



**“Things that Matter in One Hundred Years”—  
The Importance of Social Capital in Private Land Conservation  
in the Chesapeake Bay Watershed**

by

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“There are very few things you can do today that will matter in one hundred years, but a conservation easement is one of those.”

(Interview: Broughs Mill, March 2009)

## **Abstract**

The Chesapeake Bay is one of the most important coastal estuaries in North America for its abundant natural capital as well as its cultural, historical and recreational significance to the over 16 million residents in the watershed. As a result of declining water quality in the latter half of the 20<sup>th</sup> century, the Chesapeake Bay has become one of the most intensely studied coastal ecosystems in the world, yet, despite increasing scientific understanding of the bay ecosystem, the restoration efforts have been minimally successful in the past 26 years. This research looks into the problem of coastal eutrophication of the Chesapeake Bay and analyzes the policy development aimed at restoring the bay at three levels: Macro, Meso, and Micro. Through analysis of the collaborative management body of the Chesapeake Bay Program, a heuristic specific to the case study is developed and four distinct time periods of policy focus are identified. Spurred by improved scientific understanding, each period adopts a new approach attempting to improve water quality of the bay. Focusing on the most recent period this research uses private land conservation as a metric for policy evaluation and finds that there is a distinct shift in political focus and action from the macro-institutional level to the community level during each period. The main focus of this thesis centers around empirical research on the micro level in Virginia and finds that trust between community members and environmental organizations is a requisite for successful private land conservation actions, made possible by macro structures. All of these findings suggest that improving social capital within communities is needed in order to improve environmental outcomes on the physical landscape. Further, findings suggest that the focus from macro and meso levels on increasing participation in policy making may not be the most effective means of harmonizing the socio-ecological systems of the Chesapeake Bay: Rather, place-based strategies that utilize the social dynamics embodied in the concept of social capital is proposed as an alternative more likely to transform norms and values of communities and aid in the challenge to sustainably manage this valuable resource into the future.

**Keywords:** Sustainability Science; Chesapeake Bay; Social Capital; Participatory Processes

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## **List of Abbreviations:**

|                                        |
|----------------------------------------|
| <b>CBP – Chesapeake Bay Program</b>    |
| <b>SES – Social Ecological System</b>  |
| <b>CWA – Clean Water Act</b>           |
| <b>C2K – Chesapeake 2000 Agreement</b> |

# Chapter 1 — Introduction

## 1.1 Context and Purpose of Research

Coastal ecosystems have, historically, supported many of the world's most productive fisheries and currently provide livelihoods for approximately 25% of the global population who live within a distance of 100 km from the ocean (Small and Nichols 2003). In the second half of the 20<sup>th</sup> century many coastal ecosystems around the world began to show signs of serious environmental decline (Boesch 2002). Because coastal ecosystems often span political borders, the policies aimed at their restoration pioneered many new concepts in environmental management in order to address the problems. One of the oldest programs constructed to address and manage coastal ecosystem restoration is the Chesapeake Bay Program.

Located in the mid-Atlantic region of the United States the Chesapeake Bay is the largest, most productive estuary in the United States. With a watershed area of 167,000 km<sup>2</sup> spanning six states, the bay is influenced by the daily activities of over 16 million people who live within its boundaries (figure 1). The bay's fertile, productive waters have long been a pillar in the U.S. economy, and the international ports of Baltimore, Maryland and Hampton Roads, Virginia distribute the treasures of the bay and the regional economy around the globe. The Chesapeake Bay plays a significant role in the livelihoods of many U.S. citizens along the east coast both economically and recreationally. The health of this important coastal ecosystem is imperative for sustainability in the region.

Because of its importance to the region, the decline of its health has sparked a massive wave of political attention and scientific inquiry in the past 35 years. Charged with heading the restoration to "save the bay" the efforts of the Chesapeake Bay Program (CBP), the at-large community of researchers, elected policy makers, and citizens have been unsuccessful in significantly improving the environmental quality of the bay. It is from the failure of such a well funded program and well studied ecosystem that inspiration for this research was catalyzed. Being a citizen of the bay it was my ambition to better understand what the barriers to restoration efforts of the bay have been and perhaps uncover some new insight that might lead to more effective policy efforts in the future that might also be of use globally.

