticipated changes are possible. Ecosystems

can recover from many kinds of disturbance, but are not infinitely resilient, and their services are nearly always undervalued (McLeod 2005; Steele 1991).

Similar to sustainability, the concept and definition of EBM has continued to evolve. One early critique proposed seven core pillars for ecosystem management that define and bound the concept, including that it is a stage in the evolution of social values and priorities, offering the definition: "the application of ecological and social information, options, and constraints to achieve desired social benefits within a defined geographic area and over a specified period," (Lackey 1998). This author goes on to build upon the social dynamic, by quoting Zane Cornett: "Ecosystem management defines a paradigm that weaves biophysical and social threads into a tapestry of beauty, health, and sustainability. It embraces both social and ecological dynamics in a flexible and adaptive process. Ecosystem management celebrates the wisdom of both our minds and hearts, and lights our path to the future." When considering management for ecosystems, EBM generally should be: 1) driven by explicit goals, 2) executed by policies, protocols, and practices and 3) made adaptable to monitoring and research based on our best understanding of ecological interactions and processes, in order to 4) sustain ecosystem composition, structure and function (Christensen 1996). Obstacles to long-term sustainability include inadequate information on biodiversity, ignorance of function and dynamics of ecosystems, and trouble with the interconnectedness of ecosystems on scales that transcend management boundaries. The prevailing public perception that the immediate economic and social value of renewable resources would outweigh the risk of future ecosystem damage is another obstacle (Daily 2002).

Since the mid 1990s, many of the earlier obstacles were addressed and additions made to EBM's conceptual background. The concepts of ecosystem services (provisioning, regulating, cultural and supportive) and ecosystem functions have been more deeply developed, along with that of natural capital (Costanza 1997). Research grew on valuation methods relating ecological services and socioeconomics (MEA 2005; Garrod 1999; Valiela 2008). The concept of resilience, or the ability of the system to return to its original state, also developed with greater emphasis on recovery, resistance and reversibility - all influenced by species redundancy and complementarity within ecosystems (Palumbi 2008; Levin 2008). The concept of biodiversity in relation to ecosystem structure and functioning is a continuing area of research (Graf 2003). The concepts of ecological footprint and inertia were also explored as a hindrance to adaptation or resilience for both social and ecological systems (MEA 2005; Diamond 2005; Rosenberg 2007; MacMynowski 2007). The COMPASS definition of EBM, prepared and signed by scientists and policy experts, states (McLeod 2005):

Ecosystem based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors. Specifically, ecosystem based management: 1) emphasizes the protection of ecosystem structure, functioning, and key processes; 2) is place-based in focusing on a specific ecosystem and the range of activities affecting it; 3) explicitly accounts for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species; 4) acknowledges interconnectedness among systems, such as between air, land and sea; and 5) integrates ecological, social, economic, and institutional perspectives, recognizing their strong interdependences.

Throughout the literature, key elements that define what should be considered in EBM include sustainability, goals that specify future processes and outcomes, sound ecological models, recognition of complexity and connectedness, recognition of the dynamic character of ecosystems (and avoidance of freezing ecosystems in a particular state), recognition of the various contexts and scales, integration of humans, management adaptability and accountability (Christensen 1996; MEA 2005; Rosenberg 2005). At the same time, some of these key elements have been criticized as impediments to successful EBM, due to institutional inertia or traditional disciplinary tunnel vision (Murawski 2007). On the latter point, some contend the information needs for EBM and adaptive management are still significantly greater than the needs for older paradigms such as extractive management, and these complicated “hidden costs” of adaptive management, must be recognized by policymakers (Johnson 1999). In its simplest form, implementing EBM will require defining sustainable goals and objectives, reconciling spatial and temporal scales, integrating sectors, accounting for cumulative impacts, applying the precautionary approach, and making a management system that is adaptable and accountable.

Marine and Coastal EBM: Applications, Issues & Challenges

Over the years, coastal management strategies have changed. An earlier approach was Integrated Coastal Zone Management (ICZM or sometimes ICM), which conceptually developed in Europe and North America. Today, examples of the ICZM approach can be found throughout the world (Sorenson 2002; CWSS 1997, 2003). In the US, coastal management falls under a patchwork of federal, state and local control and initiatives. The US EPA manages water quality under the Clean Water Act and

subsequent amendments, while coastal development is managed at local and state levels with federal programs (some through NOAA) providing guidance under the Coastal Zone Management Act of 1972 (CZMA) (Kubasek 2005; CZMA 1972; *Federal Water Pollution Control Act* 1972). The 2005 amendments to the CZMA included language concerning land use in the coastal zone, referencing activities conducted in or on the shorelands, and especially the need for efforts to control pollution from land use activities. This is, however, most definitely not an integrated EBM approach. A true coastal EBM must address anthropogenic pressures and ecological effects by including natural and socio-cultural systems in its approach, integrating all sectors and considering cumulative impacts.

As noted, the US Commission on Ocean Policy (USCOP) and the Pew Oceans Commission (POC) called for a comprehensive, integrated and EBM approach to management of the coasts and oceans (USCOP 2004; POC 2003). The Presidential Memorandum from June of this year did just that by establishing an Interagency Ocean Policy Task Force to develop a national policy, a framework for policy coordination and an implementation strategy (POC 2003; USCOP 2004; Obama 2009). Internationally, an interest in the watershed approach to ecosystem management has grown, though unlike the US, the European Union has mandated moving towards watershed management through the E.U. Water Framework Directive (EU 2000). Although the United States at the federal level has only recently begun to make progress, a number of states, NGOs and foundations were already leading the way for a marine EBM alongside developments for indicators of sustainability within an EBM approach (Ruckelshaus 2008; Leslie 2007; Ricketts 2007; Brown 1996; Yaffee 1996; Ryan 2005; Hiscock 2003).

The USCOP and the POC articulated a number of key elements for a marine EBM. A marine EBM includes the nation's coastal areas, which suffer environmental problems stemming from anthropogenic pressures, resulting in degraded ecosystems and devastated coastal communities. This approach can be operationalized by initiating ecosystem level planning, establishing cross traditional management goals, initiating zoning of regions and expanding and improving the coordination of coastal habitat restoration. Additional critical steps include adopting co-management strategies with governments and diverse stakeholders, incorporating adaptive management and establishing long-term ocean and coastal observing, monitoring and research (Halpern 2007; McLeod 2005). Key elements of a marine or coastal EBM include (POC 2003; McLeod 2005; USCOP 2004):

- Make protecting and restoring marine ecosystems and all their services the primary focus, even above short-term economic or social goals for single services.
- Consider cumulative effects of different activities on the diversity and interactions of species.
- Facilitate connectivity among and within marine ecosystems by accounting for the import and export of larvae, nutrients, and food.
- Incorporate measures that acknowledge the inherent uncertainties in EBM and account for dynamic changes in ecosystems (i.e. as a result of natural oscillations in ocean state or shifts in the frequency or intensity of storms). In general, levels of precaution should be proportional to the amount of information available.
- Create complementary and coordinated policies at global, international, national, regional, and local scales, including between coasts and watersheds. Appropriate scales for management will be goal-specific.
- Maintain historical levels of native biodiversity in ecosystems to provide resilience to both natural and human-induced changes.
- Require evidence that an action will not cause undue harm to ecosystem functioning before allowing that action to proceed.
- Develop multiple indicators to measure the status of ecosystem functioning, service provision and effectiveness of management efforts.
- Involve all stakeholders through participatory governance that accounts for both local interests and those of the wider public.

A major difficulty arises in addressing anthropogenic pressures when one considers that nearly all impacts on the coastal environment originate upstream, magnified by the conditions of interior watersheds, much of which is driven by coastal population growth. Since 1970 in the US alone, there has been a steady increase of 2000 more homes per day erected in coastal areas, resulting in over half of the population living along the coasts (EPA 2004). Over the last 30 years, more than 37 million people and 19 million homes have been added to the nation's coastal areas (USCOP 2004). Population pressures affect land use patterns and many other sectors, resulting in the loss of coastal habitat and natural hazard protection, increased eutrophication and pollution, overfishing and a loss of biodiversity (Halpern 2008). As noted, these effects are being felt in Great Bay's watershed, where increasing population pressure has led to an increase in impervious surfaces and seacoast communities largely characterized by sprawling development (NHEP 2006). Strategies for sustainable coastal management must include discussions of the social, cultural, political and economic concerns of these growing coastal communities.

As the EBM approach has grown in acceptance, states, regions and NGOs are slowly adopting it, with projects supported by foundations and increasing federal grant money through EPA and NOAA. The more recent Coastal Zone Management Program Strategic Plan (FY 2007-2012) does reference the recommendations of both ocean commissions, echoes the call for EBM, and discusses land use and interior watersheds (NOAA 2007). It calls for strategies to acquire land for conservation easements in coastal areas, encourages comprehensive planning, and has a more robust approach to coastal communities, development and collaborative management. Another development is the

introduction of Congressional Bill H.R. 21, to establish a national policy for oceans, strengthen NOAA and establish a national and regional ocean governance structure (H.R. 21 2007).

Challenges for a marine EBM include the following: complexity with integrating all sectors, building stakeholder representation and stewardship, establishing long-term monitoring, adopting co-management strategies with other agencies and incorporating adaptive management (Boesch 2006). With respect to the question of a mandate, the Gulf of Maine, as one example, has a watershed-based EBM promoted as the dominant management framework, but there is no legally binding agreement between the states and provinces to make efficient progress (GOMCME 2007). In some cases, it has been argued that this soft management approach works to build social capital on a regional scale, but it does not lead to enforcement ability (Hildebrand 2002). Integrating sectors and crossing jurisdictional and cultural boundaries can also prove complicated and relates to the issue of stakeholder representation. Still, despite the improvements, there are many challenges to fully adopting EBM and having a comprehensive mandate to do so has been one of them.

Terrestrial EBM: Connecting the Coasts and Watersheds, Challenges & Scale

One of the most obvious challenges for implementing a coastal EBM strategy is that of scale, which relates to local watershed management. A coastal EBM strategy, first of all, would not in any way be limited to the coast, but would involve great stretches of land, reaches of rivers and streams, and communities far from shore. And while a marine EBM is complicated enough by itself, a coastal EBM would need to be fully integrated *both* with the marine EBM and relevant ocean zoning, but also the terrestrial EBM

(Burbridge 2003). On the terrestrial side, despite the fact that watersheds do not define geopolitical units, promoting a watershed-based EBM is routinely recommended (USCOP 2004). So, the coastal EBM strategy would need to be scaled, integrated and nested in some manner with the marine EBM strategy offshore and a nested network of terrestrial, watershed EBM strategies onshore.

Where did the idea for a “watershed” based EBM originate? The western concept of a regional water management approach really began with the Dutch in the early 19th century (Washburn 2001; van de Ven 1994). Although American John Wesley Powell first called for watershed political jurisdictions in the late 19th century, the concept of watershed management more formally developed in the middle of the 20th century, beginning with a focus on the shared management of large river systems, such as the Rhine (Huisman 1998; Huisman 1998; Adler 1995; Washburn 2001; Powell 1890; Worster 1993; Sabatier 2005). Over the last couple of decades, an interest in a watershed approach to ecosystem management has grown. The European Union has mandated moving towards watershed management in a wholly transnational manner (EU 2000). In the US, no federal mandates exist, but watershed-based management frameworks have become increasingly common (Washburn 2006; Brown 1996; Yaffee 1996).

Starting in the early 1990s, the EPA began to consider ecosystem protection, the title of which alternated between ecosystem management, place based management, community-based and watershed management. At this time, state agencies recognized the need to coordinate efforts with local governments, businesses and private landowners, spurring many collaborative watershed efforts. This directional shift to a watershed approach was further stimulated by a frustration with the criteria, standards and single

pollutant approach mandated in the Clean Water Act (Adler 1995). The EPA's Office of Water developed watershed-based programming and funding mechanisms, the states began to explore ecosystem management and watershed protection, and the watershed movement was underway (Brown 1996).

There are conflicting ideas about whether or not watersheds are the most appropriate scale of choice for a terrestrial EBM strategy. The general agreement is that it is important to choose the appropriate unit for planning, and it must have an appropriate level of government authority for management at that scale (Ruhl 2000). A question is whether watersheds should be considered at the USGS defined hydrologic unit codes or at a defined ecoregional level (Seaber 1987). The latter is generally identified with geographic phenomena and reflective of regional differences in ecosystem components. One reason watersheds may not be the appropriate planning unit scale is simply that ecosystem attributes are not always homogenous with watersheds (Ruhl 2000; Omernik 1997). There are suggestions to use watersheds and ecoregions together, but one would have to also consider the fact that the choice of scale will not be politically neutral, as it is likely some stakeholders will be favored over others (Omernik 1997; MEA 2005). A final point to remember is that the scale considered is not exclusively spatial; there are other scale considerations for developing an EBM strategy – namely, the social scale, the temporal scale, and, especially along the coast, the unknown scale and nature of climate change (Lindeboom 2003; Leslie 2007; Yaffee 1996).

EBM at the Watershed Scale: Land Use, Watershed Management Efforts & Issues

The need to involve the public in decision-making and the earlier discussion on scale, point out one major issue which needs to be addressed: the spatial perception of the watershed, ecoregion, and the coastal zone itself, by managers, scientists, politicians and the general public (Lindeboom 2002; Field 2003). The obvious way to address this issue of spatial perception and link a coastal EBM with a terrestrial EBM network of nested watersheds, would be through strong regional land use or spatial planning (Erickson 1995; MacDonald 2008). There is a substantial literature base on this already, and in Europe, an established tradition of long-term spatial planning including the human element and cultural systems (VROM 1998, 1998, 1995; van Buuren 1997; Waterstaat 1997; Washburn 2001; Field 2003; Endter-Wada 1998). In the United States, regional land use planning has a different history, though. Land use decisions are complicated by the legal distinctions and property rights issues of private land versus public land. Complicating matters further, the cumulative impacts of land use decisions occurring on private property have serious ecological consequences (Brown 2005).

The US does not have a national land use policy, nor required mandates for regional land use plans or long-term planning, such as they have in other nations (Waterstaat 1997). In the mid-1960s, Chicago's land use lawyer, Richard Babcock, led the call for a national land use policy act, initiating the "quiet revolution" in land use regulation. The National Land Use Policy Act envisioned by this movement would have essentially extended the Coastal Zone Management Act throughout the nation to noncoastal areas, expanded the state comprehensive laws regulating large private developments and public developments, and provided states with funding to 1) draw up

statewide plans to protect environmentally sensitive areas and 2) regulate both the public works and big private developments (Popper 1988, 1981; National Land Use Policy Act 1970). (National Land Use Policy Act 1970) This act never became law and the result we see decades later is indeed more land use regulation, but in a patchwork both incrementally and locally applied. Complaints over the years from the left and right insist there is either a need for more regulation or there is too much already, but either way, the incremental progress (patchwork as it may be) has overcome its initial disadvantage of unfamiliarity (Jacobs 1989; Popper 1988). It can be argued that the intervening decades, characterized by increased environmentalism, growing concern over climate change issues and other major societal shifts, might set the stage for a renewed call for a national land use approach, but this time, within an EBM framework.

Land use planning and decision-making within a watershed-based EBM would affect existing watershed management groups. There is much literature to draw upon for existing collaborative watershed partnerships that examine factors determining their success or failure, their growth throughout the nation, their value to collaborative learning, application within an EBM approach and their contributions in substance and process to furthering democracy (Sabatier 2005; Daniels 1996; Schueler 2000; Daniels 1996; Koontz et al. 2004; EPA 2003; Allan 2008; Bidwell 2006). The factors affecting the success of collaborative arrangements include group composition, diversity of participation, acceptance by stakeholders of the structure and process, funding, leadership, trust, network building and social capacity, among other things (Bidwell 2006; Leach 2001; Koontz 2003; Chuenpagdee 2006). Challenges to a successful collaboration include distrust between groups, lack of time, a lack of volunteers or

resource asymmetry, politics and turf conflict, still collaborations are a useful strategy for addressing complex, "wicked" problems (Kettl 2006; Imperial 2000; Rittel and Webber 1973).

If a coastal EBM approach were applied and integrated with watershed-scaled planning frameworks, there would be both challenges and opportunities for pre-existing watershed organizations. The existing outreach, education and training programs within an organization would need to be extended throughout the designated ecosystem. New opportunities would develop to build additional volunteer networks with other watershed organizations, improve communication, eliminate duplication of effort, and more efficiently target resources. Negatives might include a struggle over control of programs and identity, competition over the same pool of volunteers and some degree of turf war. Overall, the opportunities to network and function together under an EBM approach would far outweigh the challenges. It would be critical to involve all of the affected, watershed organizations as stakeholders at the outset of the design phase for the EBM. These groups could perform an interesting feature within network governance depending on their strengths and levels of advocacy. These characteristics can nurture strong interpersonal ties, increase social capital and provide strong foundations for collaborative governance (Putnam 2000). Locally applied, EBM promises "a process to transform organizations and decision-making processes to make them more willing to experiment, innovate, and look beyond themselves in both time and space [because] there is power in local ownership of problems and solutions, and strength and a sense of responsibility derived from identification with a place," (Yaffee 1996).

Land Use Planning

This section describes some basic information about land use planning in the case study region as well as perspectives on ecological planning features. Local planning frameworks in New Hampshire describe the key land use groups involved, their basic structure and purview. The state's policy directions related to Smart Growth are discussed. Following this, regional planning efforts and trends are discussed with specific attention to New Hampshire's Regional Planning Commissions (RPCs). This section ends with a brief discussion on the background of a key policy item currently moving through the state legislature.

Planning Framework in New Hampshire

According to New Hampshire state law (RSA 674), towns have the right to control local land use through zoning, site plan review and subdivision regulations for the purpose of protecting general health, welfare and protection of the community (NHOEP 2008). While this is commonly assumed to be "Home Rule", it actually falls under Dillon's Rule, an important distinction, in that the state grants the towns certain rights (Richardson 2003; Loughlin 2000, 1995). Each town's approach to land use planning is unique, although there are a common set of potential land use boards and other commissions that can provide input and common procedures employed in carrying out planning activities (Mitchell 2008). Guidance is also issued through the state's Department of Environmental Services, Office of Energy and Planning, other offices, organizations and NGO's such as the Local Government Center. The resulting amount and variety of local land use regulation can be a complicated picture across the landscape, resulting in spatially varied patterns of natural resource protection as well as other

structural and procedural weaknesses (Paulsen 2000). Starting in 1989, towns were encouraged to join with other towns to create regional water plans (RSA 4C-23), or “water districts,” for the purpose of developing regional plans and ordinances “where water protection needs to extend beyond municipal boundaries,” (NHOEP 2008). In addition, towns are encouraged to consider regional impacts of land use decisions on adjacent towns and afford those towns the status of abutters (RSA 36:57) (NHOEP 2008).

Land use planning regulations are broadly constructed and allow towns to make use of things such as Smart Growth and Innovative Land Use controls. Smart Growth is a well developed national policy approach for urban, rural and rural-urban fringe areas (Smart Growth Network 2002; Smart Growth Network; Irwin 2003; Dale 2000; Randolph 2004). These controls include things like transfer of development rights, cluster development or zoning and village plans. The results of Smart Growth should produce, among other goals, a strong sense of community identity, an adherence to traditional settlement patterns, decreased water and air pollution, protection of aquifer recharge areas, preservation of viable wildlife habitat, maintenance of attractive views of the landscape and the preservation of historic village centers. As of the year 2000, Smart Growth became the official policy of the state of New Hampshire (RSA 9B) and is defined as follows (NHOEP 2008):

Smart Growth means the control of haphazard and unplanned development and the use of land which results over time, in the inflation of the amount of land used per unit of human development, and of the degree of dispersal between such land areas. Smart growth also means the development and use of land in such a manner that its physical, visual, or audible consequences are appropriate to the traditional and historic New Hampshire landscape. Smart growth may include denser development of existing communities, and encouragement of mixed uses in such communities, the protection of villages, and planning so as to create ease of movement within and among communities. Smart growth preserves the integrity of open space and agricultural, for instance, and undeveloped areas.

Towns are authorized to develop growth management ordinances and other regulations pertinent to carry out the desires of the community in terms of land use, and the first step is developing a town Master Plan. This is composed of a number of sections addressing topics such as existing land use, open space, water resources, transportation, economic development and natural resources as well as important statements on the future development of the town with appropriate public comment. The goals are to lay out the plan “to preserve the quality of life and culture of New Hampshire, and to guide the board in the performance of its other duties in a manner that achieves the principles of smart growth, sound planning, and wise resource protection” (NHOEP 2008).

The primary land use board responsible for the Master Plan and land use decision-making is the Planning Board, but contributing to land use decisions are the Zoning Boards of Adjustment, Conservation Commissions, Open Space Committees, Heritage Commissions and Historic District Commissions (RSA 36, RSA 673-674) (NHOEP 2008). Town Planning Boards have members who are either appointed or elected, ex-officio representatives from the Town Council or Board of Selectmen depending on government style in the community, and alternates. The Zoning Board of Adjustment (ZBA) can be elected or appointed and decides appeals to the enforcement of zoning ordinances, issuing variances which often pit the ZBA against the Planning Board.

The Conservation Commission, unlike its counterpart in Massachusetts, provides oversight in an advisory capacity only. This concerns wetlands and natural resources as well as watershed resources of the town, requiring the commission to keep an inventory of all natural resources in the community (RSA 36A). These commissions are filled as in the previously stated manner with members and alternates and as part of their duties can

form an Open Space subcommittee. This committee can be charged with developing and implementing the open space plan for the town, acquiring properties via easement or other contractual rights. The Conservation Commission can receive money and property either through donations, in kind or real, or through structural arrangements to receive a portion of the fees from levied land use change taxes. Heritage Commissions and Historic District Commissions (HDC) can have some overlapping membership, filled through appointment or election. The purpose of the Heritage Commission is to recognize, use and protect all tangible and intangible resources of historic, cultural, aesthetic or community value, while the HDC is strictly focused on the structures of historic, architectural or community value located in specified districts. Training for members of any of these boards or commissions is strictly voluntary.

Regional Planning Efforts and Trends

The state of New Hampshire has established a system of political subdivision in the form of Regional Planning Commissions, three of which are situated in the case study area covering the towns in the Lamprey River watershed. The purpose of the RPCs is to serve in an advisory and support role to the town land use planning boards and commissions (RSA 36: 46-53) (NHOEP 2008). The RPCs are tasked with developing comprehensive planning documents for the region within their jurisdictions (SNHPC 2006, 2008; RPC 2000; SRPC 2005). Towns can choose to partner with their assigned RPCs. If they become members and partake of RPC services, the membership fee is charged a per resident rate for the member towns. As chapters four through six will show, while there is strong reliance on RPC staff and resources, there are also many critiques of the RPC structure and regional planning efforts overall.

Regional planning in New Hampshire got its start in the late 1960s, in parallel with national policy developments such as the National Environmental Policy Act, Clean Air Act and Clean Water Act (Kraft 2000; *Air Pollution Prevention and Control Act* 1970; *Federal Water Pollution Control Act* 1972; *NEPA, National Environmental Policy Act* 1969). At the time, that Senate Interior Committee led by Senator Henry Jackson was responsible for many of these efforts, and the senator also championed the National Land Use Policy Act, which passed several times in the Senate, failing in the House and was ultimately shelved after Watergate. The National Land Use Policy Act envisioned would have essentially extended the Coastal Zone Management Act throughout the nation to noncoastal areas, expanded the state comprehensive laws regulating large private developments and public developments, and provided states with funding to 1) draw up statewide plans to protect environmentally sensitive areas and 2) regulate both the public works and big private developments (Popper 1988, 1981; National Land Use Policy Act 1970; Congress 1972; CZMA 1972). The proposed bill would also have developed a nationally coordinated database of environmental information, and would have proposed that states develop plans based on watersheds, vertically and horizontally integrating the entire land use system through a single agency at the federal level (Nolon 1996; Hearings, Committee on Interior and Insular Affairs 1971; National Land Use Policy Act 1970). Whether due to political backlash after years of progressive environmental legislation or other reasons, this national effort failed, though that has not stopped it or its ideas from reappearing (Nolon 1996; Herlitz 2008).

Theories and literature linking ecology and land use planning are, in fact, extensive, going back several centuries in various forms and well beyond this review.

Early and modern work cross multiple disciplines, including geography, landscape architecture, regional planning, law, ecology, natural history and public policy among others. Individual contributors include Jane Jacobs, Ian McHarg, Lewis Mumford, Frederick Law Olmsted, Aldo Leopold, Stewart Udall and Richard Babcock to name just a few. Literature abounds concerning land use within a historic analysis, or concerning structural and procedural developments, with critiques of reform efforts and modern reflections on ecology and sense of place (Ndubisi 2002; Kunstler 1993; Platt 1991; Glikson 1971; McHarg 2006; Popper 1981; Dramstad 1996; Kaiser 1995; Saarinen 1976; Johnson 2002; Geisler and Popper 1984). An important debate raging throughout the 20th century in America and continuing today, involves a tension between local land use planning versus regional planning efforts, the pros and cons of each and the results for local democracy, public policy, land rights and the environment (Jacobs 1989).

Regional planning in New Hampshire was designed strictly with long-term planning and economic development in mind, and not with any particular link to ecosystems or watersheds (Scott 1993). The initial design and structure of the RPCs developed as partial fulfillment of a requirement to apply for a federal HUD funding opportunity. The state's Department of Resources and Economic Development was the lead agency in New Hampshire to design this system. At the time, state leaders were planning and reacting to the federal legislative trends for more regional programs. The state's delineation for RPC regions was strictly based on economic, social and geographic bonds, mostly to do with transportation (Hancock 1969). The RPC design structure examined linkages across political subdivisions, and used economic development and growth projections to create urban linkages that formed the backbone of the RPC system.

There were no ecological considerations in the design of the RPC structure, and despite the fact that some have changed their municipal constituencies over time, this is still the case.

The New Hampshire State Water Plan

New Hampshire is beginning to take its water resources seriously. Recent studies have indicated that the state could lose \$51 million if users perceived a decline in lake and river water quality and in the seacoast area alone, this would result in lost jobs and in one estimate, lost sales amounting to \$2.6 million (Nordstrom 2007; NHRC 2007). In 2003, the state's legislature established a Water Resources Subcommittee tasked to develop a comprehensive state-wide plan for water resources and in 2004 the Department of Environmental Services began this planning effort. A Water Resources Primer was developed, a statewide survey of policy makers was completed as well as an availability and use assessment of water resources. In 2009, the NHDES effort began a series of workshops throughout the state en route to a final report to the legislative subcommittee. The goals of the Water Primer were to provide policy makers with a current assessment of challenges for sustainably managing water resources (Pillsbury 2009). The Primer identified a number of current challenges including population pressure in the seacoast and increasing impervious surfaces that have led to a situation where 63% of stormwater leads to water impairments, water quality is degraded and groundwater recharge is reduced. Low impact development can help, but climate change is predicted to seriously challenge the state's water resources and infrastructure. The Primer cited challenges including data needs, inconsistent local land use regulations and trouble with the state's permitting process, as well as concerns over public drinking water supplies, groundwater

quality and the lack of understanding among the public. Meanwhile, the stakeholder survey initiated by NHDES provided valuable information about the concerns of local policy makers. The primary finding of this survey was that water quality is a greater concern than economic development. Importantly, there is significant confusion and misunderstanding of the relevance of spatial and temporal processes, water cycles and the relationship between surface and groundwater. Seacoast policy makers tellingly responded more than policy makers elsewhere in the state. One strong recommendation garnered throughout this process is the need for more watershed rather than municipal approaches for the final state water plan (Goetz 2008).

Social Capital Framework

The Social Capital Framework (SCF) is one of many theoretical frameworks proposed for evaluating institutional arrangements and human cooperation and can be used to explain the success of partnerships in such things as collaborative watershed management or governance (Sabatier 2005). SCF describes the trust, norms of reciprocity and horizontal social networks, predicting that each reinforces each other, while together fostering collective action or civic minded behavior (Coleman 1988; Putnam 2000). The success of watershed partnerships in management or governance has been evaluated through the lens of this theory, and it is similarly helpful in this study of the social landscape primarily because of the public and volunteer nature of municipal land use decision-making. In this section, social capital is discussed, followed by variables affecting decision-making behavior and attitudes towards the environment like trust and residence time, stakeholder characteristics and local knowledge. These characteristics and factors influence the structure and functioning of society, values, beliefs, attitudes,

politics, economics and the arrangements or relationships among and between these things in a decision-making framework.

Social Capital and Theoretical Frameworks

The concept of social capital parallels that of financial capital and physical capital which leads to several theoretical frameworks for institutional analysis (Coleman 1988). The difference is that social capital has a public good aspect, where the actor generating social capital usually captures only a small part of its benefits, typically resulting in underinvestment in social capital. The epistemological difference is that sociologists view the actor as socialized, governed by norms, rules and obligations, whereas economists view the actor independently arriving at goals, motivated by self-interest and a virtue towards maximizing utility. This epistemological difference led to different theoretical frameworks for evaluating institutional arrangements and the success of such things as policy making. In general, the latter line of thought leads to neoclassical economic theory, utilitarianism, contractarianism and natural rights philosophies. Other theoretical frameworks relating to these concepts for analysis of institutions and human cooperation include Political Contracting Framework, Advocacy Coalition Framework and Institutional Analysis and Development Framework (Sabatier 1993; Sabatier 2005; Sabatier 1999; Ostrom 1990). In particular, Nobel laureate Ostrom has addressed the topic of how private and public goods and property rights affect collective action (Ostrom 2000, 2003). Another theory is the Institutional Rational Choice Framework, which shares with SCF a similar model of the individual as self-interested (Sabatier 2005). Trust is a critical consideration for all of these, but they differ in scope, what they seek to explain, and most importantly, the model of the individual.

Social capital relates to the concept of human capital and is inherent in the structure of relationships between actors (individuals) and among actors. Human capital is created by changes in a person to bring about skills and capabilities to act in new ways. Social capital however, represents changes in the relations among persons and is conceived as a resource for action, a way of introducing social structure into a rational action paradigm. The forms of social capital are obligations, expectations, information channels, social norms, sanctions and trustworthiness. Human capital and social capital are related because the latter creates human capital in the next generation through social capital development in the family and in the community. At the same time, human capital developed in individuals within the family can build social capital in the community. Political efficacy, collective action beliefs and legitimacy, human capital (education and intelligence) and social capital (norms and beliefs, capability of groups to achieve collective tasks) combine to characterize civic community (Lubell 2005).

Social capital is defined by a triad of trust, social norms of reciprocity and the structure of horizontal social networks (Coleman 1988). Trust is both general and specific, referring to confidence in people at large (generalized trust) or specific individuals (specific trust) to keep promises, treat others fairly and show concern for community welfare. Horizontal networks indirectly facilitate collective action through collateral benefits, including participation in a network, which builds skills in communication, negotiation, compromise or leadership. These horizontal networks also serve as templates for new organizations growing and changing within the community, building trust by fostering social norms (Sabatier 2005). One argument is that differences exist between "bridging relationships" among people different than each other, versus

"bonding relationships" among people of the same class, ethnicity or group (Putnam 2000). Reciprocity, the final piece, is a willingness to initiate and return favors and reward cooperative behavior. It is often altruistic in behavior, because people tend to aim for the public good even when the cost-benefit analysis is against them as an individual (Putnam 2000). Reciprocity and trust together grease the gears of collective action in such things as watershed collaboration or land use decision-making (Sabatier 2005).

SCF can be used with respect to watershed collaborations, to hypothesize that higher trust, stronger norms of reciprocity and more extensive social networks should lead to more consensus-based agreements, project implementation and goal completion (Sabatier 2005). Collaboration in the form of watershed partnerships or governance might cultivate social capital "by producing familiarity, identification of shared values, respect for demonstrated competence, tolerance for different perspectives at a civic orientation -- all of which build social trust," (Focht 2005). SCF has been expanded by describing four forms of social capital based on levels of autonomy, embedded at all levels in society, of which a balance among the four must be struck for optimal realization (too little leads to corruption, isolationism, duplication of efforts etc.). These forms include linkage, an individual's autonomy from his or her community; organizational integrity, an organization's autonomy from other organizations; integration, an individual's embeddedness within his or her community; and synergy, an organization or community's embeddedness in society (Arnold 2007). A compilation of studies on collaborative approaches to watershed management have found that trust and participation are more complex than generally recognized, people participate to either improve conditions or protect themselves, there is a strong relationship between trust and

perceived impacts, the legitimacy of the collaborative process must be both procedural and substantive, and fair treatment creates trust and social capital (Lubell 2005).

Collaboration, Variables, Trends, Trust, Time

Democratic nations “expect citizens to participate in important matters governing social, political and economic life. In maintaining the relationships that hold a democratic nation together, citizen representation and participation play significant roles in generating support and compliance, providing important information, and shaping direction on complicated choices for the nation,” (Samuelsen 2005). Social capital, too, is an important part of our democratic system when it comes to collaborative activities such as making land use decisions or environmental decisions within a watershed.

Collaborative activities can encourage a civil society by providing opportunities for citizens to volunteer time and become involved in civic institutions, build new institutions, ensure that specific interests are represented in policy deliberations, increase accountability and ensure citizen satisfaction with government performance (Imperial 2000). Citizen involvement, however, never reaches its ideal, due to a number of challenges and variables that impact whether or not, and how the public is involved.

Challenges include personal time, trust, politics, turf conflict, asymmetry of resources or power, finances, and the group time necessary to develop a culture of collaboration (Imperial 2000). One additional point to keep in mind is that it takes much less time to educate oneself about other participants and the biological and physical processes in a watershed, than it does to enhance the social and professional networks necessary to effectively collaborate (Lubell 2005).

Trends in land use planning and decision-making have been for more participation, collaboration or partnerships. The last few decades first saw citizen advisory committees, where policy change was determined by external political support, and the existence of prior networks and institutional thickness, but more recently collaborative groups and partnerships (Koontz 2005). Land use planning is mostly a local government function, supported and enhanced by professional planners. Some states have enacted growth management plans and zoning is implemented in many, although not all, localities (Koontz 2005). In general, economically declining areas tend to support development over farm preservation or open space. Collaborative efforts by local officials and public stakeholders though, can lead to political pressure that can affect land use policy change. Land use decisions in areas with population pressure and environmental concerns tend to develop “wicked” problems, frequently complicated by demoscclerosis and the inertia of bureaucratic gridlock (Kettl 2006; Imperial 2000). This is complicated because the general public does not understand the boundaries among federal, state and NGO programs and services for land use decision-making, and for all of these reasons, collaboration within an ecosystem based or watershed framework, could perhaps be a useful strategy. This could assist in handling wicked problems, deal with bureaucratic boundaries and attract greater public participation. The literature about land use planning, watershed collaborations, and community involvement often focuses on the relationship of trust, participation and effectiveness to social capital and success.

Trust, participation and effectiveness are related, and, trust is the most important aspect within any watershed management decision context, a fact recognized by SCF and all of the other theoretical frameworks (Focht 2005). There are generally two kinds of

trust - social trust and official trust. The former acts as a key enabler of cooperation, is stimulated by identifying shared goals, has a cooperative role in participation and is dependent upon social capital in the community (Focht 2005). If stakeholders have social trust in other stakeholders, they may be willing to collaborate. Participation and trust have a reciprocal relationship though, and this can change to maintain a mix of deference and vigilance. Stakeholders, for example, are more likely to be vigilant and consistently participate if they believe others may harm their interests (Focht 2005). Official trust relates to state or agency officials, and when this trust is high, the incentive for the public to participate is reduced. Negative perceptions of government, and loss of social capital, both contribute to decline in the levels of official trust, which prompts concern for the effectiveness of policymaking institutions and government legitimacy (Focht 2005). Another suggestion is using the terms mutual and social trust, where mutual trust is key to building social trust, though these terms could be viewed as parallel to social and official trust (Ryan 2005).

It is critical to build trust and social capital into the collaborative process and a key factor to accomplish this is time. There is some evidence that younger watershed partnerships can take four to six years to overcome mistrust, become educated, reach agreements and ensure funding to begin implementation of goals (Leach 2002). Within watershed partnerships, trust seems to be an important catalyst for agreements older than three years; the relationship between trust and agreement is positive, and trust and norms of reciprocity cause stakeholders to more positively value their partnerships (Leach 2005). Concerning land use decisions, trust can be built by directly engaging participants in visiting local sites, or parcels of land, for which decisions must be made (Eisenhauer

2005). Some studies urge policy officials to assess stakeholders' levels of trust between each other and the officials before even starting a participation program (Focht 2005). A related recommendation would be to match stakeholders' participation preference so that the selection of appropriate strategies can enhance trust, rather than leading to decreased trust, questioning of legitimacy or frustration (Focht 2005).

Building trust, civic community and social capital do not come easily. Whether watershed-based land use decision groups or environmental management partnerships, the process for making decisions, reaching agreements and moving forward must retain both procedural and substantive legitimacy (Sabatier 2005). If the partnership succeeds in doing this, participation in the process can build trust, cooperation and greater social capital overall, while decreasing a perceptual bias that tends to act as a barrier to cooperation and trust. Findings from collaborative community and watershed planning support this (Al-Kodmany 2002; Ryan 2005; Sabatier 2005). For example, following the state of Washington's implementation of a watershed planning act and the explosion of watershed-based planning units statewide, a study found that all groups shared challenges (Ryan 2005). Groups found the collaborative process itself challenging, as well as developing both interagency coordination and trust. They also found that the most effective partnerships included multiple view points, had strong leadership, solid funding and time to build relationships. Time was a critical factor in trust development, and significantly, historic events and relationships affected the ability to generate and maintain this trust (Ryan 2005).

Cautions appear throughout the literature concerning the measurement of trust. One issue commonly mentioned is the "halo effect" where high levels of trust and social

capital actually inflate stakeholder perceptions of their partners' impact on watershed conditions, where the ultimate measure of success should be improvements in social and environmental problems (Leach 2005). Another admonishment is to take care when surveying coordinators of stakeholder partnerships which can lead to an interpretation of greater success and trust than actually exists, while sampling participants more broadly can lead to higher estimates of disagreements (Leach 2002). Democratic nations expect citizen participation and representation to provide information and shape national direction. In general, one should consider that the ultimate measure of a collaboration's success should include improvements in trust, social capital and community decision-making. A collaboration's success should also include improvements in environmental conditions.

Community Attachment & Length of Residence

In the literature concerning the process and challenges of community participation and land use decision-making, several variables emerge as key features to consider: community attachment, length of residence time and conflicts between newcomers to a community and the more established residents. Ultimately, research might discover that the origins of many conflicts over land use have much to do with the ways in which people are attached to places (Brehm 2004). A sense of place is a critical component of both personal and community identity, engendering shared values and common goals. Not identifying and acknowledging this sense of place and attachment are often key factors in the failure of traditional, top-down structured attempts at collaboration.

Attachment has two dimensions – social and natural attachment - that are distinct dimensions of the broader community attachment framework (Brehm 2004, Oct 2006).

Length of residence time and religious affiliation appear to be related to social attachment (Brehm 2004). Social attachment can predict concern for environmental issues, particularly when the issues are representative of community culture, heritage, identity or health (Brehm Oct 2006). Group size and geographic extent of membership impact social attachment and collaborative work. Stakeholders perceive and interact with one another based on organizational affiliation and identify themselves in terms of dominant reference groups. These characteristics and the geographic scale of a partnership together make it likely that a smaller scale group will identify themselves as a shared community, and frame issues related to community health and well-being (Cheng 2005). Similarly, collaborative land use planning groups, covering a smaller geographic area, are more likely to view each others as belonging to a shared group, and are more likely to reach agreements (Cheng 2005). This social attachment dimension is significant to land use planning and the collaborative community groups that meet to make such decisions.

Natural attachment is a bit more complicated and here the literature includes differences of opinion between newcomers and established residents, in-migration and out-migration studies and amenity-based migration. There is contradictory evidence surrounding whether or not, and why either newcomers or established residents might have more or less of an attachment to the natural environment (Brehm 2004, Oct 2006; Jones 2003; Fortmann 1990; Williams 1990). In one study, where natural attachment predicted attitudes of concern for environmental issues, there was no difference between newcomers and established residents (Brehm 2006). This same study indicated a correlation between stakeholders possessing a high degree of social attachment and longer residence with the concern over open space and multiple resource use protection

issues. In general, social and natural attachments can together be concerned with a sense of place, community identity and culture as well as about growth and development issues in land use planning (Brehm 2006).

One other important consideration for land use decision-making has great relevance in New Hampshire, and that is the concept of the newcomer - what they bring and why they come. Anecdotally, people move to New Hampshire in part due to natural amenities, such as ease of access to wilderness and traditional agrarian landscapes. This is referred to as amenity-based migration. The theories surrounding this rural rebound, or in-migrants to rural communities, and the resulting relationships between newcomers and established residents, are widely cited throughout the literature of rural sociology, planning and community development. They include the new voice theory, the gangplank or last settler theory, the culture infusion and culture clash theory (Jones 2003). The culture clash theory leads to discussions such those concerning attachment and areas of concern between newcomers and established residents based on value differences. The gangplank, or last settler theory, is the idea that conflict will develop with established residents when newcomers move to amenity-rich areas and are concerned about growth and development such that they are willing to be the last ones in, pulling up the gangplank (Smith 2000). The cultural infusion and new voices theories are related, and suggest that newcomers bring leadership, organizational skills and connections which they “voice” more readily than the established residents, whether or not the latter agree and collaborate (Fortmann 1990).

It is clear that the natural environment plays a role in migration patterns and that attachment has both social and natural dimensions. Hypotheses surrounding these topics

include that newcomers move because of the natural amenities or quality of life considerations, they are more knowledgeable and concerned than established residents about environmental issues, and they place a higher priority on protection – all of which are heavily playing out in the rural-urban fringe (Jones 2003). The earlier discussion on attachment clearly challenges some of these hypotheses. In general, the natural environment and its attachment factors outlined above need to be considered for areas under growth pressure when there are amenity rich rural communities expressing concern for enhancing community attachment and building social capital. This is precisely the case in New Hampshire. Encouraging the natural environment dimension of community attachment for areas dealing with growth management, might enhance that community's ability to pursue sustainable development (Brehm 2004; James 2004).

Local Knowledge, Values, Beliefs & Attitudes

Shared values, beliefs and attitudes must be identified because these are the things that people care about, which cause them to become participants in democracy and engage in the process of decision-making. Acknowledging and understanding these values and beliefs contributes towards empowerment. With respect to collaborative decision-making, such as in watershed partnerships, beliefs have been characterized as deep core beliefs, policy core beliefs and secondary beliefs (Lubell 2000). While deep core and policy core beliefs rarely change, stakeholders can come into cognitive conflict with their secondary beliefs, specifically about the parameters of environmental problems or institutional performance (Lubell 2000). Values have been defined as enduring beliefs, different from attitudes in that they transcend situations and issues, are a central component of a person's belief system and are limited in number (Vaske 1999). These

enduring beliefs are equivalent to deep core and some level of policy core beliefs. Values, it is important to note, can shift over time with population replacement. Finally, attitudes are mental states in reference to something, and representing a consistent tendency to respond favorably or unfavorably toward the object or situation in question (Vaske 1999).

Values relate to individual land use decision-making and economics. Although there is certainly evidence to suggest that nonmonetary evaluations play a critical role, personal values are inherently part of the economic literature surrounding open space and property valuation (Koontz 2001; Geoghegan 2002; Daily 2002). Economic valuation techniques are useful in disclosing stakeholder's perceptions, attitudes and beliefs (Chiesura 2002). Values might also be related to economic livelihood, as rural sociology's extractive commodity hypothesis suggests, where stronger connections to utilitarian rather than environmental values are exhibited in areas of extractive industries (Jones 2003). Recognizing the emotional connection between values and environmental or land use decision-making, some in the participatory GIS community have recommended focusing the technology on specifically mapping values and concerns of stakeholders (Sawicki 2002).

Researchers studying collaborative decision-making and watershed partnerships have noted the importance of identifying shared values and beliefs in order to more fully engage participants in the decision-making process, and build trust and social capital (Eisenhauer 2005; Eisenhauer 2005; Sawicki 2002; Sabatier 2005; Brehm 2004; Chiesura 2002; Lubell 2005; Vaske 1999; Al-Kodmany 2002; Imperial 2004). The work of watershed partnerships, and likewise land use decision-making, can be emotionally charged. This relates directly to stakeholders values, beliefs and attitudes, as well as

community attachment and identification with a sense of place. The emotional connection people have to the environment is a very important component of mental health and personal well-being (Chiesura 2002). Understanding this is critical to the success of a collaboration or partnership (Lubell 2002). When land use decision-makers fully partner with community members, the local knowledge and expertise they bring, in the forms of shared values, history and context, can be integrated into the design decisions of community land use resulting in a successful project, community empowerment and increased social capital.

Local knowledge is also critical within a decision-making context. Acquired through a watershed collaboration, this knowledge can be expected to be “different from that produced by a narrower network; moreover, it may be functionally better for making public policy decisions [because] there is knowledge, the public has, and it is different from the knowledge of experts; we must have both to ground public policy decisions,” (Bingham 2006). It might include such things as unique and specific environmental features in a community, or an oral history of changes in environmental features over time. The knowledge base of local community members is recognized as an important complement to scientifically acquired environmental information, because the local knowledge has oftentimes accrued over many generations (MacNab 2002; Sieber 2006; Arnold 2007). Further, outside experts can make incorrect assumptions about the values, concerns and goals of a community, which is another argument for collaborative research. Research designed and coordinated from the outside, holds less credibility with affected community members than if they participate in collecting and contributing local knowledge. Community members "are more likely to accept something that goes against

previously held beliefs," if they are involved in the process, which empowers them to act upon that experience (Wulfhorst 2004). All of the above attests to the fact that there are important and legitimate reasons to bring local knowledge and subjective criteria, such as values and beliefs, to the land use decision-making process.

Public Participatory Geographic Information Systems (PPGIS) and Spatial Scaling

PPGIS is an important tool and practice in environmental and coastal management and land use planning. PPGIS can have positive effects at the local level, and might bridge divisions between watersheds and the coastal and marine environment, facilitating change in understanding or government beyond the local scale. This section, therefore, will review the background of PPGIS, describe some of the methods and techniques so far developed, and offer examples of critiques and positive impacts of PPGIS and the issue of spatial scaling it addresses.

PPGIS Background

Public participatory GIS can help people understand how the world works through the power of thinking geographically (Dangermond 2002; LeGates 2005). The literature supports the argument that PPGIS is a powerful method for reaching out to and engaging stakeholders, increasing community participation in spatial decision-making, collecting and displaying different types of knowledge within a geographic area and lending definition to and building identity with a sense of place. Examples abound of how PPGIS can serve not only to foster better community decision-making but also, perhaps more importantly, to build social capacity in communities and within diverse groups. Still, there are issues identified with the practice of PPGIS, that challenge this rosy forecast, and at the same time, new approaches and techniques are being put to the

test. It may, in the end, be less the technical challenge of PPGIS than the challenge of community participation that influences spatial thinking and decision-making.

Coined at a meeting in 1996 at the National Center for Geographic Information and Analysis, PPGIS arose as a result of the critique of GIS proper (Sieber 2006).

Various groups were concerned about the social theory of GIS, and especially, the power relations it highlighted between those possessing access and ability to use GIS and those without. PPGIS then arose from the concepts of community integrated GIS and “counter mapping” (mapping local knowledge), much as in the same vein as postmodern and constructivist developments within qualitative research (Kincheloe 2005). As such, it is important to point out that PPGIS is always specific to the culture, law, politics, nation and society in which it is applied. From the beginning, PPGIS attracted research in fields such as landscape ecology, urban planning, community development and natural resources. Its focus on the collaborative planning process brought it deeply into the field of urban planning as a way of mapping, top-down, characteristics of people and society. Nonprofits started using PPGIS in participatory projects, explanatory case studies grew providing social connections through the narrative, development work in other countries picked up on it and it grew even more within grassroots environmental advocacy.

PPGIS comprises a set of tools or techniques based on geospatially referenced data and the interactions, utility and potential of using these with the public. PPGIS is a platform for integrating all types of qualitative and quantitative information, which is significant given the historic disciplinary divisions between such fields. At present, in its simplest form, it focuses on linking local and expert knowledge (Craig 2002). As such, it pertains to the use of GIS to “broaden public involvement in policymaking as well as to

the value of GIS to promote the goals of nongovernmental organizations, grassroots groups, and community-based organizations” (Sieber 2006). After conducting a survey of PPGIS practices and programs in the US, a working definition was developed, which includes the following components: 1) collected demographic, administrative, environmental or other local area data, 2) something is done to the data to make it more useful locally, 3) information is provided to local nonprofit or community groups at low or no cost, 4) the data has a significant spatial analysis component, and 5) some sort of analysis is being carried out (Sawicki 2002). Criteria for evaluating PPGIS have been recommended, including the appropriateness of the information, its actionability, timeliness, accuracy, insight, time perspective, synergy, and the combination of qualitative and quantitative information, to which could be added a measure of substantive and procedural legitimacy for those participating (Barndt 2002; Trachtenberg 2005).

Besides PPGIS, there are other ideas of spatial tools and “spatial media,” a term which would include all cognitive, visual, graphical, oral and narrative forms of information (Shiffer 2002). Public participation and visualization (PPVIS), for example, is used to refer to the mostly private type of map use, where people are directly involved in high map interaction and exploratory analyses (Krygier 2002). The importance of geographic education in the context of PPGIS and other spatial media cannot be underestimated. The concept of how one makes sense of geospatial relationships is critical (Krygier 2002). This sense-making conceptualizes how people move through complex time and space contexts, so the spatiality of a PPGIS map design should be

carefully attended to, with nonthreatening graphics, and software that moves people through increasing levels of complexity (Krygier 2002).

There are several different types of goals with PPGIS. Material goals often include such things as maps, case studies and 3-D models. Other goals, however, can include concepts such as empowerment, expanded participation, social capacity, equity, power redistribution and increased democracy. Some proponents assert that in general, goals should be based on broad concepts like community development, sustainable development or environmental preservation (Sieber 2006). Education and increased GIS skills are other goals, and some would argue that the ideal PPGIS would be where neighborhood residents collect their own spatial data and process it themselves (Sawicki 2002).

Methods and Techniques

There are many different styles of PPGIS tools and techniques from which to draw upon, but the key point is that they all seek to have some measured success in terms of public participation, usually in a decision-making process. Traditional public participation means attending meetings, volunteering, reading a newspaper, sending a letter to the editor, writing or contacting elected and appointed officials, participating in polling, voting in local elections and writing comments on proposals open to public input. These traditional forms are challenged by time constraints, lack of volunteers and the occasionally contentious atmosphere of local meetings – all of which deter public involvement. More recently, these have been augmented by Internet tools that generally expand the traditional information and participation styles through digital technology. For example, web sites will post meetings, summaries, information about upcoming

meetings, or documents for review. Participation in community decision-making in the United States has substantially declined, and some would say, dangerously declined, over the last few decades, as thoroughly documented in Putnam's work on social capital (Putnam 2000). So, the advent of PPGIS, and related new techniques and tools for engaging the citizenry and increasing participation, real or virtual, are exciting and perhaps have potential to alter the trend of declining social capital.

There are six general models of PPGIS delivery for community and grassroots organizations, include the following: community-based in-house GIS, university-community partnerships, publicly accessible GIS facilities, map rooms, Internet map servers and neighborhood GIS centers (Ventura 2002; Leitner 2002; Sawicki 2002; Walker 2002; Bosworth 2002; LeGates 2005). The nature of interaction can include: no direct use, passive use, active use or proactive use, and either individual or collaborative interfaces (Leitner 2002). Organizations do not typically choose just one method, but perhaps change strategies over time and develop novel approaches (Weiner 2002). These six models can be differentiated along five dimensions, including: communication structures which connect organizations with GIS facilities, the nature of interaction with GIS, the physical accessibility of GIS, community organization, stakeholders involved, and the legal and ethical ramifications (Leitner 2002).

The community-based in-house GIS, map rooms and publicly accessible GIS facilities have in common the fact that they might be geographically located within communities, but require travel to access. A map room simply includes maps created through PPGIS for members of the public to examine. This form is certainly available in many New Hampshire towns. Publicly accessible GIS facilities would require an

organization's staff or volunteers to travel in order to create and print maps. In cases where travel is required, it might prevent community organizations from directly communicating with one another and collaborating to solve problems (Leitner 2002). In the case of New Hampshire, communities often contract with Regional Planning Commissions for GIS work, analysis and map production that coincidentally results in the same loss of collaboration potential.

University-community partnerships typically involve universities assisting community organizations with specific GIS work. This is the case with UNH's GRANIT program, which houses the state's GIS data and contracts out for specific research or analysis on behalf of state agencies, nonprofits, Regional Planning Commissions, towns or other organizations. Another possibility with this PPGIS model is "action research," which is a fully collaborative, inclusive and longer-term program, where the community partners fully participate in the research and generation of knowledge (Leitner 2002). This does not exist in GRANIT, but there is a GIS-wikipedia program under development with New Hampshire's Cooperative Extension system, the goals of which are to collect and manage community group developed GIS data throughout the state (French 2008). The challenge in this GIS-wiki will be maintaining some degree of metadata standards.