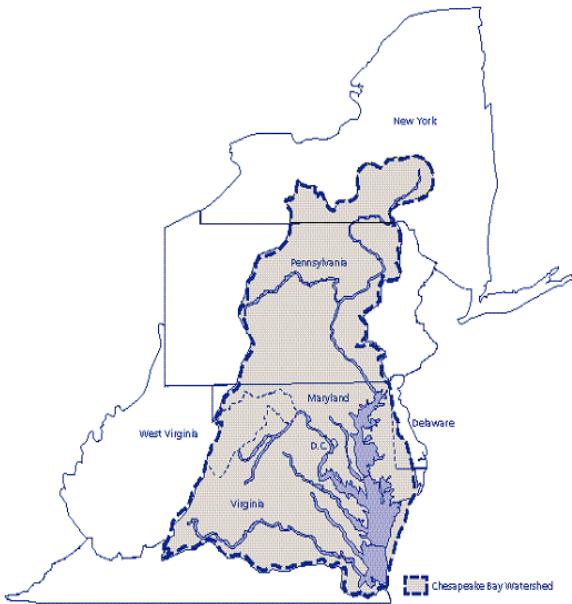


Figure 1. Watershed area of the Chesapeake Bay (EPA 1992)

## 1.2 Research Process, Findings, and Implications for Sustainability

In the spirit of sustainability science I approach the research process in a way that my method would be defined by the problems I sought to address, rather than establish a strict theory to test or disciplinary perspective to work within (Clark 2007). My approach to the research was exploratory in nature with the assumption that structure and organization of analytical components would evolve through the research

processes. I began the research by building a history of the Chesapeake Bay Program and noting the policy trends in terms of how the problem was framed and on what scale of action policies were focused. From this policy review a heuristic relative to the case was developed and used throughout the research.

Because the Chesapeake Bay remains in a poor state of health despite many brilliant individuals involved in the restoration efforts, I was not so presumptuous as to anticipate finding a ‘cure all’ solution to the problem through my research. In fact, I discovered through the research processes that, scientifically, we know the mechanics of what is going on in the bay quite well—as the volume of literature demonstrates (see Nixon et al. 1995 and Kemp et al. 2005 for a comprehensive literature review). My initial question then was, with the solid scientific knowledge in hand, what are the barriers to addressing the inputs causing the problems? Understanding the magnitude of the project, I contacted informants working with the CBP and refined my perceptive of the dynamics within the organizational structures.

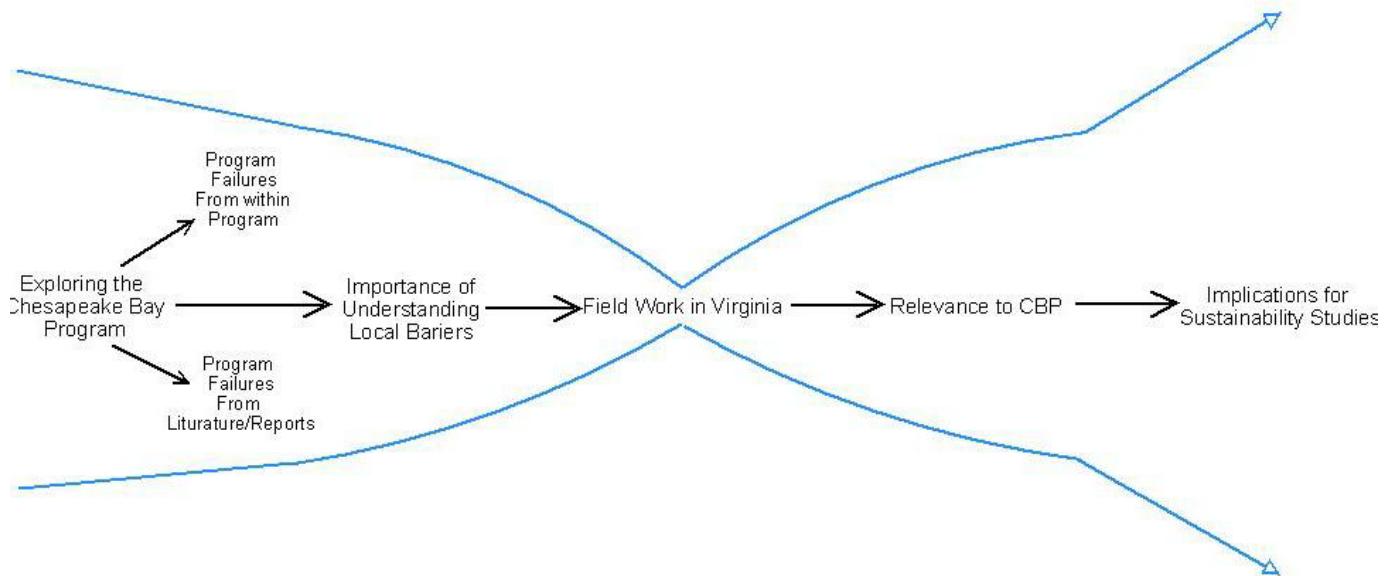


Figure 2. Illustration of the Research Process – Starting from a broad exploration of the CBP, the research focus was narrowed to examine the barriers of policy implementation at the local level. This was explored through field work in Virginia through a study on private land conservation in Virginia and highlighting the importance of utilizing social capital of rural communities to policy development. Finally, implications of the research are discussed for sustainability studies.