Internet and web based tools, such as internet map servers, have created opportunities for those in GIS and decision support research to increase public involvement in environmental decision-making by making some predefined maps available (Kingston 2002). A further development is the web-based PPGIS, which addresses some major concerns for community participation by not restricting meetings to a certain time or location, but ensuring information is accessible from a Web access

site, and opening up 24/7 access— all increasing the potential for more people to participate. A web based PPGIS allows people to explore the decision problem, examine choices and alternatives, make selections and provide feedback and evaluation (Kingston 2002). This method opens a “new public sphere supporting interaction, debate, new forms of democracy and ‘cyber cultures’ which feed back to support a renaissance in the social and cultural life,” (Kingston 2002).

Web based PPGIS spans a continuum of technology, from the simple to the sophisticated, for which two examples suffice. A simple example is the prototype web site developed with a neighborhood in Buffalo, NY (Krygier 2002). This project started by working with the public using paper maps and colored pencils in collaboration with digital technology, to develop a neighborhood website where the public could slowly move into more abstract renditions of maps, enhancing understanding of the neighborhood by broadening spatial context. A master GIS user in the neighborhood was assigned to input public knowledge and suggestions. The criticisms of this experiment were that many people, unfamiliar with GIS, initially interpreted the digital map as a finished product and were uncomfortable in making recommendations. Overall conclusions from this case study are that the majority of GIS issues are not technical, but are in the ways we manage, analyze and understand spatial phenomena (Krygier 2002).

An example of a sophisticated web-based PPGIS is the United Kingdom’s “Virtual Slaithwaite” experiment. This was a planning exercise, in which researchers were able to quickly and efficiently collect and record public views and feelings, build a database and profile users online, while continuously maintaining and updating the planning exercise and disseminating results, all the while providing feedback (Kingston

2002). The techniques employed were deemed useful and very popular and the public viewed it as a positive experience in community planning. There was already a high degree of proficiency of map usage but, when necessary, younger community members provided assistance to those experiencing difficulty with the technology. The criticisms of this approach include the fact that there was a strong male to female bias in web users and some people found the 3D maps hard to use. In addition, planners acknowledged a need to determine a strategy for incorporating "fuzzy information", such as anecdotal locations, which are not easily mapped or verified (Weiner 2002). Researchers identified issues with training requirements for people learning about the maps, Internet access for some and copyright issues. Overall, this project demonstrated that it was possible to develop virtual systems with which the public could interact (zoom, pan, question attributes, add new information), allowing maps to be customized.

There is less literature concerning neighborhood GIS centers, but these generally are created when neighborhoods pool their expertise and resources to provide a central facility that all community organizations can use. Community organizations provide the funding and goals, there is great capacity for proactive use of PPGIS, and it is an "ideal environment for collaborative learning and decision-making, as representatives of different communities can gather around a single computer terminal," (Leitner 2002). The challenge to these centers is that they might face complex legal and ethical issues, although active collaboration between community organizations within the center can facilitate a dialogue to address this (Leitner 2002). An example of a neighborhood GIS center and community constructed PPGIS database is San Francisco's South of Market Area (SOMA) (Parker 2002). A coalition of community members, activists and

nonprofits developed the GIS to create a living neighborhood map. In this successful case, PPGIS played a role as a democratic planning tool, which educated a diverse neighborhood about powerful and rapid forces of change and empowered the community to act. People became more informed about zoning and economic development and grew into a sophisticated collective voice, which successfully addressed the city's planning department, greatly increased public participation in the planning process, and eventually brought about political change.

Spatial Scaling Challenges, Opportunities & Critiques

PPGIS has great potential in influencing spatial decision-making, largely because it has the unique characteristics of simultaneously being able to “jump scale”, or project different geospatial scales and relationships of a concern or situation, while being able to also be place-specific, highlighting in detail and depth attributes of specific areas (Craig 2002). This ability to “jump scale” makes PPGIS particularly useful with understanding the overall terrain of a particular environmental struggle (Craig 2002). Considering the local, PPGIS has the ability to highlight place in a way that conventional GIS systems do not (Craig 2002). An example of this is the project mapping Philadelphia neighborhoods, where a PPGIS was developed to communicate detailed qualitative information of the local environment described by neighborhood residents (Casey 2002). Knowledge of neighborhood features like this is something that can only come from the neighborhood itself, is highly place specific and contextual. The public, in PPGIS, can be differently defined and can include virtual interest groups such as residents who live out of state (Sieber 2006).

Related to the PPGIS characteristic of being place specific and highly contextual, is the ability to use PPGIS to blend local or indigenous knowledge with expert knowledge, of which there is a substantial body of literature. Local knowledge is also called indigenous technical knowledge, indigenous spatial knowledge, traditional ecological knowledge, commonsense geography and even simply “knowledges” (MacNab 2002; Harris 2002). Positivist critiques of local knowledge are that it is qualitative and unscientific, and lacking orientation and reference it remains anecdotal. But when the local knowledge is merged with geospatial data, it assumes far more authority than possible with just oral descriptions and sketches (MacNab 2002). An example of local knowledge gathered into a PPGIS includes a combined participatory interview and GIS based map biography of fishing communities, which revealed a “social landscape” of communities and fishing practices (St. Martin 2007).

Some could argue that the PPGIS ability to jump scale, highlight place and blend local knowledges are among the most important benefits and positive characteristics, but its potential contributions to participatory democracy are also key. Land use decision-making is a difficult process to characterize. The ideal, Jeffersonian democracy would be where enlightened citizen farmers would routinely and directly engage in community decisions through voting, running for office, attending meetings, etc. Today’s cynical view is that the process is skewed towards developers and other elites with economic profits to be made. These arguments are why it is important to consider how PPGIS contributes to a democratization of both data and process, and, from an information perspective, whose views are represented in a database (Kingston 2002; Ventura 2002; Elwood 2007). PPGIS can democratize the process by effectively communicating citizen

concerns to the government, creating greater accountability, and ensuring that when planners make decisions, they do not lose sight of specific social interests or personal community feelings (Sawicki 2002).

One of the strongest local positives of PPGIS has been linked to its ability to empower communities, although there is evidence to the contrary (Craig 2002). Empowerment occurs most readily through “counter mapping,” when local spatial stories and knowledge are integrated (Craig 2002). This, like the scale of decision-making, is a political endeavor and must be viewed within the broader social, economic and political framework in which it occurs, but counter mapping has the potential to advance advocacy, make visible the claims of those affected, empower the poor, counter claims of the elite and promote new visions of development (Craig 2002; Stonich 2002). Examples of empowerment through PPGIS abound in the literature (Weiner 2002; MacNab 2002; Bond 2002; Harris 2002; Jordan 2002; Kyem 2002; St. Martin 2001; Stonich 2002). Even though empowerment for some is considered a desired outcome to judge PPGIS, there is also an argument for considering participation itself as the endpoint (Sieber 2006). Related to empowerment is scale, and as cartographic scale increases, so does the intensity with which people connect with local issues (Sieber 2006). Steps along the way in PPGIS, such as the individual “sense making,” also contribute to empowerment, because this step privileges and empowers the ordinary person in developing ideas to guide his or her personal world (Krygier 2002).

Critiques of GIS can include backlash from elites, power struggles and disempowerment. Much of the evidence for the latter comes from development projects, but this can occur where there is reconfiguration of knowledge, ownership or power,

resulting in threats from elites in response to these new technologies potentially challenging their authority (Craig 2002). Disempowerment can also arise through inequity, the lack of access to technology or lack of education about technology (Laituri 2002). Stakeholders who are less skilled in GIS can, although not always, be at a disadvantage, because PPGIS imposes a technological layer to complex local struggles and this can alter community power relations (Elwood 2002; Sieber 2002; Weiner 2002). Disempowerment can also occur where government limits data access and although most GIS data is produced by the public sector, there are competing ethics at work (free public access vs. privacy) (Sieber 2006). From another extreme, an evangelistic attitude concerning the benefits of GIS can distract grassroots groups and others from proven strategies (such as protest), while outright failing to question the overall framework of policymaking or distribution of power, similarly resulting in disempowerment (Sieber 2006). Groups that are traditionally marginalized can expect to be affected, such as seniors, non-native English speakers and people of color (Elwood 2002). A final consideration to note is that implementation of a PPGIS within community organizations may reduce cohesion of organizational membership, because rifts might develop between the new experts and often longer-term group members (Leitner 2002).

There are practical, administrative and financial difficulties with PPGIS and GIS, too. Larger groups may have the resources to internalize GIS capacity, but there is evidence that small NGOs and grassroots groups can spend a significant amount of time seeking grants to keep their PPGIS activities alive (Sawicki 2002). This was the case in Philadelphia, where even after distribution of computers and software, organizing data, and hours of training and handholding, there was a significant lack of skills necessary to

use GIS, extremely limited budgets and rapid turnover of staff (Casey 2002). There is also an assumption in the literature, that not very many people with GIS skills volunteer their time to work with grassroots groups. It is possible for organizations to develop in-house GIS capacity, which is mentioned earlier, but this is rare due to small budgets and a lack of expertise. So data intermediaries, such as government agencies, NGOs or universities take up much of the slack.

Considerations for PPGIS within an Ecoregional, Watershed Perspective

There are a great many challenges and equally many opportunities for PPGIS, and these must be considered when thinking about the divisions between data collection and management, between watersheds or ecoregions and an integrated coastal EBM, and between governance and participatory democracy - scaled both up and down (Leach 2006). The biggest challenge to PPGIS may, in fact, be the sociocultural connection. Rather than any technical issue, community participation is indicated as the challenge, but the lack of long-term studies following PPGIS projects is part of the problem in examining this (Craig 2002). The sociocultural component with community participation, over time, gets to the heart of the matter in terms of representation, empowerment, autonomy, welfare, justice, social capital and a healthy, robust, participatory democracy. The current reflexivity in PPGIS literature surrounding issues of empowerment, control over knowledge, spatial context, strength and specificity of place all resemble the theoretical developments within grounded theory over the last few decades (chapter three), but within PPGIS, they are still undergoing some thoughtful transitions. One early method proposed to examine the degree of citizen participation is the ladder concept, which might help frame some of the upcoming PPGIS analyses with respect to

community participation (Weiner 2002). This, with some longer-term studies of effects of PPGIS on community decision-making and spatial planning, would be of great value.

There are some logistical, administrative and technical challenges to which PPGIS must attend in order to be effective. In general, it is important to develop a range of strategies and institutional arrangements through which typically disempowered, smaller and resource-poor community organizations might gain access to GIS and participate in decision-making. A capacity must be developed to incorporate informal, mental models such as anecdotes or local observations, and the data for use by the public must not be “thrown over the wall”, or beyond most users ability to understand (Sieber 2006). Spatial multimedia may have the ability to expand upon these challenges through such things as cable TV access, teleconferencing and web access (Shiffer 2002). A unique example of a successful project with mixed spatial media and PPGIS involved combining art (traditional landscape and cityscape sketching) and virtual imagery to increase public participation and shape the environmental design image for a Chicago neighborhood (Al-Kodmany 2002). Other experiments which could be considered include land use forums or “listening sessions”, allocation experiments, land information bulletin series, training experiments, software modules and electronic town halls (Ventura 2002). Whatever the local arrangement, it is important that there be an in-house GIS champion (Sieber 2002).

Not surprisingly, culture can play a role in the potential use of PPGIS in decision-making and, of course, the concepts of space and scale are social constructions with different cultural interpretations. For example, the Germans and Swiss are more amenable to decision models than Americans, who tend to be distrustful of overtly

constructed participatory models (Sieber 2006). There is a fine line between PPGIS contributing to local empowerment, social activism and participatory democracy and PPGIS contributing to disempowerment and denying groups their democratic foundations (Meredith 2002; Sieber 2002). An additional layer to this question of local scope and trust in culture is the tension between municipalities, between local and state, between state and federal, and between other competing interest groups and agencies – all of which have a stake in community decision-making (Kettl 2006). This is certainly present in the existing turf wars in the NH seacoast community. There is competition among federal, state and local groups, all vying for the same funding sources and access to the same groups in order to facilitate and improve both environmental and land use decision-making. Perhaps even more interesting in NH, is the tension that exists between municipalities, which is linked to historical relationships and trends (Heffernan 1996). This currently presents itself in the form of competition over development proposals to increase a town's tax base. PPGIS will be affected by culture at many scales, national to local.

Although a defining characteristic of GIS itself is an ability to move through multiple scales, one can then ask, if community activism is spatially fixed, can PPGIS enable a breakthrough of local practices and community concerns out of Agnew's "hidden geographies" of scale concerning the concept of place (Weiner 2002; Agnew 1987, 1993)? A critical requirement for scaling up in PPGIS is to "create a system that is at once sensitive to local diversity (among people, perceptions, knowledge, environment, ecologies, political systems, institutions, etc.) and capable of synthesizing information and demonstrating regional and global patterns and conclusions," probably incorporating

counter mapping (Stonich 2002). Challenges to scaling up in PPGIS include finance, technical ability, data constraints, social, cultural and political obstacles (Stonich 2002). PPGIS can be part of the solution by creating strong multiple publics, at multiple scales, that augment democracy, by enabling people to become involved in the level that does not obfuscate their daily lives through maps and language drawn from instrumental, strategic logic (Aitken 2002; Weiner 2002). The critical challenge for PPGIS in this scaling exercise will be to ensure that the maps and language communicate spatial stories that clarify and politicize issues about which people feel concerned (Weiner 2002).

The PPGIS characteristics and techniques described above all play a part in thinking of a watershed-based land use decision-making framework. PPGIS has an impact in places where it is necessary to articulate stakeholder views, increase understanding of technology, make complex decisions transparent, augment deliberation and consensus, further communication and links between and among parties, share information, resolve conflicts or enable greater exploration of ideas (Sieber 2006). It is an accepted view among many that PPGIS must move into local and regional landscape economics and politics and that this will be a crucial directional development for the field (Craig 2002; Herrmann 1999). Coastal NH communities already have an awareness of GIS, through the work of the Regional Planning Commissions, GRANIT, and the many nonprofits developing GIS layers of such things as land conservation plans. Decision-making boards in the municipalities, however, are accustomed to seeing the GIS maps and layers within their town borders, rather than from any ecoregionally scaled perspective. PPGIS within an ecoregion or watershed scale has the potential to impact how these communities make land use decisions.

Integrating a PPGIS into a coastal EBM could change how management and governance approach the relationships between inland watersheds, the coastal environment and land use decision-making. Data collection and management could be much more efficient with strategies designed at local, watershed and ecoregion levels. PPGIS could make connections between locally captured knowledge and the larger spatial picture. Overall, incorporating this sort of tool could fine tune the understanding of the interface at the coastal and marine environment. This perspective could pinpoint focal areas of concern between the terrestrial and coastal EBM which could help direct resources for outreach, education and collaborative decision-making surrounding complex issues. Finally, considering the complexity in seacoast New Hampshire of overlapping administrative and political boundaries, PPGIS could, like it did under similar conditions in New Jersey, circumvent some environmental and growth management problems (Tulloch 2002; Richardson 2003).

CHAPTER III

METHODOLOGY

This study draws upon and seeks to characterize aspects of the social landscape of land use decision-making within a watershed of Great Bay. A social landscape, in its simplest characterization, relates communities of people to the land. The social landscape can be understood as the assemblage of communities, practices and knowledge varying across space (St. Martin 2007). Landscape ecologists refer to social landscape analysis in the context of applied demography, human ecology, community attachment and rural community studies, which characterize people, social organizational structure and social relations on the land over spatial and temporal scales. Social landscape analysis can be more specifically defined as the study of the spatial distribution of interrelated social variables in a given biophysical setting, with particular attention to the social patterns on the land and the underlying characteristics of the natural resource base and ecological processes (Field 2003). For the purpose of this study, the social landscape will be defined by the Lamprey River watershed, one of the contributing watersheds of Great Bay.

Case Study

After discussions with numerous UNH researchers, Great Bay National Estuarine Research Reserve staff and others, the Lamprey River watershed was chosen for this research. This was in part due to the characteristics of the watershed, in part to on-going efforts here by NOAA and EPA, and due to the presence of active research in this

watershed by a variety of UNH lab groups. The Lamprey River is one of seven rivers contributing to Great Bay, and one of three flowing directly into the estuary. The watershed is geographically the largest, draining 543 kilometers² (54,300 hectares or 210 miles²) (Short 1992). The Lamprey River flows roughly 97 km (60 miles) through diverse communities, with a variety of cultural and natural resources (LRWA 2005; LRAC 2007; NHDES January 1990). The watershed contains 14 towns and is bisected by three Regional Planning Commissions and two counties (Appendix 3:1; DVD 1, 2). The towns vary socio-economically and include Barrington, Brentwood, Candia, Deerfield, Durham, Epping, Exeter, Fremont, Lee, Newfields, Newmarket, Northwood, Nottingham and Raymond (ELMI 2008) (Appendix 3:2). The counties, Rockingham and Strafford, together have approximately one half million people (Zankel et al. 2006). The RPCs include the Rockingham Planning Commission, Strafford Regional Planning Commission and Southern New Hampshire Planning Commission. The public bodies involved in land use decision-making primarily include Planning Boards, Conservation Commissions, Zoning Boards of Adjustment (ZBA), Open Space Committees and Heritage or Historic District Commissions (HC, HDC). It is necessary to bound this case study, best defined by the geography of the watershed, the 14 towns within it and the public bodies of those towns that contribute to land use decision-making (Yin 2003).

Research Aims

There is no existing watershed-based land use decision-making system in the Lamprey River watershed, nor does this study intend to develop one, but the resulting theoretical framework can identify components of the social landscape that might support such a system. By examining the social landscape and describing this theoretical

framework, the research aims of this study should be able to: 1) define the land use decision-making process based on target groups in a watershed, 2) identify the components which could support a functioning, watershed-based land use decision-making system and 3) explore the understanding, communication network, cooperation potential and limitations for such a system within Lamprey River watershed communities.

Mixed qualitative methods, including semi-structured interviews and aspects of GIS based map biographies are used to examine land use decision-making in this watershed. Map biographies have been developed as a way to capture broad community level participation in ecosystem based management with local knowledge of the social context of a community's decision-makers by including local knowledge of resource use, policy and decisions within a spatial framework (St. Martin, 2001; St. Martin and Hall-Arber, 2007). While the GIS based maps developed and applied here were not used in a true map biography form, they were integrated as critical components within the semi-structured interview process as visual probes. Map biographies and semi-structured interviews are well established within grounded theory as social science techniques (Charmaz, 2006; Glaser and Strauss, 1967; Strauss and Corbin 1998; Clarke, 2005). Grounded theory makes use of data gathered through mixed methods, which are then managed and analyzed with qualitative data analysis software (QSR 2006). The analysis focuses on drawing relationships and understandings between expressed knowledge or views within and between all actors in a specified community. This results in a constructed theoretical framework, which in this case is the social landscape of land use decision-making within the watershed.

The qualitative methods employed are well established within grounded theory, and, with reference to map biographies, are useful in including local knowledge of resource use, policy and decisions within a spatial framework (St. Martin 2001; St. Martin 2007). Whereas European spatial planning and landscape architecture already have a history of including the social dimension within an underlining framework for spatial planning based on natural water systems, a social landscape analysis in this case study area can be a useful first step (VROM 1998, 1998, 1995; Verweij 1995; van Buuren 1997). Interviewing members of Planning Boards and the other target groups will thus provide an understanding of how decisions are made regarding land use in their towns, and in this way, describe some of the knowledge and practice pertaining to land use decision-making within and across these communities. This will lead to some understanding of community attachment and social relations within this landscape - all of which contribute to a picture of the social landscape of the watershed.

Considering the overarching research aims, there are a number of questions of relevance, including: Do these communities see themselves within the watershed? Do they take into account the issues of Great Bay and the coastal ecosystem? Do municipalities communicate upstream and downstream or consider cumulative effects of land use decisions? Using constructivist grounded theory, and a postmodern perspective to attentiveness to specific and circumstantial dimensions, this study seeks to explore the social landscape of decision-making by the land use groups within the watershed's municipalities. And, although there are a variety of views about what constitutes a finished grounded theory, the intent is to be able to present this constructed theoretical

framework describing how the people who make land use decisions in these communities relate to the land and to each other within the watershed (Charmaz 2006).

Grounded Theory Approach

Definition and Background

Grounded theory refers to both a method of inquiry and a product of inquiry. Definitions appear slightly different depending on source but, essentially, grounded theory is composed of a set of flexible analytic guidelines that enable researchers to focus the data collection and build in middle range theories through successive levels of data analysis and conceptual development (Charmaz 2005; Bruce 2007). Grounded theory was developed as a reaction against positivism (Appendix 3:3) and is characterized by entering the fieldwork phase without a hypothesis and then pursuing strategies or analytic guidelines such as simultaneous collection and analysis of data, a coding processes, comparative methods, memo writing, theoretical sampling and finally integrating this into a theoretical framework (Bailey 1994; Charmaz 2000). This approach requires data to be clearly bounded and located, with researchers remaining close to the data to develop an integrated set of theoretical concepts from which to further focus data collection and develop theory. An empirically based substantive theory of a particular phenomenon of concern is thus composed of the analytic codes and categories generated inductively during the analysis and integrated to frame the basic social processes occurring in a situation (Clarke 2005). A completed grounded theory would possess a close fit (“be grounded”) with the data, and possess usefulness, conceptual density, durability over time, modifiability and explanatory power (Charmaz 2006; Glaser 1967). Traditional grounded theory possessed roots in Columbia University positivism and pragmatist

philosophy, University of Chicago sociology, ethnography and symbolic interactionism. Since 1967 however, positivist underpinnings of grounded theory have been challenged, advanced and moved in slightly different directions, which has relevance to the theoretical orientation of this study.

Constructivist Approaches, Theoretical Underpinnings

Critiques of positivism in grounded theory, the influence of symbolic interactionism and the perspective of Chicago ecologies and social worlds/arenas/discourses all within a postmodern milieu, led to greater constructivist revisions of grounded theory and within this, the work of authors Clarke and Charmaz is particularly insightful. Kathy Charmaz is the leading theorist advancing grounded theory today and her work is of considerable value to the theoretical orientation of this study. She views grounded theory as a set of principles and practices, and argues: grounded theory needs be flexible, the focus must be on meanings, a reflexive stance must be assumed concerning knowing and representing studied life, close attention must be paid to empirical realities and our collected renderings of them, and there is no impartial observer. She asserts it is possible to pursue grounded theory strategies without embracing positivist leanings. She proposes a forward shift of the theory into constructivism, where one "celebrates firsthand knowledge of the current worlds, takes a middle ground between postmodernism and positivism, and offers accessible methods for taking qualitative research into the 21st century,"(Charmaz 2000). Unlike Glaser and Strauss, who contend theory emerges from the data separate from the scientific observer, Charmaz assumes that neither the data nor theories are actually discovered, "rather, we are part of the world we study in the data we collect...we construct our grounded theories

through our past and present involvements and interactions with people, perspectives, and research practices," (Charmaz 2006). Charmaz recognizes the creation of knowledge by both the viewer and viewed and aims toward an interpreted understanding of what the subjects mean, while not discrediting those of the researcher. These meanings must be found in interviews, values, actions, facts, beliefs, ideologies, situations and structures (Charmaz 2000).

Charmaz assumes the relativism of multiple social realities, and it is the researcher's attention to detail that sensitizes them to these. Grounded theories portray moments in time, because the social world is always in process as the lives of the research subjects shift and change. So grounded theory research is an emergent process, rather than the product of a research problem logically and deductively sequenced (Charmaz 2000). Whereas Glaser assumed data could be gathered without bias, Charmaz's constructivist approach recognizes categories, concepts and a theoretical level of analysis that emerges from the researcher's interactions within the field and questions about the data (Charmaz 2000). "No qualitative method rests on pure induction - the questions we ask of the empirical world frame what we know of it. In short, we share in constructing what we define as data. Similarly, our conceptual categories arise through our interpretations of data rather than emanating from them or from our methodological practices"; in essence, a theoretical analysis is an interpretive rendering of a reality and not an objective reporting of it (Charmaz 2005). In this study, following Charmaz's methodology led to conceptual categories, but Clarke's situational analysis proved useful to develop these in depth.

According to Clarke (2005), grounded theory contains the Meadian notion of perspective, a materialistic social constructionism, a deconstructive mode of analysis, open coding, an orientation towards processual analyses, and the long-standing ecological bent of symbolic interactionism. This framed the study and analysis of human society through the nature of human groups or societies, social interaction, objects, the human being as an actor, human action and the interconnectedness of action (Blumer 1969). This ecological bent to the study of communities, activities, actions and process was furthered through the analytic technique of mapping inventories of space: "deep within the sociological ecology, born in the emerging metropolis of Chicago, lie concepts and metaphors of territory, geographic space, maps, relations among entities in shared terrain, and so on,"(Clarke 2005). Analytical mapping techniques rupture our normal ways of working, provoke us to see things in new ways, create new assemblages or new connections, stimulate new questions, represent a fundamental cognitive process and open up knowledge space (Clarke 2005). Maps are part of the Chicago tradition, work as spatial and oral narratives, allow concepts to be unmapped and remapped and permit researchers to move around easily which provokes enhanced reflexivity during analysis.

Clarke's constructivist proposition was a strategy designed to push grounded theory more fully around the postmodern turn with what she called "situational analysis" and aspects of this approach proved useful in this study (Clarke 2005). Situational analysis builds upon the Chicago school perspective by offering three new cartographic approaches to analysis: situational maps, social world maps and positional maps (Appendix 3:4). Situational maps are intended to capture and discuss the complexities of the situation in a dense relation. Social worlds maps lay out all the collective actors and

key nonhuman elements in the arena of commitment in which they are engaged. Positional maps lay out the major positions taken and not taken with particular axes, variation and difference, focus and controversy in the situation of concern. Clarke's strategies are to: 1) assume the simultaneous truth of multiple knowledges; 2) use the situation of the research phenomenon as the site of analytic grounding; 3) shift from assumptions and representations of simplified normativities and homogeneity to complexities and heterogeneities; 4) assert the analytic sufficiency of sensitizing concepts, rather than the pursuit of formal theory; 5) do situational analysis throughout the process with map making and 6) turn to discourse to expand the domains of social life included in research (Clarke 2005). These methods encourage the analyst to elucidate the complexities of situations, integrate postmodern sensibilities, and provide new analytical tools for discerning subtle empirical relationships while working through what Clarke calls "analytic paralysis," (Charmaz 2005).

Clarke's situational mapping was useful as an analytical tool for this study. This approach helps to get information such as assumptions out on the table that help to ground the researcher within the process of analysis. The constructivist, postmodern perspective acknowledges all data and all knowledge as constructions: "We cannot help but come to almost any research project already 'knowing' in some ways, already inflected, already affected, already 'infected'," Clarke (2005). The challenge is to remain present, acknowledge and not discredit our own biases, and become more visible and accountable. While a grounded theorizing approach can construct situational analyses and frame basic social processes, the goal is to improve the representation of differences and complexities of all kinds. "The radical reflexive act we perform as map makers is to

reveal ourselves in and through analyzing what ‘we’ do as well as what ‘they’ do,”(Clarke 2005). Understanding the play between the researcher seeking knowledge from the respondent, that interaction, and the space in between, is a key focal point for reflexivity in the postmodern perspective. Accepting this helped to frame the processes and actions as thematic concepts within the developing theoretical framework in this study.

Attentiveness to Specific and Circumstantial Dimensions

The directional shifts in grounded theory have relevance to how this researcher attends to the specific and circumstantial dimensions in this study of land use decision-making in the Lamprey River watershed, because the researcher’s methodological approach is firmly in the constructivist grounded theory camp. Reflecting on this, we act within and upon our realities and worlds, developing dialectical relations among what we do, what we think and how we feel. The constructivist approach assumes what we take is real, since objective knowledge and truth are based on our own perspective (Charmaz 2000). The process of constructivist grounded theory entails simultaneous data collection and analysis, pursuit of emergent themes through early data analysis, discovery of basic social processes within the data, inductive construction of abstract categories that explain and synthesize these, sampling to refine categories to comparative processes, and the integration of categories into a theoretical framework specifying causes, conditions and consequences (Charmaz 2006; Schram 2006). Constructivist grounded theory means seeing how data and analysis are created from shared experiences with participants, requiring rich data and sufficient knowledge so that one can see differences and distinctions. A reflexive stance must be taken towards the process and products, and

consideration of how theory evolves, reflecting on the facts that researchers and research participants interpret meanings and actions, facts and values are linked, and an analysis is contextually situated in time, place, culture and situation (Charmaz 2006).

This researcher's perspective is also that of postmodernism, requiring a recognition and transparency in perspective, assumptions and biases within the research space developed with study participants during interviews/data collection and analysis. This postmodern conversation directs attention to how local and global concerns are linked together, which can also be considered part of the specific and circumstantial dimensions of a studied situation (Schram 2006). Specific dimensions are characterized as particularistic, context specific, local or in-depth. Circumstantial dimensions are characterized as the broader context and the interplay of social, cultural, and natural influences. These specific and circumstantial dimensions in a way are analogous to scale in the social action situation. Maintaining attentiveness to both ideas and actions can simultaneously address the range of specific and circumstantial dimensions along this scale. Charmaz (2005) argues this point in her proposal for a constructivist approach in social justice inquiry, stating that paying attention to ideas and actions concerning "the fairness, equity, equality, democratic process, status, hierarchy, and individual and collective rights and obligations... signifies thinking about being human and about creating good societies in a better world." Contextualized grounded theory can "start with sensitizing concepts that address such concepts as power, global reach, and difference and end with inductive analyses that theorize connections between local worlds and larger social structures,"(Charmaz 2006).

Research Protocol

Units of Analysis, Construction of the Interview Guide, IRB Process

A qualitative study with semi-structured interviews and a grounded theory approach requires a number of steps in the development of the protocol. In designing this study, three units of analysis were developed from which were derived the topical questions and ultimately, the interview guide, or interview questions. Units of analysis can be many different things, including persons, organizations, or engagements within organizations, but are defined and related to the initial research questions (Yin 2003). These help define the boundaries of the study, and the findings of the study will pertain to specific theoretical propositions about the units of analysis. Eventually, with a grounded theory approach, the units of analysis serve as jumping off points to ultimately generalize the findings of the study, and describe the resulting theoretical framework (Yin 2003). In this case study, while individual people, public bodies or towns could have been assigned as the units of analysis, the focus was on understanding the social process of decision-making, and the units of analysis were chosen as they related specifically to this.

The units of analysis relate to processes within land use decision-making, specifically: 1) data gathering, 2) community identification and information exchange, and 3) policy. A simple matrix was designed to frame the wording of these units of analysis under a category referred to as topical themes (Appendix 3:5). Data gathering is referred to as “resource inventorying”. Community identification and information exchange is referred to as “watershed communication and connections”. Policy is referred to as “policy adoption and implementation”. From these topical themes, a list of topical questions was developed for which the researcher required answers in order to

conceptually frame these components in theory (Appendix 3:6). For example, under watershed communication and connections, a topical question is: How is the communication characterized between communities and groups within the Lamprey River watershed? From a topical question such as this, a list of interview questions to serve as a guide during data collection was developed. Eventually, it is from across the analysis of the three units, through focus on the topical questions, framed within the social landscape, that the theoretical framework can be constructed.

After developing the interview guide (Appendix 3:7), it was necessary to seek approval for data collection through the Institutional Review Board (IRB) for human subject research (Appendix 3:8). This process took approximately four months to complete, which was longer than expected due to legal issues concerning language and requirements between the university and the funding agency (NOAA). The researcher was not involved with settling this conflict, but was prevented in proceeding with data collection until the matter was resolved. The IRB process resulted in a protocol to safeguard the anonymity of study participants through a contractual arrangement between researcher and interviewees.

Creating the GIS Based Maps

From the very beginning of the study, there was an interest in using GIS to build a visual component to change how people typically see their town within the larger landscape and watershed, or to simply present a visual 'big picture'. This visual component was initially thought of as nothing more than an outreach and education tool to assist the researcher in explaining the very important concept of nested scales of ecosystem and watersheds. It was hoped that the interviewees would interact with maps

in a map biography fashion. Gradually, it became clear that this tool could be a pivotal part of the interview and data collection phase as a probe, and as such it became more important to find ways to integrate it within this process. Initial concepts were for a 3-D GIS based image that could be easily displayed and manipulated on a laptop during the interview, providing a fly-through at various spatial scales. Attempts to create a 3D image failed, however, due to issues with ArcGIS data layers and ArcScene itself. So, it was decided to focus instead on creating 2-D paper maps with an ability to present the same visual stimulus.

The entire map design process took approximately eight months. The GIS data layers were all from the state's GIS repository, GRANIT, which is housed at UNH. The layers used included natural and cultural data as well as political boundary data (Appendix 3:9). Fortunately in reaching out to community experts, the researcher was made aware of an on-going project at the New Hampshire Geological Survey in Concord, which was mapping the Lamprey River watershed alone as an experimental 10 meter digital elevation model, funded through the state's Coastal Program. This layer was shared with the researcher prior to its public release and was a critical part of the final map products used during data collection. After receiving this digital elevation model, different ways to visualize a 3D landscape were experimented with, finally choosing a useful "hillshade effect."

In addition to giving the maps a 3D feel, the other important design challenge was to find a way to balance familiarity at one scale with the challenge of simultaneously viewing multiple higher spatial scales. While this is typically what happens with GIS software use, and the original fly-through idea would have done the trick, putting this in a

2D format was a challenge. The required spatial views included the local municipality, the Lamprey River watershed, Great Bay specifically and the larger Piscataqua-Salmon Falls coastal watershed. Upon these spatial views the GRANIT data needed to be layered. Initial attempts produced individual maps, which were large, bulky and confusing, and due to this, a different format became necessary (Appendix DVD 3). This key formatting change made use of the value of multiple images in visual design. Multiple, juxtaposed and repeated images depict comparisons, revealing patterns, change and information, giving depth to vision, while amplifying, intensifying and reinforcing the meanings of images (Tufte 1997). The final maps culminated in two large panels, or templates (Appendix DVD 4 - 18). One showed the Piscataqua Salmon Falls coastal watershed with Great Bay, the Lamprey River watershed and impervious surfaces within it, subwatersheds at the 12 digit hydrologic unit code (HUC) level and the 14 towns of the Lamprey River watershed with their 2005 land use (Seaber 1987). The second showed a close up of each town, its subwatersheds and contour lines, cultural resources and conserved public land. The land use data, received prior to public release from UNH GRANIT, was the same GIS layer used to build a set of simple paper maps of each town for use by the primary interviewees during the early part of each interview (Appendix DVD 19 - 32). These were intended to be used as tools for the map biographies, but they were less useful than anticipated in this regard.

Data Collection

Nonprobability Sampling

This case study followed a nonprobability sampling approach, because probability sampling techniques typically used in quantitative research are generally ill-suited for

conducting qualitative research. When choosing a sampling strategy in general, the following criteria are critical: 1) the strategy should be relevant to the conceptual framework and research questions, 2) a sample should be likely to generate rich information on the phenomena studied, 3) the sample should enhance the generalizability of the findings, 4) it should produce believable descriptions, 5) the strategy should be ethical, and 6) the sampling plan must be feasible (Curtis 2000). Random sampling is not appropriate for qualitative studies for the following reasons: samples tend to be small, it is rarely possible to know the characteristics under study of the entire population, random sampling may only produce a representative sample if characteristics are normally distributed, and, in general, due to the complexity of behavioral and sociological studies, random sampling is precluded (Marshall 1996).

Nonprobability sampling, however, is used when the probability of selection of each respondent is not known. This includes the techniques of convenience sampling, quota sampling, dimensional sampling, purposive sampling and snowball sampling (Bailey 1994). The key disadvantage of this approach is that since the probability a person will be chosen for sampling is not known, the researcher cannot claim the sample is representative of the larger population. This limits the ability to generalize study findings, and prevents estimating the degree of departure for representation, or the sampling error. Advantages include that this is much less complicated, less expensive, and can be done with a great degree of flexibility. This approach is adequate, if the researcher has no desire to generalize findings beyond the sample, which would apply to this bounded case study of land use decision-making in the Lamprey River watershed.

Qualitative research sampling has some key features, which include the following: the method of drawing samples is not based on theories of probability, samples tend to be small and studied intensively, samples are not usually pre-specified but instead rely on sequential selection, and selection is conceptually driven either by an existing theoretical framework or an evolving theory inductively derived (Curtis 2000). In addition, qualitative research should be reflexive and explicit about the rationale for case selection, recognizing that qualitative samples are designed to make possible analytic generalizations, but not statistical generalizations, within a specific context. Sampling is ultimately a strategy reflective of the researcher's base knowledge or assumptions about the population and phenomena being studied, which may or may not be subsequently informed by the emergent findings and can be thought of as a conceptual approach to dealing with heterogeneity within a defined sampling frame (Safman 2004). Qualitative researchers see a population's internal diversity as an integral characteristic and try to capture variation in the research strategy rather than filtering it out, and most agree that the data is as much a product of the circumstances under which it is collected, as it is the inherent qualities of what is being studied (Safman 2004).

There is some confusion within qualitative research literature concerning variations of sampling techniques and the terminology surrounding them. Some authors propose the synonymous use of the terms "purposeful (or purposive)" and "theoretical sampling", which others oppose (Coyne 1997, Curtis 2000; Charmaz 2006). "Purposeful sampling" is described as a strategy where particular persons are selected deliberately to provide information that cannot be obtained from other choices (Newman 2004). The term "selective sampling" has been called by some to be equivalent to "purposeful

sampling”, although the former is based on a set of characteristic dimensions worked out in advance (Coyne 1997; Charmaz 2006). One researcher suggested calling the purposeful sample a "judgment sample" (Marshall 1996). Finally, “purposeful sampling” techniques have been called "analysis driven purposeful sampling" or "analysis governed purposeful sampling,” distinguishing them from grounded theory’s “theoretical sampling” (Coyne 1997). With respect to grounded theory, theoretical sampling refers to the process of sampling to develop a researcher’s emerging theoretical categories. As Charmaz (2006) points out, there is common confusion among researchers with some mistaking theoretical sampling for any of the following: sampling to address initial research questions, sampling to reflect population distributions, sampling to find negative cases or sampling until no new data emerge. At least one researcher has complained that without carefully explaining sampling within the methodology, "method slurring" results, which adds to the already confusing picture (Coyne 1997).

This case study followed the nonprobability sampling approach, employing a mix of both purposeful and snowball sampling techniques, using semi-structured interviews for data collection. Purposive sampling, or “judgmental sampling”, is when the researcher uses his or her own judgment about which respondents to choose and picks those who best meet the purpose of the study. Advantages include the fact that researchers can use their skills and prior knowledge to choose respondents. Snowball sampling has increased in use over the years, particularly in observational research and community studies. Snowball sampling is conducted in stages, where at the beginning a few people having the requisite characteristics are identified and interviewed. These people are then used as informants to identify others who qualify for sampling, those individuals are interviewed

and the process is repeated. This is sometimes called “chain referral sampling.” It is useful and commonly appears where populations of respondents are “hidden” or difficult to identify, such as drug addicts, studied in medical literature.

The data collection for this study came from both primary and secondary populations. The primary population of interest consisted of voluntary, elected or appointed members of town land use decision-making groups. Specifically, this included Planning Boards, Conservation Commissions, Zoning Boards of Adjustment, Heritage Commission (or potentially Historic District Commission, or Historical Societies) and Open Space Committees. The first sampling technique employed was purposeful, because interviews were sought in a public forum, addressing the entire board and seeking an interview with the chair or someone the chair or board as a whole suggested. The requirement was for an interviewee with experience on the board and a sense of perspective in how the group made decisions about land use. If the chair was unable to participate, following up on his or her suggestion in a snowball fashion determined the interviewee for that group.

In addition to the primary population of interest, experts were selected for contextual interviews, for their in-depth local knowledge and perspective. These experts included local realtors and developers, federal and state officials, professional planners, NGOs, watershed associations and other key groups. This also began as purposeful sampling, which also typically makes use of the snowball technique for identifying others in the community with key information (Samuelson 2005). Considering the researcher was not local, it was important to interview these “key informants”, not as representatives of the primary population, but as "people who are privy to the events being studied and

[who are] able to provide the researcher with reliable information about the organization or community about which they have knowledge through their experience in the setting,” (Koontz 2005). This process of interviewing key informants or experts was referred to in another qualitative study with semi-structured interviews in a grounded theory approach as “scoping interviews,” (Pedynowski 2003).

The combination of snowball and purposeful sampling are appropriate for this study for the reasons mentioned above, but there are also published studies with characteristics similar to this one, which successfully employed these techniques. For example, a cross case analysis of six watershed programs used the snowball sampling technique to select more than 200 individuals from various organizations involved in watershed governance in order to conduct semi-structured interviews (Imperial 2004). A heavily cited article within the watershed literature, used purposeful sampling while surveying stakeholder collaborations (Leach 2002). Purposeful sampling is frequently conducted with a small sampling population, which is of value to this study which was projected to have between 40 and 60 interviews (Coyne 2007).

Another researcher studying spatial and temporal change and ecosystem based management made use of the snowball method for semi-structured interviews and contextual pre-interviews, which is similar to this case study strategy (MacMynowski 2007). Sampling there included only 48 interviewees in addition to elected politicians, planners, academics and other specialists for contextual and historical information. The author explained that these experts “provided a longer-term temporal background with which to analyze the experiences and perspectives of current land managers and environmentalists” in the case study (Macmynoswki 2007). With these examples in mind

of strategies employed to find and interview experts, as well as people with certain experience and knowledge, the snowball and purposeful sampling techniques were deemed most appropriate for this study.

Field Work

After choosing the Lamprey River watershed in consultation with GBNERR staff, contacts were made with municipal and other watershed stakeholders to assemble a database of potential primary and secondary interviewees. For a period of 12 months, from November 2007 through November 2008 a total of 43 town board or commission public meetings were attended as well as 28 meetings with secondary interviewees and groups in preparation for data collection, accumulating 4,282 vehicle miles. A database was also created characterizing all target groups in the watershed. This database held information on each town, including the boards and commissions which were active and present, key contact information for each, key contact information for town officials and the planner, if one existed, and the status of various boards and commission which were in flux (Appendix 3:10). Not all of the towns had the same active boards and commissions. The town web sites varied too greatly to be of any consistent use in keeping track of documents, boards or commissions but were occasionally referenced for information. The database regarding other watershed stakeholders, many of which were in the secondary population for expert or scoping interviews, contained contact information for NGOs, planning professionals, developers, realtors, representatives from county, state and federal offices and others. All told, interviews were sought from approximately 50 groups represented in terms of the town boards and commissions and 39 groups represented from the secondary watershed stakeholder list.

Preliminary field work set the stage for the interview and data collection phase. By attending the regularly scheduled town board and commission meetings, the researcher was able to gather a sense of the towns and key people, listen to discussions and introduce herself. In terms of the study topic, all that was related was that it was a study concerning land use decision-making in all 14 towns in the Lamprey River watershed. The researcher then exchanged contact information with the board or commission and requested an interview with either the chair or someone the chair or group recommended, the one qualification being that the interviewee must have some experience within the group to be able to reflect on how decisions are made. The secondary, expert or scoping interviews, were easier to schedule since these were essentially simple contacts made for interviews during regular business hours.

The primary interviews required a substantial amount of time and effort to organize. The town board and commission meetings occurred each week, Monday through Thursday, always in the evening and in the town halls. They also occurred at roughly the same time, which meant it took longer to get around to all the towns and groups. Some groups met infrequently, and were so *ad hoc* that the researcher was unable to visit in advance of contacting the chair to schedule an interview. Also, due to the schedule of these regular board meetings these field introductions often took place as many as 11 months before the scheduled interviews, which then required persistence later on to follow up with people and schedule the actual interviews. Despite the time it took to do this, it was extremely helpful to have attended the regularly scheduled meetings for the boards and commissions. Not only did that get the word out early that interviewees were needed, but it created a paper trail within the communities, as the researcher's

introduction was noted in the meeting minutes. In addition, word spread between groups in the towns that this study was underway, so some groups were not surprised when they were contacted. Also, it is the researcher's opinion that this helped legitimize the study in the eyes of these stakeholders and possibly made it easier to schedule the interviews later as people remembered the introductory visit.

While town Board of Selectmen and Town Council members, as elected leaders in the community, can also play a role in land use decision-making, they were not specifically targeted for this research for several reasons. First, the key, permanent structures in place for land use are the boards and commission previously mentioned. Second, very often, a Selectboard or Town Council representative serves on these boards as cross-representatives, and are thus participating in the decision-making process. Third, there is great turnover among Selectboard and Town Council positions in most towns, making it hard for these elected officials to fully learn and understand the roles and duties of the various boards and commissions. This research bore this truth out, and, in fact, one of the key issues many boards and commissions had was the interruption to their on-going work triggered by this turnover. This interruption often led to a complete cessation of on-going activities and a substantial investment in time and energy to educate and introduce the newly elected representatives to current issues and programs. Finally, while the boards and commissions are a mix of either elected or appointed positions, the goal was to focus more on the people who stepped up to fill these particular roles in the communities, and an underlying assumption was that this would allow for a greater pool of continuity in experience specifically concerning land use decision-making.

Interview Protocols

The protocols for conducting the interviews varied between the secondary and primary interview populations. The primary interviews were scheduled via phone and email and were always at a time and in a place of the interviewee's choosing. Attending to the researcher's role as an interviewer requires engaging study participants in places and under conditions that are comfortable for them and familiar to them (Schram 2006). So, the location more often than not was the interviewee's home, or the town hall, but in some cases, these interviews were scheduled on the UNH campus. As soon as an interview was scheduled, a consent form was emailed to the interviewee that provided basic information about the study and the protocols employed to maintain their anonymity. This form was signed at the time of the interview, with one copy retained by the interviewee and another by the researcher (Appendix 3:11).

In addition to exchanging the signed consent form, some other materials were necessary. The previously mentioned, simple paper map and some pens were presented for the interviewee to use while referencing any point of their responses. This map was a close up of their town, with the different land use characterized by colors and the primary roads clearly labeled. The interview was also digitally recorded in audio format with a hand held Olympus digital voice recorder. These interviews generally followed the interview guide, and while there were no time limits imposed, lasted an average of one hour and 47 minutes each with some lasting up to four hours. Following the primary interviews, memos were recorded as interview field notes, marking key ideas, questions, observations and insights of the researcher. These interviews were very intense sessions

for both researcher and interviewee, a fact that was commented upon often as the interview drew to a close.

One key aspect of the primary interviews was the use of the large panel template style GIS based maps. About 2/3 of the way through the interview, after going through the interview guide, these maps were introduced as probes for reflection. The large watershed scaling map was introduced first to discuss the concept of scaled ecosystems and watersheds and then the town specific panel map was introduced to show various kinds of information within the town. These maps required some explanation and introduction, varying in extent depending on the interviewee, their map reading skills and knowledge of such things as GIS and ecosystem concepts. The general reactions to these maps were recorded, as were specific statements and reflections that these probes induced. It was common to have more of a discussion at this point than a strict listening session.

The use of these large panel maps as probes for reflection was unique and exclusively done with the primary interviewees. Some of the key questions from the interview guide were re-introduced at this point, by challenging the interviewee to think of how looking at the land from a watershed perspective might change how decision-making is done or what they thought about their previous reflections and statements in light of this. This part of the interview varied in length, but could last as long as the time it took to go through the interview guide in the first place. It was during this time, too, that the researcher chose to share information about trends observed in the data and upcoming events and explained key concepts concerning watersheds, Great Bay and ecosystem health and sustainability. Sharing this information with the interviewees was a

way of both compensating them for their time as well as including them in the larger discussions and plans for upcoming events.

The secondary, expert interviews were different. They were typically scheduled for the interviewee's office during regular business hours, which limited the amount of time to about one hour. As soon as an interview was scheduled, the same consent form as above was emailed, with information and confidentiality protocols described, for signature and retention by the researchers and interviewee. These interviews were more similar to business meetings in which the researcher explained the study and what some of the results seemed to indicate and then asked the interviewee for their professional opinion on aspects of land use decision-making in the region. The large panel maps were displayed early and throughout the process, not as probes for reflection, but simply as reference material.

Data analysis

Assumptions and Working Hypotheses

Within the grounded theory approach, and within a constructivist, postmodern perspective, it is necessary to discuss key assumptions or biases held by the researcher. Going into the interviews and data collection phase, a number of assumptions were held concerning land use with respect to characteristics of certain boards, commissions or towns and political attitudes held by the population at large. Concerning political attitudes and board characteristics, one assumption was that the state's "live free or die" motto would be held more strongly by Planning Boards, Zoning Boards and Heritage Commissions than by Conservation Commissions or Open Space Committees. This was assumed to be the case given a generalized assumption about the types of people who

join these boards. For example, many of the cultural differences between boards are commonly explained by the assumption that that people who are strongly concerned about the environment tend to join the Conservation Commissions, whereas local developers and realtors join the Planning or Zoning Boards. It was also assumed that the dramatic population shift in this part of the state might alter the historic political constituency and outlook of board members towards land use in the towns situated closer to the coast. Finally, while classical grounded theory does not include the development of hypotheses prior to data collection, it is possible to propose preliminary hypotheses. These, through the analytical process, can be either denied or refined for the design of future studies. These preliminary, or working hypotheses, included the following statements, and can be reviewed more closely adjacent to their overarching topical questions (Appendix 3:12):

- Challenges to conducting and maintaining resource inventories include: a lack of volunteer time, high rate of turnover on boards, lack of funds, a lack of equipment (computers, software) and a lack of experience among members (GIS, etc.).
- Most town groups will acknowledge that communication between municipalities and within their own towns can be improved.
- Acknowledgments will be made concerning the ecological value of upstream and downstream communication. Local politics, time, and a lack of connections to other towns' public groups will be noted.
- Newcomers to towns may be noted as mixing up the attachment focus within communities, encouraging inter-municipal communication and a broader regional approach as well as challenging local political inertia.
- The farther one goes from the coast, the less the relationship will be acknowledged between coastal issue or Great Bay and interior watersheds and their land use decisions. Discussions of Great Bay and the coast will appear infrequently and general watershed awareness will vary.
- There will be some acknowledgement by Conservation Commissions and Planning Boards of the RSAs supporting inter-municipal collaboration and watershed-based planning, but little action on these unless specific issues arise (USA Springs).

Initial Data Treatment and Organization

The data required some initial treatment prior to beginning analysis. This included transcribing the interviews, a process which took more than two months to complete. The interview files were first downloaded in MP3 format into the researcher's computer, which was password protected. A template was set up based on the interview guide used during data collection. The narrative responses were then recorded in the appropriate section of the template related to the questions and topics that occurred during the interview. The transcriptions were all completed in Microsoft Word, but with the assistance of Dragon Naturally Speaking voice recognition software. These transcription files were then loaded into NVivo, the analytical software package from QSR International in the United Kingdom (QSR 2006).

Within NVivo, a number of the standard protocols and features were used to organize, manage and analyze the data, although there were many more features that were not used. The standard features used included the Sources, Nodes, Models and Classifications. Sources included all the memos as well as the transcriptions and audio recordings from primary and secondary interviews. Nodes were arranged in both Free Nodes and later, Tree Node categories, the latter of which played a key organizational role in assembling and defining the conceptual categories. Models were experimented with in part, but the Casebook and Classifications features were more helpful. The Casebook was developed which characterized primary interviewees according to a broad range of background factors, positions, experience and expertise. This database listed the interviewee's town, age, gender, professional background, primary board or commission, and the number of years with that volunteer position, as well as number of years overall

involved with the town government. In addition, college or technical backgrounds, and whether or not they were natives to the state or current town were all recorded. Finally, the range of town government experiences and positions the interviewees had held at any time were indicated through a checklist. All of this background material was recorded in the Casebook during the transcription phase.

Summary of Data from Primary and Secondary Sources

A total of 74 interviews were completed over the course of this study. During data collection, there were 33 primary interviews and 28 secondary interviews completed. Pre-data collection, informational interviews totaled 13. More than 100 hours of data was digitally recorded from both primary and secondary interviews, with more than 58 hours pertaining to primary interviews. Secondary interviews included town and regional planners, Regional Planning Commission staff members, developers, realtors, NGO representatives, state and county officials and representatives in higher education. Secondary interviews were not transcribed or subject to analysis, rather these expert interviews were simply used as reference points to compare, contrast or highlight the information gleaned from the primary interview data and analysis.

In terms of the primary interviews, not all of the towns had the same number of active boards and commissions, but interviews were sought from all. Representation was attained from Planning Boards, Zoning Boards, Conservation Commissions and Open Space Committees, Historic District and Heritage Commissions, as well as some Historical Societies, though not each position was necessarily represented from each town. More than 400 single spaced pages were transcribed from primary interviews. Primary sources included 21 men and 12 women. Of these, only two people were native

to their town, and only six were native to New Hampshire. Five had experience as elected members of their town Board of Selectmen or Town Council and two had experience on local river advisory committees. At least eighteen, or 55%, of the primary interviewees served on multiple boards and commissions concurrently and/or over their lifetimes. The primary interviewee pool represented at least 401 years of experience in local leadership, as volunteers on towns boards and/or commissions.

Moving Analytically Towards Conceptual Categories

The three conceptual categories represented and discussed in the key finding chapters, developed through the process of data analysis. These are called “Gathering Community”, “Handling Conflict” and “Temporo-Spatially Scaling”. The process for definition of these concepts began with the early analytical stages of initial coding and focused coding. These stages ultimately contributed to the development of the conceptual categories because of the way the codes were defined and specified through the choice of language used within them to explain the direction and movement represented in the data. Analysis followed established procedures for grounded theory techniques (Charmaz 2006; Clarke 2005). These were initial coding, focused coding and theoretical coding or sampling. Memo writing occurred at each stage, and was at an advanced level during theoretical sampling, leading to the written integration of conceptual categories, which formed the basis of the finding chapters. The following outlines the steps in this analytic process, although it is important to note that this was not strictly linear, as much of the analysis meant going back to the data over and over again within and between the various stages.

Initial or Open Coding

Data analysis began with the process of open coding. While this can be done word by word or line by line, the process employed here was to examine the data incident by incident or rather, topic by topic. In this coding process, the transcriptions were examined to determine what types of categories or codes could best crystallize the experiences of the interviewees. It was critical to be specific enough to encapsulate the experience represented, and to focus on actions and processes, but to also resist forcing data into preconceived codes and guard against forcing preconceptions on the data (Charmaz 2006). The use of verbs showing actions and process managed to directly contribute to identifying the motivation, or the movement behind the data, which ultimately was concerned with the land use decision-making process itself. Key questions for the researcher during this phase included the following: What are people doing? What are they attempting to do? How are they doing this? What is going on? The researcher needed to open up avenues of inquiry, stay close to the data and start to frame events and behaviors as types (Schram 2008). It is important to note that the practice of memo writing was present throughout data analysis. This was important to preserve ideas and insights, explore the data and re-engage with field notes taken during the interviews. Open coding in NVivo ultimately resulted in almost 300 codes. Examples of open codes, as well as their definitions, are as follows:

Dealing with lawyers: board dealings with lawyers, or interactions with legal teams pertaining to development

Lacking expertise: reflections on volunteers lacking appropriate technical and scientific expertise needed to make decisions

Proactively self-educating: board members who actively seek education and learning and then transmit information back to board

Struggling with Good Ol' Boys: good ol' boy networks and effects in the town decision-making, boards and volunteer groups

Focused Coding

Focused coding was the next phase in analysis and the first substantial step towards conceptual categories. This consisted of refining the initial open codes as categories, explicating their properties, specifying the conditions under which they occur and their consequences (Schram 2008; Charmaz 2006). This stage involved constant analysis, comparison and refining and helped to clarify what the codes consisted of and the relationships between them. A key question that was kept in mind was: Are the codes adequate enough to explain the data? Memo writing occurred throughout this stage as well, ultimately producing a total of 179 focused codes, 47 of which were post-map nodes. Strauss and Corbin recommend a tool known as axial coding for this phase, but this can also apply a biased frame and was therefore not employed here (Charmaz 2006). An example of a focused code follows:

Memo refining a node, renaming and defining it:

The node *Deciding what the group focuses on* had some text in it which was inappropriate and then really only a few examples of how the group decides on what needs to be done and why ... so in keeping with this... it isn't really a battle, in terms of win or loss, this is really more like filling some void in what needs to be done... noticing that for example, agriculture is not represented, or that no one is working on trails ...and then deciding to focus efforts.... Focusing efforts?? Filling void?? No... *Focusing efforts*: how the board or commission decides what to tackle and why, what is missing and what they can do.

Theoretical Coding / Sampling

The next stage in analysis was theoretical sampling. Theoretical sampling of focused codes, raw data within them and related memos helped to specify the relationship

between categories, which led to the development of theoretical codes. Theoretical codes are integrative, lending form and a broader contextual frame to the concepts described within. A helpful way of organizing this in NVivo was the use of Tree Nodes, which eventually numbered 19 primary and secondary level tree codes and absorbed 112 overlapping focused codes in nested sets that began to group together towards higher concepts (Appendix 3:13). A question to keep in mind during this phase was whether or not theoretical codes interpreted all of the data within them. At this point, the researcher was identifying 'frames' or 'themes' that made linkages among patterns in the data, grouping segments of data along those themes and taking care to embrace contradictions in the data as variations along the themes (Schram 2008). Through an iterative process of returning to the data, and sampling focused codes, a higher order of conceptual themes emerged which developed into the conceptual categories. Examples of theoretical codes with rough sketches of their conceptual understanding appear below and in Appendix 3:14.

Conceptual Linking intimidation and education

Concerning the node "Feeling unprepared for topic", I am going to rename this, "Feeling unprepared and intimidated"... This node has a relationship to education. Lacking education, the effects of lacking education, the fear of not educating, etc... It also is related to lacking expertise and relying on professionals ... maybe that should be a conceptual category - something about "Struggling for expertise" or struggling with, or struggling against, or with education - more broadly... Education - lacking, getting, venting frustration for effects of decisions w/o education, those with it (experts) and the need for their services, fearing and intimidation when dealing with those with education, not valuing education and the effects of poor decisions due to this...

Advanced Memo Writing and Defining Conceptual Categories

During the theoretical coding phase, advanced memoing was employed which helped to not only examine and describe the relationships between theoretical codes, but

ultimately led to an integrated concept within the ‘conceptual categories’. This final level, conceptual categories, was reached especially during the development of integrative memos, which become essentially early drafts of key finding chapters. In these integrative memos, relationships were explored between field notes, and a more sustained analysis was presented linking variations along the themes, which ultimately led to defining and describing conceptual categories.

Advanced memos describe how a conceptual category emerges and changes from within the data, identifies beliefs and assumptions that support it, examines the topic from various viewpoints, and makes comparisons between various categories and subcategories. Conceptual categories are developed by placing them within an argument, comparing them with different people, or different times, comparing them with other conceptual categories or with the literature base. This continuous string of comparisons has been described as a continuum of themes with various points along the line following each conceptual category (Schram 2008). The definition and description of these categories are best explored while following their linked development.

The first conceptual category to develop, Gathering Community, began to resonate with the data while theoretically sampling and refining focused codes. While working through the code called “Loss of Community or Fearing Loss,” the term “gathers” was first employed in a memo. This memo was an instant reflection on the data within this code and a suggestion that it might be a useful concept to carry forward. The memo partially reads as follows:

CONCEPTUAL_Fearing loss of community

This has high potential to string along a continuum. This node gathers in the loss of community, the perceived loss, the fear of change, the regret of lack of public involvement, the loss of community, the loss of history, the loss of a shared

story, the loss of community memory, the loss of democracy, the losing battle, fearing loss of democracy ... losing democracy

After making this step with a preliminary definition, Gathering Community was further explored in a concept memo, partially as follows:

CONCEPTUAL_Gathering community

Gathering community could work as a major conceptual node. I was thinking about this in terms of trying to get volunteers, reaching out to the public, succeeding and failing to gather public input, the emotional feeling of losing the community and fearing that loss, reasons for staying in as a volunteer, the motivating factors for being involved, witnessing land use change and reflecting on community values...

There are a lot of different things that could feed into this as a concept. I like being able to connect what motivates somebody to get involved, connecting to those values and that sense of fear or threat or love also civic duty and giving back. I also like the connection for staying in and learning and becoming a super volunteer and taking extra initiative. I also like the idea of how one could reach out to gather a community by trying to fill the seats, and struggling to fill those, and lacking volunteers and lacking public involvement, all with taking steps to try to build that community...

A conceptual continuum of gathering community could include: developing sense of community, volunteering, motivating, retaining, seeking, asking, reaching out to, approaching, communicating with others, failing to do any of those above, reflecting on changes in community, redefining community, accepting community, losing community, seeking community assistance, reaching out to experts, caring...

In the same memo, while defining this concept and investigating the data, another conceptual category emerged dealing with the spatial context of the data. The memo continues:

Gathering community can also be defined in various levels of space...has a spatial component: the immediate community, family, friends, home, neighborhood, then the town, the other towns the region and outsiders....There is a spatial characteristic to this concept. This could help in defining where people are in the watershed, where they relate to the river or don't, the Bay or the coasts or not, etc.... In terms of spatial features: individuals to big picture thinkers ... Gathering community should be considered in a spatial framework....In town, neighboring (upstream and downstream) towns and region/watershed and coast/ Great Bay.

After thinking about the concept of Gathering Community and trying out some ways of defining this, it became helpful to develop the conceptual categories within the tree nodes section of NVivo. So, a tree node for this concept was created and all 132 free, focused codes were examined. All the free nodes were pulled in under this tree node if they fit along a continuum of this concept. These were all double checked and duplicates were deleted (and retained under a Deleted node file for historical reference). Free nodes that were too similar were merged and renamed. The end result was a conceptual tree node heading for Gathering Community, defined through memos and theoretical sampling, and a list of daughter nodes pulled in underneath which fit along a continuum of this concept (Appendix 3:15).

The next goal was to reduce the number of themes, or points along the continuum, to no more than 10 or 12 per conceptual category. In order to do this, it was necessary to find ways that the potential daughter nodes (focused codes) related to one another and fit within the conceptual category. Continuous memoing and theoretical sampling were again employed. While continuing to memo about the conceptual category Gathering Community and simultaneously examining the potential daughter nodes, a partial excerpt in Appendix 3:16 describes how a point along the continuum was named. It starts with the daughter node or focused code “Becoming Engaged” and continues to move through other focused codes. This demonstrates how the first point along the continuum within the conceptual category of Gathering Community was named. This is referred to as an analytic unit and the approximately 10 surviving focused codes (or daughter nodes in NVivo) beneath this are referred to as analytic nodes. This same process was employed to explicate and define the other analytic units and analytic nodes under Gathering

Community, as well as the next two conceptual categories (Appendix 3:17).

Conceptual category #2: “Dealing with Conflict” to “Handling Conflict”

While memoing about Gathering Community and theoretically sampling within the focused code for “Loss of community or fearing loss,” the question was posed, “Is loss a kind of conflict?” This question became a memo in its own right and describes how the concept of conflict might be broader than anticipated. In part it reads:

Is loss a kind of conflict? ... In some ways I think loss is a kind of conflict. One can be conflicted in oneself concerning the community or the town or the characteristics or the feel or the patterns that one knew and loved and respected, and feel conflicted about those changes.

In some people, I think that sense of loss drives motivation. In that respect, the reflections about older people in town preventing change comes into play. In other people that sense of loss and conflict for community value and the change that's going on drives a different kind of motivation. Those people may or may not be involved, maybe they stepped out or maybe they are still involved, but they recognize and have accepted, (or have) an openness to change. And with some people, that acceptance might still be colored by a small sense of resignation, but other people might be excited or hopeful.

With both of those kinds of experiences or reflections, I think there is a general wariness about the newcomers but even more so (with) the younger generations. Loss can also be the lost self-definition of one's place in community and one's community in the world.

Another focused code existed at the time of the memo, titled “Dealing with Conflict” and this was the title of another memo on this concept. In this memo, it was discussed how conflict might result from the tension of not having the education or expertise to effectively contribute to decisions. So, the lack of education, needing to seek expertise, and related items cannot only lead to poor decision-making, but also the development of tension and conflict. This conflict could appear internally in one's own learning curve concerning aspects of decision-making and gaining expertise, but it also can occur within boards and commissions, within the town and throughout the greater region. At one point, the name of the conceptual node initially titled “dealing with

conflict” was changed. According to the memo, “I changed the name of the conceptual category to “handling conflict” because this leaves it more open to include the categories of things like contributing factors to conflict, lacking trust, venting frustrations and approaches to addressing conflict.” This change of name allowed this category to more broadly encompass the concept of conflict in contributing characteristics, direction and movement.

Conceptual Category #3: “Spatiality” to “Temporo-Spatially Scaling”

Before even beginning to pull in the focused codes that would fit along a continuum for Gathering Community, the memoing process had revealed the next conceptual category that would deal with a spatial framework. The early concept memo for Gathering Community went on to set the stage for the need for a category based on spatiality. It reads partially as follows:

I went through and combined in a spatial context the gatherings - individual, town, neighboring towns, region and watershed/coastal. There are a few left over and will be labeled as such. Within the Gatherings - there are spatial scales. Those gathering levels themselves need to be further defined along a continuum of action verbs (above) represented by the action of gathering.

At this point, it was not decided to split the community into spatial scales per se, but as further definition of Gathering Community took place, this was deemed necessary.

Farther along in the memo, the following excerpt describes how this developed:

Should spatial scaling be its own concept? Or should it remain placed within and addressed best by thinking of it in terms of gathering community? In some clear ways this is still a matter of gathering community, just along a different scale. It would work to think about this in terms of how one defines first, self, then board, then town, then neighbors, then region and watershed. But - the decision-making breaks at the town line. This is not happening at all... so the scaling effect is stifled and my data captures only reflections about this as a concept. Is it therefore, better to think of it as a separate concept?

The only other concept I have thought of using is something akin to it... in terms

of "Locating the big picture, defining the big picture ... Spatially (and temporally) scaling?? ... Now that I look back at what I have for the Gathering Community overall concept, I am thinking that Spatial Scaling should be its own. I think I should cut off the Gathering community at the town level, and hint at reaching outside for experts. But start a Spatial Scaling category to consider neighboring towns, provincialism, region, watershed and coast. This will allow me to fold in the post-map nodes well, too, since this is essentially a scaling factor. In fact, maybe Spatially Scaling Community or some such should be the title. But this way the remaining nodes in Gathering Community will include a personal sense, the board and the town...I like how this is looking.

In a later memo, titled Conceptual_Spatially Scaling, the name of this category was discussed as well as some of the themes or analytic units within it. From the outset that included some ideas such as approaching neighboring towns, connecting regionally, watershed and big picture thinking. Struggling with the fact that change over space was represented but not change over time, the memo records, "I think this needs to be renamed 'Temporo-Spatially Scaling' to include the ideas of cumulative decisions and effects over space and time...might need to soften the title, but I like Temporo-Spatially."

Using Clarke's Situational Analysis to Determine Analytic Themes

Clarke's situational analysis is an approach that can be used to maintain attentiveness to both specific and circumstantial dimensions of social, cultural, and natural influences within data, and it was a useful tool in the next step of describing conceptual categories. This visual cartographic alternative draws deeply from the Chicago school of social ecology and symbolic interaction studies, where different worlds are examined through inventories of space. These social worlds can be conceptualized throughout society as consisting of layered mosaics of groups, activities, technology or other manners in which identity is formed and through which people organize social life (Clarke 2005). Clarke argues that in order to understand a particular

social world, one must understand all the other worlds to which it relates and mapping out these relationships allows one to do so. Strengths of this approach are that it permits an analysis of a full array of collective human social entities and actions, discourses, and related nonhuman elements in a particular situation of concern, taking advantage of concepts to analyze multiple levels of complexity (Clarke 2005). Situational mapping can provide a new means of entering data, situating individuals and collectives, discourses, organizations etc. This technique offers a new way of interrogating data while demanding careful consideration and reflexivity on the part of the researcher. The process of making these maps and going back and forth between memos offered new ways to examine the data, emergent themes and the spaces in between.

After developing the conceptual categories, analytic units and analytic nodes, it was necessary to map out the themes within these nodes and units which could frame a discussion and here, Clarke's situational analysis method was crucial. By once again returning to the data, it was possible to visually open up spaces between key topics, identify what those spaces held, connect variations and explore the variations along each conceptual category. This process was completed by exploring the data one analytic node at a time. For example, the data within the analytic node for *Becoming personally engaged* was exploded out into the open, through each focused code it held. Quite literally, a shorthand listing of the key concepts in each of these nodes were written together on a white board and visually inspected to determine key themes that unified and described the concepts. The board was photographed and recorded verbally in commentaries about the overarching characteristics and movement apparent. The emerging themes were then gathered into continuities of movement through the data and

in this case in particular, included concern, civic duty and respect for practicing democracy as key themes regarding motivational elements that drive people to volunteer on boards and commissions (Appendix DVD 33). By visually exploring the data, these themes emerged as key elements in describing these analytic nodes.

Another set of examples suffices to show some of the variation possible in Clarke's approach. Under the analytic unit, *Finding the community in town*, the node for *Determining what we have and who we are* explored the data visually in two different ways, through spaghetti linkages diagrammatically and through more of a flow chart format (Appendix DVD 33). In this, factors contributing to a sense of community, factors leading to concerns over a loss or disconnect with community, reactions to this and the drive for balancing community all emerged as key themes. Another analytic node for *Collaborating and communicating between towns* examined communication between towns in a town by town format, visually delineating characteristics of communication versus factors promoting communication and factors prohibiting communication (Appendix DVD 34). And with still another node, *Concerning watersheds and the Lamprey river*, the visual inspection served to highlight factors (characteristics, actions or behavior) which promoted thinking about the river and watershed during decision-making, factors which impeded thinking this way and the current state of decision-making.

While mapping out the themes to frame discussions for all three conceptual categories, all the factors that emerged tended to have the same general characteristics of movement. In general, the themes were either 1) promoting or supporting certain actions or behaviors, or 2) preventing or impeding those same actions and behaviors in decision-

making. This was an important realization in the process of mapping out themes for discussion. This finding reinforces situational analysis as an important tool, but also recognizes the importance of Charmaz's insistence on using action verbs in open coding. These actions verbs and motivational descriptions carry the movement within and throughout the data and contribute to understanding the tensions that form in the process of decision-making.

Post-Map Reflections

During the interviews, GIS produced maps were incorporated as probes to stimulate reflection about a watershed perspective. The initial codes were divided into pre-map and post-map sections of the NVivo database and the post-map sections recorded these reflections. Sometimes these were in parallel codes to the pre-map sections and sometimes they were unique. At first, the plan was to compare and contrast pre-and post-map reflections as a typical representation of longitudinal qualitative data. Longitudinal data reflects a change of time, a change of experience or perspective, which could be derived from a series of interviews or, in this case, the introduction of the maps roughly two thirds of the way through the interview.

As the conceptual categories developed and more integrative memos were compiled, a memo was written concerning a change in the plan for these post-map codes. This memo, "conceptually coding post-map reflections," describes how an analytic unit was created for each conceptual category that would exclusively hold post-map reflections. It was determined that this makes better sense, "rather than folding these nodes into the pre-map nodes which will describe situations and depth before the maps were introduced, to use these as reference points for afterwards, per conceptual category,

to look for either strengthening of arguments or deviation from arguments following this probe.” So, rather than treat these in the same analytical fashion as the other analytic units and analytic nodes beneath, they would be used as reference points in the discussion of the pre-map concepts. In addition, the reactions to and comments about these visual probes were recorded as researcher observations.

Methodological considerations and limitations

Due to the inherent nature of case studies, there are both strengths and limits to the methodological approach applied. A qualitative and grounded theory based case study can never be truly replicated in the standard hypothetico-deductive scientific model. In proposing the study, the researcher did not claim that the resulting theoretical framework for decision-making developed in the specific context would be wholly transferable to other watersheds and communities. In fact, the theoretical framework developed within this case study is limited to only describing this specific case. It would be impossible to take a conceptual theory developed here and place it elsewhere, because qualitative inquiry, such as this, seeks to understand complexity and depth in a specific situation. Qualitative inquiry proceeds “from the assumption that ideas, people, and events cannot be fully understood if isolated from the circumstances in which they naturally occur;” they are context sensitive (Schram 2006). The fact is that qualitative research is so arduous, it is unlikely that other researchers could be located to engage in a task of specifically conducting a study to replicate a previous one such as this, however, the specific ideas or conclusions from this qualitative study can stimulate further research and will be discussed more in the discussions of key findings (Schofield 2002).

Although the quantitative ideal of generalizing across time and space is not possible, some qualitative researchers still believe that what matters is the question of fit or transferability (Schram 2006; Schofield 2002). It was this researcher's goal that the theoretical framework and the methodological process themselves could be replicated in future case studies of additional Great Bay watersheds, or watersheds elsewhere. There are several ways to do this, including using hypotheses that emerge concerning the conceptual categories in future studies to test relationships and ideas. Aspects of the hypotheses can even be tested again within this data set under a continuation of the grounded theory approach. Also, the theory generated around a particular unit of analysis, could be used to develop hypotheses for subsequent qualitative or quantitative research. For example, "*The farther one goes from the coast, the less the relationship will be acknowledged between coastal issues or Great Bay and interior watersheds and their land use decisions,*" could emerge as a hypothesis within the conceptual category of temporo-spatially scaling. If so, an additional study could be devised to test the relationship between distance to the coast and frequency or characterizations of land use decisions with discussions referring to Great Bay.

Another important methodological consideration is the intensity of qualitative data collection and grounded theory analysis as well as the simultaneous learning curve for the researcher. Semi-structured interviews were extremely valuable to build trust and record narratives rich with data. They were also physically exhausting. The lack of a specific time limit did allow interviewees to fully express themselves and the nature of the conversation and interactions unfolded naturally, but some interviews went for multiple hours and some days held back-to-back interviews. This led to a certain fatigue.

It was not uncommon at the end of an interview to hear remarks from interviewees concerning the intensity of the experience, and yet also a sense of gratitude for the chance to express themselves. The researcher learned the importance of being physically and psychologically prepared for each interview, which included some simple steps such as making sure she had eaten before sitting down to what could be a four-hour long intense conversation.

During this data collection, the researcher learned to listen intently, with sensitivity, while encouraging a response, all the while keeping in mind that the resulting analysis would be a construction or reconstruction of reality (Charmaz 2006). During the interview, the nature of the engagement and its effects had to be kept in mind, and the nature of this engagement was the subject of many post-interview memos (Schram 2006). Memo writing helped retain focus on the data analysis by offering new insight, elaborating processes, declaring assumptions and describing actions. Clarke's situational analysis required some practice but provided a useful tool maintaining attentiveness and reflection on the data after coding.

The nature of the engagement with the communities, boards, commissions and interviewees spanned nearly 2 years. The experience of data analysis itself was akin to re-living each and every interview and was similarly exhausting. Transcriptions took about two months to complete and initial coding required another two months time. It also took between six and eight weeks to proceed through the focused coding and development of conceptual categories. With each analytical step, the raw data was returned to in an iterative fashion, which meant, in some ways, the researcher remained close to the data almost as if the interviews never stopped. The data was coded at a specific enough level

and focused on action and process. Staying close to the data through coding, memo writing and theoretical sampling helped to fill the general criteria of category saturation with data analysis, which served as an indicator of when to stop. Eventually, categories coalesced into a grounded theory or an abstract theoretical understanding of the studied situation. These conceptual categories about community, conflict and scaling are of genuine interest to the public and are appropriate categories from which to consider a watershed-based framework for land use decision-making. The need for triangulated data within qualitative research was fulfilled through the researcher's observations and memos, the expert interviews, external literature and the data analysis itself.

The result of this rigorous methodology was a rich data set and the development of a theoretical framework which is comprehensive, complete, fully saturated and well grounded in the data. Eventually, with subsequent data collection in other watersheds and communities, a more formal theory could be built describing the specific supporting and limiting factors for decision-making that acknowledges the inland watershed land use patterns and the effects on Great Bay. This resulting theory could serve to characterize the specific changes in policy, structure or process needed to address this issue. This method could be applied in the remaining watersheds of Great Bay. The transferable components would include the units of analysis, topical questions, GIS based map biography or visual probe, semi-structured interview and grounded theory analytical strategies. The results of this study can also be made useful elsewhere by replicating the method for mapping the social landscape and constructing a theoretical framework in other studies bounded by watersheds and communities, which currently lack a watershed-

based land use decision-making system, but where assessing the potential for this development is valuable.

There were many personal rewards in pursuing this methodological approach. It was an honor and a privilege to listen to the interviewees, many of whom are playing critical leadership roles in their communities. The rapport established with many lasted beyond the length of the interview alone. The comments at the end of the interviews were by far, extremely positive, with commonly expressed regrets that the other board members had not been able to participate. The field maps received high acclaim and there were consistent requests for copies for each town hall. Many people expressed gratitude at being involved in the study and for the opportunity to express themselves about topics they hold near and dear concerning their communities. There were consistent requests to hear results of the study and to remain in the loop on further developments, and this indeed occurred. As the Epilogue chapter will attest, there was such great interest in these topics, the networks were so well linked, and momentum was building so fast that a confluence of forces and circumstances arrived which led to a participatory action environment and sustained efforts concerning watershed-based land use decision-making. The immediacy of these results was extremely rewarding.

Chapter IV

GATHERING COMMUNITY

Defining the conceptual category

Gathering community is broadly characterized by individual and group motivation, the evolution of a sense of community, and a tension surrounding conflict - all of which occur within varying spatial scales. This includes thinking about how people become involved in volunteering, their motivations for stepping forward and remaining engaged, their needs as a volunteer and how they seek assistance or support, which networks they utilize, how they define themselves within the community and how that sense of community evolves over time. Defining one's spatial scale occurs early because the volunteer must develop a personal sense of community before choosing to become engaged. This might come about because the person reacted to a threat or a fear or stepped forward out of curiosity or a desire to get involved. These motivational factors lead people to an understanding of their own personal sense of community as well as a motivating desire to get involved. On the next broadly increasing spatial scale, the volunteer seeks to find and define the community within the town. Here the volunteer reflects on how the board or commission is built, the role of conflict, the process of reaching out to the community, communicating within town, defining the character of the town, engaging the public and seeking expertise. All of these are pursued in order to follow through with decision-making that ideally reflects the desires of the community.

The characteristics of Gathering Community are next described by tracing the analytic units, analytic nodes and themes (Appendix 3:15). The two analytic units are *Developing a personal sense of community* and *Finding the community in town*. The first has two analytic nodes, *Becoming personally engaged* and *Building and sustaining involvement*. The latter has five analytic nodes: *Building the board*, *Communicating within town*, *Determining who we are and what we have*, *Engaging the public* and *Seeking expertise*. Six key themes emerge within all of the analytic nodes and units in this category and require specific attention. Each of these can be characterized by an existing tension, which contributes to the motivation for civic engagement, a changing sense of community, conflict and varying spatial scales.

Developing a personal sense of community:

This analytic unit contains the nodes, *Becoming personally engaged* and *Building and sustaining involvement*. The first describes the motivations, settings and reasons why citizens become involved in land use decision-making in the first place and thus reflects aspects of their initial foray into civic engagement. Here, a sense of community and civic mindedness, respect for the practice of democracy and motivating concerns are the key thematic considerations. The latter node, *Building and sustaining involvement*, describes how volunteer engagement is built, reinforced and sustained. The key themes include again motivating concerns, but also the lack of volunteers and personal enjoyment. Together, these two analytic units describe key themes representing, at one scale, the development of a personal sense of community, and at a broader scale, a definition of the broader community within town.

Developing a personal sense of community: 1) Becoming personally engaged

Becoming personally engaged is best characterized by the themes of a sense of community and civic mindedness, a respect for the practice of democracy and underlying motivating concerns. Volunteers step forward out of a variety of reasons. Some of the most common stories about getting involved include following the recommendations of a spouse or friend, learning something that sparked an interest, being angered about land use decisions, wanting to give something back to the town, enjoying the social aspects of the board, being concerned about the environment or being worried about the quality of existing leadership. While few of the interviewees grew up local, those that did cited this as an important factor for their volunteerism. However, newcomers to the towns substantially outnumber locals on the boards and commissions, which is largely reflective of the population trends in this region. One story about becoming personally engaged is the following:

I moved here 22 years ago ... it's funny how it evolved...I got into commercial real estate selling leases and properties and then ... moved into a new neighborhood where there was an issue with the Planning Board ... so I kept going to the Planning Board meetings and the chair of the Planning Board said 'You are down here so much, we've got an opening, why don't you join?' ... I always wanted to be involved in a small town, that's what I liked about moving here in the first place, so I joined the Planning Board and I'm still around, they can't get rid of me (*laughing*).

The three key themes, sense of community and civic duty, a respect for the practice of democracy and motivating concerns, all have a certain connectivity in the data and the most densely connected of these are civic mindedness and sense of community. This includes such notions as giving back to the community, connecting to the past, growing up local, thinking about children and heritage and following in the family footsteps. This civic mindedness or sense of community drives civic duty and is linked to

the theme surrounding a strong respect for democracy. This includes respecting the process, wanting balanced decisions, and a genuine pride of accomplishments through active civic participation. Respecting democracy reinforces the notion of giving something back to the town and supports the development of a stronger sense of civic duty and caring about the town as the data below exemplifies.

I became more interested in the heritage from which I had come, so I started doing some of that research and writing memoirs of what I remember about my grandparents while I could still do that and pass that on to my children and my grandchildren ... we have lived in [town] now since 1970 and this particular house since 1972 so we have a lot invested in the town itself... I love the town and so joining the Heritage Commission seemed like a logical place that with my mindset I could do something useful for the town.

Concern is also a strong motivating theme for engaging in volunteerism on the boards because it connects with caring about the town, developing a sense of community and civic duty. It includes being angry or worried about a particular land use proposal or potential decision. It can be motivated by a single issue that ignites an interest or by an underlying concern about the quality of the board and volunteer pool. Concern is also generated by witnessing changes in land use and landscape elsewhere, and as a result, worrying about the pace and process happening locally. This drives a motivation for civic engagement. If native to the town, that concern is often linked with a sense of loss and concern for the community that one knew from the past. Although concerns may start as a result of a singular, ongoing tension or conflict, they may lead to continued engagement as a volunteer.

When people feel threatened, they band together and get involved... there's this threshold that occurs that being pissed off or being annoyed... or feeling that your neighborhood, property value or home are being threatened by development... and there are people that go in for a single issue and they will fight tooth and nail and after that issue is resolved, plus or minus, they disappear... but generally if

there is a large group of people, there are some hanger-ons afterward and they want to keep moving along with the process... they look at the process and say 'I can do this or do a better job at this', so they get involved and stay involved.

Some reasons for becoming engaged as a volunteer were less common. Simply thinking volunteering would be fun or more cynically, volunteering for one's own ego by trying to knock down another volunteer can mark initial engagement. Holding a lifelong or professional interest and volunteering at first to help with technical things on a board can often lead to long-term involvement. Looking for something to do in retirement, stumbling into it, deciding to try something different, and even learning something new are all connected in that while not contributing directly to civic sense, concern or the respect for the practice of democracy, they do factor into motivating points for becoming personally engaged. Growing up local, learning to care about the town, beginning to volunteer and then volunteering out of defense all reflect a pattern reinforcing civic engagement. But generally, all of these reasons as well as those less often stated, share in the thematic framing characteristics of civic mindedness and sense of community, a respect for the practice of democracy and motivating concerns, all of which reflect motivations for initial civic engagement.

Developing a personal sense of community: 2) Building and sustaining involvement

This analytic node describes how engagement as volunteers within the boards and commissions is built, reinforced and sustained. It is characterized by the themes of personal enjoyment or satisfaction, motivating concerns, and a decided lack of volunteers. There are both positive and negative factors behind sustained involvement and the three general themes overlap with the themes in *Becoming personally engaged*. The lack of volunteers contributes to both a sense of concern and reinforces the civic

sense of duty. Obviously, enjoyment can contribute to civic sense and practicing democracy as well as leading to continued involvement. Taking initiative to be proactive within the commission or board can lead to becoming more engaged by building actions in which one is invested and holds responsibility. Finally, concern is a common reason for developing a personal sense of community and building sustained involvement as the quote below describes.

It's actually the reason I got back on the Conservation Commission, I was on the Open Space and initially helped protect a lot of land, but to be perfectly honest, nobody was working on trails or doing anything and I thought 'I can't in good faith help to conserve these lands and not do anything with them,' we have to have some interpretation and access and trails so I've been spending a lot of my own time with the commission and finally producing some signs and trails.

The phenomenon of “super volunteering” is by definition the result of continued engagement. The “super volunteers” are the face of the community, have a high degree of commitment and are at the very core of the volunteer force, serving in seemingly every capacity and often acting as the living memory of the community. A person who is a super volunteer has stepped forward repeatedly, simultaneously served in a number of different capacities, and is often recognized as single handedly keeping the town running. Not all of the interviewees fit this definition, but those that did all shared a tremendous amount of local knowledge as well as deep feelings of love for and concern about their communities. Enjoyment, concern and lack of volunteers contribute to factors or motivations for people to build and sustain their involvement as super volunteers. In this way, *Building and sustaining involvement*, like *Becoming personally engaged* and the codes within, contribute to the momentum of *Developing a personal sense of community* with responsibility, civic duty, and concern for the public good.

Lacking volunteers, or essentially lacking public participation, is a key theme for driving sustained involvement by seasoned volunteers. Related concepts include a lack of leadership, stress resulting from too much to do, and concern about the quality of the existing volunteer pool. Although there was one case where an interviewee did not think the volunteer position was too time demanding, that was a rare opinion. This was not the experience of the majority of volunteers surveyed and “we don’t have enough people” was instead the common refrain. This lack of volunteers reinforces the role of the super volunteers in a community and probably supports some of the conditions for them to develop.

Concern also drives sustained involvement through fear about certain people pushing extreme agendas, worry about land use change that one has witnessed elsewhere or experiencing conflict. These are negative motivating factors that develop into sustained levels of concern. For example, not having enough time to get everything done relates to not having enough volunteers and reinforces the concerns about volunteer workload. Feeling stuck in a leadership position due to the lack of volunteers was often expressed as a reason for sustained involvement as the quote below shows. The concept of super volunteers is also related to this, whether people actively chose to become these community linchpins or did so out of sustained concern for their community.

I have been a staunch conservationist all my life and a friend of mine in town said ‘have you considered getting onto one of the town boards?’, so I sat in at a ZBA meeting and knew they had a couple openings and before I knew it they asked me to sign on board, which I did, and so within a few months in 1982 I got on the board ... and became chairman a few years after that ... and I feel like Idi Amin, chairman for life, because nobody else wants the job ... apparently because I just run a very good meeting ... no one else on the board wants the job, they, to a person, have said if I ever step down as chairman, they won't re-up ... So is that a vote of confidence or ... [am I] being held hostage?!

The third and last theme, personal enjoyment, contributes to a motivation for sustained involvement. Enjoyment or satisfaction arises from thinking about interesting ideas, taking initiative, experiencing diverse challenges, having fun, developing a sense of pride and finally, making a difference. Of all of these, making a difference is probably the most densely linked category. The people who expressed concepts of involvement relating to a labor of love, learning, pride or connecting to the past tended to have specific professional or other skill sets that could be applied to their volunteer role. Recognizing specific outcomes like establishing a new, more respectful process or learning something can be positive motivators. People who enjoy a good challenge find volunteering enjoyable. Pride and respect are also key factors in sustained involvement and may be important in the development of super volunteers, by contributing towards strengthening a sense of civic duty, democracy, community and heritage.

Finding the community in town:

This analytic unit represents movement and growth in civic duty and stewardship. This goes beyond the individual or personal scale and involves the individual volunteer learning about and defining the broader community in their town, as well as entering into interactions that are necessary to fulfill their duties. This unit includes the analytical nodes for *Building the board*, *Communicating within town*, *Determining who we are and what we have*, *Engaging the public* and *Seeking expertise*, all of which relate back to continuing to define, refine and respect the community. *Finding the community in town* is characterized by the themes of newcomers versus established residents, issues about the process of decision-making, lacking leadership, failing to engage with heritage, concern over loss of community, a desire for balanced decision-making, lacking public

engagement, the lack of volunteers, the lack of education and expertise, and motivating factors for engagement. The last three are key themes that persist throughout this analytic unit.

Finding the community in town: 1) Building the board

This analytic node describes how a board or commission is built or filled by volunteers, the characteristics and the processes therein. It is characterized by the themes of newcomers versus established residents, the process of decision-making, the lack of volunteers, the lack of education and expertise and motivating factors for engagement. Included in this is the concept of established residents and newcomers, or people from New Hampshire, versus those from other states or ‘away’. It is important to note that in New Hampshire, even being a resident for several decades does not qualify one as being a “local”. Related to this is the concept of old school versus new school and different, evolving sociopolitical ideologies. The theme of lacking education, experience and expertise is expanded here. Motivating factors for engagement are specific to bringing people on to the board, but this theme extends beyond the previous section, because it can include motivations to “stack the board” for a specific agenda. Finally, there is a theme concerning issues within the process of land use decision-making. Appointed boards have different characteristics than elected boards and this may contribute to a static energy or inertia in decision-making abilities. Whether appointed or elected, though, there is a lack of institutional memory in the towns and among the boards and related to this is a real lack of time, energy, money and volunteers, as one interviewee lamented below.

How do you get volunteers? ...We've had this discussion before amongst the Planning Board how do you get people interested in volunteering their time and doing this, especially when you get yelled at and picked on and all kinds of

things (*laughing*) ... it's tough, you really have to have an interest in these things to spend your time doing it ... I don't know, I almost have the feeling that the volunteer nature of some of these things is coming to an end and it will be professionally managed one of these days.

In terms of general characteristics concerning the boards, a number of concepts stand out that are more easily discussed in concert with the theme of established residents versus newcomers. Boards consist of both established residents and newer residents, the latter of which mostly come from out of state. The majority of the interviewees represented boards that reflected the population shift in southeast New Hampshire, and as such, most board members were from Massachusetts or other states in the Northeast and Atlantic seaboard. Of the primary interviewees, there were only two native to their town and only six native to New Hampshire. In addition to this population growth from out of state, there is a decline in the number of New Hampshire residents who work locally. The fact that many people in this case study area work in Massachusetts or distant NH cities, and must commute to and fro, makes them unable to participate as land use board or commission volunteers (described below) which decreases the volunteer pool overall and is reflected in the characteristics of board membership.

It seems today people are more and more hurried in their lives and have more hectic schedules and that's probably one of the biggest issues in town on the board is attracting people who want to serve... there's all kinds of talent but there's just so many hours in a day and people are involved in our town with recreation in many different forms and Scouting and general rec programs, sporting teams just sucks up a lot of energy ... the fact that we are a commuter town means people are not working in town anymore... in the 60s we had very viable well-staffed volunteer fire department because people lived and worked in [town] or surrounding towns ... but that's become nonexistent now because there isn't anybody of working age in town during the day to man our volunteer departments so we're moving more and more to pay departments... so getting people willing to serve on boards is a problem, it's a big problem we always have alternate positions on our board which are not filled... we can always coerce somebody into running to have a full slate of elected positions but it's

very hard to attract the people.

There are general characteristics of boards with respect to diversity. There is much less representation on boards from those with a link to agricultural interests. This is remarkable given New Hampshire's historic agricultural focus and the aesthetic value of that traditional agrarian landscape. A lack of cultural diversity is common, which reflects the population at large. There is good representation for professional diversity that was oft cited as positive by interviewees. Men and women were mixed on the boards and are reflected among the interviewees with 12 women and 21 men.

The most significant factor among general characteristics and diversity is the lack of younger people on the boards. The age range for most of the boards and interviewees were late 40s through upper 70s or older. It was a rare board to have a member in their 30s, and volunteers in their 40s were scarce. Interviewees explaining why younger people were not involved simply argued this was the case because they do not have time due to work and raising families. There are exceptions to this though, and studies of the decline in social capital argue against this simplistic explanation (Putnam 2000). In some cases, where there are younger people on the board, the generational differences are hard to work through, as one interviewee stated, "I feel like I'm always at some sort of geriatric conference, which is mean to say." Much more commonly expressed by interviewees within the parenting generation, were the following sentiments:

For me, now having kids its important, and we do talk about it, that mom and dad have to go to the town, because it helps the town we're in... for us it's example setting, that life just doesn't happen around you but you have to help things around, and so that's really why I haven't packed my bags, it's why I really think it's important for them to see that we are involved in trying to make things work because things don't work without people.

Still the general lack of the parenting generation participating as volunteers in the boards is a complicated story. Different explanations were suggested, but one interesting point to note is the school tax factor, and the very real bias that exists in some of the study towns against increasing the number of families with young children. Also suggested was the idea that younger people had a preference for local athletic activities over local government, and that the pace of land use decision-making was too slow or boring for them. Younger people, and those who are newcomers, may not know the town well enough to volunteer. If most of the younger people are forced to work out of town and are already part of a more transient population, they can be deterred from volunteering due to commuting and an inability to establish roots. Leadership inertia, a lack of IT savvy, a lack of education and experience, lack of time, the role and position of super volunteers, intimidation or abuse on boards, not knowing the town or community well, mistrust and the perceived lack of fun or potential enjoyment all contribute to the lack of volunteers. Whatever the case, there is a concern among board members about this generational absence as is indicated here by an interviewee referring to the loss of a younger board member:

You are getting a group of volunteers who are either elderly people who have the time because they are retired and don't have the vision because they don't have the exposure, or young people and they are really busy... [He] was the chair for 3 to 4 years and he was fantastic, but he got a promotion and he travels all the time and ... it's really a challenge to get people who have the time to look long-term.

The generational difference was also expressed through ways of thinking about how the world works, political beliefs and the education styles of older versus younger people. Political differences are striking in this region, with the traditional established

populace largely conservative and the newcomer population decidedly liberal. Political differences were present in the study population, and tensions within boards due to this fact were discussed during interviews. The differences manifested themselves frequently in debates over private property rights versus the public good. Those who were from 'away', and in particular had witnessed land change in other states, and the younger members all appeared more apt to be concerned with the "big picture", rather than an exclusive town-oriented or property rights standpoint.

Motivating factors for board members to get others to join are diverse, yet are characteristically negative. It must be stated that this could be due to interviewees complaining about other members with whom they disagree, but the motivating factors cover a broad range of topics. Motivating others to join can include the practice of getting neighbors on the board, joining for personal gain or power, and strong-arming people to fill a board. This last concept can lead to a process of "stacking the boards" with like-minded friends or colleagues, which has negative implications for balanced decision-making as one interview explains: "I like to see different viewpoints brought to bear on problems because you get a better solution if you have people looking at it with different points of view, I really think it's a shame when we have people that try to stack the deck so that they have a common point of view and ramrod everything through." Being pushed to join the board from within a smaller, yet vocal, community, such as a neighborhood, is a factor in building the board. There can also be professional and financial motivation for local developers or realtors to join boards. In some cases, it is possible for these groups to build a controlling interest within the board. The most

significant negative factor of all affecting the motivations for getting people to join boards and commissions is the simple lack of volunteers in the first place.

Motivating factors for people to remain on the board include some of the considerations discussed under *Developing a personal sense of community*. In addition, continuous concern over a single issue such as private property rights or environmental issues can be a strong motivator to remain engaged. Some interviewees expressed the feeling of being stuck in a position, or experiencing guilt if they considered leaving, and these were reasons expressed for remaining. Fearing extremist viewpoints' taking over the board, shifting political extremes, or losing the balance on the board, are also significant concerns expressed by interviewees who decide to stay, as this next quote details. Referring to the board makeup, one 28 year veteran volunteer states:

It's not as widely diverse as it was previously ... at one point in time we had one person who was somebody who believes it's his land and he can do as he pleases and any zoning regulations are in fact taking of property by the town and therefore there shouldn't be any zoning regulations whatsoever ... to every toad and frog should be preserved, and I fall somewhere in the middle between those two viewpoints (*laughing*) ... currently the board is probably more toward the near absolute protectionism, but it's probably 55 - 60% that viewpoint and 45% of property rights viewpoint but not as strong as it has been in the past...

This person continues to explain their concern over the potential loss of balance should they step down:

At times it gets to be a chore, I don't enjoy it as much as I used to ... the problem I have, and maybe I have too high a standard in fact, my term is up next year, and I've thought about not running again and the only problem I see is I don't see anybody who has views somewhat similar to mine interested in running that I can just step aside and let that person move in ... so I'm thinking there's nobody's there who has views similar to mine, so my views won't be able to be expressed on the board [and I'll] probably sign up again (*sigh*).

The lack of trust regarding other board members' skills or abilities is reason enough for some to remain on the board. Related to the fear of extremists or losing balance, was the concept of fearing lapsed standards, as mentioned above. Particularly effective board members who have been involved for years with a high degree of professionalism and commitment often felt less inclined to retire if no one else could maintain these standards. Finally, for many reasons above, interviewees expressed a desire to wait for population change to occur, and younger generations to take over, before feeling secure enough to leave the board.

Another theme of importance is the general lack of education, experience and expertise on the boards, which will be further developed below. The lack of education and expertise came up repeatedly through all fourteen towns in this study. While the occasional board might have a technical expert, a scientist, or might be active in getting its members to state trainings, this was still a largely common problem. As a result of this, and related to aspects about building the board, there are board members who serve simply as "seat warmers". These members may or may not attend meetings, and if they do, are not necessarily prepared. In some communities, there was actual prejudice against educated board members and disdain for education in general. In a related topic, there was evidence of prejudice against board members who simply took initiative, whether that meant taking on additional tasks or self educating to share with others. There were also complaints about the lack of outreach skills among board membership that is related to education and expertise as well as the lack of volunteers. A general lack of technical savvy characterizes many boards, which is harmful in terms of education, gathering information for decisions and communication.

The lack of volunteers is a critically important theme that persists through all three conceptual categories, and can best be explored through considering the factors contributing to this issue and the consequences resulting from it. It is important to note that all interviewees expressed difficulties with attracting and retaining volunteers in town land use boards, and though in some cases this situation might ebb and flow, it is of substantial difficulty, generally common and extending back for years if not decades. Factors contributing to the lack of volunteers include conflict within boards, which will be discussed more in the next chapter. On boards which possess certain controlling interests or members who have been strong-armed to join, there is a general pressure against volunteering and acquiring new volunteers can be difficult. The conflict-averse will avoid boards that are prone to this. The intimidation and abuse board members can suffer at the hands of fellow board members or the public are also factors contributing to a lack of volunteers as the quote below describes.

So this Planning Board guy rips into this gung ho Conservation Commission member saying 'it's your responsibility to be out monitoring and reporting on this and that's not our responsibility'... I told him subsequently that I didn't care for that kind of approach, and it's people like him that scare off eager volunteers, where the hell did he get off talking to my people like that?

The transient nature of society and the loss of young people within New Hampshire communities contribute to the lack of volunteers. As one interviewee summed up, "that's why we have trouble attracting people to participate and serve on the town boards, they don't have much time and a lot of them are just passing through anyhow." This situation itself lends support to the "super volunteer" phenomenon and perhaps a misleading perception that there is no need for volunteers. Advertising for board positions is often traditionally done through newspapers, but newspaper readership has

declined making this a questionable approach. Relying on newspapers and placing notices in post offices might select against younger residents or those who work out of town, who do not regularly use these services. Most boards lack outreach skills and many lack IT skills which does not bode well for adopting new media or reaching the millennial generation.

Additional factors contributing to the lack of volunteers surround the public at large. The public fails to regularly participate in board meetings, and although some towns broadcast them on TV, feedback is limited. Some claimed that the general population's desire for excitement or controversy in order to stimulate involvement (i.e. reality TV) might prevent volunteers from stepping forward for the more mundane. As one interviewee quipped, "I don't think the general public has a clue ... I've asked people that I know live here and are not involved and I've asked, 'Do you know where the water even comes from?' and they are too busy in a day-to-day lives to pay attention to that stuff." Members of the public may interpret the volunteer work on these boards as too complicated or hard to understand, if they know anything about them at all. The complexity of information that volunteers need to comprehend is staggering. One interviewee summarized a concern expressed by many, about the contrast between non-technically trained and technically trained professionals as volunteers: "Concerning volunteers.... I think that's the biggest vulnerability in how towns administer themselves, that they are volunteer boards, and the reason [a technically trained volunteer] stuck it out so long ... [he had] a set of designs and plans for stormwater infrastructure ... that's going to be huge, and honestly, lay people just don't connect with that."

Increased bureaucracy, a lack of leadership and inertia within the boards and towns can deter new volunteers. As one super volunteer explained, “these political jobs have gotten so bureaucratic and time-consuming that if you even get paid, you don't want to give up the time because you feel like you have to go through World War III to affect the simplest of changes that are really, in many cases, just sensible, commonsense steps that should be taken.” A basic failure by the general public to understand the principles and practice of local democracy also contributes to the lack of volunteers. As an interviewee lamented:

We are not teaching a sense of responsibility for ourselves and for our families or for communities... I don't see a lot of hope myself for getting people involved enough long-term to deal with these issues, there's just too much involved ... I don't mean to sound negative and cynical but I don't see a lot of hope given the fact that we are not training these young people to understand why these things are important.

The consequences of the lack of volunteers for boards and commissions are many, and all of these are characterized by conflict. The lack of people puts additional pressure on time management in the boards. A lack of energy and drive can lead to more reactionary decision-making rather than reflective, long-term planning. Lacking volunteers eventually affects finances, since without a volunteer workforce for such things as monitoring easements, towns are forced to hire professionals. A lack of volunteers may lead to controlling interests on the boards and out-voting of other viewpoints through intimidation or an abusive board culture. The lack of volunteers over time can, through the political ebbs and flows in a community, cyclically contribute to stacking the boards, because “it tends to be the same people rotating through, like a Selectmen who will rotate through the Planning Board and will stop after eight years or

so.” Finally, a lack of a robust and diverse volunteer pool will ultimately affect the ability to make balanced, tough decisions and guarantee a vibrant local democracy with effective, strong local leadership.

Lacking volunteers leads to increased pressure on existing volunteer board members to remain and contributes in a negatively cyclical fashion to the lack of volunteers. This includes stacking the boards, intimidation or abuse, leadership inertia, fear or guilt in stepping down, developing super volunteers, burnout, failing to engage younger generations, mistrust and prejudice against education or expertise. Ironically, the lack of volunteers contributes to a failure to develop institutional memory, because more pressure is put on the super volunteers and linchpins in the community. In this case, these key people are probably more in demand and even more important in their potential role at retaining institutional memory of the community’s decision-making. The lack of volunteers contributes to burning out, and limits a board’s ability to function if members fail to attend meetings or shoulder responsibilities. Existing board members are more likely to stay in their positions, potentially feeling stuck, remaining even out of guilt, and feeling afraid to step down due to the lapsed standards or loss of balance that would occur in their absence. This is nicely summed up by one interviewee who experienced this after joining the Zoning Board:

...and that's the beginning and then you're stuck there because guilt will keep you, because if you don't do it either no one will, or somebody with some major agenda will ... so I've been stuck and the reason I was elected chair is because the previous chair decided he had enough and he has health issues and just had to go ... and the other members, some of whom were there longer than [me] refused to hold an office, so I moved from clerk to Vice-Chair to being Chair.

Finding the community in town: 2) Communicating within town

Communicating within town describes specifically how boards and commissions communicate with each other, how they collaborate with each other, and how the Board of Selectmen or Town Council works with them. This node contributes to *Finding the community in town* because it explains how individuals, boards and town leaders reach out to each other. This is characterized by the themes of lacking volunteers, lacking education or expertise, lacking leadership, shifting ideological extremes, civic mindedness, and failing to engage with or include issues of heritage. Communication within towns varied from none at all to excellent. By comparing data between the towns, pressure points were identified which contribute to tension and conflict, generally impeding effective communication. At the same time, there are examples of methods or processes that contribute to better communication. Conflict concerning communication specifically, exists in some form in at least half the towns of the study. A few are suffering from significant, omnipresent conflict and tension due in part to poor communication or a lack of communication entirely, while others suffer only intermittent conflict.

There are good examples of factors that can improve communication within towns, most of which are due to specific jobs or a process such as technical review. Joint representation between Selectboard or Town Council and a land use board or commission is not necessarily required, but where this exists, can improve communication between these groups. When a land use secretary or administrator copies the meeting minutes and information and distributes to all of the boards, this absolutely helps information flow. Similarly, the Public Works Department and the Building Inspector can play small but

relevant roles in communication. If all of the boards work with and rely upon the Regional Planning Commission, communication is better. Where boards meet jointly with other boards or with Town Council or Selectboard in a regular fashion, communication is greatly improved. If family members are active in multiple boards, which is common in some towns, then the communication flow can be affected in a positive way. The Code Enforcement Officer and Land Use Secretary play critical roles as do the Town Planner and planning staff. Where there is a formal process with a technical review committee allowing a give and take, back and forth communicative atmosphere between the Town Planner, Planning Department and developer, communication is significantly enhanced.

Circumstances or processes also exist within the towns that impede effective communication, leading to no communication, miscommunication or outright antagonism. Where other boards, Selectboard or Town Council members fail to understand the complexities of conservation mechanisms, miscommunication occurs with the Conservation Commission. This commission can also struggle to communicate scientifically-based information and principles with their arguments to other boards and town leaders. Additional communication struggles ensue with the Zoning Board, due to the different process under which this board operates and in some cases, due to the makeup of the board. Regarding Heritage Commissions or Historic District Commissions, even if these groups take initiative, full integration within the land use decision-making structure and process has yet to occur in any town. Finally, if those assigned to cross-represent boards fail to attend the additional board meetings, communication suffers.

There are specific issues related to the effectiveness of communication between boards, commissions and the Town Council or Board of Selectmen. If town leaders fail to attend meetings of boards and commissions to which they are assigned, this leads to difficulties. In some towns, the lack of respectful, effective and transparent decision-making leads to direct conflict between boards and leadership. Most importantly, a lack of effective leadership can result in miscommunication and mistrust. A high turnover rate of town leadership can, especially during times of shifting political ideologies, halt the outright effectiveness of board and commission processes. This situation typically leads to the need for additional time to educate newly elected town leaders, but can also lead to complete derailment of a decision-making process underway. As one interviewee explained, during a prime wetlands designation process, the Selectboard turned over entirely forcing the commission to begin anew: “you [are] dealing with different people every year... So you may have started ... and it takes you two years to get to the end of it and then you’re like, ‘Wow...we have to start this over again.’”