After sifting through the multiple levels of bureaucratic information in hopes of understanding the policy failures of the CBP, I narrowed my research direction. Rather than look directly for barriers to restoration efforts in the watershed, I turned to the programs successes. More specifically, I examined the area of land conservation to see what policies were effective and why. What I wanted to understand is why some stakeholders adopt land use practices<sup>†</sup> that are beneficial to the bay while others do not? What I found was that the dynamics between communities and individual landowners has the largest influence on the decision of individuals to adopt conservation practice on their land in rural settings. Transforming norms at the local level and improving trust between stakeholders and the various levels of governments involved in the CBP’s efforts is the best way to improve environmental outcomes for the watershed and the bay. These findings were then interpreted to make recommendations for the policy formulation processes as a way to improve the outcomes and efforts to improve the state of the bay.

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<sup>†</sup> It is assumed in this research that a conservation easement is a land use choice that is more beneficial for environmental outcomes because they include legal restrictions on land use practices that preserve the conservation values of that property that could be lost through development in perpetuity. A more in-depth discussion on easements will come in chapter 3.

The findings from this research present several implications important to the growing field of sustainability studies and the large scale management of natural resources.

- 1) The notions of participatory processes, which have long roots in US history, may not be sufficient in themselves to create effective policy aimed at improving environmental outcomes.
- 2) The concept of social capital, its variability relative to place, and its potential to transform norms and values in communities is an essential resource to target when developing environmental policy

These implications will be expanded on later in this paper. The remainder of this introductory chapter will explain the research process in more detail to show how I came to these conclusions and findings that will, hopefully, shed some new light on sustainable management of the coastal ecosystem of the Chesapeake Bay.

### **1.3 Methods and Structure of Research**

The research strategy changed once I began to investigate why some landowners adopt conservation practices on their land while others do not. This flexible approach allowed me to refocus my efforts several times. The scope of the research was narrowed and reframed to garner more a precise understanding of the problem in hopes of contributing to the growing field of sustainability science. I adopted one of seven the core questions of sustainability science as the central focus of my research, asking:

- What systems of incentive structures – including markets, rules, norms and scientific information – can most effectively improve social capacity to guide interactions between nature and society toward more sustainable trajectories? (Kates et al. 2001).

Examining this question relates my exploratory field work in the Chesapeake Bay Watershed with the larger, theoretical implications related to the efforts to harmonize social ecological systems (SES). In order to provide some insight to this question, I established the realm of private land conservation as metric for gauging the effectiveness of policies addressing conservation in the context of the CBP goals. The more specific research question that developed in the research processes was:

- What is the motivation and influences for why some landowners adopt conservation easements on their property?

It is from this question that I base my fieldwork in three counties in Virginia interviewing landowners who have placed conservation easements on their property.

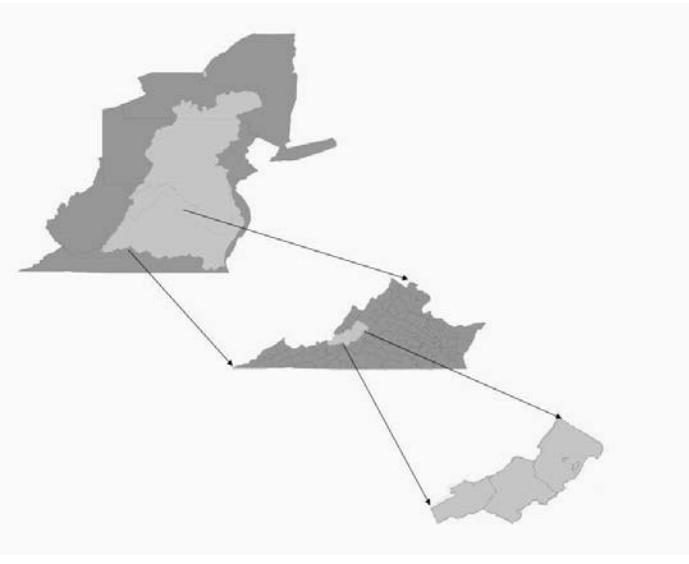


Figure 3. Levels of study: Chesapeake Bay watershed, State of Virginia, and Craig, Botetourt, and Rockbridge Counties