Some communication challenges are related strictly to structural issues. If communication exists only through contentious issues, this does not serve to generally educate and inform boards let alone institutionalize effective communication. A lack of professional procedure can lead to poor communication. A lack of volunteers serving in the boards coupled with a lack of effective leadership can create such time constraints that effective communication is prohibited. This lack of volunteers will result in greater reliance on key members or super volunteers and can contribute to burnout and inefficiencies in decision-making. The struggle with volunteers and difficulty retaining institutional memory, can lead to greater reliance on town staff as well as Regional

Planning Commissions or other professionals. Finally, even in towns where Selectmen or Town Council members are required to participate with a board or commission and report back, the lack of time, energy and logistical constraints can prevent this from happening, as is described below.

We have a Selectman representative [on] all the boards and committees in town and individuals go out, but I don't think we do good job bringing back information... [we] would have our Selectmen's business meeting and at the end of the meeting... maybe we hear reports about the what the Planning Board did this week and maybe not, and the Conservation Commission and on down the line, by then it's ten o'clock, people are tired, we don't get into detail and we really don't do a good job explaining what individual boards are doing.

Finding the community in town: 3) “Determining what we have and who we are”

Determining what we have and who we are, initially thought of as separate analytical nodes, is an important category because it relates to the board and commission work of defining the very aspects of community they seek to enhance, protect, maintain or support. The data within this node relates to how boards or commissions think about identity, culture and values within the towns while making balanced decisions. This reflects a constant process of definition and determination of the character of the community, which changes over time. Maintaining culture and identity and respecting town identity are the core focal ideas in this node, which is characterized by the themes of a sense of community, concern over disconnect or loss of the community, and the desire for balanced decision-making. Sense of community, a key theme for *Gathering Community*, includes reflection on community identity and the struggle to find and retain that identity. The concern or fear of the loss of this community serves as a negative motivating factor for determining community characteristics. There are also reactions and responses to this real, or perceived loss of community, which occur in the struggle for

making balanced land use decisions.

There are many factors concerning a sense of community that can be examined as reactions or responses to this concept. Questioning the role of agriculture in terms of community heritage and whether it should continue to be part of the town's identity is a reaction to this concept. Respect for private property rights is a common response. Exhibiting pride in history and heritage are strong reactions to a sense of community, but are not necessarily limited to the confines of the town, and for some extend into regional heritage and history. In the past, towns had strong community connections to the waterways which served as regional infrastructure. Today, connecting to a town's river heritage can still harness a community sense related to open space, rural character and historic socio-economic development.

A strong sense of community can result in enjoyment and desire to spend time in the town center, though unfortunately some towns now lack a physical center, or place that might serve as the social center. This is due to socio-economic changes across the landscape as well as residential patterns, primarily sprawl. As one interviewee put it, "I never go to the center of town except to go to a ZBA meeting ... I head the other way and everyone else does, too." Lacking a center challenges the sense of community and probably reinforces the "social center" role of the school, library and athletic fields. One Planner thinking about the loss of town centers and results of this commented:

Where is the heart of that downtown? You could do a town anatomy, there is no heart, it's spread out...they might have come together and made that heart but now its developed and you don't have Farmer Joe and his wife Betty making the apple pies, they sold out and retired and went to Florida, so it could be one person, [and] when you have someone leading the group and that person's gone, you need someone to pick up the ends and when that doesn't happen, you don't have those potluck dinners anymore.. you need someone to get the energy going.

There are also towns that have ideological factions or economic divisions within their population. These divisions can lead to competing town identities, challenging the actual integrity of the sense of community overall, as described by one interviewee living in a fractured community: “there's no ability to make a consensus ... because there are little pockets here and there and no one wants to commit to one spot as village center ... and you don't see where village center language has walked into the ordinance.” The combination of sprawl and McMansion style estates threatens many of the traditional identities based on rural landscapes and small towns, and led one interviewee to highlight competing socio-economic identities:

We have several community identities. We have old [town] community identity and the people that grew up here and it's a very Yankee, stoic, traditional, religious blue-collar community and then there's the outsiders who came in the last 30 or 40 years who came out to the country after working in Manchester ... and could afford a place in the country... and they are educated, probably more liberal, probably don't go to church in town and commit the other way, and I think young people don't stay in town... and no one that I know who has adult children have had their kids stay here... why would you? The houses are way too expensive.

A sense of community also typically led to stating the importance of recording local heritage. Monitoring natural and cultural resources, documenting heritage baselines and engaging town elders were all frequently cited as important to maintaining the heritage component of community. At the same time, the general inaccessibility of heritage information makes prioritizing heritage and culture difficult even for those involved in this work. One interviewee explained the challenges of beginning the process of documenting heritage:

What we have been encouraged to do is start in the Historic District and work our way out, it would give us a beach head... establish it right there and give us something to work from, rally support and give us some volunteers ... if we

were to pick an old part of town ... and start there, [but] we are years away from identifying the structures there because it has never come about, no one's ever surveyed the assets, they have been talking about making that part of the Historic District for years, but there are not just houses, there are barns and we know they are there, but they have never been documented.

There are many factors that lead to a concern about loss, or feared loss, of community. Factors include concern about large-scale land use change and fearing 'big box' development. They also include small changes that accumulate and challenge identity. Most interviewees commented about the latter, saying something akin to this: "we are concerned about the agricultural feel about certain things, the fact that its deteriorating to the point that eventually it's not going to be recognizable anymore, not in an overall heritage way.... they keep chipping at [rural landscape] and you keep chipping away and eventually it loses its identity." The confusion about cluster designs, reliance on zoning for access, questioning whether it's even possible to retain rural character and the impacts of laws and ordinances all lead to concerns about the loss of community. The need to identify historic and heritage features and the loss of living culture institutions are serious matters of concern, especially given the general uncertainty about public opinion regarding these things. For example, the loss of the Ioka theatre in Exeter prompted one interviewee to say, "it's a cultural institution more so than it's historical value ... and I think that has an opportunity to really say something about the town, you can see what the Music Hall has done... the Ioka may never have that magnitude but it can still offer that attraction... the cultural side is critical, and so easily lost, permanently."

Complicating the discussion over heritage and culture are tensions between generations over the concept of heritage, as the quote below explains:

We have Old Home Days in [town] in August and soon after we moved here there was a group of people and they started a ... Heritage Festival in September and I know when it first happened there was a real, progressive younger folk doing a Heritage Festival and Old Home Days [were] with the older people, and there was some offense taken about the new Heritage Festival and probably that still exists, just different groups of people involved.... and I do sort of wonder, we are small, do we really need two... wasn't there some way to combine the two together?

The fear of losing the sense of community drives many reactions, especially concerning heritage and cultural resources. Some interviewees were defensive and in support of a more traditional property rights view. One person discussing the role of cultural resource conservation and private land ownership explained this saying, "I think [cultural resources] play a great role, a lot of us have respect and appreciation for some of the features of this town and we abide by that respect when making some decisions... but then on the other hand you have to balance some of that respect for cultural assets of [town] with the rights of that landowner to do something on his land so it's a difficult balance." Concerns were expressed about the public not being aware, interested or concerned about community change and loss of heritage due to impacts from land use decisions. There were, of course, exceptions to this, such as the public outcry that occurred over the St. Michael's church proposal in Exeter (Swymer 2007). Interviewees often expressed a difficulty engaging with heritage, community and cultural resource issues. Many described overlapping membership and leadership among Historical Societies, Heritage Commissions and Historic District Commissions, and some interviewees lamented their inactivity as in the quote below.

We have a Historic District Commission that barely meets and we also have very strong overlap with the leadership in the Historical Society, [I] don't think we have anybody on the Historic District Commission that is not also in the Historical Society (*laughing*) President of the Historical Society is the

president of the HDC, and it sort of makes sense that people have the strongest interest in history of the town want to participate in the HDC.... it has been a while though since the HDC did anything substantive.

The concern over loss of community and conserving cultural heritage have led to a number of reactions that are proactive and creative, actually strengthening the role of heritage groups. Experimenting with architectural standards, questioning developers on designs, and creating innovative credits for historic barns and historic integrity were all positive reactions. The concern over fractured historic landscapes drove some towns to save stone walls or perform rescue heritage operations for features in the community's historic landscape. In a growing number of cases, the Conservation Commission or Open Space Committee have teamed up with heritage for supporting arguments concerning land use, open space and balancing preservation, private property rights and economic development. For example, one Heritage Commission member described the following: "I actually went to the hearing and supported the easement but supported it from a heritage perspective rather than an open space perspective... that it had been a tree farm, it had trails for walking, it had a history of having been a cooperative extension property for a demo spot, so in that case, I went to the hearing to support what the Conservation Commission was doing."

All of the factors above, including the sense of community, concern over this potential loss, and the reactions and responses to these concepts come together under the need to strike a balance in land use decision-making. This was evident in the analysis of this analytic node and the data within (Appendix DVD 33, 34). Almost all of these characteristics fall under the category of struggling to make decisions within an agreed upon context, more of which will be discussed later. Among all of these, there is

considerable movement, discussion and debate concerning the place of agriculture and community, the current tax structure, the cluster design on the landscape, the economic and ecological argument over open space, the concept of rural character, how to define the soul of the community and how to agree upon the concept of town centers and identity. Within the context of community identity and heritage, the dominant issue is still how to integrate heritage and cultural resources with land use planning. According to one super volunteer on a Planning Board, describing the existing situation: “the Heritage Commission... [it] may be good to get their input on some issues but I can't recall any situation where we had them get involved ... admittedly I cannot recall any significant historic structure or whatever that was threatened or been included in the development that they would've gotten concerned about.”

Finding the community in town: 4) “Engaging the public”

“*Engaging the public*” is another analytic node which relates to finding the community, reflecting the community and trying to build community stewardship and a sense of civic duty. This includes topics such as bringing the public out, motivating the public to participate, building community involvement, changing communication styles, educating the public, developing a personal sense of community and exploring differences between newcomers and established residents. The lack of public involvement and feared loss of community drive movement in this node, and explain how the boards and commissions are struggling to gather community within the town. It is with this consideration that many interviewees expressed their underlying motivations to remain involved. This node is characterized by themes concerning methods of engaging the public, receiving public input, the lack of public engagement and its consequences.

The lack of public engagement with land use boards and commissions is a critical issue, as described below.

It's a sad commentary that people are coming to town but they're not coming to meetings, are not involved, they can be involved in some other areas, I'm sure there's a strong contingent the school board meetings and things that directly affect them personally ... but when I see people come to a Planning Board meeting, and I've gone to a lot of them over the years because I like to keep track of what's happening because it will fall on our board, ... I'm surprised about the real lack of, not just curiosity, but people who are involved enough to say, 'I may not be an abutter, but I have a strong feeling about this development', I just see it's sort of sad when there are more board members than people in the audience.

There are a variety of methods for engaging the public with varying degrees of success. Traditional means include public forums, school or library events and newsletters. Old-fashioned canvassing was cited as helpful in engaging the public over specific issues. Actively sharing the town history, the use of e-mailed newsletters and websites are more recent, and the latter varies significantly in content and usefulness between towns. Coffee houses, brown bag luncheons and farmers markets were suggested and in some cases have provided opportunities for engaging the public, although where a town lacks a center, this is difficult. Some towns established a public process for seeking input concerning open space or natural resource inventories with success. One experimented with surveys, sending them out to all landowners, only to get zero replies. Local cable broadcast of meetings can be useful, although there are no known studies of the effects of this media on enhancing public engagement, and as one interviewee quipped, "it's a great tool but who would want to watch...it's boring." Another explained that although getting information out is still a challenge, the real trouble is "getting people to understand some of these concepts and what they mean."

Despite these efforts, there is a decided lack of engagement by the public, as one interviewee summed up:

People will show up if ... they are in opposition ... but beyond that just any informational meetings, and we're trying to get the word out, and we have zoning amendment hearings, they don't show up for those, or very few of them do, and of course that makes [it] all the tougher and more and more difficult for us when people are saying 'Gee, I don't know about XYZ amendment.' ... Well, we had two hearings and nobody shows up... so, 'why didn't you show up for that?'

Public input, when received at all, tends to result from contentious issues, which always bring out members of the public, especially neighbors or abutters to a property under question. Individuals or small groups concerning and reacting to a single issue usually perceived as a threat, and the sustained involvement by a core interest group are characteristic of public input. The latter can include board or commission "groupies", although rare, as well as the dedicated super volunteer core in the community. Although random groups or individuals infrequently appear, the common complaint from all interviewees was that the boards and commissions hear from the same people, with the same voices, all the time. This is disconcerting from the board members' perspectives, as one interviewee explained, "I would say for the Planning Board the majority of people in town don't take the opportunity to have a voice and that's our biggest concern and ... something I consider a lot, we hear from a minority of people, and quite frankly, it's the same minority of people ... it's a very, very small voice and so, one of my biggest concerns is that I wish there was a voice for people who are not taking the opportunity to have one." A sudden loss or threat of loss to natural or cultural heritage can drive public input and appearance at public meetings. Newcomers with concerns about open space,

and conservation-minded residents tend to follow those issues and provide input, as the quote below describes.

A lot of the newcomers that live in [town] respect and appreciate the heritage of the community and the importance of preserving that heritage even if they don't get involved too much in that community they still don't want the town to become suburbanized, they don't want to lose the characteristics that make it special, and so a lot of the newcomers have been appreciative, understanding and supportive of the methods I and others have undertaken to try to save what we have here in [town] before it's lost.

Interviewees offered a number of explanations for and comments about the lack of public engagement in terms of volunteering or attending board and commission meetings. One of the common assumptions was that the public has little to no knowledge about the role of the boards and commissions, the land use decision-making process in general, or even the content or purpose of the master plan. Residents working out of town and newcomers may not actually know how to get involved. In addition, volunteering on the boards is not necessarily fun. People can be intimidated by the amount necessary to learn for the job, and afraid of the conflict or controversy one would have to deal with as a volunteer. Ineffective local leadership and a lack of journalistic reporting about land use decision both contribute to the lack of public engagement. One interviewee offered general differences within the population as a contributing factor:

I think there's probably two or three classes of people in the town ... there's a class of people that know everything that's going on, they've been here for a while, this is their home... and then there's a group of people that's just passing through, and they're less inclined to participate in town affairs ...and then there's people sort of in between, if it affects their taxes maybe they will get riled up, but as far as land use issues they are not passionate ... they have their 20 or 30 acres someplace and they are happy with that, and they just sit back and wait for the zoning to happen to them rather than participate and make it a better plan.

The lack of public engagement has consequences in a variety of ways. In terms of structure or procedure, there might not be enough board members for a vote at any particular meeting. In addition, more persuasive members can strong arm and stack the board and illegalities may occur, which in the study area include such things as boards allowing spot zoning, old families asserting their status to avoid ordinances, judgments based on personal rather than legal criteria, or boards considering proposals under illegal circumstances, as this quote relates: “I had to speak up because they went through an hour and a half with the meeting before they realized that there were some abutters not notified and they basically said, ‘don't worry about it, just go on with the meeting’ and I said, ‘Um, that's illegal,’ and then they took 45 minutes to debate whether they really cared if that was illegal or not, or should they just progress on.”

In terms of balanced decision-making, the lack of volunteers and public engagement can limit the scope of debate, preferential engagement by certain members of the public can result in differential treatment, hearsay can become powerful, and rivalries can dominate decisions. Other consequences are that the public may not understand articles upon which they must vote, and fail to understand the importance of hiring staff and professionals when it becomes necessary. The lack of public engagement can put additional pressure on the core of super volunteers. The lack of engagement leads to perceived public apathy, which can translate as conflict to the board, where members are charged with following through on the desires and values expressed by the public. As one interviewee explained, how do you engage with so little input: “if you have something with six people speaking against it, does that mean nobody else wants it, or people don't

care, or want it and those people don't come out ... how do you engage with just negative input?"

Longer-term consequences for the lack of public engagement can include the development of transience as a community trait, a superficial town identity, and disjointed or fractured communities. A lack of public engagement can lead to burn out within the volunteer pool, and a cycling of core volunteers through various positions, with no "new blood". There were some suggestions that residents who commute for work were preferentially associating with a sense of community where they worked, rather than where they lived, which has unexamined consequences. Lack of public engagement also contributes to decreased initiative by the boards to reach out to the public. One outcome of this is that policy proposals, such as smart growth, take much longer than anticipated. A loss of a sense of attachment to the community can result in a loss of pride, decreased stewardship and a far from robust and dynamic local democracy. This was summed up by one super volunteer who stated democracy "really is the best form of government, and it only works best when people participate in it, and when they ignore their responsibility and blame those who are taking responsibility for the way things are instead of them putting their muscle where their mouth is ... obviously it's going to create a lot of frustration and anger and confusion, and I've seen that in this town."

Finding the community in town: 5) "Seeking expertise"

"*Seeking expertise*" is the last analytic node under *Finding the community in town* and describes how volunteers on boards and commissions seek information and knowledge through experts in order to define aspects of their community. Lacking knowledge and expertise is one of the biggest problems and most common complaints on

the part of board and commission members. This is especially the case with respect to technical and scientific information, knowledge of which is necessary for these volunteers to do their work. There is, of course, the rare board member with advanced technical or scientific training, but this expertise is substantially lacking in practice. Attending trainings, proactively self educating, and the challenge of educating the public and decision-makers all relate to trying to learn about the community. Sometimes information gaps are filled by local knowledge where older residents are considered local experts. But when the boards or commissions need to obtain outside expert information, this expands their realm of community. Seeking expertise can engage the public, contribute to understanding what the town contains and help with communication within town. "*Seeking expertise*" is characterized by the themes of seeking education or training, characteristics of lacking expertise and the consequences or results of this.

There are many methods and characteristics of seeking expertise. Self-educating is the first method, which includes many avenues such as - learning a trade, attending expositions, reading, performing volunteer research, watching the Discovery Channel, or simply using the Internet. Formal self-education can include advanced degree programs, continued professional training and coursework through such programs as UNH Cooperative Extension. Education is obtained in state or other training programs such as those offered by the Office of Energy and Planning or the UNH Stormwater Center. While these formal trainings appear well received, in general, most board and commissions members struggle to attend regular trainings and, as one interviewee put it, "I've gone to a couple way back in the beginning, but all of us usually use common sense." As summed by another, and commonly described, "[I] guess it's not really the

knowledge the board members bring when they join the board, but what they absorb.”

There were a few boards which appeared to try and regularly take advantage of training, and one interviewee reflected on this saying, “we do take advantage of some of the workshops and special training, but then again it's on a volunteer basis, and you are talking about people who really don't have a lot of background to take to a workshop to build on ... you're pretty much starting from scratch when you go to a workshop.”

Strong leadership within a board can provide motivation for members to attend trainings and that was certainly the case in at least one town. In others, however, where board culture and dynamics differ, leaders can experience resistance to education and training and rather, as one board leader described, “choose to operate in ignorance.” Finally, other than formal or informal training, some kinds of seeking and acquiring expertise, like learning how to approach landowners to discuss easements, simply require time and practice.

Regional organizations play a very important role in education surrounding issues related to land use and the broader picture. Joining the Lamprey River Advisory Committee, Lamprey River Watershed Association, Great Bay Stewards or any of the other regional groups increases both formal and informal learning opportunities. One interviewee best described the value of these regional groups in this way:

I guess I've had an opportunity and been able to look at it, always well, watershed perspective. I see this as the Lamprey and I've seen similar things for the Exeter River... and I feel very strongly that you need to look at it from a total perspective and this is why organizations that are not local Conservation Commissions and Planning Boards but local advisory committees or SPNHF ... look at it from a much more global perspective. We have to start looking at it from a much more global and regional perspective. Unfortunately I think it's still difficult at the town level because they get so wrapped up in what they have to do in their town that's difficult to look at from an overall perspective and ... that can be overwhelming. In working on [NGO], I get to work with people on

different commissions and boards in other towns and some towns... [they are] experiencing tremendous growth and putting stress on their resources ... And they get so overwhelmed just with what's going on in their towns that's hard to start thinking about what's happening on a regional basis. This is why I think that organizations like local advisory committees like SPNHF or Bear Paw really play a great role.

Expertise within towns is sought from a number of places, starting with local professional resources. This often includes a key land use board secretary, town clerk or administrator, and in the towns that have them, Town Planners and planning staff. One interviewee lamented the imminent retirement of their land use secretary, stating commonly expressed sentiments about such key linchpins in the community saying, "When [she] retires I don't know what we're going to do ...there's such a font of knowledge with that woman." Additional local resources include the police, Code Enforcement Officer, Town Engineer, Building Inspector, Road Agent and others. Town planning departments and technical review committees have both the process and expertise that is sought after for advice and support. Individual local professionals in engineering, soil science, wetland science, wildlife biology, archaeology and other fields are typically hired for monitoring, assessments and research on natural or cultural resources. One interviewee from a well resourced town stated, "we are privileged from the standpoint that we have a Town Planner and he has a share of assistants and so they just provided new GIS mapping with UNH and things like that, so from that standpoint and the resources at UNH we've got most of that covered and if we need updates we can get things pretty quickly."

Interviewees in towns without resources commonly are frustrated. One interviewee said, "We have no professionals, I mean really my whole board is all

volunteers, this isn't our avocation, I'm an engineer ... but I became interested because I saw that there was a deficit of knowledge and experience and dedication to these issues, so I'm on there but I would love to have somebody that's downtown, understands all the issues and has resources and we just don't have that.” This is compounded by the lack of training, as this interviewee continues, “the board operates in a complete and total vacuum and they don't go the trainings that the OEP [offers] ... there is not the desire ...[for] quality and intelligent people who want to be involved in this in a professional manner, so it's just all beyond the Zoning Board.”

Local knowledge plays an important role in seeking expertise within the community. It provides an opportunity for engagement with elders, builds a sense of respect for history and can cultivate a local knowledge base concerning cultural and natural heritage. While the lack of web savvy or email use by elders can be frustrating to boards, these seniors are valued as one interviewee described: “the oldest person is probably high 70s, he's retired for a long time but I wouldn't trade his mind for anybody's... he grew up in this town and he will say ‘I remember that house and it was Mrs. so-and-so's’ and he knows a lot of the history of the town and I rely on that.” The information from town elders can vary in terms of accuracy, and is sometimes limited, but the knowledge often includes reflections on change over time in the landscape, environmental history and population. Some local information is valued as fun stories, but the most critical components of this type of expertise come from the value it brings to heritage, cultural history and the town’s institutional memory. Some boards and commissions promoted this and were actively doing research on specific topics in town history. As many of the older residents or key linchpins in the town retire or pass away,

there is a real loss of not only local expertise but also institutional memory, recording the history of decision-making and change in towns. The lack of an institutionalized approach to maintain this, compounded by volunteer and leadership turnover in towns was often lamented during interviews.

At the regional and state level, there are many different sources for expertise (Appendix 4:1). The Regional Planning Commissions can be a source of great support, expertise and guidance, though experience with these groups varies and staff turnover can cause difficulties for towns. In addition, while some towns question retaining their RPC membership due to budget restraints, others do so because they associate themselves more with the characteristics of towns which belong to a different RPC. One super volunteer explained the positive aspects of these groups:

The RPC has really been a big driver in ... zoning in general which has really changed a lot in the small towns around here ... thru their circuit rider [who] has been working for [town] for about as long as I have been involved in the town... so that's what's really given us our focus toward looking out for resources and protecting open land and trying to maintain some balance ... they brought a lot of scientific information.

Despite the praise, there were fervent calls for more leadership by the RPCs, with one interviewee stating, "I actually think that Regional Planning Commissions could be a much stronger partner and they also seem to me to be reluctant in terms of pushing the envelope... I think they should be the leaders in landscape thinking ...it seems a little piecemeal to me." Summarizing another common reflection, another interviewee remarked, "I know there are regional planning wards and regional resources but I suspect that could use a lot more work in terms of how that funnels down to the towns, because a lot of times we're winging it, let's face it."

Formal expertise can also be sought through the university, UNH Cooperative Extension, GRANIT and other groups. The numerous regional environmental groups are tremendously helpful with expertise on the big picture, science literacy and education. State offices and programs can be a good source of expertise, although seeking assistance and support from these varied by board, commission and town. The Department of Environmental Services was the most often mentioned resource at this level. Bear Paw, the Southeast Land Trust and other land protection groups are also routinely sought after for assistance with easements and monitoring. National level groups such as the Center for Watershed Protection are less commonly mentioned. At the federal level, resources are sought after through NOAA's Great Bay National Estuarine Research Reserve and the US EPA's Piscataqua Region Estuaries Partnership, although much more so with the latter.

Lacking expertise is one of the biggest complaints and struggles with board and commission members. Not all towns reported making the best use of their Regional Planning Commission membership for training assistance. In some towns, interviewees remarked that no one went to trainings and, in general, attendance was poorly indicated, as one interviewee stated, "there's probably five trainings every six months to come to the Conservation Commission and I encourage people to go, I'm culpable as well I should go to more and I don't and I don't know why, we even carried line item fees to go to those and they don't work ... they don't suck people in." In general, the Open Space Committees, Conservation Commissions and Heritage Commissions appeared more focused on acquiring education. Time is probably the single most significant factor preventing boards and commissions from taking full advantage of training opportunities,

although distance to the training events, feeling overwhelmed or confused by the amount of information or discomfort with technical topics can also deter attendance. One interviewee reflected on the reasons for the lack of attendance in general:

I think there is a whole host of reasons but I suppose my sense is too that some of these people sit on the board for their own ego, they would run, they get elected, and then they realize there's work involved and they don't want to do the work, they show up,... make sure people who are in front of them think they are important, and they ... have to listen to what they have to say and beyond that, beyond going to the meetings and being someone, that's where it ends for them ... it's a whole host of reasons but it is amazing... I've made the same observation [a] host of times... of all the opportunities people have to go to Office of Energy and Planning and the number of seminars they have each year and the administrative training sessions for town officials here and there by the planning commission or... it amazes me how few people, given the fact that we'll pay mileage and fee, how few of them actually go, it's abysmal.

Recognizing the lack of expertise and failure on the part of volunteers to attend trainings, some towns have discussed mandatory training. Some interviewees remarked on the value of pushing new members hard, but in at least one town, where they were going to make training mandatory for new members, the efforts “never got off the ground with the selectmen.” One interviewee complained that without technical training, “someone new comes on the board, they jump in, and start asking questions and offering opinions that had don't have any perspective, they're not offering the right perspective because they just don't have the right experience, they haven't been in land use or engineering and are told to jump in.” Another reason boards may lack expertise is the cultural makeup within the board, as this interviewee describes:

I think I've been to those [trainings] myself both professionally and as a volunteer and I don't know if it's a cultural thing... it's like you are either into that network or you are not... a lot of [the] same people ... go to those things and they are very for it and very involved, but our commission... two people work full time, and so going up there on a Saturday... they have other stuff going on in their life or they don't see the need to go to a statewide meeting, I

don't know, we don't really talk about it...we also have a pretty small commission [and] it really varies in the number of people active or not, or they come to meetings or not, so I wouldn't say it is one of the super active commissions although I think it's very conscientious and works pretty hard, but ... it tilts more to the people side of things, like to [make] trails.

The consequences resulting from a lack of expertise are many. When presented a map of their town, some interviewees were unable to name neighboring towns. Simple math and map reading abilities vary widely, as one interviewee remarked, "you get people who have really good intentions or not but who can't tell looking at topo lines whether it's a hill or a depression." Some interviewees struggle with technical issues, the state RSAs, legal texts and federal grant writing, and the increasing complexity of land use decision-making was commented on by many, prompting one interviewee to remark, "I'm not even sure they should be citizen boards because the issues they have to deal with are incredibly complex to ask [of] a layperson ... they have to be aware of court decisions, the statutes are complicated, the courts are always overruling."

There is a skepticism concerning the expertise available within other boards and leadership in towns, which often leads to mistrust. Another consequence is that volunteers are constantly comparing their town with other towns, and New Hampshire with other states, in part to seek expertise and find examples to locally adopt. One of the most distressing issues concerning a lack of expertise was the viewpoint of education as a liability. This creates negatively reinforced stereotypes about education and learning, which prevents boards and commissions from making the best decisions possible in an open, friendly and learning environment, as this story relates:

One of our selectmen has a masters in taxation and accounting and people actually criticized him for showing up at a Board of Selectmen meeting and bringing his laptop computer, he has all the same material on his laptop computer

that everybody else has in paper but he was derided for being a snob... so now he brings his computer during budgets because it's so much easier to find things in a spreadsheet if you have something on a computer screen rather than flipping through sheets of paper but there are people in town who are anti-technology... I mentioned the fact that I had a master's degree, and I was summarily attacked.

A serious consequence of lacking expertise is the generally low level of science literacy among the board and commission members. A few towns do have board and commissions members with technical and scientific training, many of whom are comparatively younger, possessing some connection to the university and might be able to negotiate GIS. Still, as one interviewee put it, while “the newer folks play an important [role] ... they've made these things so complex that [for] too many individuals it's intimidating and they may come away with the feeling that ‘it's more than I know about’ and ... it scares people off.” There were fairly consistent calls for much more information and education to be on the web. Not understanding basic scientific concepts such as watersheds or habitats leads to a difficulty understanding the effects of land use on water quality, or how sprawl contributes to cumulative impacts threatening sustainability. This lack of expertise can result in board members making improper assumptions such as a simple percentage of conserved land should be the goal, rather than the land within the context of its ecosystem. It can also lead to a reliance on potentially false assumptions concerning environmental standards or confusion over professional scientific opinions, as one interviewee related: “it's hard to get a handle on those impacts because what I find in my 20 years is there's always a scientist which will say it's bad and another one it's good and another in the middle and it's hard as an unaware or uneducated person on some of

these expertise that after a while your head kind of fills up and so it's very hard, it's a very hard challenge.”

A lack of science literacy on boards, commissions, the Town Council or Selectboard leads to misunderstanding of science and poor land use decisions. When boards and commissions do not understand science arguments, it can lead to a need to strategically focus or ‘dumb down’ information for the public. This lack of expertise can lead to conflict as well as an inability to include science in policy debates. As one interviewee explained:

Having a hundred year flood three times in three years is because it's not the hundred year flood anymore it's 10-year flood but it's so hard to get across to [the] Planning Board composed of [an] engineer, a wallpaper guy, a racecar owner, a motel owner ... it's just really hard and statistical rainfall patterns don't make sense to anybody, but you can say ‘look [the] driveway is flooded three times in five years!’ ... that's a lot more concrete.

Lacking expertise also makes it difficult for boards and commissions to work with developers, as this story relates:

We do look at the impact of impervious surfaces and ... we started talking about impervious pavement but of course the developers say ‘well, it doesn't really work’ or they give us these reasons why we shouldn't do it but we say, ‘well, it does work and it's really better all the way around’ there again we don't have enough expertise to make a good solid case.... so to try and convince somebody that's in the field that they need to use this material ... is difficult because they are the ones that do it professionally and we are the volunteers who are saying ‘this is what we understand’.

The consequences of lacking expertise overall are significant in terms of land use planning. It hinders an ability to see the big picture and the interconnection of decisions and cumulative impacts over space and time. Avoiding lawsuits can be, and was indeed commonly cited as, the primary driving force behind land use decisions. The need for

more administrative support, expertise and staff puts additional pressure on time and budgetary frameworks. The lack of expertise within land use boards and commissions leads to piecing together whatever skill sets exist within the board, a reliance on common sense and building subcommittees with a heavy load on super volunteers. It also leads towns to hire professionals at an additional expense. Lacking expertise leads to reactionary decision-making, putting out fires and focusing on day-to-day activities, rather than proactive community envisioning and long-term planning as described by two interviewees below:

It's a little frustrating that they themselves aren't seeing that they have that information available to them ... it's fine that your boards have different responsibilities, but I think my one frustration is no matter what board, people are always just reacting to that specific thing that comes in the door rather than saying, 'does this fit into the master plan?' ... you know, Planning Boards are supposed to be planning, not just reacting to something and I never hear them talk about 'is this in our master plan or is this in our open space plan and what do our natural resource documents say about this area?'

On the Planning Board, you get a mix of people and getting people to think longer or bigger scale and economic stuff is really difficult... so my first reaction is ... I don't know if we have a plan, we never really talk about things long-term... most of the steps we have taken have not been initiated by the Planning Board, but by people coming forward and suggesting subcommittee work ... just keeping up with applications and day to day stuff is what we do.

Summary: Key Themes

The conceptual category of Gathering Community is broadly characterized by individual and group motivation, the evolution of a sense of community, and a tension surrounding conflict -- all of which occur within varying spatial scales. As this chapter has outlined, this concept includes motivational factors for initial and sustained civic engagement, land use decision maker needs and how they are met through assistance or

support, how board and commission members define themselves within the community and how that changes over time. This concept also includes how decision-makers seek to define the community in which they live, reflecting on the board membership, the role of conflict, engaging the public, communication, defining the character of the town and seeking expertise. The process of gathering community is an integral part of land use decision-making because it shapes and equips the volunteer board and commission members who are charged with land use decision-making. Together, the analytic units and nodes within describe key themes representing, at one scale, the development of a personal sense of community, and at a broader scale, a definition of the broader community within town.

Six key themes emerge within Gathering Community. These key themes include lacking volunteers, the sense of community or civic mindedness, lacking education and expertise, motivating concerns, respect for democracy and personal enjoyment. Together, these can each be characterized by an existing tension, which contributes to the motivation for civic engagement and characterizes the evolving sense of community. These themes are also characterized by conflict and varying spatial scales. Spatial awareness, and early community awareness, begins at the personal level and moves through the board, into the town and beyond the community. Land use decision-making is ultimately concerned with balance. Yet the characteristics, conditions and factors inherent in the current land use decision-making structure and process challenge not only achieving any balance, but fundamentally lack a context which could incorporate the cumulative spatial and temporal consequences of these decisions. Considering the issues of scale and context is the subject of chapter six. A sustainable balance is also impossible

to achieve under current land use decision-making, without handling the conflict that comes along with it – and that is the subject of the next findings chapter.

CHAPTER V

HANDLING CONFLICT

Defining the conceptual category

Handling Conflict can be broadly characterized and defined by examining the factors and forces contributing to conflict and the characteristics of actions and reactions, structures and processes used to address conflict in decision-making. Conflict exists at multiple scales simultaneously. Individual volunteers can be faced with their own internal conflict related to, for example, requiring education and expertise to make decisions. Conflict can occur within boards and commissions, between these groups and within the town, as well as with neighboring towns and throughout the region. Depending on how conflict is managed, the results in terms of land use decision-making can be positive or negative, with the latter characterized by such things as reactionary planning. Of the themes identified within Gathering Community, those that persist within Handling Conflict include lacking volunteers and lacking education and expertise.

Reviewing the general characteristics of conflict can help set the stage for an examination of the factors and forces contributing to conflict. Characteristics of actions, reactions, structure and process tend to have spatial components. For example, while structure and process characteristics are more confined to the boards or commissions, the actions and reactions include the interaction of these groups with the public. These characteristics provide a framework in which conflict is negotiated, prepared for,

addressed and handled overall, providing a sense of direction and movement within this case study and specifically the social landscape in which it exists. As in the previous conceptual category, data from within these analytic nodes was subjected to Clarke's analytical strategies, which helped to identify key themes.

Handling Conflict addresses the characteristics, direction and movement of decision-making. The characteristics are described by tracing the analytic units, analytic nodes and key themes as before (Appendix 3:17). The analytic units include Contributing to conflict and Addressing conflict. The former has four analytic nodes including: *Difficulty trusting*, *Struggling with process or structure*, *Being unprepared*, and *Struggling with the public*. The latter has three analytic nodes: *Developing plans*, *Taking actions* and *Reflecting on effects*. These will be addressed in turn as in the previous chapter. In the process of doing so, three key themes have emerged that link Handling Conflict with Gathering Community as well as the next conceptual category, Temporo-Spatially Scaling. These themes contribute to the framework for Handling Conflict as well as the movement and action within this concept and are key points to follow through this discussion. They include lacking expertise and education, lacking volunteers, and trust.

Contributing to conflict:

This analytic unit describes the characteristics, actions and reactions, structures and processes that lead to difficulties and conflict in land use decision-making. It contains the nodes for *Difficulty trusting*, *Struggling with process or structure*, *Being unprepared*, and *Struggling with the public*. *Being unprepared* describes the degree of preparation for making decisions experienced by the boards and commissions. *Struggling with the public*

describes conflict generated in the public realm, when boards functionally interact with the general public. *Struggling with process or structure* describes conflict generated as a result of the structure or process of decision-making. Finally, *Difficulty trusting* describes the factors and forces that contribute to mistrust or distrust within and between the boards, commissions, Town Council or Selectboard and the public. While each category has numerous minor themes, the overall key themes resulting from this analytic unit include: lacking leadership, struggling with science and technical information, communication issues, lacking volunteers, loss of community, lacking public engagement, newcomers versus established residents, questioning legitimacy or legality, balancing environment and development, questioning the role of the board, trust and reactionary planning.

Contributing to conflict: 1) Being unprepared

This analytic node describes factors and forces that contribute to conflict concerning the lack of preparation for decision-making. It is characterized by the themes of lacking expertise, leadership, time and institutional memory, struggling with science and technical information, communication difficulties and failing to contextualize decisions within a long-term planning frame. Of these, lacking expertise was fully explored within Gathering Community, but highlights of this with respect to conflict are presented, as well as the consequences of lacking expertise. Resource issues, difficulties with technical or scientific information and the challenge of contextualizing decisions in a temporal and spatial perspective will be discussed.

Lacking expertise directly relates to being unprepared and contributes to conflict, through both characteristics and consequences. Characteristics of lacking expertise that contribute to conflict include a lack of time to receive training. As one interviewee stated, “we’re all volunteers and none of us have enough time to work, really learn a lot about the stuff and try to make decisions, when we really don't understand and we don't have the expertise.” This sentiment was well understood by planners, one of whom described the difficulties of getting people together for complex evening trainings:

You’ve worked all day, you go home, you stuff yourself with some dinner in 5 minutes, you take the dogs out, you say hello to your significant other and you go to a meeting at 7 pm, and you are sitting there and you are debating about whether or not to have the cookie and you are worried about your calorie intake and you wondered why you didn’t work out that morning, and now you have ten giant size poster things and someone is dictating to you the doom of the world and how you are supposed to improve things...Are you kidding me? You’ve got to be kidding me! I want one map, and one topic, and I don’t want to be there for more than an hour, and I’ll make something happen in my town the next day, but don’t give me overloaded doom talk... There’s only so much one person can do.

Poor literacy in science and technical issues contributes to being unprepared. Understanding of land use law and related legal matters is limited. If a town relies on a Regional Planning Commission for assistance and that organization has high staff turnover, access to expertise is limited. The lack of local expertise concerning the town's institutional memory contributes to being unprepared in decision-making and can result in conflict. In general, the complexity of issues is one of the biggest challenges and as this quote states, might keep newcomers away: “it's become so complicated and I don't keep up like I should, but it's gotten so complicated for new people, who have no background in this too, coming to one of these boards and [trying] to make an educated

or knowledgeable decision on some of these things, that may keep a lot of them out of it too.”

There are many consequences resulting from lacking expertise that specifically contribute to conflict. Feeling overwhelmed and confused by the knowledge-base required for decision-making, scientific and technical information can contribute to personal and within board conflict. Skepticism of the expertise within other boards and individuals can lead to conflict, as one interviewee expressed this way: “the Conservation Commission ... they are goodhearted and have their mission but they don't have the technical expertise to prepare a good case, which is unfortunate and the same with the Open Space Committee.” Another interviewee reflecting on legal statute said, “it’s worded in a convoluted way and hard for laypeople to understand the legal ramifications and aspects of making a decision under that statute....and unfortunately the ZBA is making decisions.”

Another consequence of lacking expertise can include uncertainty over who the board is responsible to - the town as a whole or the individual property owner, a debate characterized by conflict. Without expertise, boards that choose to act may do so in order to avoid lawsuits, which is an example of actions driven by conflict avoidance. The boards that are operating in a communication vacuum or experiencing a series of failures in decision-making are consequences of lacking certain expertise. Trying to stick to time and budgetary frameworks without the expertise necessary to make decisions, causes conflict. Lacking expertise can force a reliance on super volunteers, leading to conflict. Finally, lacking expertise and not valuing education within the board is likely to build conflict.

The resources available to volunteers can be a limiting factor in terms of preparation for decision-making, many of which are described fully in *Gathering Community*. A lack of volunteers and expertise, a forced reliance on key people, a lack of town staff and training, limited time, a lack of general institutional memory and poor leadership all contribute to being unprepared and to conflict. Resources such as GIS, software and computer access are lacking in many towns as one interviewee complained: “the town isn't even half like other towns, when you walk in towns have computers off to the side and you can turn on different overlays and shape files, look at tax maps, and have these digitized... just a computer to play with and fairly easy utility to pull on different layers.... we don't even have that.” Less technical but equally critical are filing systems, that when lacking contributes to an inability to retain institutional memory as this quote describes:

We did get a file cabinet in the town hall and I basically tried to arrange a field file for each of the properties with our monitoring forms so somebody could go in, but again, that's not going to get sustained, I mean who's going to sustain that? We are all volunteers and [in] five years we're all off the commission, and this new bunch of people [comes in] and they're not even going to know that the file cabinet exists So, it's that kind of continuity with information, it's really hard for the towns, unless there is a staff person and we don't have anybody.

Even the simplest of resources and support tools, like meeting space and maps, can be challenging for towns to overcome, as this quote describes:

I went and got [the maps] laminated so we could have them out so people could paw over them without screwing up the map but it really hasn't been much effect ... they all sit on top of the case over there... I'm usually the first one to yank them out when we are looking at a project and I would love to get them up on the walls, but people seem terrified [of them] being abused or stolen.

Other factors such as individual and board drive or initiative, the turnover rate, social skills and characteristics of super volunteers affect the resources available to decision-makers. Effective leadership is a key resource for a board to draw upon, but without this it can lead to decision-making based on lawsuit and conflict avoidance.

Many characteristics of *Being unprepared* can be organized according to struggling with science or technical issues, which relate to lacking expertise. Characteristics include struggling to understand such things as wetlands, hydrology, habitat and ecosystem science, the effects of sodium chloride on water quality or GIS technology. One interviewee described the need for assistance by stating science is “one area that we feel least comfortable discussing ... meeting with soil scientist and environmental engineers and so forth we have to get expertise in this because we can't make a decision in a vacuum, because none of us have that particular license or technical expertise.”

It can also include more general difficulties with understanding concepts like watersheds, the relationships of habitats and corridors to ecosystem health, or key definitions. Legal technicalities are also challenging for boards due to the language which “has a lot of big words and you don't know what it means.” Finally, being confused over uncertainties in the scientific literature and mixed professional opinions is a common characteristic of struggling with science: “At the same time ... it's hard to get a handle on those impacts because what I find in my 20 years is there's always a scientist which will say it's bad and another one it's good and another in the middle, and it's hard, as an unaware or uneducated person on some of these expertises, that after a while your head kind of fills up and so it's very hard, it's a very hard challenge.”

Being unprepared contributes to conflict by preventing effective communication with the public and developers, preventing the development of persuasive arguments with technical backup, deterring effective leadership from developing and limiting the ability to consider decisions within a long-term spatial and temporal context. General skills including map reading are important for land use decision-making and when absent, can contribute to conflict. The inability to think long-term or big picture, understand pressing climate science issues, or technically communicate with state offices contributes to conflict as this quote suggests:

I just always felt like as a group we did not have the big picture and I'm a big picture kind of person and I like to know where everything is, how it lays out, and where the important things are, and I started feeling and seeing there were factions in town saying 'we already conserved enough' and 'the University owns a bunch of land that's already conserved', although it's not ... there was always this fight going on and I kept saying, 'I need to see the big picture' and 'Are the things the other side was saying ... true?'

Being unprepared leads to challenges in preparing good arguments and explaining things to the public. Without understanding hydrology or other technical disciplines, boards and commissions cannot effectively intervene with other town entities and elected leaders concerning long-term water resource issues. Not understanding the relationship between impervious surface and water quality challenges boards to explain their desire for innovations such as permeable asphalt. Some boards handle this better than others, as the detail below suggests:

So we say, 'let's put in it this swale', swales are popular, or a riparian buffer, and they'll ask 'What's a riparian buffer?', and we'll say, 'You need to have plants in the buffer to keep water from running off,' ... And they will say, 'Like a lawn?' and we'll say, 'Yeah, a lawn is okay,' (*laughing*) ... or blueberry bushes or shrubs 'What are you gonna have under the deck?' and they say 'What do you mean?' ... 'We want 6 inches of gravel ...' and we explain how splashes of mud create erosion.

Finally, ineffective leadership, together with the characteristics of *Being unprepared*, can contribute directly to poor management practices and an inability to develop and maintain a good decision-making process. As one interviewee stated, “So there's a lack of dedication among the multiple boards and a huge gap in leadership ... Nobody knows what to do and really what it sets us up for is that we only respond or react to avoidance of a lawsuit.” Personally, this can result in anger, feelings of frustration and discontent with board dynamics. Frustrations can exist due to the lack of volunteers, and when new people are brought on, their steep learning curve, as the quote below explains:

Particularly with the more technical knowledge ... I've been frustrated in recent years, someone new comes on the board, they jump in, and start asking questions and offering opinions, they had don't have any perspective, they're not offering the right perspective because they just don't have the right experience, they haven't been in land use or in engineering and are told to jump in and they forget from our standpoint of working with the legal book ... you have to stick with that book.

In the public realm, decisions made under ineffective leadership often lack clear transparency which can make them look whimsical and lead to conflict. In addition, boards faced with these challenges may simply resign themselves to waiting for lawsuits, political change or generational turnover, rather than making hard decisions - all of which maintains that undercurrent of tension and conflict.

Contributing to conflict: 2) Struggling with the Public

This analytic node describes factors and forces contributing to conflict that are related to struggling with the public. It includes lacking volunteers, challenging divisions in town, the loss or feared loss of community, pressure from established residents and ‘good ole’ boys’ and struggling with generational differences. Most of these were already

closely examined in *Engaging the public* and *Building the board* within Gathering Community and will be briefly touched on here with regard to conflict. The key themes are lacking volunteers, loss of community, factions and divisiveness, engaging the public and newcomers versus established residents.

Lacking volunteers and concern for the loss of community are critical themes that have consequential factors for conflict. For example, lacking volunteers can lead to conflict through strong-arming or stacking the boards, intimidation and abuse, prejudice against education and initiative, pressure on time management, reactionary decision-making, burnout, fear or guilt for stepping down and mistrust. Concern for the loss of community may cause conflict through uncertainty of public opinion, confusion about built designs and impact on rural character, generational tensions, extreme private property views, NIMBY-ism and failing to integrate heritage. Fear of losing community can also create conflict when land use boards question developers on designs, engage in rescue heritage, or try to balance preservation and open space with private property rights and economic development. In addition, a sense of losing community can develop and cause conflict when historic landscapes appear to be fracturing.

Divisions or factions within a town's population contribute to conflict. Factions manifest themselves on boards and commissions when these groups comprise controlling interests. This can lead to one subset of a population pitted against another creating a feel of the 'South fighting the North.' These factions were characterized by xenophobia, divisions in wealth or class, old family rivalries, and newcomers versus established residents, as this quote describes:

Yeah and there seems to be a growing gap between the two factions, these supporters of conservation understand that there's no question ... how you help control taxes by maintaining open space, how the environment is affected by it, how natural resources are affected by it, they understand it, and then there's people that say 'Bear Paw has foreign money coming in and the Iranians want to take over' and things like that.... *(sigh)*... those are the old-time folk who just don't get it and 'don't confuse me with the facts.'

These types of divisions on boards and commissions create tension and conflict within the decision-making process, both between boards and commissions in a town and with Selectboards and Town Council members, as this quote describes:

On the Planning Board we've had people who have basically suggested that whole huge parts of our regulations just be thrown out the door because we are being overly burdensome ... that everyone should be able to do what they want with their land until a friend of theirs walks in the door and is somehow harmed by an application or has perceived harm and then they want us to apply everything very literally.

Negative attitudes, intimidation, abuse or consistent, low-level tensions do not create a welcoming atmosphere for any well-intentioned, potential new volunteers.

Finally, actions or reactions to decision-making can contribute to conflict and be exacerbated due to divisions in town. There are positive and negative approaches to handling this. Positive, proactive approaches include actively questioning the other side on arguments, insisting on contextualizing a bigger picture, choosing to join forces and deciding when to step back, all of which can help reach a consensus on decisions. Negative reactions include not trusting leaders or other boards, waiting for other boards to act, struggling to educate factions, fearing resignations or losing balance on the board, experiencing power struggles and shifting political extremes in representation. The turnover rate of Selectboards or Town Council, which can reflect political divisions in

town, can also inhibit the process of good decision-making and contribute to conflict.

The quote below best describes how town factions lead to conflict within boards:

There definitely are folks hellbent on being exclusionary, xenophobic, overly libertarian and sit in these chairs in order to push their agendas and that's true... someone could say 'well, you are liberal minded, bla bla bla socialist ... and that's why you sit to make sure your views are heard', know what I mean? ... and sure they would not be entirely wrong, everyone wants to have the vision of what they think is right and wrong and sit on these boards and make decisions based on those principles, but they shouldn't ... they should base their decisions on the ordinances and the subdivision regs and master-plan but that is definitely not the case and there have been some hellacious examples in this town, just utterly ridiculous and absurd.

Contributing to conflict: 3) Struggling with process or structure

This analytic node describes factors and forces contributing to conflict due to the process or structure of decision-making. It is characterized by questioning the design of the process, disregarding or disrespecting practice and principle, confronting an inheritance of bad decisions, and failing to understand, or, choosing to ignore, authority and jurisdiction. This node holds specific data concerning the Planning Boards and the Zoning Boards.

The structure or character of the Planning and Zoning Boards are key considerations for contributing to conflict. In general, any board with poor quality membership or abusive and intimidating atmospheres will manifest in conflict. In terms of land use planning however, these two boards are the most conflict-prone and are often pitted against each other as one member explained, "I get frustrated for long periods because we go to the Planning Board and say 'we need to make changes to the ordinance' and they say 'we don't want them' and we ask 'can you sponsor them on our behalf?' and they say 'no we are the God of zoning ordinances' ... and yet we get stuck at the end

with whatever's written.” The Zoning Boards, essentially operating in a judge and jury capacity, work narrowly, which as a process can lead to conflict between boards. Both boards experience conflict if trying to work with a weak master planning document, which provides little direction for strategic development and no enforcement potential. Boards with disparate philosophical beliefs and memberships slow to change in character also contribute to maintaining conflict between and within boards as this describes:

The Zoning Board members are largely a different philosophical bent and more inclined to simply grant whatever variance are requested then to the [inquire] into the town plans or as far as I can tell into any plan or any sort of analysis at all ... I think it's the makeup of the Zoning Board ... one of the things about a local town board is it is a slow process to change the character ... the Zoning Board's composed of ... Libertarian oriented people and in fact Zoning Boards ... I'm not even sure they should be citizen boards because the issues they have to deal with are incredibly complex to ask a layperson to deal with ... and they simply are inclined to grant whatever is asked for.

Actions and procedures within the Planning Board can contribute to conflict. Members feeling overwhelmed as a result of the demands of their roles experience conflict. Interacting with and questioning developers can lead to conflict. Uncertainty about the process for involving the Conservation Commission or other groups can occur causing conflict as this quote describes:

Early on the first conservation subdivision came before the Planning Board right after I became chair ... and [they] completely ignored the fact the Conservation Commission was part of the process and they were walking through the whole thing almost ready to approve the project and somebody stood up and said 'where's the Conservation Commission in this?' Part of that was the Town Planner not doing his job, but the Conservation Commission was not even aware of the fact that this was going on.

Finally, Planning Boards characterized by abusive behavior or intimidating atmospheres can lead to conflict, as described here: “so this Planning Board guy rips into

this gung ho Conservation Commission member saying 'it's your responsibility to be out ... monitoring and reporting on this and that's not our responsibility' ... I told him subsequently that I didn't care for that kind of approach and it's people like him that scare off eager volunteers, where the hell did he get off talking to my people like that?" Boards guilty of ignoring members of other boards, dismissing other towns, failing to communicate or rubber stamping projects are conflict prone.

Actions and procedures within the Zoning Board can contribute to conflict.

Making decisions outside of their jurisdiction, ignoring the town attorney, stacking the board in favor of one political alignment, failing to receive proper training and using improper criteria as the quote below mentions, all are examples that led to conflict:

Well we had the chair of the Zoning Board give a Lot away that was designated in a mobile home development for recreation as an additional building lot, because he thought requiring them to have a parking space was a stupid idea and he convinced the rest of the board such, but just because you don't like it doesn't mean you ignore the zoning ordinance! Does it meet the criteria or doesn't it? Your personal criteria don't matter!