This research uses a combination of primary and secondary data and employs both a quantitative approach (using land conservation as a metric) as well as a qualitative approach (collecting information on the effectiveness of incentive structures and individual motivations for private land conservation). The Chesapeake Bay Watershed, The State of Virginia, and Botetourt, Craig, and Rockbridge Counties serve as the foci of my empirical research (see figure 2). As mentioned, my aim in this research was to generate solutions to the problems I discovered. Thus, I employ a variety of techniques to represent the challenges in finding workable solutions to this complex SES. By focusing on the motivations of individuals who have taken actions to do their part for the Chesapeake Bay and exploring their perceptions of the barriers involved in recruiting others, I hope to provide information about the ways in which policy makers, and the scientists who inform them, can better address individuals in sustainably managing the bay.

The remainder of this introductory chapter contains a brief description of the theoretical and conceptual models employed. In Chapter 2 the macro level of political processes related to the development of the CBP and its recent history are presented; major policy shifts in the program are identified and discussed. In Chapter 3 the importance of land conservation is justified and the ways in which the macro level of policy is translated through the meso institutions involved in the case study are examined. Interrelationships between institutions at the macro and meso levels are analyzed while conflicts and limitations are identified. In Chapter 4 the motivations for why individuals implement conservations practices at the micro level are presented through empirical research in Southwest Virginia. The empirical research at the micro level from a local community is presented and theoretically explained in the context of the larger case study. Finally, in Chapter 5 the case study of the CBP, from macro to micro, is synthesized to highlight the findings of this research and make recommendations for policy makers and the implications for sustainability studies discovered are presented for further discussion.

#### 1.4 Theoretical and Conceptual Frameworks

This thesis draws from a host of theories as they apply to the aims of this research. In Chapter 2 macro level theories of regulation and markets are employed in the discussion of the CBP's development. In Chapter 3 the role of the State and NGO's are examined through exploring land conservation policies and organizations in Virginia. Finally, in Chapter 4 social capital is used to explain the success of private land conservation through empirical studies. To aid in mapping the research processes I will utilize a single conceptual framework throughout the study tailored to the relevant levels focus in each chapter.

All theorists employ some sort of mental roadmap relating the concepts and scales of their discussion, whether those be “*crisp or fuzzy*” in their definition is a matter of style and efficacy of communication

(Wiley 1988). Borrowing from Torsten Hägerstrand's (2001) system of nested domains the case study to follow is divided into the three levels of focus labeled the macro, meso, and micro levels. These levels are divided in a crisp manner in terms of their scale of possible actions, but fuzzy in terms of defining the specific actors within each level. A more detailed description of this framework is presented in Chapter 2.

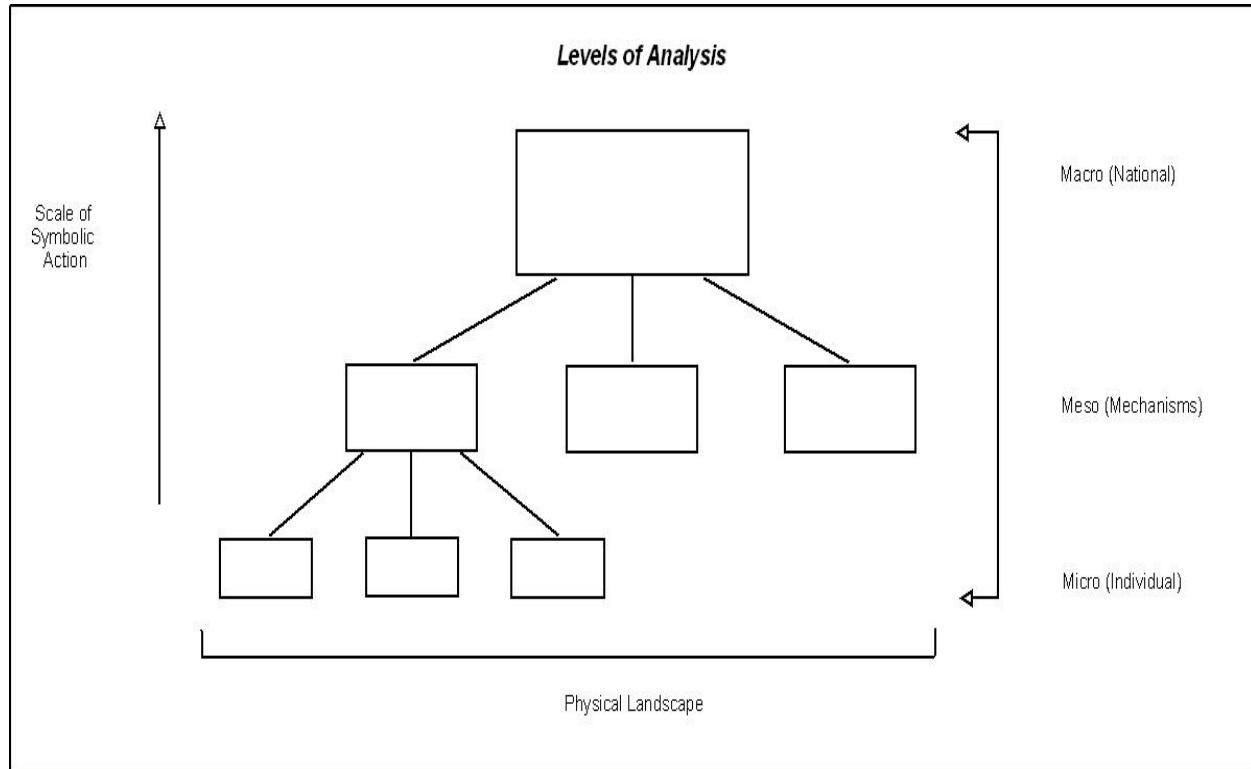


Figure 4. A simplified adaptation of Hägerstrand's (2001) system of nested domains that serves as a basis for my conceptualization of the Chesapeake Bay Program's dynamics from the macro institutional to the micro agent levels of action.

## Chapter 2 — The Chesapeake Bay Program: A Model for Restoration Efforts

### 2.1 Problem Background

Spanning a length of over 300 km from Maryland to Virginia and a surface area of 11,000 km<sup>2</sup> the Chesapeake Bay is the largest estuary in the United States. The watershed is composed of nine major rivers and over 100,000 streams which covers six states in the Mid-Atlantic region; a total area that comprises approximately one sixth of the eastern seaboard (EPA 1982).

While stratigraphic studies of the Chesapeake's sediments show that the ecosystem has been impacted by changing land use patterns since the arrival of European settlers in the 1600's (Cooper and Brush 1993). The environmental issues immediately affecting the health of the bay in modern times were initially thought to be related to local problems such as industrial and municipal pollution, pesticide toxicity, wetland loss and coastal development (Boesch et al. 2001). A more pervasive, estuary-wide issue has been overfishing (especially of native bivalves), which has been suggested as a precursor to the current eutrophication and hypoxia issues (Jackson et al. 2001). It was not until the last quarter of the 20<sup>th</sup> century,

however, that the focus of concern was expanded to address nutrient enrichment and eutrophication of the bay—primarily because the noticeable, deleterious effects of the phenomenon on living resources.

While eutrophication of freshwater systems had been a well studied facet of ecosystem science (Wetzel 1983) and studies related to the process dominated the field of limnology in the 20th century (Kemp et al. 2005), eutrophication of estuarine ecosystems was not well studied until the end of the 20th century (Nixon et al. 1995). In part, this was a result of the general opinion that estuarine ecosystems were immune to eutrophic processes because of their “open system, well flushed” nature of having an input of fresh waters and an output of saline waters and a calculable turnover time for the entire body of water (Kemp et al. 2005). However, in the 1970’s several major coastal ecosystems around the world began exhibiting signs of eutrophication (Boesch 2002) and there was an explosion of scientific inquiry in response (Nixon et al. 1995). It was from the growth of research that two general conclusions were accepted in the scientific community regarding the Chesapeake Bay: First, the driving force behind the decline of the bay was uncertain and needed further study, and second, that there needed to be a central organization to coordinate research and policy efforts to address the complex nature of the bay ecosystem (Malone et al. 1993).

It was from these conclusions in the scientific community and the growing pressure from the public that the Chesapeake Bay Program was established in 1983 to oversee restoration efforts. The CBP was heralded as a pioneer in management for the scale of the efforts as well as the political backing for environmental cleanup. With the mission of restoring ecological integrity of the bay, the CBP was to serve as a model for water cleanup efforts for the rest of the nation (Imperial et al. 1992).