Interviewees described a difficulty in the board keeping up in character with the town's political views which results on conflict. Being stuck with the consequences of past bad decisions is also a source of conflict. This is often recognized as a piece-by-piece loss of landscape or failure to uphold the master plan, both of which result in an inability to trust Zoning Board decision-making. Finally, Zoning Board decisions when made outside their jurisdiction lead to direct conflict with the Planning Board, lost economic opportunities and a circumvention of the Zoning Board in the future, which is what happened here: "The ZBA turned down the application ... and two of the reasons were out of the jurisdiction that they use, one was traffic and the other was safety, but

that's the Planning Board... so they turned down the application based on something that they had no authority over ... and the result of that is the developer left and said 'thank you very much I'm out of here'." Conflict also erupts with the other boards and commissions when and if the Zoning Board breaks state law, as one interviewee reflected:

ZBA is the weakest link in most towns and it's because of the concept frankly... [it] is in place to pop the cork on the town's ordinance and it draws in ... people whose identity and philosophy align pretty well with that concept that a private person should be able to do what they want to do in lieu of the regulations in place... it is designed to be the yang to the Planning Board ying for subdivision and site plans ... so it pulls in those people and I could say that all Zoning Boards should be dissolved as a concept but the worst part is, in New Hampshire, they are given quasi-judicial capacity, and they have an attorney and this was the first time ... the ZBA attorney has gone against the town attorney because the ZBA has done things against state law ... she and I and the Town Council sat in front of the ZBA and explained to them how the series of variances they had issued violated state law It was a nightmare.

Finally, conflict can result when boards disrespect the process, fail to enforce policies, or do not adhere to clear decision-making procedures. Considering the latter, one interviewee said of the Zoning Board, "you can have all the zoning in the world but if you go and convince those five guys or people on the board that what you want to do is okay then it's okay and the hell with the planning and zoning ... that's how that parade marches." Conflict within and between boards result when members do not understand basic democratic practice, or are perceived to ignore the rules. Failing to understand authority or jurisdiction, questioning the structure or timing of the decision-making process and poorly designed policy, even when dealing with outreach to the community, can all lead to conflict. One interviewee complained about policy saying, "we have a town master-plan which is a lovely document to read but it has absolutely no connection

to our zoning ordinances, so it's wonderful to read this thing and see this is what the town will of the people is but the zoning ordinance doesn't connect to it in any way, shape or form." Finally, much conflict can result when boards lack a clearly contextualized planning framework and process:

Members of the Planning Board think we should be ... doing more of the planning, but it is volunteer ... when do people meet to get it done? We meet once a week, and if it is a public body, it needs to be done in public, so how can you meet and discuss things to move things forward and develop a plan without keeping the public out ... or how do you invite the public in... and again, if you want to sit down and have strategic planning, how do you do that with the Planning Board or the Town Council ... you have all these groups, but what's the overall strategic plan?

Contributing to conflict: 4) Difficulty Trusting

This analytic node describes characteristics, factors or forces that contribute to mistrust or distrust – either directly sowing seeds of mistrust and uncertainty, or creating an atmosphere incompatible with building or maintaining trust at all. One key theme leading to a difficulty trusting includes the characteristics of the boards, Selectmen or Town Council. Another involves the interactions, reactions and perceptions between boards, commissions and the public. Building into this interaction between groups and the public reaction to it, is questioning the legitimacy or legality of decision-making, which reinforces mistrust. Finally, fearing litigation is a key theme which, in decision-making, contributes to mistrust or distrust. All of these contribute to conflict by creating a sense of uncertainty, lack of confidence, or an outright lack of trust.

I think the Planning Board is very good board... we work as a team... I don't think we've taken a vote which wasn't unanimous [we] work together and compromise and I think we're very professional about the way we do things ... and I wish I could say those things about other committees in town, including Town Council.

As the quote above relates, not all boards have internal issues with trust, but there are characteristics which contribute to a lack of trust and conflict. Abusive or disrespectful behaviors, mean and unfriendly people, exacerbated by strict political ideologies playing out on the board are not only a product of poor leadership, but also contribute to conflict. Board members expressing fear over losing the political balance, or a concern over the skills and abilities of other members contributes to mistrust. Poor communication, a lack of expertise and poor leadership contribute to an atmosphere of mistrust between boards and commissions, as this quote describes:

I think all the boards should be meeting jointly. I think that's the biggest problem in the town ... because it's completely fractured, the boards operate in complete isolation from one another. I mean we all have a similar piece but we operate in complete isolation and that can work if you have strong leadership downtown with the Selectmen and Town Manager. But the Selectmen squabble amongst themselves, the Town Manager, I don't know what his qualifications are, I don't think very many, and he just does whatever the Selectmen and Town Attorney tells him to do... we don't have effective leadership.

Interactions between boards and the public perception of this process also contribute to an atmosphere of mistrust, distrust and conflict. Poor communication or a lack of communication characterizes the majority of interactions and perceptions. This lack of communication can include boards ignoring other boards and years or decades of different “cultures” within boards that struggle with communication. One interviewee describes how communication and perceptions changed by cross-representation on boards:

Personally I think it's very good if there's at least one member ... on another board, I think that's a tremendous aid, at least in communication and you don't get the feeling that prior to this you might have the idea that the Planning Board deliberately did something and [tried] to hide something, it's a paranoid type thing, you might think that way ... and they do that and didn't let us know, and it wasn't intentional [it] just happened, and you start perceiving that we didn't know what was going on.

The lack of effective communication includes a board operating in isolation as well as inappropriate, off-the-public-record communication, which is a precursor for lawsuits. A failure to comprehend a matter of jurisdiction or a technical or legal issue can result in perceptions of mistrust. In some cases, emotional expressions of distrust and conflict were shared by interviewees, such as this one:

The makeup of the Planning Board at that time was far more pro-development... some real pricks on the board, who just beat the shit out of her verbally ... she took tremendous amounts of abuse trying to extend buffers and get people on the Planning Board to require buffers and blah blah blah ... fortunately, some of those folks have left or didn't choose to run again and a far more friendly and supportive Planning Board now exists.

The results of all of this include a perception of boards taking advantage of others, of acting to avoid lawsuits, of rubberstamping, and of making decisions against master plans – all of which ultimately leads to mistrust, distrust and cynicism. Interviewees mentioned boards that hated one another, paranoia, or stories about boards undermining each other. Experiencing undue pressure from another board to remove board members was also shared in this way:

The selectmen have tried to remove some of us ... we have a little political stuff going on, we have five selectmen one of them is a Conservation Commissioner and the others don't get it, are very suspicious and do not trust ... and in fact they have basically tended to undermine things we've tried to do because they don't understand, and we have made a number of attempts to educate them, to engage them, to include them, and I don't understand.

Mistrust and conflict are often generated through interactions with local leaders in the Board of Selectmen or Town Council. Characteristics of local leadership that contribute to this include a lack of training and expertise, perceived dishonesty or lack of integrity, and a failure to effectively lead. As one super volunteer complained, "Now it's

horrible, there are three members that don't do anything but keep our taxes down and do a clean sweep of anybody's projects... I'm [so] glad I'm not still on it, if I were 10 years younger it'd be different but I don't need it in my life." Being disrespectful or rude, struggling to gather a full board, or ultimately acting with an appearance of personal gain, are all negative characteristics.

Actions taken by town leadership leading to mistrust or conflict often stem from communication issues, which include a lack of engagement with the public and other boards. One interviewee described an on-going negative relationship with the Town Council this way: "we could see they were just trying to railroad this through really fast, and it appeared clear they were doing it because the developer needed it to be done, so they were doing zoning to satisfy a developer which seems a pretty tail wagging the dog way of doing things and everybody who knows the details about this is very upset about the way this happened." Another stated the following:

We get this recommended change by the Town Council and the TC probably has been in discussion for several weeks or several months coming up with this recommended change, and we may hear some info behind it, but what was their thinking behind it when they recommended this change? ... *(laughing)* We get the minutes and stuff like that [but] as far as the thought process when they voted for it... all the other info is not there.

Being afraid of making decisions, re-delegating to other boards, and allowing lawsuit avoidance to drive decisions all exemplify ineffective leadership, which prohibits the vision and context development for long-term community planning. One example of the effects of not being able to make a decision and consistently re-delegating is below:

They are ... sort of making it more of a hot potato back and forth *(laughing)* because it's like, 'oh well, there's this information,' so then who should make decision!?! ... I'm going to push it further and say maybe the Conservation

Commission should formally make a recommendation to the Council about what we think they should do, because we were just trying to give them information to make a decision.... everyone is a little bit leery about where their role [is] in giving firm recommendations I think people are little too tentative, they don't want to offend their friend or affect private property rights and people are sort of afraid and don't want to say things, but that's the purpose [of why] we are here, to discuss things and put information forward to make decisions.

Reactions to characteristics and actions by the Board of Selectmen or Town Council include many things that lead to mistrust, distrust or conflict. These reactions can be boards simply feeling they are out of the loop or isolated from decision-making, or a general disappointment in leadership, cynicism and mistrust, as this interviewee describes: "I'm a little distrustful knowing the Town Council and the way they are hell bent for leather to get economic development done, even though they are talking a good game about meeting with us.... I feel like they want to get this office research light industrial done and then talk to us later, just make a show of it ... I don't think it's an earnest intent."

These reactions reinforce an assumption of politics driving decisions, the sense of a fractured community, and create a feeling among board members of the need to pressure leadership. An important reaction that commonly occurs in such an atmosphere of mistrust, includes a continuous questioning among the boards and commissions of whom, if not Town Council or Selectboard, speaks for the public good, as one interviewee explained: "I think the other thing is people on boards, are they there to represent the town and town policy? Or are they there to protect individual rights? Or maybe it's a combination of both?.... but surely one is to look out for broader public interest and public policy, so I'm not sure how people balance that."

Questioning the legality or legitimacy of decisions made by boards or town leadership can also lead to mistrust, distrust and conflict. This results when there is a perceived lack of vision and leadership, skepticism of qualifications and a decision-making style appearing more reactionary or whimsical, rather than proactive or civic minded. Allowing such things as spot zoning, described below, leads to distrust between boards:

We had in this case a developer who came to town and said to the Planning Board 'either you write this ordinance or I will' and get it on the ballot by citizen petition.... he was a resident here and a land developer and the Planning Board basically... turned it over to him and said 'write your own ordinance' which he did... and to me all [it] would take is one more like that to keep writing the ordinance the way they want it for their own land, and [this town] would change fast!

Reactions to decision-making can trigger questions about legitimacy and legality of boards, leadership and decision-making overall. Actions that enhance this skepticism and mistrust include ignoring procedure, dismissing relevant boards or commissions, practicing illegal behavior, or operating in a threatening manner. Permitting established families exemptions with regard to the rules, allowing old family rivalries to dominate land use decision-making, or referring to improper criteria all lead to a question of legitimacy and mistrust as the quote below suggests:

We had the chair of the Zoning Board give a Lot away that was designated in a mobile home development for recreation as an additional building Lot, because he thought requiring them to have a parking space was a stupid idea and he convinced the rest of the board such [but just] because you don't like it doesn't mean you ignore the zoning ordinance.... Does it meet the criteria or doesn't it? Your personal criteria don't matter!

Finally, fearing litigation is a prominent theme that contributes to a sense of mistrust or outright distrust. This includes expecting lawsuits due to illegal activity, or

constantly fearing a lawsuit and practicing avoidance as the primary land use decision-making mechanism. Boards and commissions fearing litigation react defensively to even the potential legal threat issued by developers, often resulting in reactionary planning. As one interviewee described, “Nobody knows what to do, and really, what it sets us up for is that we only respond or react to avoidance of a lawsuit, so really any towns like these are a victim to a strong lawyer.” The perception of reactionary planning is not limited to planners or decision-makers, but is also obvious to developers, as this quote suggests: “Half the towns, if they have a Master Plan written in the last 10 years, it’s garbage, and a lot are 20 years old, and no one looks at them, so the notion that they are making planning decisions based on natural or cultural resources is just bullshit... people on these Planning Boards are very reactionary.”

Fearing litigation is not confined to interactions with developers. In towns where early conservation of open space was obtained, the transfer of title to newcomers poses a potential legal threat to maintaining easements and can be a cause of new conflict: “The new landowner is not a understanding of, or sympathetic with, the terms and conditions of the easement as the original owner, so we are starting to find places where there are problems and we haven’t gotten into litigation but it is certainly a possibility.. .so there are things like that which get my anxiety level up.”

Addressing Conflict

This analytic unit contains the nodes *Developing plans*, *Taking actions* and *Reflecting on effects*. It describes the process of finding ways to address conflict under various circumstances, and the effects of the actions taken to do so. The key themes in Addressing conflict include recognizing needs, driving forces, planning actions,

struggling with pressure points, reactionary planning, and questioning the role of Regional Planning Commissions.

Addressing Conflict: 1.) Developing Plans

This analytic node describes how *Developing plans* is a method of addressing conflict. This node is characterized by the themes of recognizing the need for an effort to address conflict, driving forces that continue to build this effort and planning actions to move forward. Concerns, threats and emergencies all drive the need to develop plans. Wanting a balanced board and decision, taking initiative and fearing extremist ideologies, (not wanting the “kooks” to be in charge as one interviewee stated), all contribute to the need to address conflict. Lacking volunteers and experiencing weak leadership are also of concern as one interviewee explained, “nobody is working together ... the RPC could help with, there are some trails at The Nature Conservancy works on so there is a start of trails but it's fragmented and it's an area [we] could get excited about but it needs leadership.” Concern about sprawl is also a contributing factor to recognizing the need to develop plans to address conflict, as described by one interviewee who had witnessed sprawl elsewhere:

I came away from New Jersey with that, and, lived in a very nice area ... with lots of green and open space set aside, but coming up here it just hits home, you don't realize what you got till you ain't got it no more, and I think that's what we're dealing with this, faction that doesn't understand and I believe many ... if they understood the purpose of what we were trying to do I think they would agree but they just don't want to know, it's too new, too threatening somehow the walls go up.

Driving forces include interviewees' feeling stuck or overwhelmed, caring about the town and being worried about the community. Specific planning actions can include calls for stronger regional leadership, targeting specific areas for public policy, bringing

in the voiceless members of the community or joining forces with other members of the board, other boards or others in the community. It can also include focusing on a single issue, as this quote describes:

What really has legs for an argument is to sell it on the fact that this will really help with flood protection with all the damage the town had with floods so I've pushed ... the one who leads this in front of the Planning Board meetings ... to come at it from that angle, that you need this for flood protection, flood protection, flood protection as opposed to natural resource protection for surface water because with the CSPA, they just don't want to hear it anymore.

Addressing Conflict: 2.) Taking actions

This analytic node describes actions taken to address conflict. This includes balancing environment and development, confronting public attempts at corruption, questioning the role of the board, and dealing with developers and lawyers. Choosing to take action as part of *Addressing conflict* often begins with questioning the role of the board itself which involves taking proactive steps and struggling with conflict. This conflict can result from dealing with laypeople, struggling with a process, inadequate communication, lacking time, or simply struggling with guidelines for decisions as the next quote suggests:

It's fine that your boards have different responsibilities but I think my one frustration is no matter what board, people are always just reacting to that specific thing that comes in the door rather than saying, 'does this fit into the master plan?' ... you know Planning Boards are supposed to be planning not just reacting to something, and I never hear them talk about 'is this in our master plan or is this in our open space plan and what do our natural resource documents say about this area?' ... and I think they tend to be very worried about their legal authority.

Proactive steps that boards and commissions can take include actively defining the role of the board, approaching town leadership, being careful with legal authority, attempting to build consensus, reaching out to other boards and choosing when to push

back or become more aggressive. This amalgam of action and conflict leads to reflecting on planning versus reacting, recognizing the lack of the big picture and regional context, relying on member skill sets, and questioning the rights of the town versus the individual.

Boards and commissions react differently to developers, which depends heavily on how those developers are perceived. From a developer's perspective, difficulty often arises when the boards do not have a clear picture of what they want in terms of their

Master Plan goals:

They don't understand when they whack a developer in the pocket there's a ripple effect ... these towns run out of tax revenue for the school and other needs of the community because things get developed a lot slower and don't get developed the way they should got developed, I mean my whole business is not development, it's psychiatry, I actually hired a psychiatrist and took them to a hearing, and that's where we'd get into what [the board] had in their mind of what they wanted, it was not what they wrote down in their zoning ordinances and when you try to satisfy those needs, what happens to me as a developer is, I just go by the model, I'm not interested in what you think it should be, you've got to write it down.

Developers who proactively work with review committees, and take it upon themselves to seek out innovative low impact designs are generally more welcomed. Boards with actual procedures in place to work with developers recognize the benefits to all sides:

[The Town Planner] recommended that the developer meet with us first and that worked really well and we talked about how we can work with the wetland that needs to be restored and how that could work with their plans and schedules and ... that way everybody is in the room at the same time hearing the issues and concerns ... and if the Planning Board wants to meet with them about things not to do with natural resources that's fine, but it's more efficient for us and for the developer because it's frustrating for the developer [otherwise].

Reactions to the approach of developers varied with the interviewees. Boards react negatively when developers appear to sugarcoat information or bend the truth. They are also negatively received when information and scientific data is taken out of context

to debate proposal details, or worse, in situations of outright deceit, illegality, or misrepresentation of information or data. Most interviewees mentioned suspicion and some even assigned developers an ‘enemy’ status, as in the quote below.

I go in there now with the idea of trying to defend the town and that the developers are the enemy ... and that's not a good way to approach this sometimes, but some of them do try and pull these things [off] and it just grinds me to see them try and get away with some of this stuff, like using wetlands instead of uplands as recreational stuff ... I don't mean that they're the enemy, but I approach them suspiciously.

Many interviewees were proud of the idea of making developers loathe coming before their boards and took a strong defensive stance against any and all proposals. Developers whose proposals failed to convey a certain respect for the uniqueness of communities were poorly received. Boards that include strong pro-development factions can experience uneven push-back by minor factions within the board, leading to conflict and imbalance. Overall, reactions to developers tend to be negative and defensive, although there are some examples of boards and commissions working hard to balance environment and development.

Reactions by boards and commissions to developers include legal changes to statutes and ordinances, stylistic approaches, and battleground-style defensive posturing. Reactions include building language into ordinances that gives value to the rural landscape, establishing a technical review process, limiting the number of subdivisions per year or requiring open space conservation subdivisions. Other reactions include choosing to consistently seek the reduction of ecological footprints when viewing proposals, challenging developers to explain profit margins or disapproving of designs. Using science as a legal defense is sometimes an action of choice, but this is hampered by

the lack of technical expertise within the boards. This, ironically, forces boards to rely on the developers for information about a site. Another reaction to developers includes simply waiting for cases to go to court.

Reactions to lawyers included standing up to perceived intimidation and digging in against development. One important reaction of dealing with lawyers led boards and commissions to actively collect technical and scientific evidence to be used as a backup for future proposals and court cases. The general opinion seemed to be that without good leadership in towns, boards and commissions were easy victims for attorneys, and as such, interviewees described their perceptions of lawyers in terms of factors of intimidation more than civil interaction. In at least one case, even the professional dress of the attorneys was used as a rallying point of defense against a proposal, as in this quote: “If anything, when we get pressure we start digging our heels and, saying ‘hold on here, we are charged with protecting a letter of our ordinances here’ ... just because I really don't like getting pressure to do something because it worked for someone else, I don't care if the lawyer has tasseled loafers or they are coming as one of my neighbors.”

Actions taken by boards and commissions to address conflict generate positive and negative reactions. Negative reactions include stonewalling, failing to make decisions, and remaining on the board out of a fear of losing balance. Educating the community about decision-making and insisting on a fair and just process are positive reactions, although difficult, as this next quote explains:

I really don't want people calling me at home and telling me what they think, if they want to say what they think, they should come to the public meeting, because when you have private conversations [with], people that's when you are in trouble after or before the meeting that private conversation is going to hurt you, so when people call me at home, I don't talk about it I say ‘you have to present your information in a public forum...I can't listen to you now’ ... and you try to cut

them off a little bit and be nice and polite, but you will regret everything you ever said in private to people.

Addressing conflict: 3.) Reflecting on effects

This analytic node describes the reflections of decision-makers on the effects of addressing conflict. It is characterized by recognizing poor decisions, questioning the role of the Regional Planning Commissions and reactionary planning. Reflecting on the effects of Regional Planning Commissions and their role in land use decision-making relates to ways these organizations assist boards and commissions to address conflict. Reactionary planning can be described in terms of general characteristics, structure, process, and results.

Reactionary planning is one of the most critical points raised by interviewees. This concept includes such things as operating on a day-to-day basis or "putting out fires", failing to consider the big picture, struggling with the process and timing for decisions, questioning the strategic plan and waiting for court cases. Many of these characteristics arise directly out of conflict due to a lack of volunteers, public engagement, training and expertise, or fear of lawsuits. The lack of time is a critical structural element leading to reactionary decision-making, as one stated, "we meet from 7 to 10 Wednesday nights *laughing* ... depending on the extent of the development and public input it can be 11 o'clock by the time we move to something else... there's just not enough time to start thinking do you want to start thinking about making serious decisions at 11 o'clock at night?"

Interviewees described the lack of time to think about long-term planning, and some suggested a difficulty retaining people who are long-term conceptual thinkers. One

interviewee and super volunteer stated that other than writing the Master Plan, “which is not too much in terms of guiding day to day decisions, other than that, the Planning Board does not do much long-term planning.” Interviewees expressed concerns about reactive versus proactive decision-making referencing time as one constraint and lack of public engagement as another:

We are reactive rather than proactive ... While we try to be proactive, [a] couple times in fact we sent out letters to all landowners with more than 50 acres asking if they were interested in conservation, there are benefits, please contact us, and got zero responses so it's mostly been reactive to word-of-mouth and people possibly interested and in recent years much more collaboration with land trusts.

I think to a large extent we are reactive rather than proactive and a lot of that has to do with time. Dealing with the things that come up day-to-day ... if I had the time to sit down and do a major land use planning effort, I'd love to do it, but we are just dealing with what has to be dealt with, the prime wetlands was the only thing ... sort of stepping out and it was huge amount of time and then I wasn't working full-time and now I'm working full-time so I could not do it now.

Consequences of reactionary planning include frustration as well as poor decisions and the sense that decision-making is directionless. There are significant challenges in terms of education about thinking long-term, spatially and temporally. Some of this relates to the lack of volunteers and public engagement, both of which contribute to conflict. In addition to the recognition of the constraints working against proactive, long-term planning, there was also an uncertainty about the planning process in general as expressed here:

Members of the Planning Board ... feel adamant we should be doing more of the planning, but it is volunteer.... when do people meet to get it done?... we meet once a week and if it is a public body, it needs to be done in public, so how can you meet and discuss things to move things forward and develop a plan without keeping the public out ... or how do you invite the public in... and again, if you want to sit down and have strategic planning, how do you do that with the Planning Board or the Town Council ... so you have all these groups, but what's

the overall strategic plan?

The Regional Planning Commissions have important roles in land use planning, but are characterized by both positives and negatives. The positive aspects of RPCs include the fact that these groups have become far more ecologically aware over decades and can help balance environment and development. They bring more clout to land use decisions, help towns with grant applications, and can be of assistance with scientific and technical information, including work with GIS. RPCs can also serve a communication role in towns which can be a critical function, as one interviewee attested:

We are such a small town, and virtually all the boards you jointly use the resources of the RPC and because we are so small and it's [a] tightknit group, everybody really relies on the RPC for most of the information so ... it meshes together, the boards don't seem to have too many different concerns or conflicting concerns because most of it is vetted through that process.

Despite these positive characteristics, there are legitimate concerns expressed by interviewees about the RPC role and actual value in regional planning. First, there appeared to be a general hopeful assumption that regional planning was happening at some level, by some body, but an acknowledgement at the town level that it, "could use a lot more work in terms of how that funnels down to the towns because a lot of times we're winging it, let's face it." Some interviewees were confused about the RPC role versus the county or state, yet the latter two are negligible in terms of land use planning. Staff turnover and retention issues in RPCs can impede work within towns and was viewed negatively. In some cases, towns identified themselves as more akin to towns in a neighboring RPC unit than the one they were assigned to, resulting in perhaps an undervaluing of their RPC service. For example, one interviewee noted, "[Our town] is in

Rockingham County, why isn't [town] in the RPC? Why are we with Southern New Hampshire, who is historically focused on the road system in Manchester?"

Interviewees suggested regional planning should not only be stronger, but some thought it should be mandated from the state. This was due to the concerns mentioned above as well as complaints that regional planning is piecemeal, linked only to traffic in greater metropolitan regions, and that it fails to fully integrate zoning and planning between towns. Comments could be summed up through the viewpoint of one interviewee who stated:

From what I can see they can assist us with projects if we invite them but they don't have any overall influence on the way these towns in their group develop.... they are not leaders at all, they're not proactive, they are not leaders They'll come in and tighten up the nuts and bolts ... but as far as integrating our zoning with [neighboring towns] and make it a holistic approach to things, they don't do it.

In general, despite the criticisms, the work by RPCs is valued, but there is a strong desire to have greater coordination in regional planning and far more directed at the landscape scale, perhaps even through direct mandates to the towns.

Summary: Key Themes

Handling Conflict is broadly characterized by examining the factors and forces contributing to conflict and the characteristics of actions and reactions used to address conflict, or in essence, the direction and movement of decision-making. Conflict simultaneously exists at multiple scales. The analytic units here traced this conflict at the level of individual volunteers, within and between boards and commissions, between these groups and the town, and between these groups, town leadership and members of the public. The public also included developers and lawyers. Both the positive and

negative results of Handling Conflict were reviewed leading to the concept of reactionary planning. The key overall themes for Handling Conflict include: lacking leadership, struggling with science and technical information, communication issues, lacking volunteers, loss of community, lacking public engagement, newcomers versus established residents, questioning legitimacy or legality of decision-making, balancing environment and development, questioning the role of the board, trust, recognizing needs to address conflict, driving forces, planning actions, struggling with pressure points, questioning the role of Regional Planning Commissions and reactionary planning. Of all of these, balancing environment and development and reactionary planning will carry the most significance for the next chapter, Temporo-Spatially Scaling.

CHAPTER VI

TEMPORO-SPATIALLY SCALING

Defining the conceptual category

Temporo-Spatially Scaling is, in some ways, the final dimension to both Handling Conflict and Gathering Community. Gathering Community explores multiple proximal dimensions of land use decision-making, including seeking expertise, public awareness and engagement, education and the meaning of community. On the practical side, this includes reaching out to other towns to find ways to move forward with decision-making at home. Handling Conflict expands dimensions of community through exploring historic relationships characterized by mistrust or skepticism between towns and the changing population with newcomers versus established residents. These populations experience conflict over different attitudes about regionalism and growing concerns about climate, environmental impacts and the future of water. Temporo-Spatially Scaling continues to highlight aspects of community and conflict, while expanding movement and direction in increasingly broader spatial and temporal scales. Reflecting in this manner highlights the characteristics, factors or forces preventing towns from working together in a regional sense, as well as those causing conflict within boards and between the town and public. Identifying impediments or restrictions to greater spatial scaling is critical. There are also characteristics of decision-making that encourage spatial scaling and regional contextualization for land use which are also critical to define.

Temporo-Spatially Scaling as a conceptual category encompasses the temporal and spatial aspects of land use decision-making. These aspects contribute to understanding the current contextual framework in which local land use decision-making functions. For this discussion, it is useful to scale all of the potential frameworks and characterize land use decision-making from multiple perspectives. The town itself, or first degree of Temporo-Spatially scaling, can be thought of as the baseline or the typical perspective employed when people are making land use decisions. The second degree deals with approaching neighboring towns where it is important to describe the land use decision-making relationship a town has with its neighbors through patterns of communication or collaboration. The third degree of Temporo-Spatially Scaling describes how a town connects regionally, perhaps with other groups or over specific issues. The fourth degree more specifically describes how a town's placement within the watershed is conceptualized and how land use decisions are impacted by this perspective. Finally, the fifth degree of Temporo-Spatially scaling includes not just the spatially defined perspective of the big picture, but the temporal perspective as well. This requires describing how land use decision-making in the town relates to change and impacts over time, cumulatively, connecting to Great Bay and the coasts.

Temporo-Spatially Scaling is discussed in terms of characteristics for these various degrees of scaling and includes the factors and forces that promote, encourage, hinder or impede the consideration of cumulative decisions and effects over space and time. An understanding of these frameworks provides us with an assessment perspective that can characterize spatial and temporal awareness with respect to land use decision-making. This assessment can identify the limitations and opportunities in the towns of

this case study for developing and employing a watershed framework for land use decision-making. Identifying these limitations and opportunities can help key regional organizations refine their education and outreach strategies and allocate resources more effectively to address land use in this coastal watershed.

Temporo-Spatially Scaling is comprised of five analytic units with a variety of analytic nodes beneath (Appendix 3:17). These analytic units are *Defining the current focus*, *Approaching neighboring towns*, *Connecting regionally*, *Thinking watersheds*, and *Connecting time and space*. Some of the same themes identified within Gathering Community and Handling Conflict will appear as critical factors or forces that affect the ability of local land use boards and commissions to consider cumulative decisions and effects over space and time. Of note are the persistent themes lacking expertise, education, public engagement, volunteers and leadership. These common and critically shared themes, when evaluated in Temporo-Spatially Scaling, are in part responsible for the degree to which moving towards a watershed-based framework for land use decision-making is, or is not, possible.

Defining the current focus: Reflecting on town isolation

This analytic node describes the first degree of Temporo-Spatially Scaling, or the baseline and typical perspective employed when making land use decisions. It is characterized by the themes of niche mentality, barriers to greater spatial thinking, challenges to the status quo and supporting factors for greater spatial thinking. The first degree framework can be summed up in the phrase ‘niche mentality’.

The data for *Reflecting on town isolation* shows an overwhelmingly strong local focus by land use boards and commissions, as one would expect given their purview. As one interviewee summed up:

I would say we are pretty parochial...we don't pay a lot of attention to what's going on regionally, there's been the regional wastewater treatment study and that certainly has implications for towns that have municipal wastewater treatment plants but it also has implications for land application wherever that may occur... but we are not there, we're focused on our own navel.

This parochialism can extend to extreme isolationism, although one super volunteer reflecting on a part of the watershed bluntly exclaimed, "I can't imagine this isolationist type thinking and that's what a lot of it is ... 'We don't give a damn what happens in Northwood and it ain't any bother to us any' ... because if Northwood puts in a 500 house subdivision just across the town line from Nottingham it could affect Nottingham."

Decision-makers are not looking at upstream or regional land use issues, not thinking about the big picture, inconsistently assuming responsibility for downriver effects of land use, acting in a shortsighted fashion and largely not communicating with the other towns. They are also inaccurately assuming that regional planning responsibility is with the state or county and that RPCs are in control. Towns that fail to participate fully in regional organizations such as the Lamprey River Watershed Association reinforce this 'niche mentality'. Communities also act defensively towards neighboring towns, which was described as a piece of cultural legacy:

They would warn people out of the town [if someone] wanted to come here, because if there was a blacksmith or a tanner, well those people didn't want competition, and so [our Town] warned out over 300 people and that essentially protected the town from not having to take care of those people if they became a burden onto the community... say the husband died and the widow had seven kids and the town had to take care of the seven kids... if they warned them out, the widow could go back to her hometown and that town had to support her... so that was a way of protecting the town's economic structure.

In addition to characteristics that reinforce a niche mentality, there are other barriers to greater spatial awareness and regional thinking. The town boards are too overwhelmed to deal with planning either long-term or within a greater regional context. Interviewees expressed a sense of a lack of responsibility for the future as a reason for this, but there are also barriers within the law and in terms of differences between towns. One critical barrier was the fairly consistent reply that land use board members are generally unaware of their counterparts in neighboring towns. The historic, independent New England attitude was commonly cited as a reason for failing to work together, as is explained below.

There's been a little bit of discussion over the years, we had the thing with the water, but with police and fire... and it seems the New England Yankee spirit is ...very independent, 'we've gotta take care of ourselves', type thing. There have been arguments about mutual aid with fire, after a bad year our Fire Chief will say 'Well, geez we had to go out of town 20 times and they came in once,' and somebody will say 'End it! We are not gonna help each other,' And I think 'are you crazy?' I understand the smaller towns, though... it doesn't seem to be an emotional winner right now for anybody I know. They [smaller towns] like having their independence, their own volunteer fire department and the police chief [they] get to know.

Where a historic attitude of suspicion to outsiders does exist, mistrust and cynicism abound, but according to interviewees, this attitude lies largely with older established residents and does not exist with newcomers, who make up the vast majority of the population explosion. In some cases, towns are comprised of minority factions with strong xenophobic attitudes, and when members of these factions serve in local government or are more outspoken, the bitterness often engendered contributes to difficulty of working with other towns. Issues with school funding and a reluctance of the public to spend money outside of town make it difficult to argue for the benefits of more

regionally coordinated planning. The lack of regular and normal communication between towns reinforces all of these barriers. As one interviewee put it, “I personally would like to see that we have regional meetings, we talk about these issues, but we're not even having luck within our own town. It's kind of like a person, until you accept yourself [you have a] hard time doing [that with] other people.”

Developments within the land use decision-making community may pose a challenge to the niche mentality. Concerns are growing about both upriver and downriver effects of land use, along with a general concern for the future and recognition of the value of thinking more globally. Land use decision-makers are questioning why natural features like wetlands would stop at the town line. Some interviewees lamented the loss of past efforts at working together. Interviewees questioned the value of RPCs in terms of accomplishing regional planning, and the need for more education and broad thinking were generally and routinely expressed.

There are a number of trends and characteristics in the structure or process of land use decision-making and the communities at large which support regionalism. The independent attitude and legendary New Hampshire ‘live free or die’ motto are beginning to show signs of change due to the population growth in this part of the state, with more politically liberal newcomers. The value of broad regional groups for their perspective and communication potential is largely recognized. These include the Exeter River Local Advisory Committee, Lamprey River Advisory Committee, Lamprey River Watershed Association, Great Bay Coast Watch, the Marine Docents and many others. Land use board cross-membership in these groups contributes to broader thinking and understanding of spatial and ecosystem concepts. There is a growing awareness that the

state supports regional water districts and is doing more work on water related issues, both of which lend value to more regional approaches (Goetz 2008).

Interviewees expressed an openness to sharing resources between towns for economic reasons, a desire for regional public water forums and greater education, clearly recognizing that water is a different type of resource that crosses town lines, as one stated: “A lot of times towns try to get involved in matters in another towns and sometimes that invariably causes conflict on the board, but we’re pretty self-reliant and we don’t want to be told by another town what to do, but we realize that water issues are something of a different nature.” A final consideration of the characteristics within communities which would support greater spatial thinking is the fact that the town histories are intricately connected and intertwined. The communities have far more in common than many residents typically acknowledge.

Approaching neighboring towns

This analytic unit describes the second degree of Temporo-Spatially Scaling and expands the bounds of land use decision-making beyond the confines of the town borders through *Approaching neighboring towns*. With this expansion, it examines the land use decision-making relationship a town has with its neighbors. This unit is comprised of two analytic nodes, *Collaborating and communicating* and *Comparing to other towns*. Key themes include the lack of communication, public engagement, education and leadership.

Approaching neighboring towns: 1.) Collaborating and communicating

This node describes factors and forces that contribute to the structure, process, practice and potential of towns approaching their neighbors in communication or

collaboration. It includes characteristics of communication as well as the forces that either support or prevent collaboration. In general, there are more things preventing or restricting collaboration than supporting it, but there are a number of themes that do act as supporting forces or factors in building collaboration between towns. These can include transportation, land swaps, road access, wellhead locations, ordinance development on a border or regional impacts. Independent regional organizations can also spur collaboration between towns, and usually deal with open space conservation, water or other environmental concerns. Interviewees describe a growing interest in greater regional collaborations concerning the future of water and the larger economic picture, specifically for exploring shared water treatment facilities, planning staff, and fire or safety resources. Towns with an interest in collaboration rely on professional staff or experts, including the town planner, RPC representatives or a local super volunteer, however, these resources are inconsistently utilized.

Collaboration is often prevented due to the structure and process of decision-making. The lack of public engagement, volunteers and expertise all contribute to a lack of collaboration and are a result of board and commission characteristics, which either generate conflict or prevent a collaborative atmosphere from developing. Time is probably one of the biggest constraints as explained by one interviewee: “Time... the fact that most of the people involved in town business are volunteers ... first of all, you end up with so many meetings in your own town that finding time to go to another town for another meeting is just not a high priority, which is unfortunate because a lot of what we are dealing with affects both towns.” Some interviewees assumed there was no interest in

the towns about land use in neighboring towns and no real knowledge of ongoing land use issues elsewhere.

There is no direction, focus, motivation, or context for sustained and consistent collaboration across the landscape between towns. Misunderstandings about regional impacts were common along with a frustration over the lack of regional ordinances. The fact that property is valued based on the town which has frontage constrains collaboration. Even if collaboration occurs with the conservation of a border area, once the arrangements over this piece of property are complete, collaboration ceases. Critically, the Board of Selectmen and Town Council are the only local officials with mandated regular collaboration with neighboring towns. This mandate is the annual town line perambulation, done in concert with the neighboring leaders as one interviewee explained:

I think the Selectmen probably have a greater opportunity to have contact with the Selectmen from surrounding communities primarily because of the fact that they perambulate the... communities every five years or something ...well I'm sure they don't walk the whole thing but ... they get together and I assume they have a cup of coffee and chitchat ... so at least they have that opportunity, we don't.

The results of a lack of collaboration over land use decision-making are many. Suspicion of neighboring towns, as well as a fear of their unknown volunteer staff, drives a defensive posture, and fuels the incorrect perception that the towns have very little in common. The lack of strong local leadership, time and volunteers leads to an inertia to confront these issues. Towns struggle to notify neighboring towns, or even abutters in neighboring towns about land use decisions, which could impact them and contribute to mistrust. One interviewee explained a situation like this: "When they came to us I believe we turned the application back because the abutters were not notified ... and they said

‘Well, they’re not in [town]’ and I said ‘No, that’s not how it works, everybody gets notified’.”

An interest in sharing resources between towns, or an acknowledgement of those currently shared, could build more collaboration. This includes considering sharing staff between towns, which could help with communication as well as economic issues. There is an interest in focusing on Great Bay as a shared regional resource. There is also a very real growing concern about the future of water resources, an acknowledgment that these issues are different and should require towns to work together. More regional meetings and shared professional stewardship of easements would assist in building collaboration between towns as one interviewee proposed:

I thought for a while that a bunch of these towns around here should jointly hire someone to be held responsible for stewardship both on town owned lands as well as easements, so that somebody professionally could help these communities, even if it's just advisory or thingy to step in and monitor ... or lead a project, they are there on retainer somehow maybe a retainer fee ... how to keep their time open I'm not sure, but something like that, I think there's enough lands here that are conserved and none of these towns have staff.

More than one interviewee incorrectly assumed that all the long-term planning is coordinated through the state or county. The sense that the county and state governments were responsible for regional planning sheds important light on the fact that this is poorly understood by local decision-makers; these levels of government play no real part in land use planning. One interviewee exemplified complaints about the RPC’s regional planning efforts:

Well I know in planning when we designate an area up here, we don't know what might be planned by [town to the north] in terms of what they are doing or where they’re thinking of doing, but it's never really been discussed it was discussed but not with [that town] directly but with somebody [who] said the county or state

or economic development, and that person said it might be such and such... but in my mind, you would think [an RPC] ... would take the regional view and then inform people. Why isn't the recommendation emanating from [an RPC] based upon what they hear? Because they are the ones who are in each of the towns, so they know better than we do.

Existing collaboration efforts are supported through a heavy reliance on town planners, even more than the RPCs, though the RPC meetings were valued by some: "We more or less communicate with [an RPC] because all the towns around us are part of that... we have members that go ... and so they all meet and get to talk amongst themselves but as far as communicating with the towns unless we have something that's a regional thing we don't communicate much." Despite the opportunity provided by RPC meetings, there were strong criticisms about the current design and value of these groups as previously mentioned. As described next, they do not support structural mechanisms for the development of regional land use planning:

They don't have any overall influence on the way these towns in their group develop.... they are not leaders at all, they're not proactive, they are not leaders They'll come in and tighten up the nuts and bolts... but as far as integrating our zoning with [town 1] zoning and [town 2] zoning and [town 3] zoning and make it a holistic approach to things they don't do it, they are mostly involved in Manchester and transportation issues.

While many issues preventing collaboration relate to discussions on conflict, including the struggle for volunteers and public engagement, the greater question is effective leadership. In cases where some regular inter-town meetings occurred historically, the blame for failing to continue collaboration is squarely laid at the feet of local leadership. Collaboration is so rare that any attempt from neighboring towns is often perceived as pressure, resulting in mistrust. The quote below describes a typical situation:

Maybe I'm not enough of a politician to understand, I'm mostly naïve ... [That town] wanted to alter that conservation easement and offered us a large chunk of land to hold as an easement than the one already in place, and at least the suspicion on [our] side was that because they were considering the possibility of razing the dam on that reservoir and flooding out more land which would've covered some of the easement ... at the Selectmen's level they were not happy about that option ... confrontational is perhaps too strong of a word but it was not a mutually friendly situation.

Communication within towns, between boards and commissions, varies from excellent to absolutely none at all. Boards can and do mistrust one another, although having professional town staff can alleviate this. Heritage groups are not integrated in the communication flow in any town's land use decision-making process. The structure and process of decision-making hinders communication between groups in a town. There is also a real concern over the loss of institutional memory of decision-making in the form of retiring land use clerks, secretaries and other key community linchpins or super volunteers. The person or persons holding such institutional memory are often the key to effective communication within towns. A description of the critical lack of leadership is below:

To me I think all the board should be meeting jointly. I think that's the biggest problem in the town ... because it's completely fractured, the boards operate in complete isolation from one another. I mean we all have a similar piece but we operate in complete isolation and that can work if you have strong leadership downtown with the Selectmen and Town Manager. But the Selectmen squabble amongst themselves, the Town Manager, I don't know what his qualifications are... we don't have effective leadership.

Communication between towns occurs due to single issues, which tend to be either on a town border or concerning water. Towns that have planners or RPC staff rely heavily on those professionals for communication over single issues. Towns that are well networked with NGOs, such as Bear Paw or the Southeast Land Trust, rely on those

groups for communication as one explained: “Bear Paw holds a roundtable once a year, that is open to all the member towns ... so in that respect there is a regular attempt to get a neighborhood of towns ... together under one roof to talk about specific issues.”

Interviewees assumed that the Selectboards or Town Councils are regularly communicating.

Whether or not towns notify other towns can shed light on aspects of communication. A few towns proactively notify their neighbors regarding regional impact, but most do not, and there are significant issues of structure, process and character that prevent regular communication. Only a few instances of communication were related where towns reached out to their neighbors, through a board, commission or town staff, often eliciting suspicion and conflict as a result. The common reaction by decision-makers who receive communication from a neighboring town was defensive. Town boards react with cynicism and mistrust, often feeling pressured to act, under these circumstances.

Whether board and commission members know their counterparts is also of value in considering communication and it appeared that most interviewees did not know their counterparts in the surrounding towns. Even those who knew fellow Selectboard, Council or board members indicated that membership changes make it difficult to maintain connections. Most boards and commissions do not invite neighboring counterparts to attend their meetings, nor have they received invitations by neighboring towns. As one interviewee reflected:

I'm sitting here feeling guilty because we just had two presentations about the findings of this research grant which involved recognizing that we are the headwaters of three watersheds and that half, or several of the lakes are in other communities, and we had this great conversation about all the findings of this

report but it never occurred to us to invite anybody else ... so I am feeling a little guilty about this at the moment.

There is a general sense of uncertainty about the benefits for communicating under the current decision-making framework and once again, the lack of effective local leadership is a significant issue. One super volunteer reflecting on the lack of a regional collaborative effort said:

Yeah... It's a curious thing because ... the answer is we don't communicate with other towns and that to me is kind of a fallacy in New Hampshire zoning because you would think that the Earth's edges were around the four corners of [town] right there when it comes to planning and zoning and our relationship to the greater region, there is no overlap to [that town's] zoning and no attempt to complement each other's zoning restrictions and it's kind of a tragedy because [we] could have a residential district and [that town]... across some imaginary line could have an industrial district backing right up to it ...so there's no blending of these districts, these zoning districts from one town to another ... it's a tragic thing.

Among and between the towns, some discrete dissimilarities emerged concerning characteristics of communication and collaboration. One of the most respected towns is also the most well networked regionally and one of the most proactive from a heritage standpoint. They have a key staff person whom the boards and commissions rely upon to reach out to professional organizations and other towns and whom is sought after for advice. This town has a good reputation for being proactive and progressive in terms of agriculture, open space conservation and heritage. Despite these accolades, board and commission members themselves were not well networked there is little or no consistent communication with most of the neighboring town boards and commissions, and a lack of awareness of regional issues concerning water. This has forced them into a reactionary and defensive mode, as one interviewee described: "A few years ago I was reading

Fosters and [a neighboring town] was talking about taking water out of the Lamprey River in [our town], well we had to go find some asbestos sheets to write a letter to them because regular paper would have burned! And we contacted [them] and said ‘Before you do another thing you come talk to us!’”

Of all the towns, those with the greatest indication of actual or potential communication between boards and commissions were characterized by a volunteer board membership possessing a mix of local and professional expertise, a respect for education and training and a proactive stance towards seeking additional outside experts whenever necessary. One explained it this way:

I've talked with other Conservation Commissions, but my sense is that there are differences in the towns that are fully volunteer and the towns that are not. [Our town] is fully volunteer except for [Town Planner] and it really limits the it's partly time and it's partly knowledge, I mean you get a whole mix of people in there and you're not mostly dealing with professional planners, you are dealing with people who want to ensure their town is going the direction they think it ought to be. My sense is that towns that are run more by professionals have more of a regional sense... I mean I don't think there are any barriers to talking to other towns, I think it just doesn't happen a lot.

These same towns with a mix of professional expertise, however, were not effectively communicating with their neighboring towns. One super volunteer in these towns said, “I think it's structural [problem]... to the extent that we find out about things it's word-of-mouth or it's Fosters, but then it's up to somebody to take the initiative to say ‘Hey you! Whoever you are over there, we should talk!’ (*laughing*).” Several towns relied exclusively on NGOs and outside expertise, and interviewees simply made the hopeful assumption that someone was doing the communicating. Two of the fourteen towns have no communication at all with neighboring towns and little or no communication between boards and commissions within town; both suffer from a severe

lack of leadership. Succinctly, an interviewee from one of these towns complained: “To be honest with you, unless it is something that affects of the town, our town does not associate with anyone else.”

Approaching neighboring towns: 2.) Comparing to other towns

During the course of data collection, it became clear that decision-makers were keenly interested in comparing their community with, and expressing their opinions of, neighboring towns. This can give some insight into some of the issues, obstacles and opportunities concerning communication and collaboration as well as historic relationships and the struggle for more coordinated regional planning. This analytic node describes interviewees’ reflections when comparing their town to other towns. This node is characterized by both negative and positive themes, with the latter including criticisms of characteristics, the general population and leadership of other towns. The positive themes included taking pride in their own town, curiosity about what's working in other towns and compliments on innovative policy observed elsewhere.

When comparing their towns to other towns, a number of themes emerged. Some expressed pride at their towns’ development and circumstances compared to others. There was an oft-stated fear of the development patterns witnessed in other communities. The historical and developmental similarity between all of the towns was often expressed. The complex and often difficult relationship between UNH, Durham and neighboring towns was generally acknowledged, as one interviewee commented:

The university owns 3500 acres of land in Durham and pretty much controls [them] and as bad as they are a neighbor for [us], they're probably worse for Durham... but as far as I'm concerned Durham deserves them because we have been their ugly stepdaughter for many, many years. We were the bedroom, in fact

they wanted to make a new town seal ... and I suggest they put a bureau and a bed on the seal, because that's all we are, is a bedroom town.

Some decision-makers simply made fun of the population, volunteers, staff and leadership in neighboring towns, often concerning their level of education, sophistication and politics. For example, one interviewee reflecting on other towns stated, "Maybe you gravitate towards a community that's more advanced and educated and progressive and it feeds on itself, like who would move to [town] ... sorry (*laughing*)."

While these comments tended towards the pejorative, they are informative about some of the obstacles in approaching neighboring towns. One interviewee describing neighboring town leaders exclaimed, "Perfect example is [their] Town Council... they can't agree on what time it is... they would be better served if they didn't televise their meetings because it's a joke, it's truly a joke... "I don't like you, you son of a bitch!" Right there! They are the town fathers for cripe's sake!"

Interviewees also described learning from other towns about land use policy. Both during the pre-interview introduction and data collection phase, there was a keen interest in learning what the other communities were doing. Some interviewees saw progressive policy on energy, environment or economic issues and were interested in exploring those policies. Some wanted to copy land use ordinances developed outside the region, and often, outside the state. A common theme was concern expressed at witnessing land use patterns in other areas, locally or nationally, and fearing the same development patterns taking root in southeast New Hampshire.

[Our town] looked at Stratham and how 108 developed ... and because of that [we] passed a curb cut zoning which is one of those things where it sounds irrelevant and people voted for it, but it limits access to this road so you can only put a certain number of curb cuts on the road which limits development. We can

only have maybe three more on that stretch of road and the idea was that it would limit development to access a set of office buildings rather than a big sprawling Wal-Mart or something like that ... that was sort of learning by example.

Connecting Regionally:

Reaching out to and working with other groups in the region, is the third degree of Temporo-Spatially Scaling. There are three analytic nodes including *Connecting with other groups in the region*, *Needing help* and *Reflecting on regional issues or impacts*. *Needing help* consists of two nodes which have been fully vetted elsewhere and thus only touched on here: lacking expertise and relying on professionals. *Reflecting on regional issues or impacts* includes reflecting specifically about impacts with respect to water. *Connecting with other groups in the region* will be examined first. Those items that persist from Gathering Community through Handling Conflict and into connecting regionally include lack of education, training and leadership, but expand to include difficulties with the structure, process and context of land use decision-making.

Connecting Regionally: 1.) Connecting with other groups in the region

This analytic node discusses the regional groups towns most often reach out to for land use assistance which relates to the expansion of spatial awareness. The dominant themes include reaching out, knowing whom to go to, missing groups, and questioning the benefits and roles of these groups. There was a fairly common list of organizations cited by interviewees as key (Appendix 6:1). All of the land trusts, the big state environmental organizations, Regional Planning Commissions and most local river advisory committees were mentioned as well as most of the watershed associations. Some of these organizations are better known and understood than the others. There are

also some regional organizations that geographically link to only a few specific towns within the watershed. For example, Bear Paw is limited to the western-most towns. Public libraries and schools were noticeably absent in the interviewees' accounts of entities with which the boards and commissions partner or collaborate. The University of New Hampshire was commonly named as a source of regional support, though not without controversy, and markedly so in Durham. Less frequently named in the list of regional organizations were NOAA's Great Bay NERR, New Hampshire's Office of Energy and Planning (OEP), and the Local Government Center. The latter two were rarely, if at all, mentioned by interviewees. There was confusion between the federal partners in the region, NOAA's Great Bay NERR and the EPA's PREP. Interviewees associated slightly more with the latter, but were generally uncertain about the distinction between these federal programs, both of which were mentioned in reference to training, grants and conferences.

There is general confusion between the Lamprey River Advisory Committee and Lamprey River Watershed Association, with some interviewees assuming they were one and the same organization, and a few having never heard of either. It was frequently admitted that the towns lack representation in either organization, and in addition to confusion between these two groups, some expressed uncertainty as to the benefits of joining. In general, the Conservation Commissions and heritage groups appeared to do a more comprehensive and consistent job of reaching out for assistance to regional organizations and seemed to have a better understanding of the role of the many regional groups.

Connecting Regionally: 2.) Reflecting on regional issues or impacts

This analytic node reflects on regional issues and impacts, specifically with respect to water. It describes characteristics, forces and factors that ultimately prevent or impede the development of spatial awareness at the regional scale. It also discusses factors that could enhance, promote or support spatial awareness, including, but moving beyond, neighboring towns, into the larger regional ecosystem. Many of these factors have been explored in depth elsewhere, but thematically are critical here. This node is characterized by critiques of structure, process and context for decision-making. Key themes include lacking awareness and education, questioning the role of the Regional Planning Commissions, lacking leadership, scientific and technical expertise.

There are a number of contributing factors that could enhance, promote or support the development of a regional spatial awareness. The role of regional groups such as watershed associations have already been mentioned as key if cross-membership exists with the land use boards and commissions. Local membership representatives in the Great Bay Stewards, river advisory committees and other volunteer groups are important. The larger, professional organizations such as Bear Paw, The Nature Conservancy or the Southeast Land Trust also play critical roles.

Factors related to water and landscape, history and communication can support greater spatial awareness at the regional scale. Communication up and down river increases an understanding of the region. Knowing the history of the landscape and communities across it, which were initially dependent upon rivers and waterways, creates a greater spatial awareness of water systems and the landscape. Conversely, noting discrepancies between natural resource boundaries and political boundaries challenges

spatial awareness. Reflecting on the meaning of regional impacts can similarly challenge spatial awareness, as one interviewee reflected: “It's relatively new the whole [regional impact] concept, and I know that we have that whole cultural change, that demographic change going on the last few decades but you still have the mentality, that's [them] and this is [us] and never the twain shall [meet].”

An awareness of issues concerning water resources can support greater spatial awareness. Some interviewees mentioned that dealing with problems like wastewater treatment or drinking water need to be handled at a larger regional scale, as one expressed, “I do know that the sewage plant is very close to capacity, the mills won't probably have that big of an impact on it but [we are] growing, something's going to happen and I think it needs to be a regional solution.” Concerns about such things as storm flooding, combined sewer overflow, leachate from landfills, and long-term drinking water supplies all support thinking regionally and developing greater spatial awareness. Then again, as one interviewee put it: “Some would claim that the actions we've taken with regard to protecting land ... or the Lamprey watershed ... are things that, although they do benefit [us] they also benefit the downstream users and where those users are using the resource for drinking water supply then we sort ... *laughing*... it's a self-congratulatory thing.”

Understanding basic ecosystem concepts promotes greater spatial awareness. Simply comprehending the idea that river systems flow into Great Bay and out to the coast promotes a greater regional awareness. Understanding the basic watershed concept, that conditions and actions in the upper watershed affect the lower watershed, and that upstream land use ultimately affects and impacts downstream communities – helps to

promote spatial awareness. Several interviewees mentioned the value of the coastal watershed plan, while admitting the remaining challenges of this perspective: “When the whole coastal watershed plan was released, that certainly makes one take a look at the big picture... but the truth is, and I'm sure it's true of most towns, we have a very provincial look at it, and kind of, by and large ... we just get our map and want to know what's going on here and not the other side of the line.” Finally, water-related crises, such as the controversy over USA Springs, can contribute to promoting spatial awareness at the regional scale, as do points of conflict within or between towns such as dam removal, water bans, pollution or water quantity.

There are many contributing factors, forces or characteristics that impede or prevent development of a regional spatial awareness. Lacking a basic bioregional awareness and understanding of water systems and watersheds is one of the greatest impediments. Lacking consistent, systemic and effective regional communication between towns is another significant impediment. The lack of leadership at the local level, lack of regional meetings, and difficulty understanding scientific, technical or legal material (including the regional impact statutes) are problematic. As one interviewee complained:

I've been driving the bus on this issue and all the other affiliations I've had ... I see the bigger picture and I think it's kind of scary, and because of the fractured nature and the lack of regional leadership we are not making good decisions. And again the state is not providing good leadership on it. The only thing the county does [is the] Sheriff, courts, nursing homes, but nothing related to land use.

Finally, one of the most significant impediments to greater spatial awareness is the lack of strong regional leadership by the RPCs. This leads to shortsightedness, acting with a

niche mentality and carrying out reactionary planning. Interviewees commonly complained about this and called for stronger action and leadership by the RPCs.

Connecting Regionally: 3.) Needing help

This analytic node describes concepts discussed elsewhere, lacking expertise and relying on professionals. These are both examined under *Seeking expertise* within *Finding community in town* in the chapter on Gathering Community. Rather than review all points, it will be simply stated that under *Connecting Regionally*, the characteristic themes include lacking expertise and education and the consequences and results of this. One of the most important consequences of needing help to connect regionally is that without expertise, training and education, it is difficult to see the big picture, the regional spatial connections and the value or necessity of looking at land use from this scale. Without this perspective, it is difficult to consider land use decision-making within a contextual framework that accounts for the reality of ecosystem functions and services.

Thinking Watersheds

This analytic unit represents the fourth degree of Temporo-Spatially Scaling. This describes how a town's placement within the watershed is conceptualized and how land use decisions are impacted by this perspective. This unit contains three analytic nodes, *Considering watersheds or Lamprey River*, *Characterizing Boards and Public on Watershed IQ* and *Thinking about Water Systems*. Many themes carry over from the previous analytic unit *Connecting regionally*. Overall, the key themes include lacking education and expertise, waiting for a crisis, lacking volunteers and leadership, valuing regional organizations, connecting with history and lacking a collective vision.

Thinking Watersheds: 1.) Considering watersheds or Lamprey River

This analytic node describes the current characteristics of thinking regarding watersheds and the Lamprey River's place in the landscape, as well as the forces that increase awareness of the watershed concept as well as those that prevent developing this awareness. It is characterized by the themes of lacking education, volunteers and leadership, struggling with science, valuing regional organizations, connecting with history and lacking collective vision.

Although evidence was mixed among the interviewees, there was in general a struggle to understand the watershed concept. There was confusion over what a watershed is, over basic hydrology and the structure and function of rivers and streams, including how they connect across the landscape. There was confusion over the link between surface water and groundwater. Some interviewees were not aware of the effect of impervious surfaces on water quality. Interviewees expressed doubt that watersheds were understood by the general public, including developers, as illustrated below:

If 10% of the watershed is impervious cover and the water quality is seriously impaired ... a consultant that they brought in said 'This is only going to be 1/10 of 1% of the entire watershed so who cares if 50% of it is covered,' but I'm thinking they don't get the point... here you are 10 feet upstream from the water impoundment and you're going to cover it with 50% impervious cover ... do you want to take a cup of water that's draining right out of that parking lot?!

Watershed thinking overall is simply not viewed as a priority. As one interviewee summed up, "Wow, watershed health here is not a burning issue in [town] to be honest with you, we do our best to respect the wetlands on individual parcels, but I'm not sure we know why we're doing it." One of the biggest complaints concerning the lack of understanding of this concept was the fact that land use decision-making is

completely lacking an ecosystem context. For example, when the value of open space is being debated, the arguments themselves are without reference to an ecosystem. So, people might be in tune to the ideas and value of open space for other reasons, but it is not integrated within a larger context, let alone the Lamprey River watershed specifically. One interviewee succinctly stated it thus:

No... people have no idea what the Lamprey River watershed is, most people can't tell you where the Lamprey river is, it's not like we live in Hanover with the Connecticut River ... the Lamprey River doesn't even run in [town] you have ... little tiny trickles that don't amount to anything, you can't call them a river ... so how can we say we identify with the Lamprey River? ... I mean I have a stream that flows through my property and it must end up in the Lamprey River, but I've never been able to figure it out, it's not that important... I don't know where the Lamprey River picks up enough size to be considered a significant feature it must be around Epping or someplace.

There was no straight board or commission breakdown with this lack of conceptual understanding. Rather, it was highly individualistic, but in general, there appeared to be greater awareness of this concept by interviewees serving on Open Space and Conservation Commissions. When awareness was expressed, it included understanding the connections across the landscape with water flow, but was directly linked with a concern for the future. Even if an interviewee expressed watershed awareness, there is a disconnect between individual knowledge and a group's ability to act upon it in land use decision-making. Interestingly, the interviewees from the town that had the best networked group of volunteers and leaders, and one of the stronger heritage groups, had the best grasp on the watershed concept in terms of ecological function and relationships across the landscape.

General awareness of the Lamprey River was highly variable. While public concern over water has generally increased over time, there is a substantial lack of

knowledge about the river and surprisingly, many interviewees claimed it is rarely mentioned in land use decision-making. There is a lack of understanding about how surface waters connect and competing ideas about where the headwaters even originate. Interviewees from three different towns claimed these headwaters within their borders (Northwood, Candia and Deerfield). There is a minimum working knowledge of river and stream systems and more than one interviewee claimed the river was simply an insignificant landscape feature.

There are a number of forces that increase awareness of the watershed concept and the Lamprey River's place in the landscape. Increased awareness occurs in areas where towns split surface water resources creating border tensions, regional impact issues, and variability in resource protection. As one interviewee reflected, "How do we determine how much more building we can do using the water supply? And also the impact of UNH on the water supply ... because the last few years have not been drought conditions but if we have a true drought conditions will [we] not have water? There have been discussions about how much we can draw down the Lamprey River." Regional organizations and cross-membership increases awareness of watersheds and is likely to increase understanding of the connections between landscape imperviousness and water quality. The open space argument has resonated with some in terms of watershed health and awareness, although perhaps not as much as the increase in droughts or flooding events.

Of the factors and forces that drive awareness about the Lamprey River, the most important are visibility, proximity and access to the river. Interviewees from towns that have strong historical ties to the river and highlight that heritage, asserted a stronger

sense of public awareness, as this quote describes: “Everyone is very aware we are part of the Lamprey River watershed and I think that's true of town as well, from a historical point of view ... the town is the mills and the mills are there because the water power's there and the water power's there because of the Lamprey River.” Recreation on the river is also a significant factor and the process undertaken years ago to designate a section as national Wild and Scenic status increased awareness of the river, as one explained:

That's how we explained to the upstream towns ... it's a package deal, and everybody in the watershed needs to work together to protect this river, and we're willing to take what you give us as it flows downstream, but make it good, because we're gonna pass it on to the next town as it flows downstream ... the river isn't entirely protected, but it was working with Durham and Lee and Epping and Newmarket that got the wild and scenic designation in place.

There are a number of forces that restrict or impede developing an awareness about the watershed concept or the Lamprey River in general. Struggling to understand scientific concepts is a part of this. The failure to communicate upriver and downriver between towns probably decreases any impetus to think along a watershed scale. The lack of public awareness, education, expertise and volunteers again are dominant factors, as is the lack of local leadership. Limited time to do anything other than reactionary planning also contributes. There were hopeful assumptions that someone else was handling watershed issues and that all towns were properly fulfilling their custodial roles in the landscape. Critically, there is a lack of collective vision and no perceived crisis upon which to focus the towns on the Lamprey River watershed.

Thinking Watersheds: 2.) Characterizing boards and public on watershed IQ

This analytic node describes reflections about current board membership and the public on watershed perspectives and the forces contributing to or preventing the growth

of these perspectives. It is characterized by lacking leadership, education and a collective vision.

Boards are currently not thinking about a watershed perspective, nor do they necessarily understand the basic concept as this quote illustrates: "I'm not sure I could even confidently say other members of the board really get the concept that lakes are actually connected and part of, I don't think people understand even the watershed concept, we've certainly had conversations where I hope people have garnered that if they didn't to begin with." Regular communication upriver and downriver is virtually nonexistent and contributes to this issue. There is a strong reliance on regional groups and a slowly developing understanding of innovative land use policies, but these are not necessarily linked to the river or watershed as this interviewee describes:

We have gone down to maybe 18 foot wide... with the understanding that you probably don't need 24 foot wide pavement where you have half a dozen houses on that road, and we can certainly ... reduce the overall run off ... but that has been not in the context of overall water issues with regard to the Lamprey River basin, that really has not been a topic of discussion with regard to those changes.

Boards struggle to engage neighboring towns, even though they might be aware of potential downriver impacts of their own land use decisions. Those boards that do understand watershed thinking lack the authority, tools or wherewithal to act on this knowledge.

Factors prohibiting the growth of a more watershed perspective include challenges related to education and leadership. Not understanding the value of wetlands, the importance of watershed health for water quality or struggling with the idea of cumulative impacts are significant problems. These occur at the board and commission level as well as Town Council or Selectboard. Ineffective local leadership and an inability

by boards to engage leadership in a strategic fashion regarding a watershed perspective contribute to the struggle to develop awareness. One of the most significant factors is the lack of a collective vision as expressed here:

If you look [at] ... wellhead protection we really haven't protected any land over there and that's one of my frustrations, we can protect land elsewhere but partly because it's expensive [and] landowners won't sell for a reasonable price but where is the collective vision? We really should redouble our efforts to protect the aquifer ...but instead, we rezone [for commercial].

A watershed perspective can develop among boards and commissions. If neighboring towns push for action, it leads to greater awareness of the watershed concept. Individual board and commission members learning about this helps as do an informed Department of Public Works and other town staff. Subcommittees tasked with water-related issues tend towards a watershed perspective as do many of the Smart Growth philosophies that are promoted by some Planning Boards. According to the philosophy of one such board, "This benefits the town ... but we are members of a watershed, and some homage has to be paid to that in terms of water quality."

Among the public there is variability, but interviewees believed people basically did not understand watersheds, and expressed reservation about whether or not the average person knew anything about where water comes from, or if they cared. As one interviewee put it, "I doubt most people in town know they are in the Lamprey River watershed.... I think there's almost no ... very little understanding of watershed scale dynamics... and again it's 'just the water in my backyard, comes from the hill behind me' and not seeing the bigger picture."

The ability of the public to even consider cross-town implications about water issues was questioned. The struggle to educate and engage the public plays a significant

role in preventing the growth of watershed awareness. The inability by many leaders and members of the public to follow scientific and technical information is also a contributing factor. One interviewee expressed frustration with the public this way:

People just don't have a clue... there is no end to the surprises ... people move to town and say 'It's my land I can do whatever I want.' No, not necessarily, because what you're doing here is going to impact your neighbor who is really upset that you want to have an automotive repair in your side yard, because who's to say that junk car sitting there isn't leaking gas and antifreeze and whatnot ... I'm not saying they have a coy pond on the other side of the fence that will be contaminated, but God knows what it can do to their well and what it's doing to the groundwater.

To promote watershed awareness and build an understanding of this perspective for land use, much more public outreach and education is required. More visual imagery and outreach tools are necessary. Regional organizations could play a stronger role. In the meantime, boards and commissions resort to argument simplification concerning water issues, by either focusing on economic issues related to water, or flooding as this quote illustrates:

[The boards] are becoming more aware but it's not a priority they are aware of the rivers when they flood but as far as the watershed goes, the water runs through our area, comes in this end, goes out that endand when the water doesn't go out that end, it's a problem, but as far as developing along the river and the impacts it has on the river and potential impacts on exacerbating flooding and so forth ... it comes up a little bit but not a whole lot.

Thinking Watersheds: 3.) Thinking about water systems

Continuing with spatial scaling at the watershed level, this analytic node discusses awareness of water systems and hydrology, thinking about regional impacts and concerns for long-term water issues. The discussion is organized around factors or forces that encourage a spatial awareness of water systems and those that prevent or impede this

awareness. Key themes once again include the role of regional groups, communication, landscape and history, watershed concept familiarity, points of conflict between towns and the town niche focus.

Factors that increase the spatial awareness of water systems include water resource issues and challenges. Struggling with sewage treatment at the local level leads into thinking about addressing this regionally. Concerns about drinking water supplies do as well, as one interviewee explained:

Despite the fact that we have a couple rivers running through town and we're right next to this large brackish water supply ... we seem to be in a perpetual level of water ban ... we have two wells that we use and that's where we get our public water from but what used to be surface water treatment is no longer operational, we have to use groundwater sources and we are using two wells that are realistically tapping the same aquifer, and you can only put so many straws into the same glass.

Recognition of the need for greater watershed-scaled spatial thinking and increased awareness of water systems are correlated. Recognizing that a town lies in more than one watershed, or that wetlands cross town borders encourages thinking more broadly. Recognizing upstream and downstream effects of land use and witnessing degradation of water resources increase spatial perspectives. Identifying that neighboring towns have inconsistent ordinances in riparian areas promotes awareness of water systems. When it comes to policy, differentiation between boards and town leadership can result in conflict over water resource protection as described below.

One thing we're trying to put in the purpose of our zoning ordinance is for recognition that all of [our town's] domestic water supply is from groundwater and that wetlands are a primary recharge for those groundwater supplies and ... wetlands are very important and there should be no net loss and we're trying to put that in, ...not any particular wording [saying] 'You can do this, you can't do that', and our town attorney came back and said 'Don't put that in there.'

Most of the factors that impede or prevent the awareness of water systems and the watershed concept specifically relate to education and spatial scaling challenges. Not understanding characteristics of a river's headwaters, or the fact that smaller streams are tributaries and feed into a larger river system are significant issues. The latter makes it difficult for board and commission members to understand the policy implication differences between first and fourth order streams. This difficulty has to do with challenges in understanding spatial scaling itself and connections across the landscape. One other factor contributing to spatial scaling occurs when a town lacks a substantial river system running through a publicly-accessible center of town. Without this immediate visual reminder of rivers in the landscape, it is even harder to grasp the concept that the landscape is connected at the watershed scale. Finally, lacking any immediate crisis prevents the impetus for developing an awareness of water systems.

In terms of long-term water issues, there are more positive drivers for considering water systems and the watershed concept. Drinking water availability, aquifer recharge protection and wastewater treatment are significant issues. Contamination of drinking water, well water and public water supplies is a growing concern. With population growth, there is uncertainty about the ability to forecast water needs and availability, made more complicated by patterns of drought or climate change predicted alterations in precipitation. The effects of more impervious surfaces in the upper watershed and the relationship to flooding leads to a concern over water related infrastructure damage, as one interviewee described: "You look at some of the 100 year floods and what's happened because of people filling in wetlands... what were they thinking? ... How did they ever get away with that ... and I'm sorry their houses fell into the river, but why the

hell were they building in that area?” Finally, those towns that experienced devastating floods in recent years are obviously concerned about long-term changes in water systems.

Connecting Time and Space

This analytic unit is the fifth and final degree of Temporo-Spatially scaling because it includes not just the spatially defined perspective of the bigger picture, but the temporal perspective as well. This unit discusses how land use decision-making relates to change and impacts over time, cumulatively, in the region and for Great Bay. It includes four analytic nodes, *Concerning the big picture*, *Thinking about Great Bay and the coast*, *Considering cumulative issues* and *Thinking about change and impacts over time*. Key themes include lacking resources, leadership, context and vision, and the value of history.

Connecting Time and Space: 1.) Concerning the big picture

This analytic node describes the factors and forces that either prevent the ability to think about the big picture with regard to land use decision-making, or promote and contribute to thinking big picture. It is characterized by themes including lacking leadership, volunteers, context, vision and expertise, the need for integrated economics and the value of history as a contextualizing factor.

Boards and commissions are generally not thinking about the big picture according to interviewees, but there are some factors that encourage and support this thinking. Regional organizations and specifically cross-membership with these groups, promotes big picture thinking. Actively comparing land use and development patterns across New England and with other regions in the country promotes the big picture of spatial and temporal change. Studying history encourages a time depth awareness as well as spatial awareness of change across the landscape.

There are far more impediments to thinking about the big picture including lacking resources like leadership, volunteers, expertise and education. Anticipating continued social change in the communities with population and generational shifts leads to thinking more broadly, but economic concerns pose significant challenges. One interviewee expressed concerns about a new state land use policy and the effects on community:

Workforce housing is supposed to be affordable by a family of four making median family income you say, 'Holy shit, that works out for us to be \$273,000 bucks a year... [my son and daughter-in-law] together might come close to the \$91,000, but not totally and in order for them to buy a house in [town] they would both have to be working and maintain a two income family, and what does that say for raising kids... it's certainly not good.

The fact that ecological impacts are largely abstract limits the ability of most to discuss land use effects over space and time, which can be exemplified in the debate over the meaning of "rural." Reflecting on the meaning of "rural" contributes to thinking big picture, especially in concert with the recognized chipping away of rural landscapes. The lack of public engagement poses challenges to even thinking about the how or whether to retain rural character. One interviewee described a working interpretation of this issue: "If you drive down the road and see house, house, house, house, house, then it's not rural, but if you drive down the road and the houses start 50 feet back because that's where the subdivision is and you look down the road and basically just see trees, then that is a more rural feel."

Connecting Time and Space: 2.) Thinking about Great Bay and the coast

This analytic node describes how and under which circumstances Great Bay and the coast are discussed when making land use decisions. This is another temporal and

spatial scale beyond thinking of the big picture but with a specific focus. It is characterized by the role of regional groups, access to resources, incorporating heritage and distance from the coast.

The majority of interviewees indicated that the coast and ocean never come up in the context of making land use decisions. Interviewees from seven of the towns said that the coast and ocean are never discussed under any circumstances at all. Interviewees from the other seven towns made mention of peripheral ways in which the coast or ocean are mentioned. Two towns mentioned the Coastal Plan (Zankel et al. 2006). One town mentioned the coast in the context of a NOAA grant application that the Conservation Commission had submitted. Four towns indicated that regional organizations with which they had contact had connections to the coast, which included the Exeter River Local Advisory Committee, Great Bay NERR, Lamprey River Watershed Association and PREP. Interviewees from two towns mentioned the coast in the context of heritage and history and one relied on a key professional staff person to occasionally mention the coast.

The vast majority of interviewees indicated that the coast and ocean never come up in land use decision-making, but surprisingly, distance from the coastline to the towns made no clear difference in these responses. According to interviewees from two of the towns very close to the coast, not only do they not talk about the coast or ocean, but they struggle with the watershed concept and tend not to think at all in terms of a greater spatial landscape, in spite of the fact that they are essentially downstream of the entire watershed. Still, some interviewees from these towns had a personal connection to Great Bay and talked about that:

I personally think about it a lot, but as a commission, probably not all that often, because when we refer to the river we see it as a little microcosm ... I've watched it because I fish it, I'm out in the kayak or I flyfish it, wading in or from a boat and started taking an interest in it with the sewage things years ago, Pierce Island and the city of Portsmouth, I wasn't aware of what they were doing... just primary discharge and I didn't know that was even going on, I just couldn't believe it once I understood it ... my wife and kids have always loved Great Bay and the estuaries and through it we put our kayaks in a few times a year both in the river and few times in the bay and I also believe it is one of the largest estuaries on the east coast... and people don't realize how sensitive it is and how lucky we are to have it.

On the other hand, interviewees from a town less than 20 miles from the coast, stated they did not think of themselves as part of the coastal area at all. As one interviewee explained: "Never - the coast? Great Bay? I don't know how that would ever influence what [our town] is doing here ... I can't imagine it, that might as well be 1000 miles away as far as the way we conduct ourselves here... I think we're on the far western fringe of the coastal area... I don't consider myself living in a coastal area and I live on the eastern part of town." Another interviewee from the west with a stronger connection stated "I know that the river is an integral part of what happens in Great Bay, but it just doesn't come up, and I'm probably the only person on any of these boards who fishes." Remarkably, an interviewee from one town in the middle of the Lamprey River watershed discussed the coastal connection at length – although in the context of historic development and heritage, not land use planning.

Interviewees are overwhelmingly not discussing Great Bay when making land use decisions. As with the concept of the coast or ocean, there was some variability surrounding how and when Great Bay is mentioned, but it is not in the context of influencing decision-making. Interviewees from eight towns stated that Great Bay is never or rarely mentioned at all. Interviewees from two of the towns nearest Great Bay

indicated that the bay was “assumed knowledge” and so, though not mentioned in terms of decision-making, it might come up when referencing work by local NGOs. One mid-watershed interviewee summed up reflections this way: “Great Bay? Never. Isn't that where all the toilets go? (*laughing*) ... [Our town] is considered a seacoast community but we are sort of like a poor cousin, we're not close enough to the ocean to be considered truly seacoast.”

The two towns with the most robust ability to consider Great Bay in land use discussions are well networked, have key professional staff and a fair number of cross membership between boards and regional organizations. As with the concept of coast and ocean, regional groups, the coastal plan and the work of GBNERR and PREP all contribute to increasing the awareness of Great Bay within the land use boards and commissions. Ironically though, despite it being the terminus of the Lamprey River, Great Bay is rarely discussed, and even more rarely mentioned, within the context of making land use decisions.

Connecting Time and Space: 3.) Considering cumulative issues

This analytic node describes how and under what circumstances land use decision-makers consider cumulative issues when making decisions. Cumulative issues include the concepts of cumulative impacts or effects of land use decisions, such as increasing sprawl and impervious surfaces. Reflections on innovative land use policies to address these cumulative issues are examined. This discussion is organized around current characteristics of considering cumulative issues, the results, limiting factors and

developing opportunities. The key themes throughout this node include lacking volunteers, time, expertise, education and awareness.

Cumulative effects of land use decisions are generally not being discussed because land use decision-making at the local level is on a parcel-by-parcel basis. There is no thought to the cumulative impacts on neighboring towns downstream. The lack of discussion about cumulative issues was not limited to Planning and Zoning Boards, but included Conservation Commissions and Open Space Committees as well. One interviewee summed this up by stating, “Everything is kind of one off, we don't look and the opportunity is not there, or a perceived need, to look at the cumulative effect.”

Sprawl is one of the most significant concepts in the discussion of cumulative issues and it was not clearly understood by the majority of interviewees in this study. One interviewee went on to describe how their town did not have sprawl, only strip malls, which are indeed a characteristic of sprawl. Another described the opinions of the controlling faction on the board (developers) who believe “there is supposed to be sprawl, this is rural.” Sprawl was associated with big-box stores, two acres zoning, the land patterns of California and urban areas. There was limited recognition that sprawl could exist in different patterns in rural areas although interviewees from one town accurately defined their residential development as sprawl. There was general association of sprawl with the loss of a community’s soul or rural character, but this concept overall seemed to typically trigger references limited to traffic issues.

The best example of generally accepted sprawl was the big box store, Wal-Mart, which approached one town eliciting different reactions among board and commission members. One interviewee was defensive stating, “We immediately rewrote the

regulations to drop the square footage on the lot, so none of the big box things will be able to build in this community, unless they get a waiver from the ZBA... 85,000 ft max and these big box guys are over 100,000 square feet ... there was a conscious effort to make sure this doesn't happen and that to me is sprawl." Another interviewee, recognizing this as sprawl, was more sympathetic to business stating, "there was a group that got together and flipped out ... and one of their arguments was ... that was a sprawl type of store and would change the dynamics of downtown, the local shops and so forth... and they went away ... and I always thought that was a little snotty, like we were too good for Wal-Mart."

There are a number of limiting factors that prevent cumulative issues like sprawl from being a part of land use decision-making and these are related to education, leadership, expertise and the lack of a collective vision. The lack of awareness and education is a limiting factor by boards, commissions, developers and the public. The lack of time is another constraint, as one interviewee reported:

The last few months we had NH Soils ... come in with proposals for a DES application, we don't have materials or respond solely on their application [but]... short of our knowledge ... Sometimes a decision is made at night and you really don't have any idea what the best decision is, and most of the time you think that's fine and that's not a big deal, but it's all cumulative.

The lack of regional thinking and collective vision for the big picture limit the discussion of this concept. In terms of structure and process, ordinances do not prevent sprawl and there is some uncertainty about the jurisdictional rights of boards to suggest solutions. More importantly, cumulative issues are difficult to discuss because "the ecological impacts tend to be viewed as more in the future and abstract whereas flooding

in my backyard is more or less right now.” Similar to the struggle with sprawl, interviewees expressed difficulty with the concept of impervious surfaces accumulating across the landscape. There was no perceived need or real opportunity to examine cumulative issues as part of the current decision-making structure and process, including in deciding variances as one interviewee explained:

That's where the real fight is ... you have someone come in and say the impervious is a problem and has consequences to the neighbor or two neighbors down and it's just a domino effect way back when... I think the Zoning Board is conscious of that and you want to hear about that but it's hard to get a handle on it all the while knowing you've got the pressure in the state for people to be able to use their property, so I mean that's a real hard burden sometimes, you know it's there, but how do you prove it? ... We can say to a property owner 'You can't build up there because it's got downstream effects 5 miles, 10 miles down' ... it can be done, it probably has, but that's a real challenge to work with because it's so complex, and when push comes to shove, I would say we tend to err on the... take the easy way out, that the property owner has the rights.

There are a number of opportunities for developing more awareness of cumulative issues such as sprawl and impervious surfaces. There are already concerns about wetlands and runoff, and a few interviewees recognized that “impervious surfaces are the enemy of the watershed” so more efforts to link impervious surfaces to polluted groundwater, flooding and watershed health would help raise awareness. It was generally known that water quality was impacted by impervious surfaces, but a mixed understanding existed of the tipping point for water quality.

Some interviewees knew about advances in permeable asphalt and concrete and were interested in promoting these technologies. Others have struggled to promote an interest within their boards, as one interviewee remarked this was not a topic of conversation and, “I'm sorry but that's the sad state of affairs. There was a project that came up and I said that's an awful lot of pavement have you considered permeable

asphalt? And everybody looked at me and said ‘Really, that interesting,’ and then just went on with the same discussion.” Overall, policies promoting Smart Growth and innovative land use designs, with higher density and mixed use development, promote an awareness of cumulative issues, but towns are struggling to implement these policies.

So far, the results for considering cumulative issues are more negative than positive. Some recognize that their towns are beyond the impervious surface limits for protecting groundwater. One of the most significant results of the lack of consideration for cumulative effects is the perceived loss of rural character and chipping away at the landscapes so commonly valued by these communities. Other results include increased flooding and towns stuck with the effects of years or decades of bad decisions. In some towns, zoning limits impervious surfaces at the remarkably high level of 30% and this together with variances for grandfathered lots can add up to significant increases in impervious surfaces. As one interviewee reflected, “We have nothing in our zoning ordinances that limits or restricts drainage and driveway types... you could pave your whole lot if you wanted to.” Interviewees also struggle with the public, as one interviewee expressed:

[Cumulative effects?] I would say they are cries in the wilderness I think my impression is that when decisions are made ... the mindset is not what happens when we achieve build out, I think there is a sort of a subconscious expectation that we will change the zoning ordinance and allow closer development and open up some areas that were protected before, we’ll just open up and make room for more houses! so I think [cumulative effects are] not a conscious thought.

An important result of the lack of discussion and understanding of cumulative issues and effects is that there is, for some interviewees, a real misunderstanding of the issues and the innovative land use policies proposed to address them. One individual’s

statements illustrate this point. While some spoke of wariness over using precedents to determine variance applications, this person describes how his board is strongly influenced by precedents, but struggles with the idea of cumulative impacts resulting from patterns across the landscape.

Well, our board is pretty much committed to consistency, and whether we do that out of recognition of the impacts of cumulative or just out of a desire to be consistent from case to case, we always look back and see how we decided the last case, and what we did the previous 20 years or whatever as far back as we can all see and we try to be as evenhanded that way as possible, but whether we do that to be fair to that applicant or out of recognition that there is an impact I don't know... we look back and that's to be consistent but I don't think we look back so that each one of our cases accumulates in the same fashion ... see the difference?

This interviewee continues to describe a perceived *negative* impact as a result of density development with one acre zoning, which is in line with innovative land use policies to reduce sprawl and encourage Smart Growth. The comments indicate he favors spreading the population out over larger areas, with residential development sprawling across the landscape, but his ideas of cumulative impacts are made in relation to the aesthetics of density development. His comments illustrate a misunderstanding of Smart Growth policy implications, environmental drivers and effects.

Well every time we approve land use that has these density bonuses, there is a cumulative impact on this town. Right now we have three acre zoning in town in general and that spreads everybody out but we have these districts here where you can get these density bonuses within a mile of the town center, you can go to basically one acre zoning or even less, and it's permitted by law and by the ordinance ... but it does have a cumulative effect on town services and population of the town and our carrying capacity because if everybody in that 1 mile radius of the town center develops their land in that fashion it wouldn't be [town] for very long ... you would have this little metropolitan area right here and it would soon spread out so it would not be a rural town for long.

Smart Growth and innovative land use practices can be used to address sprawl, impervious surfaces and related cumulative issues, but according to the interviewees, towns are struggling to adopt these tools. One interviewee shared a laugh saying, “Why I am chuckling is we had a conversation about conservation subdivisions and we had the chair of the Planning Board basically say ‘I don’t like conservation subdivisions because everybody should have two acres of land, that’s why people move to New Hampshire,’ *(laughing)*.” Some expressed regret that Smart Growth was taking so long.

Smart growth is taking a very long time.... I remember a couple years ago when I said something about Smart Growth [at a] Planning Board meeting and the response was, ‘that’s for towns, [or] bigger cities,’ but since then I think ... some people are slowly coming to the realization that Smart Growth can apply to rural community, to this vacant building that we have over here, or that piece of land that somebody chopped up and clear-cut and hasn’t done anything with... so I think people are starting to pay more attention to the options, but that being said, we did designate a couple mixed-use zones, great, and in the process of recognizing that we have a mixed-use zone, we have to change the zoning ordinance, and so what we did was, this is Smart growth, we *reduced the required lot size from three to two acres in some areas (sigh)*, so we have a ways to go. *[emphasized]*

Factors that discourage these policies include a lack of awareness or expertise about these techniques but importantly, towns that have had a single bad example of cluster ordinances can experience negative pressure from the public to experiment further. The result is that in some cases, interviewees expressed uncertainty about the Smart Growth concept all together. One bad example and the results from it are described below.

Part of our problem is that cluster zoning has become a dirty word in [town], we had a very unfortunate proposal which was turned down but not until we went to the Supreme Court ... and the guy wanted to do a cluster development, and as a result the town voted out cluster zoning, which we had at the time. And now anything that is anything close to “cluster” is a dirty word, so when you talk about

a conservation subdivision, you get the same thing only different... there again the seed is starting to get planted ... it's not such a bad idea but people had such a bad taste in their mouth after that situation.

Connecting Time and Space: 4.) Thinking about change and impacts over time

This last analytic node describes reflections about change and impacts over time with respect to land use, water and climate change. Water quality and quantity concerns, economic costs, collaboration challenges, pollution, lacking education and expertise, conflict and the lack of a collective vision are all key themes.

Concern about water resources in the future, and drinking water protection in particular, were dominant themes from interviewees who were both newcomers to the region and established residents. The lack of education and expertise as well as the current nature of planning and decision-making seriously challenge board members to consider long-term implications of land use decisions that accumulate over time. As one interviewee expressed:

As a kid ... [there was] a dairy farm on my street and I watched it become condominiums over the years, and the pond that we grew up on all of a sudden had houses all around it, and so I've seen it before and I'm familiar with it and I know that's the way it goes. So I've seen the inevitability of growth in the ways that some members of the board who have lived in this town have not, so they have never seen the poor planning, of not looking out far enough.

Concerns and uncertainties over the effects of climate change complicate this. Interviewees expressed concern about changes in rainfall patterns, more frequent and larger storm flooding events and the economic costs associated with adapting to climate change, as one noted, "Having a 100 year flood three times in three years is because it's not... the hundred year flood anymore, its [a] 10-year flood." There is a great deal of concern about protecting water for future generations. Some interviewees also looked to

the past and were actively pondering the effects of river, coastline and ocean changes. As one remarked: "I'm watching what's happening on Plum Island, the houses are [being pushed] ... off the dunes right now as they are collapsing, they are undermined, and one of the directors said one day there's 50 feet taken away... it's unfortunate the houses are being undermined, but why they were allowed to build on the dunes to begin with is a question."

One of the most important drivers in *Thinking about change and impacts over time* comes from witnessing land use patterns elsewhere and comparing those with the current situation in New Hampshire. Many of the interviewees who were newcomers to the region (even decades ago) mentioned witnessing substantial land changes where they first lived. These changes were consistently described in a negative fashion, with regret for the changes that were wrought and out of concern for the circumstances here, as the quote below describes.

I remember when I was a kid in New Jersey people would say ... when we first moved to this farm you can see forever, it was all hillside, it was all farmland and forests, and of course now it's nothing but lights and buildings and roads and impervious... And so I came away from New Jersey with that, and ... coming up here it just hits home, you don't realize what you got till you ain't got it no more. And I think that's what we're dealing with, this faction that doesn't understand, and I believe many ... if they understood the purpose of what we're trying to do, I think they would agree, but they just don't want to know, it's too new, too threatening somehow the walls go up.

These concerns and reflections of change witnessed elsewhere were motivating factors for these interviewees to become and remain engaged in their towns. People described the consequences of poor planning and the results as either destroying the environment, the community or both, as the quote below describes.

What's a severe threat to not only [our town] but to a lot of southern New Hampshire communities is we are losing our connection to the past for these communities. Because I figure when I came to town here in 1960 there were not even 800 people and when I married my wife in 1980, there were only 1300 people here and I swear there's probably not ... 225 people here who have lived here more than ... 50 years at the most. So you figure now we are at 4300, so most of those newcomers came between 1980 and 1995 and they haven't got a clue, they never even heard of the town until they talk to a realtor ... And so as the years go by, I keep telling people that the town has been re-settled again by a new breed of settlers, and in another 10, 15 or 20 years they will hopefully have those roots that the earlier settlers have, but that's probably dreaming a little bit, because we are not as connected to one another as we used to be, we don't know our neighbors like we used to, and we don't have the events in the community that drew us together like we used to have even 25 years ago, so there's a disconnect ... It's basically a place to come and sleep and leave when you go to work in the morning ... and so it's kind of a shame that we are losing that early New England connection.

Despite the negativity generally associated with reflecting on land use change, there were positive lessons too. Some interviewees spoke optimistically of what they had seen in regional and county-wide planning in other states, asserting that this approach needs to happen here in New Hampshire as well. One bluntly stated what many others did not, "I think we are way behind and it's kind of surprising to me, because we read about and think about the Northeast and New England, heavy university, intellectual brainpower, and we seem way behind sometimes from other parts of the country."

Summary: Key Themes

Temporo-Spatially Scaling is the final dimension to both Handling Conflict and Gathering Community because it continues to highlight aspects of community and conflict, while expanding movement and direction in increasingly broader spatial and temporal scales. Temporo-Spatially Scaling is discussed in terms of characteristics for these various degrees of scaling and includes the factors and forces that promote,

encourage, hinder or impede the consideration of cumulative decisions and effects over space and time. The assessment framework presented is along five degrees of spatial scaling, through which it is possible to identify both limitations and opportunities to considering greater spatial and temporal perspectives for land use decision-making. The key themes overall include lacking expertise, education, public engagement, volunteers and leadership – all of which began in Gathering Community and persisted through Handling Conflict. The challenges identified and opportunities presented must be addressed in these towns if moving towards a watershed-based framework for land use decision-making becomes the goal, which could happen if Great Bay’s ecological integrity continues to degrade.

CHAPTER VII

DISCUSSION AND CONCLUSIONS

Recap of Research Aims

The underlying motivations for this study were the health and sustainability of Great Bay, recognition of emerging national policy towards EBM for the coasts and oceans, and concern about the long-term, cumulative impacts of land use decisions in coastal regions. Understanding that land use decision-making is largely a local function led to the question of whether or not there was any potential for moving towards an EBM, watershed-based approach, which could then be incorporated into the national EBM policy framework under development. In order to answer this question, the challenges and opportunities existing within the current decision-making system needed to be identified. By conducting a social landscape analysis of land use decision-making within a single case study watershed for Great Bay, it would be possible to answer this question, and perhaps design a methodology that could be used in other watersheds to similarly map out the challenges, opportunities and potential of moving towards watershed-based land use decision-making.

Using social science methods within a constructivist grounded theory analytical approach allowed this researcher to develop a theoretical framework describing the social landscape of land use decision-making within the Lamprey River watershed. It was hoped that this resulting theoretical framework could identify components of the social

landscape that might support a watershed-based land use decision-making system. Keeping this in mind, the specific research aims of this study were to: 1) define the land use decision-making process based on target groups in a watershed, 2) identify the components that could support a functioning, watershed-based land use decision-making system and 3) explore the understanding, communication network, cooperation potential and limitations for such a system within Lamprey River watershed communities. The social science methodologies employed in the analytical approach proved successful in addressing the research question and specific aims of the study. The target groups in the watershed were identified and sought after for data collection through semi-structured interviews. It is important to recall that the interviewees are the land use decision-makers in their communities.

The theoretical framework that emerged from the data analysis identified many characteristics, factors and forces that either encourage and support, or impede and hinder, moving towards a larger spatial and temporal context for land use decision-making. The theoretical framework contains three pillars, Gathering Community, Handling Conflict and Temporo-Spatially Scaling, all of which were described in detail in a descriptive analysis format typical to qualitative social science studies with grounded theory (Hallock 2002; Seaman 2006). (Seaman 2006; Hallock 2002) Within this theoretical framework, the communication, cooperation potential, limitations and understanding for land use decision-making within an ecosystem context were explored. Along the way, a number of themes emerged as constant factors and features within this theoretical framework. The framework itself serves to map out, in ever increasing spatial scales, the direction and movement of land use decision-making based on concepts of

great importance to the volunteer land use decision-makers and seacoast communities at large. The direction and movement of these themes in fact reflect lines of pessimism and optimism, both of which illuminate the underlying value structures of these communities which must be seized upon in order to address long term concerns.

This chapter reviews the three pillars within this theoretical framework, key themes, and the challenges and opportunities with respect to land use decision-making within this watershed. Results of the current approach to land use decision-making are reviewed. Following this, the potential of an EBM, watershed-scaled land use decision-making system is discussed. At this point, the interesting results of using GIS-based maps as visual probes are reviewed. These are the post-map reflections referenced in the methodology chapter, specifically captured in the context of Temporo-Spatially Scaling. Finally, remaining working, or preliminary, hypotheses are reviewed and a number of additional questions and research directions are suggested, including the potential transferability of the developed theoretical framework.

Theoretical Framework

The theoretical framework describing the social landscape of land use decision-making in the Lamprey River watershed is built around three pillars – the conceptual categories of Gathering Community, Handling Conflict and Temporo-Spatially Scaling. All three of these conceptual categories are linked through persistent themes that highlight both challenges and opportunities in aspects of land use decision-making. These challenges and opportunities have an impact on decision-making perspective and the ability to consider broader spatial scales and cumulative impacts while participating in

and carrying out land use planning. All three conceptual categories can also be thought of in terms of varying spatial scales (Appendix 7:1).

Gathering Community and Handling Conflict contain their own internal scaling effects while setting the stage for the broader Temporo-Spatially Scaling concept. Gathering Community is characterized by individual and group motivation, the evolution of a sense of community, and attention surrounding conflict - all of which occurs at varying scales. An individual volunteer first defines his or her place in the community, realizes motivations for becoming engaged in decision-making and eventually questions and discovers community values, features and goals en route to decision-making on behalf of the community. Handling Conflict is characterized by the factors and forces contributing to conflict and the characteristics of actions and reactions used to address conflict. Conflict simultaneously exists at multiple scales, in individuals, within boards, between boards and between towns, expanding into larger spatial scales.

Temporo-Spatially Scaling is in some ways, the final dimension of Handling Conflict and Gathering Community. Gathering Community explores multiple proximal dimensions of land use decision-making including seeking expertise, awareness and engagement, education and the meaning of community. Handling Conflict expands the dimensions of community through exploring the mistrust or skepticism inherent in characteristics, structure and process of decision-making, and moves beyond town borders. Temporo-Spatially Scaling highlights aspect of community and conflict, but expands the movement in direction and scope, building into broader spatial and temporal scales. Temporo-Spatially Scaling is described in terms of characteristics for several degrees of scaling with factors and forces that promote or encourage, hinder or impede

the consideration of cumulative decisions and effects over space and time. Five degrees of scaling are described, starting with the baseline of a typical town's parochial perspective, and continuing out beyond this through the neighborhood of communities, the region and watershed, culminating with a perspective that includes impacts of decisions over time.

Reflecting on aspects of decision-making through this theoretical framework, highlights characteristics of factors and forces which prevent and impede decision-making at higher spatial scales as well as those that encourage spatial scaling and regional contextualization. Understanding the pillars within this theoretical framework can provide an assessment that can characterize spatial and temporal awareness with respect to land use decision-making. This assessment, in turn, can identify challenges and opportunities in the towns for developing and employing a watershed framework for land use decision-making. Identifying such challenges and opportunities can help coastal managers and key regional organizations more effectively refine their strategies and allocate resources. Indeed, the characteristics present that support thinking about the big picture perspective should be seized upon as opportunities to continue developing greater spatial and temporal awareness about land use decision-making in the coastal watershed.

Gathering Community: Reflections

Gathering Community, described through its analytic units, includes exploring how one develops a personal sense of community and then how that individual finds and determines the community in the town. This latter process can begin an exercise in spatial scaling, reaching out to members of the community, neighboring towns and the region. Key negative themes within this conceptual category include lacking volunteers,

education and expertise, all three of which are significant challenges to the volunteer based land use decision-making system. Positive themes include personal enjoyment and a respect for democracy. The sense of community or civic mindedness can be both negative and positive motivating factors within Gathering Community. The overall motivating concerns for engagement, the last theme in this conceptual category, tend towards the negative and are largely due to the lack of volunteers and expertise in the first place. Gathering Community's challenges and opportunities can be summarized in terms of aspects of community and heritage.

The challenges within Gathering Community as an inherent and vital part of land use decision-making are significant and involve the topics of the public, democracy and sense of place and often, conflict. Lacking volunteers, public engagement, leadership, and expertise are significant constraints on the ability of volunteer boards and commissions to make good land use planning decisions at the local level, and significantly hamper the ability of decision-making regarding broader spatial scales. These constraints also cause conflict within boards, between boards and within towns. The struggle for public engagement is mirrored in the decline of the traditional New England town meeting in nearly all of the case study towns (Knoy 2007). The decline in public engagement, influx of newcomers from other regions, and larger socio-economic trends have all very likely diluted the historic, independent Yankee attitude in this part of New Hampshire. While the data found small, vocal factions still exist, this researcher found the communities and populations not unlike those in other areas of the nation. Additional challenges include concerns about the loss of super volunteers, about the lack of a strong sense of place or community identity as well as questioning the future of local democracy and the ability of

New Hampshire communities to maintain rural character (Salamon 2003). These deep concerns about community structure, character and sustainability are reflected in much of the literature concerning the loss of social capital in the decline of volunteerism throughout the nation over the last few generations, including volunteerism in local government (Putnam 2000). This subject is also the focus of broad national research on civic engagement and volunteerism (CIRCLE 2009).

Another challenge related to lacking expertise is the lack of knowledge about cultural and environmental landscape change over time, and the failure to fully integrate heritage groups with land use decision-making. This impedes thinking about the temporal aspects of land use decisions and how these accumulate within the town or region.

Paradoxically, reactions to an evolving sense of community can be reflected in the desire to preserve town image or character amid changing public perceptions about heritage and cultural resources. In towns where the discussion of heritage and cultural resources is more developed, not only are the heritage groups more active, but also more proactive in their work with land use boards and commissions. Just as the fields of archaeology and ecology need to collaborate more to build an understanding of ecological histories, local experts in history and heritage need to work more closely with ecologists and natural historians to build an understanding of landscape change over time in their communities (Briggs 2006; Lotze 2005).

A final area of substantial challenge within Gathering Community involves communication. Within-town communication varies from none at all to excellent, but where this is absent, cynicism and mistrust reign. There is significant variation between the towns of the Lamprey River watershed in terms of staff and professional resources,

but where these exist, communication improves. The structure and process of decision-making also hinder communication, and again towns that are fortunate in possessing professional staff can address this challenge by developing things like technical review committees which improve communication and decision-making. A final challenge regarding communication, which is also linked to the lack of volunteers and expertise, is the concern over loss of institutional memory, too often held alone in the memories of key community linchpins. The lack of consistent and effective communication within all towns challenges not only local land use decision-making ability, but does not bode well for developing a broader communication picture throughout the watershed.

Another characteristic within Gathering Community, which contributes both challenges and opportunities to the community and heritage components of land use decision-making, involves similarities and differences between newcomers and established residents. The data shows that newcomers can often challenge political inertia and the status quo, have flipped the political scene in the towns of the Lamprey River watershed and are involved to a greater extent as volunteers in land use decision-making. The data also indicates that many of these newcomers got involved due to concerns over observed trends in land use that they witnessed elsewhere and fear could happen in New Hampshire, out of concern for the lack of local expertise and leadership, and out of an attachment to natural resource amenities. Within the theories covering rural rebound and differences between newcomers and established residents in rural communities, there was little evidence in this data for the culture clash theory marking significant value differences, but supporting evidence for the gangplank theory, cultural infusion theory and new voices theory (Fortmann 1990; Jones 2003; Smith 2000). Data

showed some resentment by established residents for newcomers who opposed economic development opportunities with Wal-Mart and other big box stores, lending support to the gangplank theory. Data also showed support for the new voices and cultural infusion theories, with more newcomers represented on boards and commission, lending organizational skills, networking and leadership.

Length of residence relates directly to the development of both social attachment and natural attachment to a community. Both of these dimensions of community attachment relate to the development of social capital and a concern for the natural environment. Considering the amenity rich migration patterns for New Hampshire, one working hypothesis was that research would show a concern for the natural environment and open space protection among both newcomers and established residents. While there was some evidence in the data about differences between newcomers and established residents in their understanding of the economics of open space and conservation, both newcomers and established residents were concerned about the future of water. This is evident in the data collected in this study as well as the stakeholder surveys done for the New Hampshire Water Primer (Goetz 2008). This fact presents an opportunity to engage the population at large, and land use decision-makers specifically, with the concept of scaling up land use decision-making and planning to a regional and watershed perspective.

The positive aspects of Gathering Community, which can be seized as opportunities to address the aforementioned challenges, include a respect for tradition, civic duty and practice of democracy, as well as the enjoyment from giving something back to the community. All of these things could be seized upon as positive elements to

build a sense of civic duty, stewardship and community, particularly with respect to developing a more dynamic and vibrant volunteer base. The most positive aspect of Gathering Community which could be an opportunity to improve land use decision-making locally and develop greater regional thinking is the concept of balanced land use decisions. While attempting to make balanced decisions and valuing economic development, ecological and cultural resource protection are laudable motivations, but without an agreed upon context, the balance of these decisions is subject to temporal and spatial whimsy. The sociocultural results are likely to continue to be a patchwork of towns with varying degrees of success in developing community, sense of stewardship and civic duty, and a healthy engaged citizenry in the practice of democracy.

Within the characteristic topics that reflect the struggle for balanced decision-making, the lack of context and the need for heritage engagement are common throughout. In a community sense, the lack of both context and heritage information stifle the discussion over the common good versus private property rights. This often resulted in an expression that the board is “waiting for population change” to handle the ideological difficulties of the situation. The disconnect with a regional context is evident within the factors for concern over the loss of a sense of community, the grass roots push back and NIMBY-ism, the lack of understanding about regional and cumulative impacts and the connections across time and space. The reactions and responses that result from this cycle are characterized by pitting boards against one another, questioning who is responsible for the common good, fracturing historical landscapes and battling over cognitive conflict which challenges socio-political ideologies (Lubell 2000). The lack of

a defined regional context and struggle for balanced decision-making result in a continuous chipping away at the “rural character” everyone insists they value.

Handling Conflict: Reflections

Handling Conflict, described through its analytic units, includes factors and forces contributing to conflict and the characteristics of actions and reactions used to address conflict. Conflict exists at multiple scales simultaneously, extending back into Gathering Community affecting individuals and occurring within boards, between boards and between boards and the public. Extending conflict into larger spatial scales involves examining contributing factors and the characteristics of actions and reactions addressing it between towns and within the region. The key themes are all largely negative in nature. Lacking expertise, education and volunteers remain significant, to which are added the critical issues of leadership and trust. Handling Conflict’s challenges and opportunities can be summarized in terms of aspects of expertise, education, community and communication. A key point upon which to reflect is that depending on how conflict is managed, the results can be either negative or positive in terms of land use decision-making.

Challenges within Handling Conflict relating to lacking expertise and education are primarily to do with struggling to understand scientific and technical information. The vast amount of material and information volunteer decision-makers must gather, process and understand in order to make balanced decisions has grown unwieldy over the years for all but the most dedicated or technically savvy. The fact that training is not mandated complicates this issue, but even if it were, the data showed extreme concern about the overwhelming amount of technical knowledge required for volunteers on these board and

commissions. This in itself was a contributing factor, in some views, for the lack of new volunteers. The lack of understanding such things as water systems, ecological connections across the landscape, the watershed concept itself and basic science are significant. This particular challenge manifests itself in the form of conflict both within boards, between boards, when dealing with town leadership and confronting developers and lawyers. From the developers perspective, the tensions resulting from the lack of technical savvy on the boards contributes to poor design, as one developer described: “these small towns they are so unsophisticated they have not grasped [technical info] they don’t even have a planner, and a lot of times they keep arguing ...we are disliked from the day we step forward... and a lot of the time we get stuck building things that are ugly.” The lack of understanding of science and technical information by the majority of volunteers in decision-making severely impairs the boards and commissions when it comes to making land use decisions, often resulting in conflict, and typically contributing to reactionary planning.

Lacking volunteers and leadership are also significant challenges contributing to conflict within the realms of community, education and communication. Issues surrounding the lack of volunteers continue from Gathering Community. Ineffective and weak leadership contributes to everything - the lack of volunteers, conflict within boards, between boards and in between towns. Poor leadership leads to less emphasis on education and training and impediments to the development of greater spatial and regional thinking. Lacking leadership contributes directly to an inability to plan long-term and is both a factor contributing to conflict and a symptom of it. Effective leadership is a prerequisite for good communication between boards and towns and a lack of

communication leads to mistrust. Regular communication between towns is virtually nonexistent in the Lamprey River watershed. Poor communication in general leads to conflict within boards, between boards and within towns, as well as between towns in the region. A niche mentality drives the typical land use decision-making and together with the lack of communication, can result in conflict and mistrust when single issues force towns to collaborate.

Trust is an important characteristic of social capital and it is this together with reciprocity, that grease the gears of land use decision-making and other forms of collective action (Sabatier 2005). Of the two kinds of trust, social trust and official trust, there is evidence within the data of a significant lack of both on the part of land use decision-makers in this watershed. The lack of communication, leadership and expertise at the local level impedes the development of strong social trust within some boards and between boards in some towns. This further hampers the ability of land use decision-makers to consider broader spatial scales, trusting their neighboring communities and others in the region. Social trust enables cooperation and participation, is stimulated by identifying shared goals and is dependent upon the social capital in a community (Focht 2005). Where mistrust and conflict reign due to lack of communication and no knowledge of neighboring counterparts, developing social trust is impossible. Building social capital is, likewise, difficult.

At this point, there is more evidence within this data set for a lack of both social and official trust and rather, a vigilant attitude for protecting individual interest. A low level of trust, negative perceptions of government and loss of social capital prompts skepticism about the effectiveness of policymaking institutions as well as government

legitimacy (Focht 2005). The data set collected for this study also contains evidence of increasing concern that the state policies in place are not enough to protect water resources, and this skepticism, in concert with the ideological shifts in the population, might paradoxically set the stage for building social capital and trust, in order to cooperate at a novel spatial scale.