## 2.2 A Macro Perspective of the Chesapeake Bay Policy Processes

Recent sustainability studies have employed the use of Hägerstrands conceptual framework of how environmental policy functions in society, from problem recognition to the implementation of remedial actions on the landscape (Ness 2008). The conceptual framework is useful for both understanding and analyzing environmental policy processes between multiple scales and actors within a defined geographic boundary. Of particular use is the visualization of the knowledge-action gap that often exists in environmental management cases (*Ibid*; Schönström 2005). Hägerstrand distinguishes between two “realms” of phenomena (see figure 3) in environmental management: the realm of symbolic action within social institutions and the realm of physical actions in the landscape (Hägerstrand 2001). The realm of symbolic action takes place within social institutions that govern a particular territory and they discuss with “words, figures, and pictures” a vision for the future and then devise strategies to translate these symbols and concepts into reality on the landscape (Hägerstrand 2001). Regulation, subsidies, and allocation of funds through levels of government all take place in the realm of symbolic actions; while the aggregate actions of individuals actions on the physical landscape, despite the restrictions and incentives aimed at them is what drives environmental problems.

Important to the following analysis is the assumption that a territory is defined on the physical landscape (i.e. nation, state, city) and that the territory is divided among actors in the landscape who are restricted in the ways that they interact with the biophysical landscape via two factors: legislation (defining what people have the right to do, or more appropriately, not do) and technological capabilities (what individuals have the capability to actually do on the landscape) (Hägerstrand 2001). Thus, human institutions are conceptualized as a hierarchy ranging in the size and influence of domains, from the Macro (national) down to the micro (individual landowners), with any number of meso actors in between (state, agencies, NGO’s, community organizations, etc). As Ness (2008) explained, restrictions increase as one moves from

the macro to the micro level as each domain operates under the legislative framework of the domain above – states are restricted by national law, counties restricted by state law, residents restricted by county laws.

This conceptualization will serve as the basis of my analysis of the Chesapeake Bay watershed. Where the watershed is the territorial space of the study and the Chesapeake Bay Program, the State of Virginia, land trust organizations, and private landowners are the structures and actors that this study focuses on—all of which operate on various special scales within the watershed.

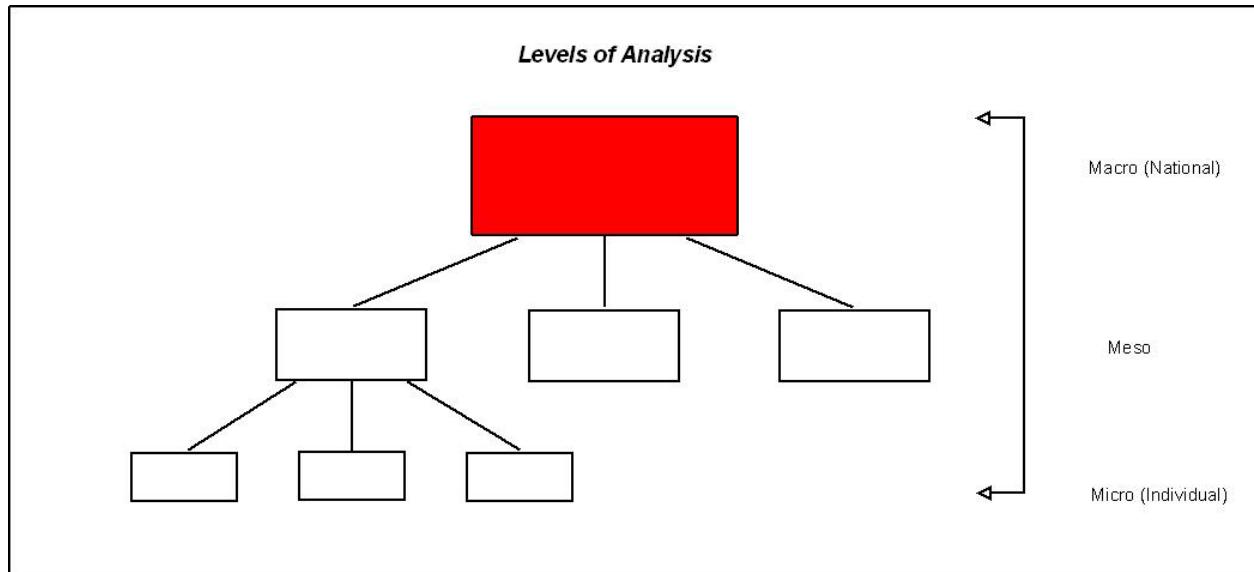


Figure 5. Highlighting the *macro* focus of chapter 2 which sets the fundamental structures of social systems