Despite the negativity and challenges surrounding issues of Handling Conflict, there are also opportunities that can be pursued to both reduce conflict and improve land use decision-making with greater consideration to spatial and temporal scales. One is the recognition that local expertise in historical, cultural and ecological change can be found by more directly engaging with heritage groups. The volunteers in heritage groups had, not surprisingly, much greater awareness of temporal change and regional connections across the landscape than any other interviewees. This gives them a time depth awareness lacking in land use decision-making that would greatly contribute to an awareness of the temporal perspective of land use decisions. The role of local knowledge has already been described as valuable to the land use boards and commissions (Arnold 2007; MacNab 2002; Sieber 2006; Wulfhorst 2004). Encouraging the incorporation of heritage, cultural resource knowledge and importantly, ecological history with local knowledge would build legitimacy, engage elders and empower communities to define their identity and strengthen the sense of community overall.

Another opportunity to increase regional spatial scaling is by promoting the role of regional organizations. These play key positions when they are cross represented in land use board membership, sought after for specific expertise, or used to fill communication gaps between towns. Regional organizations increase spatial awareness

and watershed perspectives, and promote big picture thinking among land use decision-makers with whom they work. Towns that do not have volunteers serving in regional organizations such as river advisory committees or watershed organizations have limited potential for understanding regional context and relationships over greater spatial scales.

Regional Planning Commissions are the most immediately important groups for increasing spatial scaling in land use decision-making, but there are both positive and negative aspects of these groups. The positive aspects of RPC structure, process and product include the fact that these organizations have become far more ecologically aware over the decades and can help balance environment and development. They bring more clout to land use decisions, help towns with grant applications, and can be of assistance with scientific and technical information. They can also serve in a communication role between boards and commissions in towns, which can be a critical function. In at least one case, an interviewee described that 85% of the Planning Board's work originated as topic ideas from the RPC, so providing direction in a town is also valuable.

RPCs often take leading roles in the development of the town Master Plans. Despite the Master Plan's purpose as a guiding document, it must be noted that the construction of these plans have been known to be flawed and systematically lack enforcement capabilities, timelines and strategies for implementation, and commonly, any inherent vital strategic expression of the core values of a community (Mitchell 2008). More than one interviewee described it as without teeth, or as a "shelved weapon," hauled out at points of conflict, but not capable of directing overall land use decision-making efforts. One Planner, commenting on the utility of the Master Plan complained,

“These master plans require monumental geologic movement to get done and they produce a monumental geologic document that can’t be used.” It should also be noted that there were some complaints about the qualifications of planners, with too few trained in scientific or technical disciplines. Despite the criticisms, RPCs are valued, but there is a strong desire for greater coordination and more leadership in landscape thinking.

There is considerable questioning about the role of RPCs in actual regional planning. Most decision-makers suggested regional planning needs to be much stronger or even mandated from the state level. There were also concerns of towns undervaluing RPC services because of a failure to identify with the RPC to which they were assigned, feeling more akin to towns in a neighboring RPC. Staff turnover and retention issues in RPCs can impede work within the towns. Significant concerns were expressed about regional planning in general, with the common perceptions that it is mostly piecemeal, linked to such things as traffic and greater metropolitan regions, while failing to fully integrate zoning and planning between towns. Planners agreed with this, but described a failure in the institutional framework, with a complete lack of support from the state. As one described, there is a loose hierarchical system, but “there’s no teeth behind it... we are supposed to review town Master Plans to be consistent with our plan, whatever that might be, and the state reviews ours, but ours is supposed to be consistent with the state planning goals, but there is no state plan... the pieces are not in place, the framework is, but not the plans or any enforcement mechanisms.”

The goal of land use decision-making, as mentioned earlier, is commonly referred to as balancing environment and development. Taking actions to address conflict concerning the public, developers or lawyers should ideally have this balance in

mind. The factors and forces contributing to conflict work against obtaining this balance, and the actions employed by decision-makers to address this conflict can douse or inflame the situation. While poor designs fail at balancing environment and development, the larger failure overall within the structure and process of decision-making is the result of chipping away at natural and cultural resources and community identity. This is the result of not only struggling to make balanced decisions, but also making decisions without a well-defined larger context for environmental, economic and community sustainability. A final point about conflict is that if boards allow conflict avoidance to drive decision-making, as was often described in the data, the results, in aggregate are reactionary and fractured land use planning.

Temporo-Spatially Scaling: Reflections

Temporo-Spatially Scaling, described through its analytic units, includes five degrees of spatial scaling, tracing many of the same themes identified within the previous conceptual categories, but focusing on land use board and commission abilities to consider cumulative decisions and effects over space and time. While this conceptual category continues to highlight aspects of Gathering Community and Handling Conflict, it expands the movement in direction and scope, building into broader spatial and temporal scales, with factors and forces that promote or encourage, hinder or impede the consideration of cumulative decisions and effects over space and time. The five degrees of scaling begins with the baseline of a town's parochial perspective, and continues through the neighborhood of communities, the region and watershed, culminating with a perspective that includes impacts over time. Persistent themes include lacking expertise, education and leadership, and in a more nuanced manner, public engagement, volunteers,

and trust. When evaluated through Temporo-Spatially Scaling, these themes are responsible for the degree to which moving towards a watershed-based framework for decision-making is possible. The challenges and opportunities therein can be summarized in terms of spatial awareness of the Lamprey River, the Lamprey River watershed, Great Bay and the coast, and thinking about the big picture, sprawl and cumulative impacts.

Challenges within Temporo-Spatially Scaling relating to lacking expertise and education are once again to do with the struggle to understand scientific and technical information. Struggling with understanding hydrology, connections across the landscape, the watershed concept and basic science are significant and hinder or impede broader spatial thinking. For example, the mantra “conserve wetlands” has been strong over the years, but the context for why this is important has eluded much of the public as well as volunteer decision-makers in these communities. Not only is there a lack of synthetic understanding of watershed concepts and how rivers, streams and wetlands connect, but also how this spatially relates to Great Bay and the coast. The lack of collective vision and loss of bioregional awareness has created a set of circumstances within the structure and process of decision-making leading to decisions made without context to the long-term spatial or temporal challenges concerning the future of water in this region. Land use decision-makers are overwhelmingly not considering Great Bay in the course of decision-making. Data also indicate that the coast and ocean are essentially never considered, and surprisingly, the distance from the coastline to the town in question made no clear difference. An original working hypothesis was that the closer a town is to the coast the more aware it is of Great Bay, the coast and the ocean, but this was not supported in the data.

Challenges concerning spatial awareness of the Lamprey River and Lamprey River watershed were more variable in nature, although struggling with spatial scaling was generally acknowledged. Where boards and commissions understand these concepts, they lack the authority, tools or wherewithal to act on this knowledge. There's a general consensus that the public doesn't understand the watershed or related concepts at all. Where land use decision-makers did not associate with the watershed, or failed to consider the Lamprey River itself, education and expertise were lacking. Adding to these factors however, were failures in public engagement and leadership, lack of association with regional organizations and a failure to engage with history and heritage. There was some evidence in the data for recognition of the link between impervious surfaces and water quality, but even here, understanding of this concept was mixed to poor. Understanding the basic watershed concept, and how conditions and actions in the upper watershed affect the lower watershed, that upstream land use ultimately has downstream affects – helps to promote greater spatial awareness, yet these are still significant conceptual challenges.

Challenges related to thinking about the big picture or cumulative impacts are again related to education and expertise, but even more significantly, leadership. The data indicated decision-makers in this watershed are not discussing cumulative effects when making decisions, struggling to implement Smart Growth and assuming instead a defensive posture towards development. This is complicated, as planners remarked, by an institutional framework that completely ignores the cumulative effects of land use decisions. Decision-makers also did not present a clear understanding of sprawl, although they did broadly associate it with the loss of community's soul and rural character. The

data indicated mixed understanding and recognition, with some decision-makers believing this phenomenon was limited to big box stores, traffic or the state of California. Very few decision-makers correctly identified characteristics of rural sprawl in their communities.

The lack of expertise and leadership on these topics significantly hinders the ability of volunteer boards to consider broader spatial and temporal scales. In terms of temporally-linked concerns, drinking water, wastewater treatment and aquifer recharge were probably the most significant issues raised, causing struggle in some towns to estimate the need and availability of future water resources. Many indicated the dominant challenge was lacking leadership for the development of a collective big picture. This lack of context which could help frame decision-making at the big picture level while incorporating the temporal scale, leaves people with no option other than waiting for some sort of crisis to force action.

While the challenges are significant in broadening spatial and temporal scales, there are some opportunities to grasp. Awareness of the river and watershed can be raised through closer proximity and public access to the river. Using history and heritage as hooks to explain the landscape connections and relationships to the river would expand spatial and temporal awareness. Not surprisingly, regional organizations can play an important role in raising spatial awareness of the connections throughout the watershed to Great Bay and the coast, as well as the temporal awareness of the effects of cumulative land use decisions. In addition, the efforts of GBNERR and PREP, and publishing of the coastal watershed plan have raised awareness. Despite these factors that could promote and encourage increased spatial awareness and regional connections, the reality is that

lacking an immediate crisis, remaining unaware of watersheds and water systems, struggling to relate to Great Bay and lacking communication between towns will collectively continue to support a niche mentality for land use decision-making and a failure to recognize ecosystem connections within the watershed.

Reflection on the Current Situation

The structure and process of local land use decision-making was well-suited for early 20th-century communities, which were intact and well-defined. But it can be argued that, to a large degree, the conditions and characteristics of communities for which this system was designed, no longer exist. It is questionable whether this design fits well with modern public realities of participation in local democracy. In many ways this situation mirrors the state and federal government structures of the 19th and early 20th centuries. In recent decades, these structures have grown into more networked governance models, with shared data and resources, greater emphasis on accountability and transparency, and with the incorporation of 21st-century innovations to increase public engagement (Rasmussen 2007; Elwood 2004). In addition, management of the nation's coastal zones, oceans and waterways are now viewed within an ecosystem perspective. At the local level, however, the lack of volunteers, public engagement, education, training and expertise, effective leadership and a strong regional context linking land use planning to the ecosystem, all remain significant structural and processual hurdles. This was expressed as disappointment in regional planning, recognized chipping away at the rural landscape, uncertainty over how to integrate heritage, concern over the loss of institutional memory and a strong desire for greater state and regional direction. Local land use planning efforts nationally result in the destruction of ecosystems, parochialism,

and an elitist, discriminatory and wasteful investment of capital because they are based on artificial systems of land division and political control (Jacobs 1989). The data collected in this study reinforces existing critiques of land use planning, and supports a renewed regionalism over localism in the debate which has been raging in planning circles throughout the 20th century.

An additional, critical challenge to the towns within this watershed, and the nation's coastal areas in general, is due to the dramatic population increase that threatens community identity. This identity drives stewardship, civic duty and many aspects of social capital. The sense of a loss of community, or the fear that many decision-makers described, can be attributed to this large influx of newcomers, and the patterns of engagement or lack of engagement that ensue. The struggle with volunteers speaks to the larger loss of social capital and volunteerism decline experienced nationally. Despite some statistical evidence showing hope, there is a very real concern of failing to teach civic responsibility and grow a sense of stewardship among the millennial generation in this region (CIRCLE 2009; Kawashima-Ginsberg 2009; Roscow 2009). Unlike developing a conceptual understanding of ecosystem functions and services, this question of community identity can only ever be answered locally and this concept alone requires substantially more engaged citizenry. There are few places where heritage, connecting to the rivers and the broader landscape appeared in the data, which underlines the lack of common context within the bioregion, loss of heritage and failure to engage with cultural resources. Ironically, it is by refocusing on heritage and connecting to the larger regional landscape that a new context for land use decision-making could come more closely into focus.

The lack of context throws into question many things about land use decision-making, including whose job it is to make decisions about respecting individual property rights versus respecting the common good. This lack of context contributes to the tension between Planning and Zoning Boards and town leaders concerning the trajectory of decisions. This tension and conflict is most likely highlighted during extreme ends of political ideological shifts within town leadership or board membership. This lack of context also makes it difficult to justify a hard decision, resulting in a private property rights arguments used as a simpler excuse to grant a variance, possibly via precedent, which adds to cumulative decision-making impacts. The best boards and commission, those with effective leadership, education and training, and adequate numbers of volunteers will probably struggle with decision-making but choose to balance practicality, economic considerations and ecological considerations. Professional assistance through a process with a technical review committee, planning department, or RPC representative can help alleviate the tension and strengthen decision-making capacities. But boards that are struggling with leadership, education, expertise or volunteers will probably choose a more practical solution every time and make decisions to avoid conflict rather than wrestling with any element of the big picture.

Over the years, people in the seacoast region have become more aware about the importance and value of protecting natural resources, but there is no direction, focus, leadership, vision and most importantly, context, for a sustained and consistent collaboration concerning land use among the towns of this watershed. Many of the thematic issues, challenges and opportunities concerning this have been discussed. Arguments can thus be made for greater state support for regional planning efforts, re-

alignment of such efforts to ecosystem scales and seriously addressing funding structures and mechanisms to support and build intermunicipal collaboration. Discussions at the local level need to engage the public in defining the community they desire and re-connecting with the heritage and historical ecology of this region, growing a wider regional identity. Without such efforts, town land use decision-making will continue to be reactionary and shortsighted in nature. The difficulty in spatial and temporal scaling, lack of awareness of bioregional and watershed connections, and struggle with education, expertise, communication, public engagement and leadership are all further hampered by the lack of a defined ecosystem appropriate spatial context for land use. This missing context could provide the big picture that frames where land use planning and decisions ultimately conclude – with affects on Great Bay and the coastal ecosystem.

Reactionary planning best describes land use planning in the Lamprey River watershed. This is a result of factors and forces contributing to conflict, and guarantees continued conflict, by failing to critically plan for the long-term sustainability and health of communities. The lack of understanding the big picture, the difficulty in thinking of long-term and cumulative impacts and the challenge of linking local decisions to larger regional impacts lead to a lack of context for long-term, economic, environmental and community sustainability. If the structure and process of local land use decision-making are retained without revision, and specifically without an ecosystem defined context, the result will continue to be a spatial and temporal patchwork, largely disconnected to ecosystem functions and services, with hotspots of significant resources issues – starting with water. These resources issues will appear as hotspots for economic and community sustainability and will likely limit options and weaken regional ability to adapt to climate

change. At the same time, these resource issues, economic and environmental hotspots, will tear at the remaining fabric of community, and threaten democratic ideals of autonomy, justice and welfare.

Potential of Watershed-Scaled Land Use Decision-Making & Coastal EBM

Structuring land use decision-making within an ecosystem, and the Lamprey River watershed specifically, would provide the big picture context that is currently missing in land use planning. This would frame land use planning at a regional spatial scale that would be based on underlying ecosystem functions and services. This would lend support to state efforts for a regional approach to managing water resources, encourage greater inter-municipal communication and provide an opportunity to address long-term water issues in the seacoast. It would also provide a baseline for discussions about regional heritage, ecological history and cultural resources, and provide a context for developing a regional identity by re-connecting to the landscape in ways that honor history and heritage.

A watershed-based land use planning effort would better address the nonpoint pollution issues from this watershed which are contributing to the decline of Great Bay's ecosystem functions and services. A Lamprey River watershed approach for land use decision-making would also prepare the communities therein for handling upcoming TMDLs for Great Bay's watersheds and serve as an example for the other watersheds. A watershed approach for land use planning, would better integrate spatial planning in inland watersheds with the developing coastal EBM frameworks under development. This approach was not unwelcomed by developers, who would like to see more consistency in regulations, and who argued the economic savings that this would promote

for their companies, communities, and property buyers. Although details differed, planners generally agreed that some sort of planning framework based on ecoregions or watersheds would be a good idea, perhaps re-configuring RPCs along watersheds or giving them fuzzy boundaries in which to work. One reflecting on Great Bay stated, “Eventually the impaired water TMDL will create imperative in some of these watersheds... and all of a sudden everyone will be responsible for achieving that [nutrient] loading limit and that’s when all of a sudden it will become necessary to look at [planning] in the context of this watershed.”

In its simplest form, implementing a coastal EBM will require defining sustainable goals and objectives, reconciling spatial scales, reconciling temporal scales, integrating sectors, accounting for cumulative impacts, applying the precautionary approach, and making a management system that is adaptable and accountable. A coastal EBM approach would require overall more creativity and flexibility, a broadening of legal management to multiple sectors, a change in resource and budget allocation procedures and the development of interdisciplinary expertise (Rosenberg 2005). It is possible that this would require the creation of more regional and networked governance systems for decision-making among multiple sectors (Goldsmith 2004; Imperial 2000). When integrating these sectors, an EBM approach again will be complicated, and require more numerous and more diverse stakeholders to be present. While bureaucratic gridlock and institutional inertia come to mind, the result could also be more dynamic, creative, responsive and sophisticated – especially if the designed management structure made use of some tools and techniques already underway in collaborative management (Bryson 2006; Cooper 2006; Leach 2006; McGuire 2006). Such an effort could address

cumulative effects, create complementary and coordinated policies at multiple scales, and involve all stakeholders through participatory governance. A coastal EBM of nested watersheds and ecoregions, with appropriately - scaled governance structures could be developed to blend inland spatial planning and coastal EBM while allowing a kind of local autonomy envisioned in the original National Land Use Policy Act. This effort would require much more social science work, as has been recognized lately by NOAA (Anderson 2003).

Another consideration in developing watershed-scaled collaboration for land use relates back to the concepts of trust and social capital. Trust is the most important aspect within any watershed management decision context, and the higher the trust and more extensive social networks should lead to consensus based agreements (Focht 2005; Sabatier 2005). Collaborations in watershed governance might build social capital by strengthening linkages, organizational integrity, integration and synergy within a community (Arnold 2007). It does, however, take more time to enhance social and professional networks to collaborate and it is critical to identify shared values and beliefs in order to more fully engage participants building trust and social capital (Al-Kodmany 2002; Brehm 2004; Chiesura 2002; Eisenhauer 2005; Imperial 2004; Lubell 2005; Sabatier 2005; Sawicki 2002; Vaske 1999).

If the Lamprey River watershed was accepted as an appropriate scale for coastal management efforts including land use decision-making, and a coastal EBM were implemented on top of this, there would be some challenges to consider. The existing Lamprey River Watershed Association does not perform watershed management roles, but should it develop in that way, integrating a coastal EBM strategy would not be

entirely seamless, but this existing program would likely be receptive. On one hand, the network of diverse stakeholders, communication structure, training, outreach and education programs would already be in place through the pre-existing structure in the LRWA and LRAC, as well as federal-state partnerships with PREP, GBNERR and other regional organizations (Schneider 2003). It would be necessary to expand these existing programs throughout the watershed, and provide more funding and support to do so. The stakeholders already involved would be spatially aware of the challenge and may have developed some interdisciplinary tools, which could help propel the EBM effort at a faster rate. On the other hand, competition over the same pool of volunteers and struggle over program identity could result. In addition, serious turf wars could materialize, with or between different agencies and the established watershed organization, leaving the latter feeling threatened and disempowered (Yaffee 1996). Just like a stakeholder under other circumstances, the existing coastal watershed organization would need to be involved in the EBM strategy design from the beginning, and would very likely serve a critical role. The positive results of this include an opportunity to develop additional volunteer networks with other watershed organizations, improve communication, eliminate duplication of effort, and target resources more efficiently.

If the Lamprey River watershed management effort failed to materialize before an EBM coastal framework were developed, implementing a coastal EBM would be much harder. This is essentially the case for the current situation in coastal New Hampshire. The state's Department of Environmental Services has a Coastal Program, with a mandate that does *not* reach the extent of the entire Piscataqua-Salmon Falls coastal watershed. The coastal watershed includes Maine and Massachusetts, so, a coastal EBM

would likely require the three states to work together. With regard to land use planning alone, the counties, Regional Planning Commissions, municipalities, and land use boards (with very different sets of statutory power) would be required to coordinate with a broad range of stakeholders, GBNERR and PREP among other programs. Transboundary issues would need to be addressed through the political cycle, education, outreach, increased public awareness, increased institutional capacity and coordination, and collection of environmental data (MacMynowski 2007). These transboundary issues are substantial, however, creating a coastal EBM from scratch would at least allow all stakeholders in at the same time, which might prevent the development of the aforementioned turf wars resulting from competition over existing roles and resources.

Considering the overall findings and results of this study, in the context of long term land use planning issues, regional water concerns and the sustainability of Great Bay and the coastal ecosystem, a number of suggestions are recommended. The state's Office of Energy and Planning needs to have stronger legislative support for state wide planning efforts linking climate change, land use and energy. There should be a mandated ecosystem planning framework based on watersheds, much in line with the earlier proposals for the National Land Use Policy Act and extension of the Coastal Zone Management Act. This planning strategy should encourage communities to design and fill in the frameworks based on local community values and goals for sustainable communities, economies and ecosystems. A revision of the state tax code would be necessary to promote and ease intermunicipal collaboration and resource sharing. This could include such innovations as credits for wetland and open space protection or carbon and eco-footprint reduction. The state's planning efforts should also be framed to blend

with the strategies under development for EBM marine spatial planning which links coasts to inland watersheds. The RPCs should be re-aligned within watershed boundaries, but retain significant urban planning structures to promote sustainable green cities. A watershed council should be formed within the RPCs, with voting rights and representative membership from the towns. This council and the RPC should employ a watershed coordinator and develop a neighborhood watershed GIS center, promoting new tools, better communication and broader public input on community, land use and the future. This GIS center should be integrated with local schools and curriculum to support stewardship training and build civic mindedness. The RPC and watershed council should work to ensure consistency of zoning frameworks and ordinances throughout the watershed.

At the level of town and community, there are also specific changes recommended as a result of this research. Towns should mandate training and evaluation of volunteers, paid through a shared resource pool within the watershed. A certification program should be developed for town volunteers leading to watershed council membership, including voting privileges and salaried watershed council representative positions. Towns could develop, with RPC and watershed council input, a common technical review committee to share in resource expenses and planning needs. There should also be a pool of approved professional experts kept on watershed wide retainer for assistance with natural and cultural resource monitoring and management. Towns and communities must integrate heritage into their community envisioning platforms. Regular gatherings should be held in watersheds blending the social and natural sciences and the arts to promote awareness of various issues, build community and strengthen

local participatory democracy. Finally, the business community must be integrated into watershed planning frameworks. This would encourage and strengthen the local creative economy through such things as promoting watershed products and certifying and supporting local developers, builders, architects and engineers who pursue sustainable design initiatives for community, economy and the environment.

Post-Map Reflections: The Value of GIS-Based Visual Probes

One of the biggest obstacles in developing a watershed-scaled EBM approach to land use decision-making, concerns the difficulty on the part of volunteer decision-makers to recognize the effects of land use on larger spatial and temporal scales. This challenge can be met in some ways through PPGIS efforts in land use planning. As described earlier, PPGIS is recognized to contribute to empowerment, expanded public participation, increased social capacity and local democracy (McCall 2003; Sieber 2006). A defining characteristic of GIS is the ability to move through spatial scales, and arguably can enable a breakthrough of local practices and concerns out of Agnew's "hidden geographies" of scale (Weiner 2002). It is possible for a user friendly PPGIS to jump scale and form a larger political constituency because accepting spatial data legitimizes local issues as larger public concerns (Aitken 2002; Sieber 2002). In this manner, through the "visual sphere," PPGIS may offer the public a method to transcend and transform notions of local activism, expanding this through space, and impacting justice in a broader scale (Elwood 2006).

The paper maps that were incorporated throughout the length of the interview, and were intended for interviewees to engage with in a map biography fashion, were not successful in that way. Map reading ability and familiarity with geographic information

varied. Some people did interact to a limited degree by writing on or circling features on the maps within their towns (Appendix DVD 35). This was normally done during the course of explaining points of conflict, histories of conservation across the landscape, or simply by labeling features or parts of the town with local names. Even though the interviewer gave examples and encouraged people to interact with these paper maps, they proved much less successful than hoped, which was probably due to design. By adding information about parcel level data, they might have been more useful. On the other hand, parcel level data may have restricted people even more so in their thinking within the borders, and might have encouraged people to stick to more linear story telling about say, conservation easement histories, which though interesting, were not helpful in addressing the study's questions. Reactions to the GIS-based template maps were very different, altering spatial awareness and challenging pre-conceptions about land use planning as currently practiced. Data indicated these maps could be used as even more than visual probes, as the Epilogue attests, possibly enhancing participation and social capital, which might indeed matter the most for making long-term decisions on spatial issues and growing political constituency (Meredith 2002).

As stated in the methodology, the interviewer used the introduction of these visual probes as a way to reflect on the data already collected and challenge interviewees to look at the landscape from different spatial perspectives. At this point in the interview, the interviewer spent more time talking, explaining visual imagery presented, and offering, in the form of payment, to share some of the trends observed in data collection throughout the watershed. During this time, interviewees listened and examined the templates. Often, the interviewer would describe some of the points brought up by the

interviewee earlier in the discussion as an example of how their data fit within the data collected elsewhere in the watershed.

The template maps were introduced after the interview guide was nearly complete. The only questions not raised, prior to the introduction of the templates, concerned watershed-based land use planning. By way of introducing these templates, the interviewer would first explain the imagery seen in the larger Piscataqua Salmon Falls nested watersheds template, pointing out the impervious surfaces, land use layer classifications, subwatersheds and towns within the Lamprey River watershed. Oftentimes this introduction would include tracing the path of the river and explaining the tipping point of impervious surface for water quality. The second template involved describing subwatersheds for the interviewee's town, the conserved land layer, cultural resources layer and an image with topographic contour lines of the town. Data labeled "Post-Map Reflections" was collected and organized in the same tree nodes as the conceptual categories of Gathering Community, Handling Conflict and Temporo-Spatially Scaling.

Interviewees by and large reacted very strongly to these images. Nearly everyone reacted verbally, and some physically, to the information and scales portrayed in these templates. There were consistent requests for physical copies of these maps to share within their boards, commissions and towns. All interviewees engaged with these templates, touching and tracing features and characteristics, asking questions and posing suggestions concerning all of the previous topics discussed. Additional topics such as climate change, sea level rise, agriculture and regional history also came up. Data was not collected concerning the map reading abilities or basic geography skills of the

interviewees, which is one recommendation for future studies. If such data was collected, not only map reading ability or basic geography should be assessed, but also concepts related to bioregional awareness. While it might be interesting to conduct a longitudinal analysis of each interviewee and reactions following the introduction of those visual probes, tracing topics of conversation before and after, that baseline information about skill sets would probably be useful as an analytical starting point.

Overall, there were a few different types of reactions to the templates. The very small number of the most elderly interviewees reacted with astonishment, but often appeared too overwhelmed with the visual imagery to comment upon it. Comments upon seeing the maps were often akin to “I don't think I've seen anything like this before.” One volunteer, involved in the Planning Board for approximately 15 years, had earlier expressed confusion over the concept of sprawl, which was clearly evident in the visual imagery presented, but reinforced their confusion by remarking about the impervious surfaces layer, “what comes to my mind when I see this is a lot of yellow... (*Laughing*) I don't think [our town] is one of the towns that's really affecting it that much probably some of the towns are affected more.”

The small number of interviewees with technical skills, scientific expertise or GIS knowledge, were not unfamiliar with the concepts of watersheds and so did not react with astonishment or shock. These interviewees took advantage of the maps to stress certain points they perhaps had already mentioned or were aware of, which allowed a much deeper conversation to develop about land use decision-making within an ecosystem perspective. Upon viewing the templates, one simply stated, “land use planning should be ecologically based, that's a no-duh.” Another although agreeing with the concept of

watershed-based planning, expressed concern about the political realities of accomplishing this:

I think there's a political reality in NH and I do really think this is going to probably show more of my political philosophy than I would like, but I think ... with the mindset of local funded everything, I think [it] creates a culture of really having a small view of the world and not understanding that things are interconnected, because our resources are only being spent in our borders, loosely, and it generates an entirely different philosophy on how towns would interact otherwise and the lens through which people look at issues so hopefully things like this [maps] can try to change that... I also think until there's a real philosophy shift in the way that we fund, I'll say education because that's where the majority of our funding comes and goes, and until there's a different shift it's always going to be a challenge [to do] this kind of regional thinking, although it's incredibly valuable.

Finally, more than one decision maker came up with suggestions about how to move forward on this line of thought, as this quote describes:

So I think maybe it needs to be a watershed planning scale along different issues, maybe not the same thing as a master plan, but maybe there are certain broad issues that could somehow guide people in a framework for discussion ... yeah, this is the way I think all the time, I don't think about political, am not big on political boundaries, I tend to think about the globe and not even the US, so it's hard for me not to think this way.

Most interviewees, lacking an understanding of the watershed concept and perhaps even the Lamprey River, reacted with varying degrees of astonishment, surprise and curiosity. These interviewees directly engaged with the maps, posing questions and hypotheses, reflecting on topics discussed and openly brainstorming about the challenges related to water and land use planning in this region. Some people reacted physically, by standing up and moving away from the maps. A few people took extra time to carefully examine them, appearing to allow the visual imagery a chance to sink in before commenting. One stated, "these maps are kind of a good start because they bring into

focus things people commonly don't see.” Another invoked the typical provincial town attitude, stating:

You know...here's where you are gonna come right up against an immovable object and that is our tradition of defining our own destiny town by town. New Hampshire is a collection of 212 city states ok, town states, let's call them, and if you think for one minute you can get [our town] and Lee and Durham to agree on one thing it ain't gonna happen ... that's how we are we just don't see beyond our town borders here, we don't! I don't know how that ever happened. You go to Vermont and they have all kinds of regional planning authorities up there and towns have minor roles in it, and I don't know how it is in Maine, but we believe in that local control and we just are not going to go down the same road as other towns go down... you have a big task in your hand.

One interviewee with thirty years of experience on the town Planning Board was stunned with the imagery, stood up and jumped back from the maps, and while rocking back and forth on his heels stated the following:

It's scary what we are evolving to, its just been a tremendous eye-opener and I wish the whole board had seen your presentation just to kind of grasp the gravity to begin thinking outside the bounds of our little town and how we do impact and I don't think quite honestly, you work all day and go to your little meeting and we don't really seem to have any energy or impetus to become part of a bigger [picture] ... and perhaps it's because we don't understand the situation like this and the facts of how interconnected everybody is.

Topics discussed in post-map reflections that concerned Gathering Community or Handling Conflict tended to reinstate characteristics, factors or forces already included in the conceptual categories and theoretical framework. At the most, data collected showed evidence of interviewees stating more precisely, unequivocally or with greater conviction some of the comments they had earlier shared. The most useful manner to review the impact of these images is perhaps within the framework of Temporo-Spatially Scaling.

1st Degree: Defining the Current Focus (Provinciality)

Concerning town provinciality or the niche mentality that frames land use planning, the comments concerned the reality of changing this frame, as in “I think your challenge will be getting people to cross town line.” Others reflected on the New England history, saying “this is a very old part of the country ... and I still have a sense each town still wants to be its own entity, there’s kind of a mentality of ‘let’s think about [town] first’ and not think about what’s going on in Stratham or anywhere else.” Another stated that this independent attitude might disappear in 25 or 30 years and though “maybe you can get these young people involved from a computer standpoint and that would be great, but from the people that actually get off their butts and do things they’re going to have a little bit of resistance because they don’t know how to expand beyond their own boundaries.” One person reflected on the fact that the Planning Board a couple years ago said, “this is crazy, we don’t do any planning” but instead were dealing with day to day matters and putting out fires, which appealed to some people because it felt real and not theoretical as planning would be. Finally, another type of comment concerned how important the regional view is, as in this quote:

I think it’s an approach we are seeing more and more and has a long way to go... with the expression ‘Think globally and act locally,’ we’re still provincial I guess. I run into that a lot with some of the people in the town and they value those [ideas like] ‘when I was a kid such and such...’ ideas. We are a small state and a small region from a national perspective but the problems we face have to be addressed more than just a town by town basis, but these are the type of things I think looking at it from a watershed perspective has been a good way of showing how communities are linked by water and that’s why [regional NGO] organizations have been playing this role for a long time. I think it’s getting better but we still have along was to go, it’s gonna be a challenge.

2nd Degree: Approaching Neighboring Towns

Reflections about moving into neighboring communities drew some comments concerning the threatening nature of realizing one could impact one's neighbors as in this quote: "In some ways it can be threatening to think about what I'm doing and how it might affect somebody here, it's akin to 'don't tell me what to do with my land' ... so I can see that sort of mentality I don't know how you combat that, New England mentality is different." Other interviewees expressed surprise at the regional connections within this watershed perspective, not realizing how close or far certain landscape features were. For example, one decision maker not from Nottingham, expressed surprise at how the USA Springs conflict might actually have affected his town:

Gee, you mention the USA Springs thing ... and again when I first heard about it I thought Nottingham wasn't even close to us, but it's closer than you think it is and what impact will that have on the water supply here? And again we're a couple towns removed but we're part of the watershed so until we start hearing about this and getting involved with these things ... you don't see that from the public perspective.

3rd Degree: Connecting Regionally

Thinking more regionally led to reflections concerning the challenges to moving this direction, the problems with retaining a provincial approach, and some suggestions about how to proceed. One interviewee who had given the concept of state level ordinances some thought before said, "I think I was ostensibly vehement about, we need something at a higher level.... it is just crazy for every town to try and create a conservation subdivision ordinance." Comments reflecting on the design of the state tax structure and local tax structure were common. One comment representative of reflecting on the problems associated with retaining a town exclusive land use planning approach

stated:

The fact that we are still trying to run everything on a tiny little municipal level with what we know and how big of a footprint ... we now have, it just doesn't make any sense. It doesn't mean that we can't have local volunteers representing, and we've got things like the Lamprey River Advisory Committee which only takes in just a couple of the towns and only a quarter of a mile on either side of the river.... these are some old ideas and maybe [they] were good to begin with and were headed in the right direction, but we didn't keep going [regionally].

Finally, an example of an interviewee's comment concerning how to move forward with a regional approach references concerns about water resources specifically:

I think it would be beneficial if there could be some sort of southeast regional water planning activity... I don't know, I guess there are folks around here with some well issues, [I] don't know about contamination, but certainly water ... we have some incredibly deep wells that don't get water, hard to imagine that with all the water there is, you can't get deep groundwater ... certainly water, if I think about it at all, and I don't think about it much, but [water is] an issue that we need to come to grips with sooner rather than later because there's more and more people and the water quantities don't change.

4th Degree: Thinking Watersheds

Reflections concerning the watershed specifically ranged from additional suggestions about how to do this, the importance of protecting water resources, generational shifts and results and the politics of building a watershed approach to land use planning. Some interviewees stated bluntly that the RPCs should be realigned based on watersheds. On the political difficulty of "regionalism," one interviewee stated that watershed approach would have to be veiled in different terminology:

[A watershed approach is] a hugely viable tool but what's become clear ... is that the term "regionalization" is a dirty term and towns are afraid of that term, you have to call it something else like, "mutual aid in emergency situation,"...you have to come at it from that angle to get towns to say it's a good idea to attach their infrastructure together outside the municipal level.... if you say it's a good 'regionalization' project, then towns start walking away ... watershed planning it

seems to me will probably be the same thing... you'll have to trick the language to make it sound like you're not trying to plan on a watershed basis because people don't want to plan together, they want to do their own thing.

Concerning the generational differences in view, one reflected:

I am concerned that there is such a provincial outlook in the towns although maybe in these bedroom communities and among young folks that is not the case, so maybe with the younger generation this will work better than the old folks who think problems stop at the town line or start on the other side of the town line, 'who cares what happens on the other side of the town line!' ...*Laughing*... so maybe that more global perspective with the under 40 crowd will play into that better... obviously it makes great sense to do it that way, it is a natural boundary ...these stupid lines on the map drive me nuts, [our town] has one boundary almost parallels the ... river, it goes right along it and crosses over it and why couldn't they have just used the river as a boundary?

Concerning strategies for moving towards a watershed approach, some expressed concern at the multiple arbitrary political boundaries and how this affects water: "I think that eventually ... we're gonna end up with regional management situations where you have to ... look at the whole picture and with more and more people wanting to drink the Lamprey River and we're gonna have to protect it and I would think you'd have a worst conundrum with the Salmon Falls River because you've got two states involved, it's the boundary water and a lot more towns." One interviewee reflected, "I think if they were presented a master plan that this is a river, this is the watershed, this is where your town fits in, and how your town can contribute... I think the easier it is the more likely it is to happen ... if there's a framework and there's a recommended set of zoning amendments that you can make and recommended ways to go about it, it is just more likely to happen for us because of the time involved." Another interviewee wanted to discuss specifics about how to operationalize a watershed approach:

That's where you need something to oversee the whole thing... and as I said, and I'm sure the other boards are the same way, your focus is on the town, you don't think big, you don't think this whole watershed but if we're gonna protect our own little site here in town, we've gotta think about this. How do you think it should be organized?? And I'm a big fan of organization How would you best put a group in charge of looking at this? Would it be a representative from each town? A specific RSA, something that the legislature would pass saying each watershed should have its own advisory board or made up of components of the towns within that watershed?? Because to me you need some big guy sitting here saying, 'This is our territory and we need to look at it and not just at the individual towns.'

Finally, there were comments concerning the value of the watershed approach and the utility of visual imagery such as the templates. Concerning the value of imagery and the maps in particular, many interviewees stated that these kinds of visual resources would lead to changes in master planning because they would result in broader discussions within the boards and town leadership about the big picture of land use. Finally, a simple statement about the value of a watershed approach resembled this: "I think watershed master planning would be a great idea because if you don't look at it from a broader perspective you are gonna make mistakes, you are only going to think about the small spots and not the implications downstream. I think you really need that other layer of management and administration to have the bigger picture."

5th Degree: Connecting Time and Space

Reflections about cumulative impacts and land use decision over time included a number of types of comments. Interviewees described the challenges of thinking this way, stating "I think it's difficult for people on Planning Boards and I include myself in this to think 20 years from now.... if we approve this or do this or that or the other, what is it going to be like in 20 years?" Other described the challenge of linking decisions together saying, "It's hard to link [board decisions] together in terms of what they mean

cumulatively and what they mean down the road spatially in terms of the bigger picture, the macro picture versus the micro, it's hard to get out of the micro sometimes and see the big picture and of course it's a really big picture when it comes to water.” There was general acknowledgment that planning needs to be “for decades ahead not just reacting to things happening today like we do here.” There were some complaints about people being too egocentric and of political ideological shifts contributing to this.

Those involved with heritage and cultural resources commented on how historically the towns were connected and that there should be a renewed effort to educate people about this, helping to seal the towns together as a force against provincialism. One, lamenting the lack of knowledgeable and active town historians, described the value of history for regional identity in this way:

These towns wouldn't have been settled without these rivers ... and there are things you could say like Fremont, Epping and Brentwood were all part of the same New Hampshire militia regiment and we all banded together and we fought these battles ... and again those are the things that connect them that they we were tied together politically or socially and migration patterns and so forth ... an overall historical perspective might do something to tie them together and make them realize we have more than we don't have in common ... I think if nothing else it doesn't hurt to try to give a regional history of the area ... obviously Deerfield was part of Nottingham, this was not Northwood, and remind some of these newcomers because they don't have a clue they don't know that these towns split off from some of the neighboring towns, and an overall historical perspective might do something to tie them together and make them realize we have more than we don't have in common.

Comments about how to develop this perspective varied. Some stated concerns about developing a whole new group, saying “You can't come forward with yet another group they will look at it and say ‘we are spread too thin we don't have enough volunteers to cover the groups already out there’, you can restructure existing groups, the RPCs, then you are taking a resource and redeploying it, you are not looking to add further demand on existing resources.” Another typical comment indicated that land use

planning was going to have to move towards professional, paid positions: “I really think that the only way to get out of this trap is paid positions, it can't be volunteer boards it can't be, they do not have the time and resources. It's like our state government, where the only people who can afford to serve are retired or rich, so (*laughing*) it's really kind of the same with the local stuff.” Finally, there were concerns expressed at an even broader scale such as this: “Even here, we have people living in [town]... they are not thinking about the coast at all, so how do you get somebody in Illinois or South Dakota to think about the coast?” Another range of comments had more to do with climate change and sea level rise:

Communities should not be allowing the overbuilding down along these marshlands and along the riverbeds and what have you ... it's just not sensible. We're gonna be asking for it if we got a tsunami, which is quite possible of happening, do you know what damage that's going to cause 6 or 7 miles inland? And they say if that Arctic keeps melting within the next 50 to 100 years it's going to erode a huge portion of our coastline, and where are those people gonna be living? We need to start thinking inland and Vermont is pretty good place to go (*laughing*).... because really people are not thinking about their impact on the overall scheme of nature.

Finally, there were a number of comments concerning the future of water resources, here in New England and elsewhere, as this comment illustrates:

I think water is going to be the next battlefield beyond oil. We can live without oil we can't live without water. I think ... that we have reached a critical stage for water management for protection of the resources.... Katrina was just sort of like a Post-It note, it was a wake-up call.... Am I preaching to the choir?... whether you agree or not I have a strong bent and I've had that comment from three other people on my board how strongly they feel that water will be the next major issue in this country.... why are we putting so much water on golf courses in the desert? Why should someone be allowed to do a massive subdivision just because there's open space when all of a sudden it's going to impact the aquifers and groundwater? What about a bottling plant that's going to draw out, waste so much water? You've probably run across that board and Thank God because of the economy they bankrupted and pulled out... [it's] a matter of greed and misinformed intentions... it's not the doomsday scenario until it's right in your

front yard, ask anyone in the Lower 9th Ward and sorry, now they are paying to rebuild and do the same thing.

Overall, the templates were extremely valuable as visual probes in this study, eliciting reflection and brainstorming about watershed-scaled approaches to land use decision-making. This tool's value is most evident in this final quote:

We are the Planning Board, we should be thinking more about just the year 2008 and 2009, somebody's gotta be thinking about the next generation and what can happen 30 or 40 years from now. Thirty or 40 years ago all these old little towns we didn't have new developments we didn't have any pressures and now we have all these things so it's a magnifier many times over as each year goes by about what the concerns are... there's so many leaps you're making again it feels like we've been here three or four hours... just what you opened my eyes to, this opened my eyes to so many things in such a short period of time, it's interesting but more scary than interesting, but it's good, it's something that needs to happen - to be aware of what we are facing and how really ill-prepared many of us are at this point to tackle these issues... but gosh, I'm glad you came I really appreciated this... [it] has been an eye opener.

Transferability of Theoretical Framework

One research goal was that this theoretical framework and methodology could somehow be replicated in future case studies of additional Great Bay watersheds, or watersheds elsewhere. The theoretical framework for decision-making developed in the specific context of the Lamprey River watershed may not be wholly transferable to other watersheds and community contexts because it was developed within this case study to describe this specific case. It would be impossible to take a conceptual theory developed here and place it elsewhere, because qualitative inquiry, such as this, seeks to understand complexity and depth in a specific situation. Qualitative inquiry proceeds "from the assumption that ideas, people, and events cannot be fully understood if isolated from the circumstances in which they naturally occur;" they are context sensitive (Schram 2006). In addition, qualitative research is so arduous, it is unlikely that other researchers could

be located to engage in a task of conducting a study specifically to replicate a previous one, however, the specific ideas or conclusions from the qualitative study can stimulate further research (Schofield 2002). So, the quantitative ideal of generalizing across time and space is not possible, yet, some qualitative researchers still believe that what matters is the question of fit or transferability (Schram 2006; Schofield 2002).

Given this, there are several ways that the results of this study can be made useful in future case studies of additional Great Bay watersheds or watersheds elsewhere. In one way, the theory around a particular unit of analysis could be used to generate hypotheses for subsequent qualitative or quantitative research. Reflecting on the preliminary or working hypotheses listed in the Methodology - nearly all were supported in the data. The one working hypothesis which was not supported was the following: *The farther one goes from the coast, the less the relationship will be acknowledged between coastal issues or Great Bay and interior watersheds and their land use decisions.* Considering this evidence, a new hypothesis surrounding this unit of analysis, “watershed communication and connections” might be developed to test certain factors that would explain why distance from Great Bay or the coast made no clear difference in land use decision-making in these communities. Eventually, through subsequent data collection in other watersheds and communities, a more formal theory could be built refining the three conceptual categories and their underlying characteristics.

The results of this study can also be made useful elsewhere by replicating the method for mapping the social landscape and further developing the proposed theoretical framework for watershed-based land use decision-making. This method can be applied in other studies bounded by watersheds and communities that currently lack a watershed-

based land use decision-making system, but where assessing the potential for this development is valuable. No literature was discovered pertaining to assessing the potential for building a watershed-based land use decision-making system where one did not yet exist. Most watershed studies focus on the analysis of existing organizational structure and functioning, and very few rely on qualitative research to do so (Kerr 2001; Sabatier 2005). Finally, the method developed here could be applied in the remaining watersheds for Great Bay. Transferable components would include the units of analysis, topical questions, semi-structured interview, GIS based maps as visual probes or full map biographies and grounded theory analytical strategies. The resulting theoretical constructions along a series of coastal watersheds could then provide new avenues for coastal managers to pursue in developing watershed-based, EBM strategies in concert with the national coastal and ocean management policies currently under development.

CHAPTER VIII

EPILOGUE

As the last part of chapter 7 attests, the GIS-based maps were highly successful as visual probes to stimulate reflection upon aspects of land use decision-making in multiple spatial scales. My only goal with that methodology and protocol in mind, was to record what land use decision-makers thought about moving towards watershed-based land use planning, reflecting on what they had already shared concerning current aspects of decision-making. It was my hope that the paper maps would serve in a traditional PPGIS map biography fashion and would in turn be augmented by the brainstorming discussions following the introduction of the large template maps near the end of the interviews. I was looking forward to experimenting with the possibilities of PPGIS, recognizing that people operate at multiple scales simultaneously and this tool could challenge understandings of spatial and temporal relationships. My thoughts were that some sort of PPGIS employed within the Lamprey River watershed could ultimately help decision-makers scale up the visual sphere of analysis and reference when engaged in land use planning.

Studies have shown that it is important to have face to face communication and that there is a comfort scale at the local level important for social capital development and related to the number of individuals with whom one can easily network and interact (Stonich 2002; McCall 2003; Cheng 2005; Gladwell 2000). Considering the value of face to face communication, the first step in even considering a PPGIS might just be a

physical representation such as the visual probes used in this study. Employing these GIS-based maps as visual probes served this purpose, but also led to what could be called miniature collaborative learning environments with a series of teachable moments presented to me as interviewer. While my protocol included the possibility of sharing information and having more of an open conversation with the introduction of these maps, what occurred led directly into action research.

Participatory action research has an extensive history, with much work in the realm of watershed management (German 2006). Its attributes include the idea of shared ownership of research projects, community-based analysis of social problems and an orientation towards community action (Kemmis 2005). There are a number of different types of action research including critical action, classroom action, action learning, industrial action and action science. Of these types, that most resembling what eventually transpired in this case study was probably action learning. At its best, this type of research is a social process of collaborative learning "realized by groups of people who join together in changing the practices through which they interact in a shared social world," (Kemmis 2005). Other key features to recognize include that participatory action research is a social process, participatory, practical and collaborative, emancipatory, critical, reflexive and aims to transform theory and practice. In addition, literature examining the success or failure of these types of efforts highlights the importance of boundary spanners, interdisciplinary approaches, the integration of social and natural sciences and community learning (Tress 2003; Williams 2002). Although action research was not part of my original methodology, it became clear during the course of my data collection that the methodological approach undertaken led directly to this.

During data collection, it became clear that there was a tremendous amount of momentum building to address issues in land use decision-making, long-term water resources and regional planning in some cohesive, organized fashion. Interviewees routinely expressed concern about the current situation, much of which was captured in chapters 4 through 6, and was backed up by concerns expressed by professional planners, scientists, state and federal leaders, NGOs and developers among the secondary interviewees. At the same time, PREP began a process of documenting consistencies of local land use regulations and ordinances among all the towns of the Piscataqua Salmon Falls coastal watershed, beginning with those in the Lamprey River watershed. The LRWA was completing its first Streamwalk, documenting sources of pollution and ecological degradation the entire length of the river, with outreach throughout watershed communities. The LRAC was beginning to discuss efforts to extend national Wild and Scenic status all the way to the Lamprey's headwaters in Northwood. In addition, the UNH-based NH Water Resources Research Center (NHWRRRC) was hosting its second annual Lamprey River watershed science symposium. Participation in this symposium grew considerably between 2008 and 2009, scientists and lab groups on campus studying aspects of this watershed were communicating better and there was obvious interest by members of the public, land use boards and commissions, elected leaders, NGOs and RPCs.

In this milieu of activity, GBNERR's Coastal Training Program, serving as my NOAA Social Science Fellowship coordinating office, was discussing possible outreach tools that GBNERR could adopt as a result of my research. It became clear that the momentum could be more than traditional white papers or advisory information. Midway

through data collection, a series of meetings were held with the principal actors in this watershed to share ongoing activities and discuss opportunities for a larger collaborative effort to take advantage of the momentum. Other than myself, participants included GBNERR Manager Peter Wellenberger, Coastal Training Program Coordinator Steve Miller, LRAC chairperson Sharon Meeker, LRWA Executive Director Dawn Genes, LRWA President Carl Spang, NHWRRC Associate Director Michelle Daley and PREP Project Coordinator Derek Sowers. We realized that in a number of months we would have information to present to the towns about the current challenges and opportunities concerning land use decision-making, the results of the Streamwalk analysis, a comparative analysis of local ordinances and regulations between towns, and the NHWRRC data concerning long-term water quality trends throughout the watershed.

With all of this activity, we decided to focus on hosting the first-ever 14-town-wide Lamprey River watershed conference on land use. LRAC was able to come up with some funding to hire me as a coordinator for the conference, starting in March of 2009. Less than five face-to-face meetings were held with the rest of the coordination done via a Google group. In less than three months, the above-mentioned organizations formed an *ad hoc* Lamprey River Watershed Outreach Collaborative, complete with letterhead and logos, webpage links through existing organization sites, flyers and advertisements for the conference. A site was confirmed in the watershed, at Nottingham's Town Hall, and catering and logistical preparation proceeded. The database I created of board and commission contacts, land use secretaries and administrative staff was combined with the databases from these organizations to send out e-mailed invitations and reminders about the conference. The LRWA was the obvious organization to carry on past this *ad hoc*

collaborative effort, so they took over registration duties and fielded conference questions from the public.

As a novel characteristic, we invited local artist Linda Sten, to work with the collaborating organizations to design a small Lamprey River watershed art exhibit at the conference venue. In addition to making this a unique gathering, it was clear to me from what I had witnessed in various European spatial planning venues, that the arts can play a pivotal role in creating a regional identity as well as building a creative economy. The collaborating organizations agreed and Ms. Sten put together a top-notch artist and craftspeople call for entry, eventually gathering pieces for exhibit and sale by a dozen or more local artists, from a variety of disciplines.

Obviously, putting this together in such a short time was not ideal, the method of virtual communication was challenging for some and we were entering a difficult season in which to gather participants for the conference. We also struggled for some time with the conference name, description and agenda. We thought it was important to remind people of the economic benefits of working together and needed to incorporate that in the title, which eventually became “Your Water, Your Wallet, Your Watershed- Why Working Together Across Town Boundaries Makes \$ense for Protecting Our Water,” (Appendix DVD 36). While basic flyers and a description were circulating via e-mail and postings by LRAC and the LRWA, Michelle Daley and I did specific outreach presentations to advertise our conference. We spoke to the Southern New Hampshire Regional Planning Commission in Manchester, and did a joint presentation to the Rockingham Planning Commission and Strafford Regional Planning Commission held in Exeter.

In terms of the conference agenda, there were some interesting discussions about possible goals, speakers, formats and topics. The collaborating organizations all had different styles of hosting gatherings like this, with accompanying differences in final products and outputs they either expected or required in their work. Potential conference goals included gathering signatures for forming a watershed alliance or determining a list of action items for conference participants. In the end the goals were simplified and included brainstorming actions that the towns could take to address the critical issues of water quality and impervious surfaces, communication and community. In terms of participatory action research and building collaborative efforts, it was my assertion that the goal might in fact be the process itself and the outcome of simply gathering these 14 towns together for the first time. In this respect, the most realistic goal resulting from these preliminary outreach efforts was simply to start building momentum and community with key representatives from within these towns.

The conference format became morning lectures and afternoon discussion sessions, although there were differences of opinion early on about this. CTP Coordinator for the Wells NERR, Dr. Christine Feurt, gave our keynote address, setting the stage by explaining collaborative efforts and processes and sharing some of her experience with municipalities and land use in Maine (Feurt 2009). My presentation concerning challenges and opportunities for land use decision-making came next. As part of this presentation, all of the GIS based template field maps were hung around the conference room, with hundreds of quotes from my data set. These quotes had been scrubbed of any identifying information and were randomly scattered and attached to the maps, providing a presentation of voices from within the watershed. Michelle Daley spoke next about

water quality data and trends and was followed by Derek Sowers who presented information about the consistencies of local land use regulations throughout the watershed communities (Daley 2009; Sowers 2009). At the end of the morning session, we had established that: 1) there was a formal process by which communities could learn to collaborate, 2) there were significant, and shared challenges and opportunities for land use decision-making in this watershed, 3) water quality was degrading and directly related to increased population and impervious surfaces, and 4) local land use regulations were patchy and largely inconsistent between the 14 communities.