This chapter will examine the environmental policy of the CBP on a macro scale that has developed since the problem recognition in the 70's and follow its efforts through to present day (figure 4). I wish to highlight a few exemplary policies that emphasize the paradigmatic shifts in the CBP's approach to restoration efforts. It is through this compressed account of the CBP's development that four key time periods are identified that correspond to improved scientific understanding about the complexity and drivers of the eutrophication problem in the bay. There are two factors uncovered in this analysis of primary literature:

- 1) CBP policy at the macro scale has continually redirected its focus to smaller scales of symbolic action in order to better address actors on the ground.
- 2) There is a shift in the way in which the CBP approaches restoration efforts moving from regulatory restrictions of freedoms to market based voluntary approaches involving incentives and civic engagement enabling individuals

The following is a brief historiography of important elements of the CBP's progress from which these findings are based.

## **2.3 Origins of the Chesapeake Bay Program 1976-1983**

In response to increasing public outcry at the state of the bay, in 1976 the United States Congress commissioned the newly formed Environmental Protection Agency to conduct a \$27-million, intensive five-year study into the environmental quality of the Chesapeake Bay and the potential management options available for remediation. While the study was underway, the state legislators of Maryland and Virginia convened to discuss management strategies available to improve the common resource shared by both states. Deciding to adopt a bi-state agreement, independent of federal involvement, the Chesapeake Advisory Commission was created in 1978. A few years later, after some deliberation and experimentation at drafting cooperative management policies, the states created a more comprehensive organization that remains today as the Chesapeake Bay Commission (CBC). The CBC is a legislative organization that seeks to, “assist the legislatures [...] in evaluating and responding to problems of mutual concern relating to the Chesapeake Bay; to promote intergovernmental resource planning and action by the [states]; to provide [...] through recommendation to the respective legislatures, uniformity of legislative application; [...] and to recommend improvements in the existing management system for the benefit of the present and future inhabitants of the Chesapeake Bay region” (CBC 1981).

In 1983, after the EPA published several technical reports—*Chesapeake Bay Technical Studies* (EPA 1982) and *Chesapeake Bay: A Profile of Environmental Change* (EPA 1983a)—that summarize the results of the federally funded studies, which inspired the CBC and the states of Virginia, Maryland, and Pennsylvania as well as the District of Columbia and the EPA to hold a massive conference titled, “Choices for the Chesapeake: An Action Agenda”. Seven-hundred legislators, scientists, administrators, politicians and citizens met at the conference to draft an action agenda for the bay. The result was a signatory commitment to a short document with very general language and descriptive goals addressing improving the bay. Signed by the Chairman of CBC, the states in attendance, as well as the administrator of the EPA, the 1983 Chesapeake Bay Agreement sought to “address the extent, complexity, and sources of pollutants entering the Bay”(EPA 1983b). It was from this agreement that the CBP was born. While ambiguous in its actual meaning for the signatories involved, the document itself was important as a symbolic beginning of a comprehensive management plan aimed at restoring and protecting the Chesapeake Bay ecosystem.

## **2.4 Growing Problems 1983-1992**

In 1984, six additional federal agencies joined the Bay program, and the administrative structure was established to implement policy goals. In 1985, the newly formed Bay Program produced a dense, detailed document titled *A Chesapeake Bay Restoration and Protection Plan* (EPA 1985), which specified the environmental and policy goals that signatory states had made in the 1983 agreement. This management plan was the first comprehensive document emphasizing the importance of collaboration between the federal and state partnerships and the first document to admit the serious challenges ahead and quantify specific goals that participants should strive to achieve. The issue of largest concern was that nitrogen and phosphorous levels should be reduced in the watershed, according to scientific understanding. Even at this early stage there is recognition of the challenges that successful management of the Bay ecosystem will need to overcome. Flexibility, participation, and adaptation of policies as more scientific findings arise was inherent in the programs formation, “The Executive Council, its committees, and the general public will be involved in the future efforts to expand and refine this Plan which will serve as an evolving blueprint for the restoration and protection of the Chesapeake Bay” (*Ibid*).

After several sparse meetings in the proceeding years, the Chesapeake Executive Council recognized the need for a more specific set of goals to catalyze restoration efforts and generate energy needed in government agencies to start to act. In 1987, the Chesapeake Bay Commission significantly revamped the original 1983 Agreement and drafted a new document which established six priority areas that contained specific goals and commitments, with dates on which to achieve them in order to effectively improve each area.