With that stage set, the afternoon sessions were organized around three topics which were identified in my data analysis as important challenges to moving towards a watershed framework for land use decision-making. These included communication issues between the towns, water quality and land use planning and finally, regional identity and heritage. Rockingham Planning Commission Executive Director Cliff Sinnott and Senior Planner Julie LaBranche served as facilitators for the water quality and land use planning discussion session, with particular focus on the development of the New Hampshire water plan legislation. UNH Cooperative Extension Specialist Julia Peterson facilitated the communication session and Professor John Carroll facilitated the discussion on heritage. Each session had a note taker and a specific list of questions related to the conference goals. Following this, participants reconvened to share information from the three afternoon sessions. Steve Miller brought the conference to a close discussing expectations for follow-ups and next steps and concluded by raffling off a kayak trip on Great Bay.

Overall, the conference was rated a huge success. The collaborative organizations were all pleased with results and feedback was extremely positive both in person and in anonymous survey forms. Nearly 80 participants attended the conference, with representation from all 14 towns, land use boards and commissions, local Town Council and Selectboard leadership, NGOs, federal and state programs and UNH scientists. Almost all of the participants stayed throughout the entire day, despite the fact that it was the only sunny Saturday in the month of June. Comments about the presentations, discussion sessions, maps and information were all positive. And at the end of the day, there was general consensus in the discussion about the importance to move towards watershed-based land use planning frameworks, the value of heritage and need to improve communication.

Through my data I was able to show that the volunteer land use decision-makers in all of these towns share a common set of experiences, frustrations, values, challenges and opportunities. I think this data was all the more compelling in the format of quotations from members of this very community, many of whom have served as volunteers for years or decades. These challenges - lacking volunteers, needing expertise, communication, spatial scaling, heritage and all the other components identified, clearly show that the towns have more in common than not. While the impending crisis concerning Great Bay's water quality and likely Clean Water Act violation served as an extra incentive for collaboration, I think that showing a combination of challenges in land use decision-making, trends in water quality data and inconsistencies between town regulations all served to make a more compelling argument that the context for land use decision-making and planning needs to change.

As a footnote, additional developments occurred by the end of the summer of 2009 concerning this watershed collaborative effort. The conference presentations, afternoon discussion notes and evaluations were posted and shared on the web with conference participants. A DVD was created of the morning presentations, which is available for personal purchase by participants and other interested members of the public. In addition, LRAC and the LRWA are working with local cable TV broadcasts in towns throughout the watershed to play this DVD as an educational program. Efforts are under way to extend Wild and Scenic status the entire length of the Lamprey River and to identify options for delivering copies of the GIS-based maps to all 14 towns. The Google group for the Lamprey River Watershed Outreach Collaborative is now actively managed by the NHRRC, which is hosting its 3rd Annual Lamprey River Symposium in January 2010. Finally, the Natural Resources Outreach Coalition has agreed to take up a leadership role in continuing to move this watershed collaborative effort forward.

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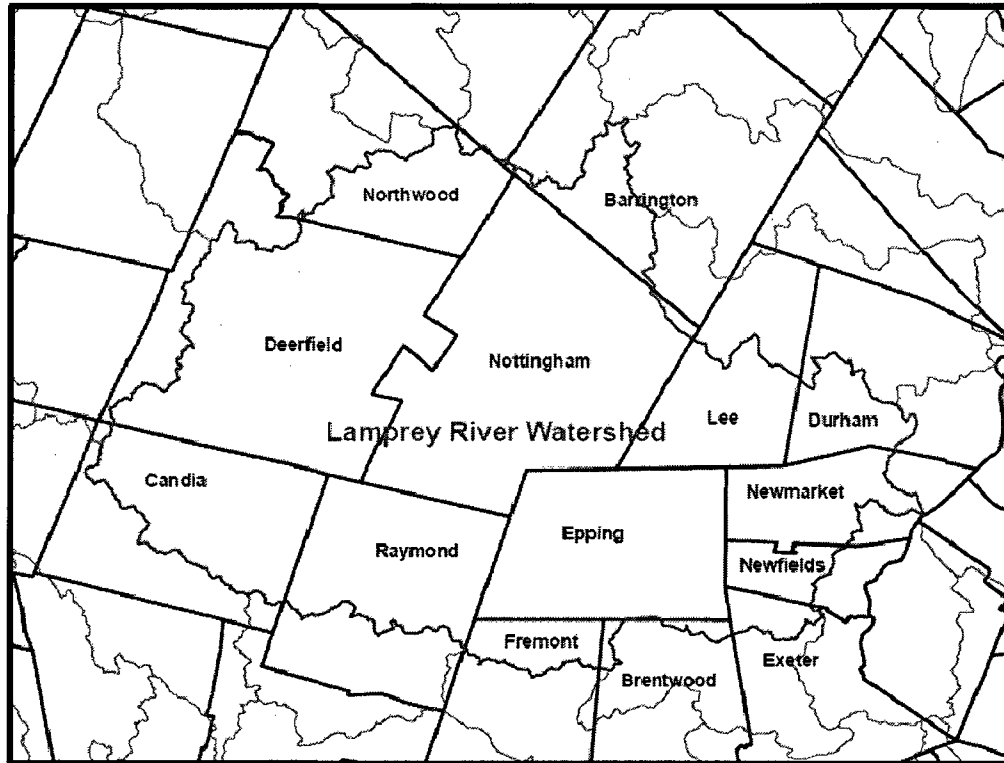
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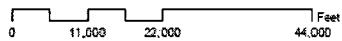
APPENDICES

Towns in the Lamprey River Watershed



Legend

-  Watersheds
-  Towns



3:2 Lamprey River watershed town characteristics

| | A | B | C | D | E | F | G |
|----|--|------------------------------|------------|------------------------|-------------------------|--------------------|---|
| 1 | Town | Regional Planning Commission | Population | Density (pop/sq. mile) | Master Plan Update Year | Budget in USD (yr) | Education Levels for Adults 25 yrs+, (H.S. Grad / BA +) |
| 2 | Barrington | Strafford Regional | 8,405 | 179 | 2004 | 5 million ('07) | 91% / 28% |
| 3 | Brentwood | Rockingham | 3,904 | 245 | 2008 | 2.8 million ('08) | 86% / 28% |
| 4 | Candia | Southern NH | 4,181 | 135 | 2004 | 2.3 million ('08) | 93% / 29% |
| 5 | Deerfield | Southern NH | 4,181 | 86 | 1999 | 3.1 million ('07) | 92% / 32% |
| 6 | Durham | Strafford Regional | 13,684 | 624 | 2000 | 10.5 million ('08) | 98% / 73% |
| 7 | Epping | Rockingham | 6,169 | 232 | 2006 | 5.2 million ('08) | 85% / 15% |
| 8 | Exeter | Rockingham | 14,735 | 734 | 2004 | 21.2 million ('08) | 89% / 38% |
| 9 | Fremont | Rockingham | 4,074 | 240 | 2001 | 2.7 million ('07) | 88% / 19% |
| 10 | Lee | Strafford Regional | 4,447 | 221 | 2006 | 3.2 million ('08) | 95% / 53% |
| 11 | Newfields | Rockingham | 1,613 | 232 | 2002 | 877,000 ('08) | 92% / 44% |
| 12 | Newmarket | Strafford Regional | 9,485 | 739 | 2001 | 8.9 million ('04) | 91% / 33% |
| 13 | Northwood | Strafford Regional | 4,079 | 145 | 2004 | 2.9 million ('07) | 91% / 24% |
| 14 | Nottingham | Strafford Regional | 4,490 | 96 | 2004 | 4.4 million ('07) | 86% / 25% |
| 15 | Raymond | Southern NH | 10,195 | 375 | 2002 | 20 million ('06) | 84% / 13% |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | Economic and Labor Market Information Bureau, NH Employment Security, 2008 | | | | | | |
| 19 | Community responses received: 10/30/08 | | | | | | |
| 20 | www.nh.gov/nhes/elmi | | | | | | |

3:3 Grounded theory background

Grounded theory, a revolutionary development in the social sciences by Anselm Strauss and Barney Glaser, came after years of ascendancy of quantitative methods and served at the front of what became known as the "qualitative revolution," (Charmaz 2000, 2005; Glaser 1967). The late 1950s and 1960s saw robust development of quantitative methods, which tended to undermine ethnographic approaches in places such as the University of Chicago. At the time, the positivist natural science approach reigned over departments, editorial boards and funding agencies, and research emphasis was on observation, replicability, logically deduced hypotheses, and confirmed evidence (Charmaz 2006). Positivist methods assume an unbiased and passive observer, the collection of facts without participating in creating them, separation of facts from values, the existence of a true external world and the accumulation of generalizable knowledge. Quantitative researchers pushed the development of valid instruments, technical procedures and replicable designs, while contemporary qualitative research was largely considered impressionistic, anecdotal and unsystematic. Grounded theory challenged these critiques with a systematic, logical and theory-generating approach, where one wrestled with data, made comparisons, developed categories, engaged in theoretical sampling and integrated an analysis into a constructed theoretical framework (Glaser 1967). At the same time, they acknowledged that while these activities were conducted, they did not occur in a social vacuum, that the entire process is interactive and researchers bring past interactions and current interests into the research while interacting with empirical materials, emerging ideas, research participants and colleagues (Charmaz 2005).

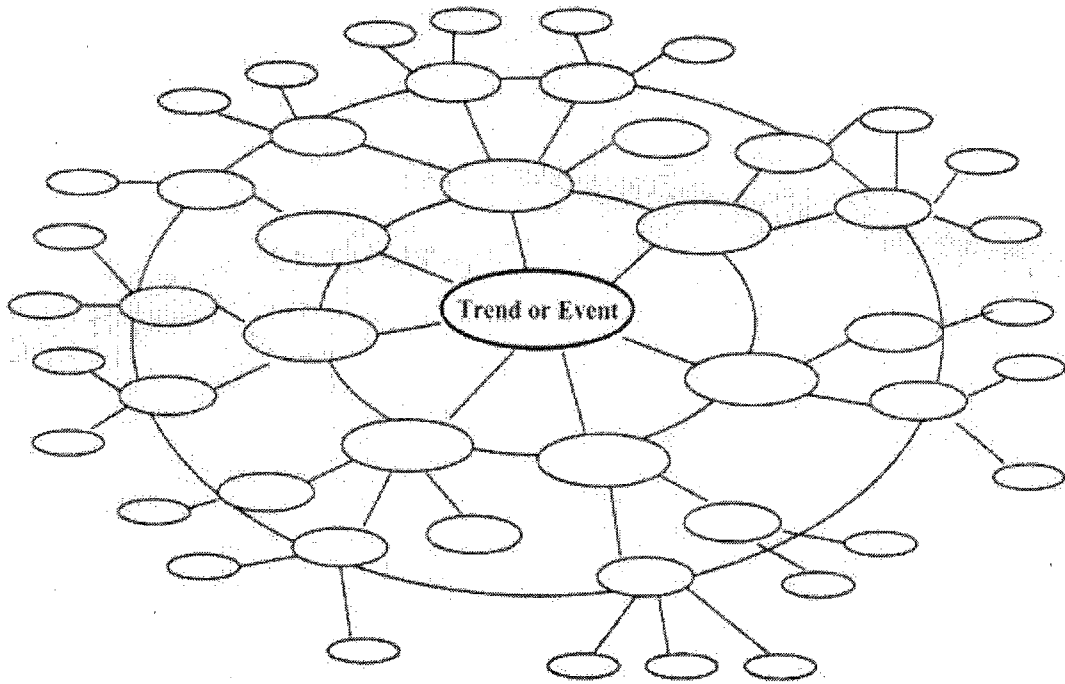
Key differences existed between the two primary authors originating with their divergent disciplinary traditions: Columbia University positivism and the University of Chicago's pragmatism and ethnographic field research. Glaser came from the rigorous positivistic background in quantitative research at Columbia University, under the tutelage of Lazarsfeld and Merton, who proposed middle range theories, or abstract renderings of specific social phenomena grounded in data (Charmaz 2006). Glaser's training focused on logic, analytical procedures, comparative methods, conceptual development, the assumption of an external but discernible world, the unbiased observer and the ability to discover theory. He imbued grounded theory with a dispassionate empiricism, rigorous codified methods and an emphasis on emergent discoveries with a specialized language that echoed his quantitative background (Charmaz 2006).

Strauss's training was in the University of Chicago's school of field research and symbolic interactionism, with the pragmatist philosophical study of process, action and meaning (Charmaz 2000). Symbolic interactionism is a theoretical perspective, that assumes society, reality and self are constructed through interaction and rely on language and communication; Strauss adopted this legacy within the Chicago ethnographic research style (Blumer 1969). He viewed people as active agents in their lives and in their worlds rather than being passive recipients of larger social forces, assumed process is fundamental to human existence and that people created structures through engaging in processes and the meanings and use of language. He brought notions of the construction of action, human agency, emergent processes, social and subjective meanings, problem-

solving practices, and the concept of open ended study of action to grounded theory (Charmaz 2006). Traditional grounded theory, in sum, possessed roots in Columbia positivism and pragmatist philosophy, Chicago sociology, ethnography and symbolic interactionism.

Challenges have come from both within and without the field of qualitative research and largely focused on the positivistic underpinnings of Glaser and Strauss's original articulation. Positivist tendencies of traditional grounded theory include the following: 1) a lack of reflexivity about research processes and products, including the notion of giving voice to the unheard from their own perspective, 2) assuming the researcher can remain invisible, 3) an oversimplification by thinking of singular social processes as characteristic of situations, 4) interpretations of data variation as negative cases and 5) the search for a "purity" in grounded theory (Clarke 2005). Critiques of traditional grounded theory also include the claim that researchers chose evidence selectively, cleaned up subject statements, unconsciously adopted value laden metaphors, assumed an omniscience, and fractured data into codes and categories that separated experience from the experiencing subject (Charmaz 2000). Strauss and Glaser have themselves participated in this critique, although in divergent ways. Glaser remained more firmly in the positivistic camp, assuming an external reality and a neutral observer. Strauss moved the method slightly into post-positivism by proposing voice to the study respondents, although this was not enough to satisfy the postmodern perspective (Strauss 1998; Clarke 2005).

3:4 Generic example of Clarke's visualization techniques for situational analysis



3:5 Units of analysis and topical themes

| Land Use Decision-Making Process Components | Units of Analysis Leading topical themes |
|--|--|
| Data Gathering | “Resource inventorying”: i.e. cultural (historical, archaeological, ...) & natural (water, species, land use, ...) |
| Community Identification & Information Exchange | “Watershed communication and connections”: Communication within and between municipalities and groups, awareness of watershed impacts from land use decisions, identification of community ... |
| Policy | “Policy adoption and implementation”: Smart Growth, watershed based planning, inter-municipal planning... |

3:6 Topical questions

- How is the resource inventorying process characterized by participants from various public groups and communities?
- What are the challenges participants see in monitoring, assessment and updating resource inventories for land use decisions?
- How do participants characterize communication between communities and public groups regarding land use decisions?
- What do participants describe as facilitating or hindering communication within the watershed?
- Do participants acknowledge that sprawl and impervious surface area are significant issues for the health of regional coastal waters and Great Bay?
- Do participants acknowledge the effects of cumulative land use decisions in the watershed?
- How can the participants’ spatial awareness of the watershed be characterized?
- How do participants’ characterize the impact of NH Smart Growth and watershed based planning policies in influencing communities and public groups?
- How do participants describe the relationship between adopting these regulations and land use decisions which have in mind cumulative regional impacts?

3:7 Interview guide

Potential Interview Questions (italics = 2nd time with maps; underline = only with maps)

I. Resource inventorying

- What kinds of information do you gather in order to discuss and make decisions on land use?
- How are cultural resources, such as archaeological or historical features, included when considering land use planning?
- Describe the challenges and opportunities you see in monitoring, assessment and updating resource inventories (such as GIS info) used for making land use decisions.

II Communication and Connections

Watershed communication

- What groups (in town, NGOs, region, etc.) do you regularly communicate with regarding land use decisions?
- Describe the circumstances under which you would approach ConsComs, Open Space, Heritage or historical groups, the ZBA, PB or others.
- In your opinion, which groups are not involved in land use planning, but might have additional insight of value to the community?
- What other towns do you communicate with concerning land use?
- *Describe the circumstances under which you might approach upstream or downstream towns regarding land use.*
- *Describe a situation where your town would collaborate on an issue of land use planning with another town in the Lamprey River watershed? Has this occurred?*
- *What are the challenges and opportunities you see in communicating between towns?*

Watershed connections

- Regarding land use, what kinds of discussions do you have?
- *Does your group discuss how a land use decision in your town might impact downstream communities and if so, would you invite someone from downstream to participate in the discussion?*
- *What larger regional issues are considered in land use decisions in your town?*
- When, or under what circumstances, do the coasts, Great Bay, or the ocean figure into decision making regarding land use?
- How are the effects of cumulative land use decisions in your town discussed?
- Describe a situation where you can imagine that the cumulative impacts of decisions would be considered.
- How would you characterize the level of awareness in your group, or your town, for the Lamprey River watershed and its connection to larger watershed systems or the Bay?

III. Policy adoption and implementation

- What regulations has your town adopted under New Hampshire's Smart Growth framework?
- What are some other formal or informal regulations, or practices, which you consider effective at decreasing sprawl and impervious surface area?
- Describe how these kinds of policies influence your decisions regarding land use proposals and planning.
- Can you describe a situation where a proposed development was challenged based on sprawl or impervious surface area concerns?
- How often and when are the RSAs invoked for Smart Growth, inter-municipal collaboration or watershed health?
- What are the challenges or opportunities you see in your town for adopting, implementing or promoting inter-municipal and watershed decision making?
- How might a watershed master plan be of interest to your group or your town?

3:8 Institutional Review Board approval form

University of New Hampshire

Research Conduct and Compliance Services, Office of Sponsored Research
Service Building, 51 College Road, Durham, NH 03824-3585
Fax: 603-862-3564

10-Sep-2008

Washburn, Erika
EOS Morse Hall
PO Box 188
Durham, NH 03824

IRB #: 4357

Study: Mapping the Social Landscape of Land Use Decision Making

Approval Date: 08-Sep-2008

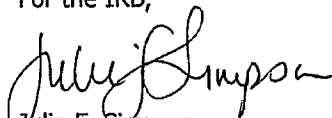
The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,



Julie F. Simpson
Manager

cc: File
Rosenberg, Andrew

3:9 UNH GRANIT data layers used in map template development

From GRANIT:

Conservation/Public Lands
Graveyards
Historic and Cultural Features Inventory
Hydrography Dataset
Impervious Surfaces
Land Use (2005) Dataset (CTAP derivative)
Level 6 Hydrologic Unit Boundaries (watersheds)
National Register of Historic Places
Political Boundaries
Public Roads

From NH Geological Survey:

Lamprey River Watershed 10m DEM

3:10 Status of various town boards and commissions as of September 2009

| TOWN | PLANNING | ZBA | CONSCOM | HERITAGE | OPEN SPACE | HDC (Historic District) | Historical Society | OTHER / NOTES |
|------------|----------|-----|---------|----------|------------|-------------------------|--------------------|--|
| Barrington | Y | Y | Y | NO | NO | NO | Y | |
| Brentwood | Y | Y | Y | NO | Y | NO | Y | |
| Candia | Y | Y | Y | Y | Y | NO | Y | |
| Deerfield | Y | Y | Y | Y | NO | NO | Y | |
| Durham | Y | Y | Y | NO* | NO | Y | Y** | * HDC is changing to HC, ** Historic Association |
| Epping | Y | Y | Y | NO | NO | Y | Y | |
| Exeter | Y | Y | Y | Y | Y | Y | Y | ** PLUS Environmental Planner |
| Fremont | Y | Y | Y | NO* | Y | NO | Y | * Hist Society contact |
| Lee | Y | Y | Y | Y | NO | NO | Y | ** PLUS Land Protection Administrator ** PLUS Agricultural Committee |
| Newfields | Y | Y | Y | NO | Y | NO | Y | |
| Newmarket | Y | Y | Y | Y** | Y | NO | Y | ** Advisory Heritage |
| Northwood | Y | Y | Y | NO** | NO** | NO | Y | ** Community Resources Committee - INACTIVE as per email by contact |
| Nottingham | Y | Y | Y | NO | NO | NO | Y | |
| Raymond | Y | Y | Y | NO | NO | Y | Y | |

3:11 Letter of agreement for interviews

Dear _____

I am conducting a research project to learn about land use decision-making in the 14 towns of the Lamprey River watershed. I am writing to officially invite you to participate in this project. This project is a qualitative study, involving semi-structured, conversational interviews and map biographies. The outcome of this study will be a doctoral dissertation as well as related published articles. If you agree to participate in the study, you will be asked to:

- participate in a formal, digitally-recorded interview (audio only)
- discuss some notes from the research with the researcher to check that your comments are represented accurately
- respond to follow up questions during data analysis

Excluding follow-up questions, your involvement should not take any more time than an approximate 1.5 hour interview, which will be designed for convenience to your time, schedule and location. You will not receive any financial compensation, but the anticipated benefits are that your participation in the interview and conversation may deepen your understanding of the land use decision-making process.

Participation is strictly voluntary; refusal to participate will involve no prejudice, penalty, or loss of benefits to which you would otherwise be entitled. If you agree to participate and then change your mind, you may discontinue the interview for any reason at any time.

I seek to maintain confidentiality of all data associated with your participation in this research. To accomplish this, pseudonyms will be given to all research participants when references are used in the data analysis. All written data will be kept in a locked filing cabinet in my office. Electronic data, including digitally recorded interviews, will be stored on my password-protected office computer, with backups stored in the same locked cabinet as the written data. I am solely responsible for reviewing notes and other materials. Access to data will be limited to me and my faculty advisory committee members. You should understand, however, that there are rare instances when I may be required to share personally identifiable information according to policy, contract, regulation or law. For example, in response to a complaint about the research, officials at The University of New Hampshire, designees of the sponsors, and/or regulatory and oversight government agencies may access research data.

While I will be diligent about confidentiality, confidentiality cannot be guaranteed from other research participants with whom you may interact. For example, if several participants within your community are speaking with me at the same time, it is not possible for me to guarantee that they will not speak of the event.

Consent Statement:

I agree to participate in a recorded interview for a study about land use decision-making. I understand I will be asked about ordinary experiences and about my experiences related to the land use decision making process. I understand that I do not have to answer any questions I choose not to answer. I understand that any excerpts taken from this interview, written or spoken, will disguise all names of persons and places so as to preserve my anonymity and privacy. I understand that at the end of this study, the recordings will be kept in the privacy of the researcher's archives for future reference. I understand that although most people find these interviews engaging and interesting, should I feel like discontinuing the interview for any reasons we may do so at any time.

Yes, I _____ consent/agree to participate in this research project.

No, I _____ refuse/do not agree to participate in this research project.

If you have any questions about your rights as a research subject you may contact Julie Simpson in the UNH Office of Sponsored Research at 603-862-2003 or julie.simpson@unh.edu to discuss them.

If you have questions about the study at any time, please contact me. Thank you!

Sincerely,



Erika Washburn
Tel & Voice Mail: 603-969-7414
Erika.washburn@unh.edu

Date

Signature of Interviewee

3:12 Topical questions and working hypotheses

- How is the resource inventorying process characterized by communities within the watershed?
- What are the resources inventoried and do these include cultural resources?
- What are the challenges to monitoring, assessment and updating resource inventories for land use planning by communities?

Very few towns will run their own natural resource inventorying program (with data updating) and none will have a cultural resource inventorying program. Resource inventories and GIS layers or other deliverables will be provided to Conservation Commissions and Planning Boards by contract with nonprofits or private business, and through some state programs, when funds are available. Challenges to conducting and maintaining resource inventories include: a lack of volunteer time, high rate of turnover on boards, lack of funds, a lack of equipment (computers, hardware and software) and a lack of experience among members (GIS know-how, etc).

- How is the communication characterized between communities and groups within a Great Bay watershed?
- How does this communication look in actual practice regarding land use decisions?
- What facilitates or hinders communication?

Most town groups will acknowledge that communication between municipalities and within their own towns can be improved. Acknowledgments will be made concerning the ecological value of upstream and downstream communication. Local politics, time, and a lack of connections to other towns' public groups will be noted. Newcomers to towns may be noted as mixing up the attachment focus within communities, encouraging inter-municipal communication and a broader regional approach as well as challenging local political inertia.

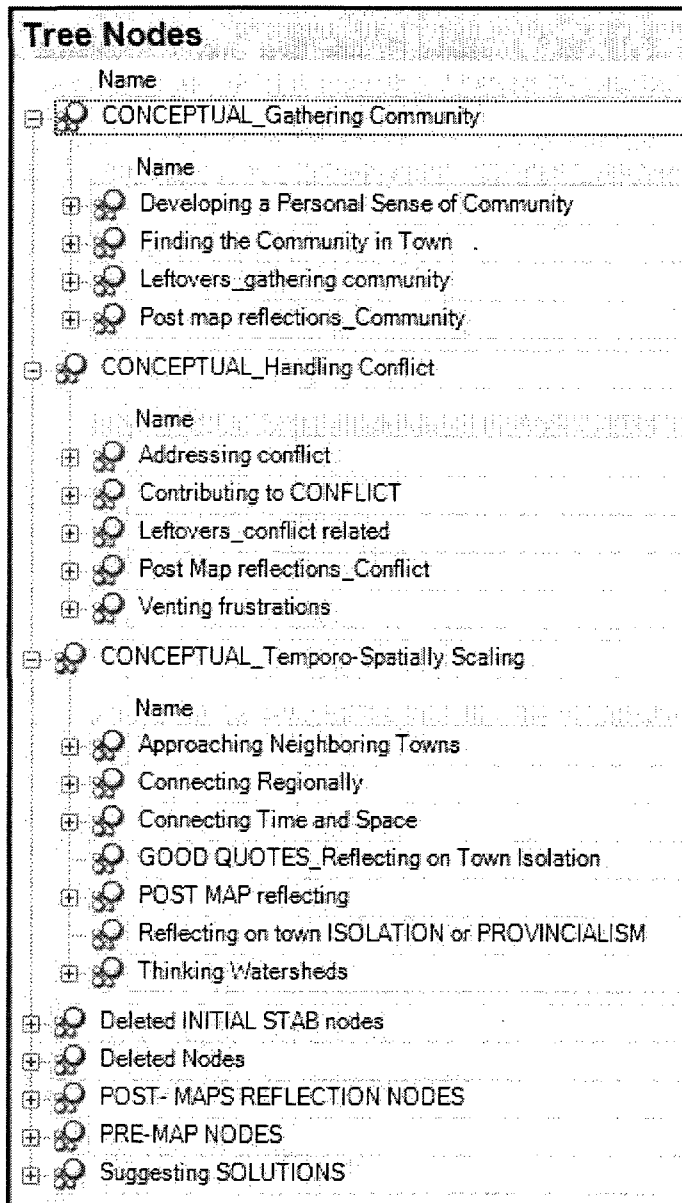
- Do coastal watershed communities include coastal or estuary issues in overall spatial planning and development strategies, acknowledging that sprawl and impervious surface area are significant issues for the health of Great Bay?
- Are the effects of cumulative land use decisions in the watershed acknowledged?
- What is the general level of watershed awareness?

The farther one goes from the coast, the less the relationship will be acknowledged between coastal issue or Great Bay and interior watersheds and their land use decisions. Discussions of Great Bay and the coast will appear infrequently through meetings (Planning Boards, Conservation Commission, Zoning Boards, other towns groups). The NGOs will more broadly respond to this and it is more likely that some will include discussions about larger regional issues and the land use relationship to the coast and oceans. General watershed awareness will vary; members of the Conservation Commissions and Heritage groups may possess more knowledge, but during the duties and general work of the Planning Boards and Zoning Boards watershed issues will not be considered when making decisions, despite the RSAs for watershed and inter-municipal collaboration.

- What has been the impact of NH Smart Growth and watershed based planning policies, in influencing communities to adopt regulations to limit impervious surface area and sprawl?
- Is there a relationship between adopting regulations and land use decisions in line with Great Bay coastal sustainability goals?

There will be some acknowledgement by Conservation Commissions and Planning Boards of the RSAs supporting inter-municipal collaboration and watershed based planning, but little action on these unless specific issues arise (USA Springs). Some communities will have adopted regulations or be following regulations promoting Smart Growth – but these will likely be in the towns under the greatest stress from population pressures and limited land, such as Newmarket. Other towns not yet quite so stressed, will be following more traditional economic development models and perhaps even struggling to promote open space and conservation easements within local politics or the town administration.

3:13 The use of tree nodes in NVivo in nested sets to group ideas together towards higher concepts



3:14 Examples of theoretical codes

“Conceptual_Trust and not trusting

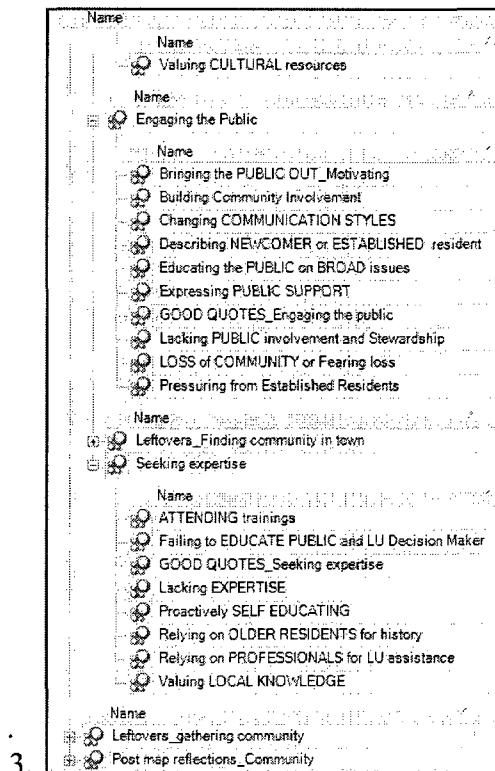
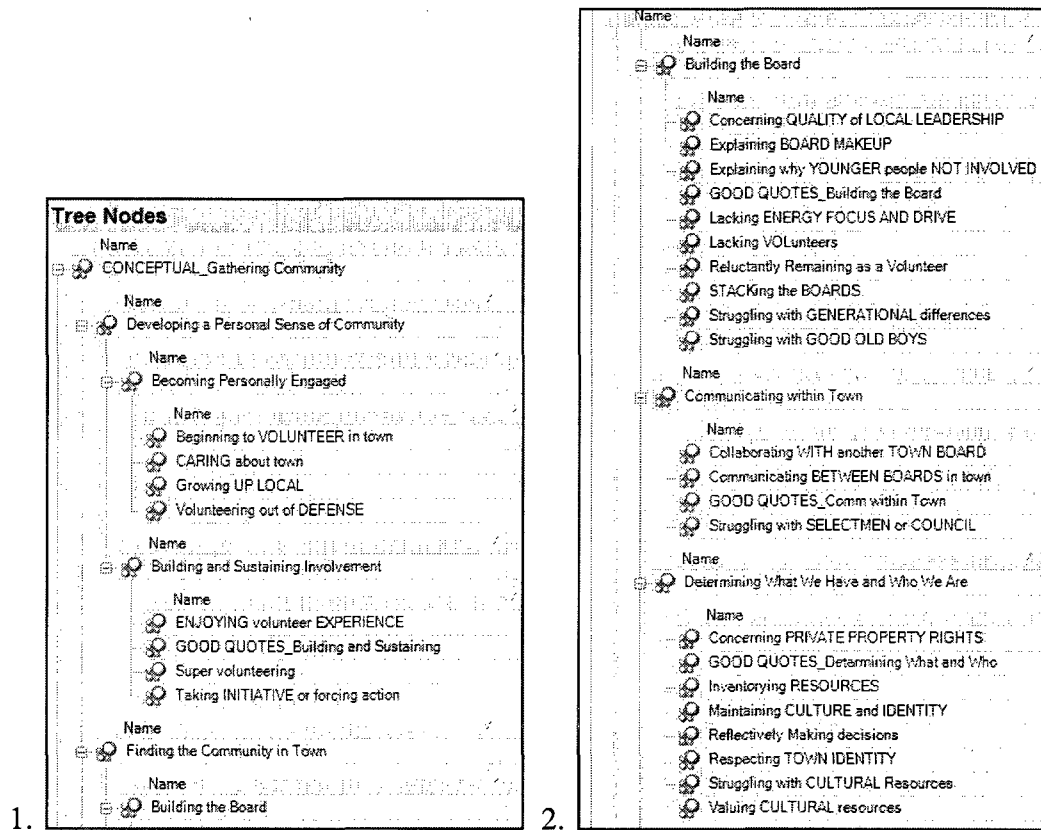
This topic comes up a lot with respect to examples of conflict. There is conflict between the boards, between people, etc.... but with respect to leadership, dealing with council or selectmen, or considering the state, there is venting of not trusting. Or there are examples of things that have happened which would certainly affect and diminish the abilities of others to trust ... Right now, I have the following nodes on trust: “Not trusting the council or selectmen”, “Not trusting town boards and leaders”, “Distrusting other boards”, and perhaps also important: "questioning legitimacy" ... concerning process or decision making or upholding aspects of democracy....

Trusting also seems related to process and communication... also education, quality of leadership, motivations for serving, town interest, etc.”

“Conceptual_Lacking Initiative

Going thru the node, "Lacking energy focus and drive" made me think of overall personal initiative. There are constant struggles in the towns for volunteers, but this goes beyond that. This is more the reasons behind, the motivations behind, the movement behind the lack of volunteers and disengagement of the public to an extent. This is the inertia in peoples' lives that challenges their abilities to drive, energize, focus and see their tasks through.... So, the node captures time management issues, the lack of time, the lack of energy, the older volunteers, the younger volunteers not being there due to jobs and parenting and 21st C challenges, the inability of a board to carry sustained focus and the lack of sustained drive. Burning out. Institutional inertia vs personal inertia. ?? Can I say there is some institutional inertia in the board / commission practices and processes for decision making? ... Conceptual categories: Concerning energy, Burning out institutionally and personally, Fighting inertia, Committing, Following it through, Struggling against Inertia, Struggling with inertia...”

3:15 Conceptual tree node heading for Gathering Community



3:16 Naming a point along a continuum

“The stories presented here are a lot of different ways people started Becoming Engaged in their community -whether by accident, or force or applied guilt or curiosity or fear or concern. These stories are not specifically reflections about caring for town, or serving as an example, or practicing democracy. So, I would say the Caring about town node and others are different. This one is really important - what first triggered someone to step forward. "Becoming engaged" could be used as a way of describing their initial volunteering efforts and reasons...

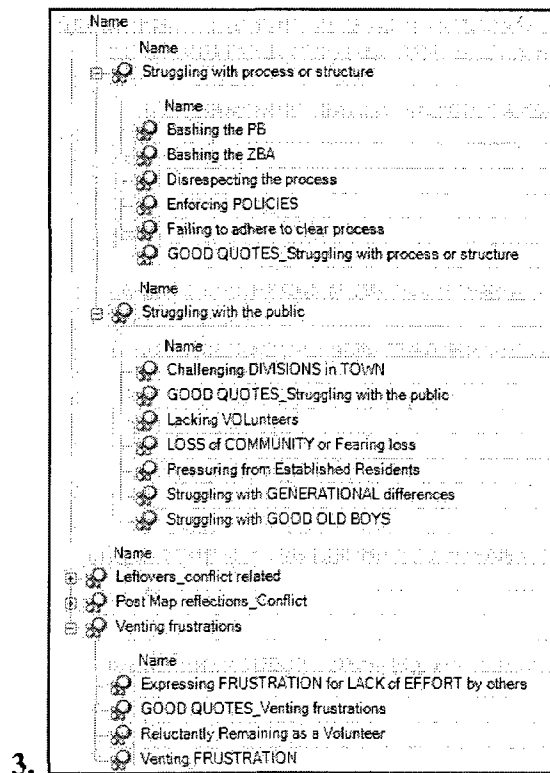
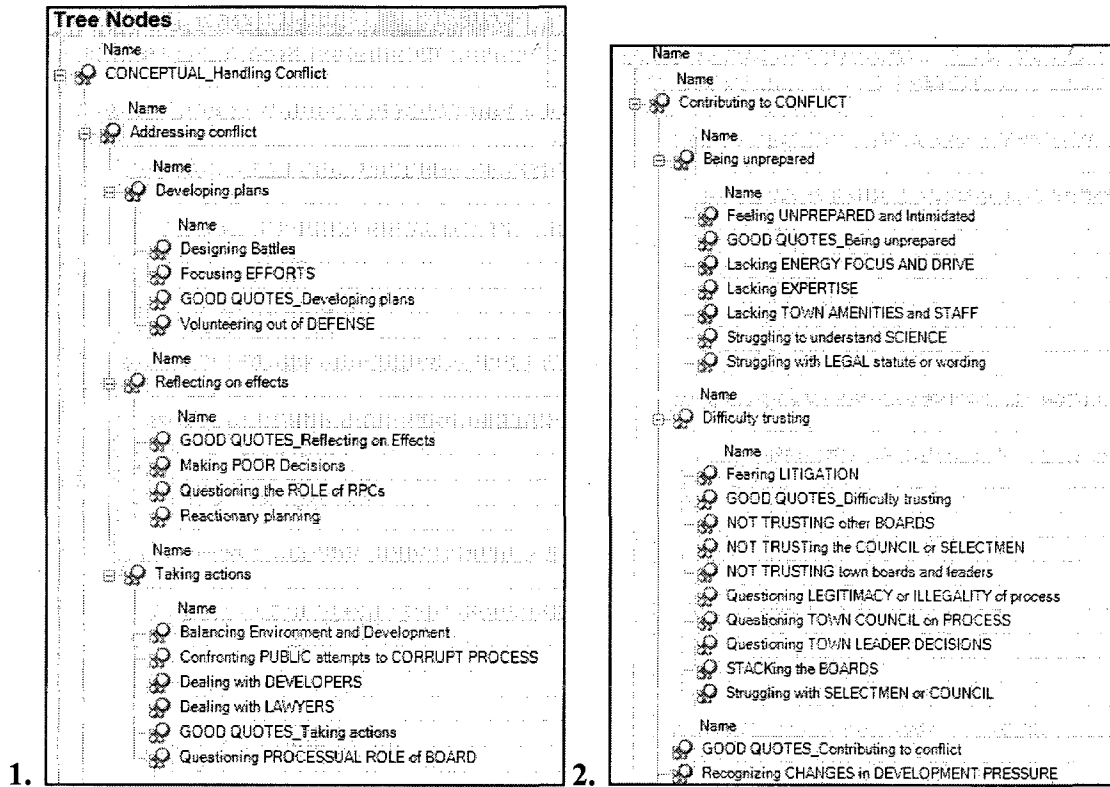
Does "becoming engaged" fit within Gathering Community? Becoming personally engaged.... this described the motivations behind volunteering. Yes, I would say this describes an aspect of gathering one's sense of community because it also means gathering the sense that there is responsibility to serve as well - thus leading into the quest, the start, of building and defining and gathering community sense over broad and varied scales....

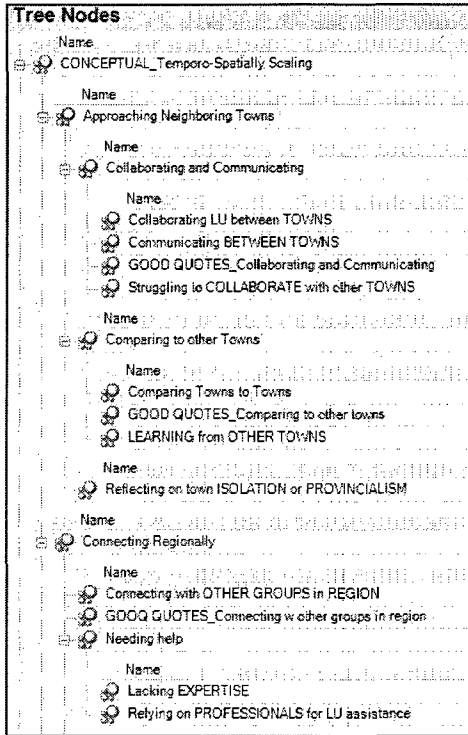
Together with Beginning to Volunteer (Becoming Personally Engaged), Caring about town and Growing up local are closely aligned. These represent why someone wants to be involved, if they talk about caring and worrying and so forth. They also talk about how growing up might initiate that feeling of responsibility. So, these three it makes sense to combine....

Do Super volunteering and Enjoying the volunteer experience go together? In a way these are all about building and sustaining momentum or inertia for involvement in the community. Super volunteers are those that are in it for life. They get a lot out of it, it's fun, they feel they are giving back, they are respected, they feel it is an important duty. Enjoying the experience ... not everyone does but this does provide a window onto what someone's motivation is for staying in... they become super volunteers here. Taking initiative describes these people pushing forward, and building steam, in much the same way as the super volunteering, but with specific examples on what drove them forward....

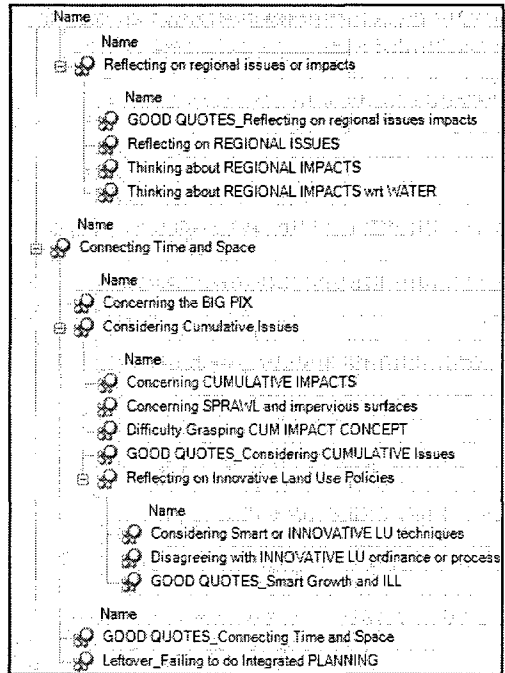
Does that represent movement in a continuum?? In order to gather one's sense of community, there must be some underlying factors which motivate you to step up. These things lead to your interest in becoming engaged and often sustain it. In some ways, this is a cyclically reinforcing motivational engagement. Building and sustaining involvement then happens - especially with those who become Super Volunteers, but it usually is a consequence of taking initiative and becoming a super volunteer, which with time, allows one to reflect back and think about the sense of enjoyment one gains from this experience.....I see these things as linked conceptually in motivation and movement in one's community and one's personal sense of community develops as a result. Maybe rename this, 'DEVELOPING A PERSONAL SENSE OF COMMUNITY'."

3:17 Conceptual tree nodes for Handling Conflict (1-3) and Temporo-Spatially Scaling (4-6)

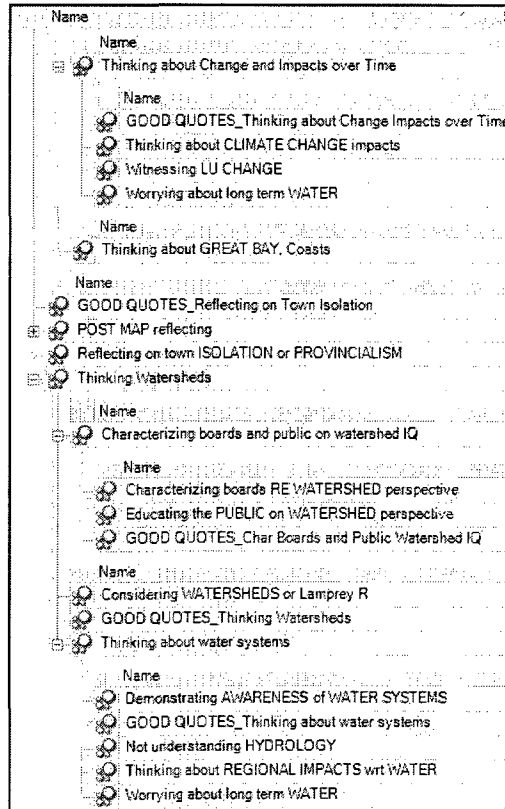




4.



5.



6.

4:1 Partial list of regional groups

American Rivers
Audubon Society of NH
Bear Paw Regional Greenways Environmentalists (Bear Paw)
Coastal Conservation Association
Coe-Brown Northwood Academy You
Concerned Citizens for a Safe Environment
Ducks Unlimited
Exeter River Watershed Association
Exeter River Local Advisory Committee (ERLAC)
Governor's Lake Improvement Association
Great Bay Coast Watch
Great Bay National Estuarine Research Reserve (GBNERR)
Great Bay Resource Protection Partnership
Great Bay Stewards
Lamprey River Advisory Committee (LRAC)
Lamprey River Watershed Association (LRWA)
Natural Resource Conservation Services (county conservation districts)
Natural Resources Outreach Coalition (NROC)
Neighborhood Guardians
NH Agriculture Commission
NH Association of Conservation Commissions
NH Department of Environmental Services (NHDES)
NH Department of Fish and Game
NH Department of Transportation
NHDRED
NH Office of Energy and Planning (NHOEP)
NH Rivers Council
NH Water Resources Research Center (NHWRRRC)
Northwood Lake Watershed Association
NYNEX Pioneers
Pawtuckaway Lake Association
Piscataqua Region Estuaries Partnership (PREP, formerly NHEP)
Pleasant Lake Association
Salmon Unlimited
Save Our Groundwater
Society for the Protection of NH Forests (SPNHF)
Southeast Land Trust
Strafford Rivers Conservancy
The Nature Conservancy
UNH Cooperative Extension, SeaGrant

6:1 List of organizations sought after for assistance

Local:

Town Attorney
Town Building Inspector
Town Clerk or Land-Use Secretary
Town Code Enforcement Officer
Town Department of Public Works
Town Engineer
Town Land Protection Administrator
Town Planner
Town Planning Department (or Technical Review Committee)
Town Police
Town Road Agent

Regional / National:

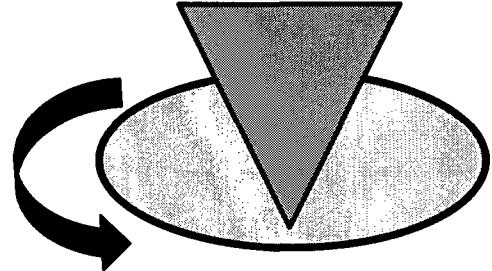
Bear Paw
Center for Watershed Protection
Ducks Unlimited
Exeter River Advisory Committee (ERLAC)
Great Bay National Estuarine Research Reserve (GBNERR)
Great Bay Regional Protection Partnership
Lamprey River Advisory Committee (LRAC)
Local Government Center
Natural Resources Conservation Service (soil conservation districts)
NH Department of Environmental Services (NHDES)
NH Department of Historic Resources
NH Fish and Game
NH Office of Energy and Planning (NHOEP)
NH Preservation Alliance
New Hampshire Soils
Piscataqua Region Estuaries Partnership
Regional Planning Commission
Strafford Rivers Conservancy
Society for the Protection of NH Forests
Southeast Land Trust
The Nature Conservancy
UNH Cooperative Extension
UNH GRANIT
UNH Storm Water Research Center
West Environmental

7:1 Illustration of theoretical framework

Developing a Personal Sense of Community:

Becoming personally engaged

Building and sustaining involvement



Developing a Personal Sense of Community:

Becoming personally engaged

Building and sustaining involvement

Finding the Community in Town:

Building the board

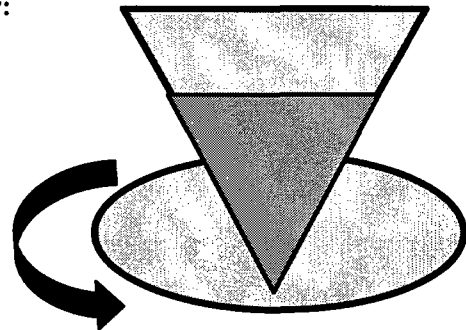
Lacking Volunteers

Communicating within Town

Determining What We Have & Who We Are

Engaging the Public

Seeking Expertise



Conceptual Category: Gathering Community

Individual & group motivation, the evolution of a sense of community & a tension surrounding conflict – all occurring at varying spatial scales.

Developing a Personal Sense of Community:

Becoming personally engaged

Building and sustaining involvement

Finding the Community in Town:

Building the board

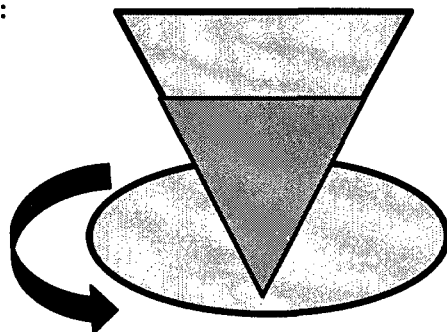
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Conceptual Category: Handling Conflict

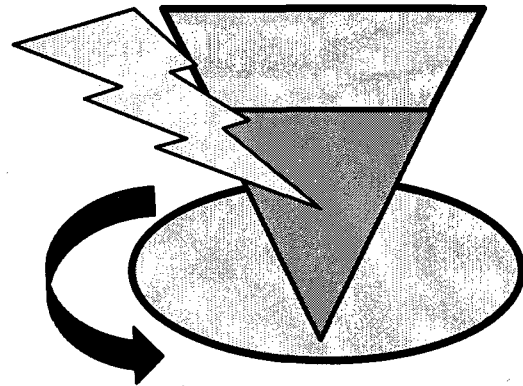
Characteristics, actions & reactions, structures & processes that contribute to conflict, at multiple scales simultaneously.

Contributing to Conflict:

Being unprepared
Struggling with the Public
Struggling with Process or Structure
Difficulty trusting

Addressing Conflict:

Developing plans
Taking actions
Reflecting on Effects



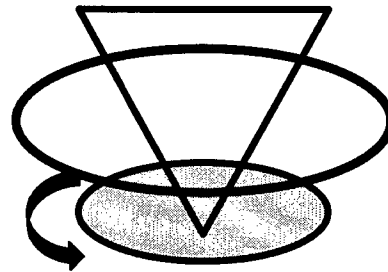
1. Defining the Focus



1. Defining the Focus

2. Approaching Neighboring Towns

- Collaborating & communicating
- Comparing to other towns



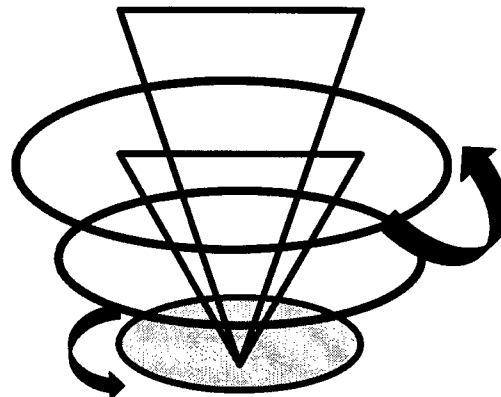
1. Defining the Focus

2. Approaching Neighboring Towns

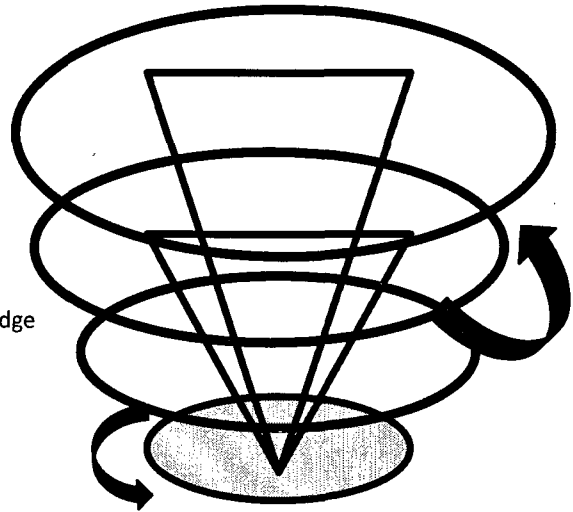
- Collaborating & communicating
- Comparing to other towns

3. Connecting Regionally

- Connecting with other Groups
- Reflecting on Issues or Impacts
- Needing Help



1. **Defining the Focus**
2. **Approaching Neighboring Towns**
 - Collaborating & communicating
 - Comparing to other towns
3. **Connecting Regionally**
 - Connecting with other Groups
 - Reflecting on Issues or Impacts
 - Needing Help
4. **Thinking Watersheds**
 - Considering Lamprey River or Watershed
 - Characterizing Boards & Public on Knowledge
 - Thinking about Water Systems



Conceptual Category: Temporo-Spatially Scaling
 Factors and forces that promote, encourage, hinder or impede the consideration of cumulative decisions & effects over space and time.

1. **Defining the Focus**
2. **Approaching Neighboring Towns**
 - Collaborating & communicating
 - Comparing to other towns
3. **Connecting Regionally**
 - Connecting with other Groups
 - Reflecting on Issues or Impacts
 - Needing Help
4. **Thinking Watersheds**
 - Considering Lamprey River or Watershed
 - Characterizing Boards & Public on Knowledge
 - Thinking about Water Systems
5. **Connecting Time and Space**
 - Concerning the Big Picture
 - Thinking about Great Bay & the Coast
 - Considering Cumulative Issues
 - Thinking about Change & Impacts over Time