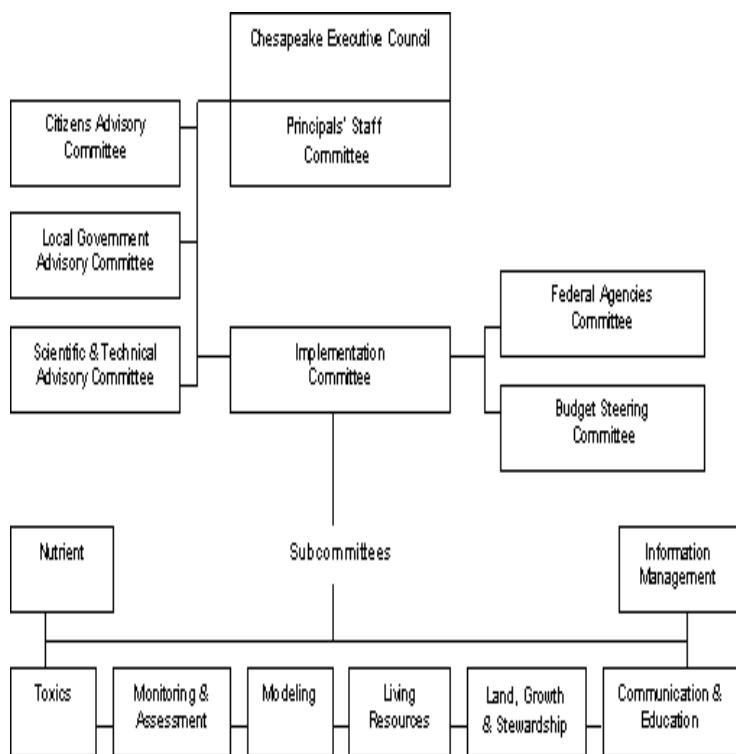


Figure 6. The organizational structure of the CBP (EPA 2000)

In the following years several long term studies initiated by the original agreement came to a close and increased understanding of the bay system and formalized the challenges of restoration efforts. One of the most influential findings came from a report titled *Dissolved Oxygen in the Chesapeake Bay: a Scientific Consensus*, which emphasized the vulnerability of the bay to climatic variations, but the core of the research found that nutrient inputs from nonpoint sources were the primary cause of oxygen depletion (Harding et al. 1992). The report also emphasized the lack of knowledge about the relationship between water quality and living resources in the bay, but emphatically endorsed the 40% nutrient reduction goals of the CBP.

One of the more influential reports to policy makers was titled *A Progress Report of the Baywide Nutrient Reduction Reevaluation* (EPA 1992a), which synthesized research from computer models, engineering, and the natural sciences in a lengthy report. The report found that nutrient control efforts had decreased phosphorous inputs by 19% in the bay over six years of abatement efforts, but a 2% increase in nitrogen. Legislation to ban phosphate detergents and improve municipal wastewater treatment facilities and other point source pollution sources were credited as the main reason for the decrease in phosphorus (Boesch et al. 2001) but the problems stemming from nonpoint sources remained a serious barrier. The report suggested a more significant impact from agricultural runoff and atmospheric deposition of nitrogen input

Most notable about the new agreement was the quantified targets for nutrient reductions, which for the late eighties, was unprecedented in environmental management (Doyle and Drew 2008). Namely, the 1987 Agreement set a goal of 40% nutrient reduction by the year 2000 (EPA 1987). There is also a notable influence of the accumulation of science focusing on the bay in the new commitments. One of the important ways in which conceptualization of the bay changed was from viewing the body of water as the beginning of the sea to an aggregate extension of rivers, heavily influenced by land use practices in the watershed (Boesch et al. 2001). In 1988, a *Federal Workplan* was published that highlighted the roles that seven additional federal agencies should play in improving and streamlining the understanding of environmental problems and coordination of remediation efforts (EPA 1988).

into the bay as well as an improved understanding of inputs from the three additional states – New York, West Virginia, and Delaware -- in the watershed (EPA 1992a).

As a result of these findings, the CBC amended the 1987 Agreement to redirect policy so that the nutrient reduction goals could be achieved. The 1992 amendments highlighted the importance of improving tributaries systems in addition to the main stem bay. The amendments call for the development of tributary-specific nutrient reduction strategies that “ensure the broadest possible public involvement [and] advance both cost-effectiveness and equity” (EPA 1992b). In addition, the new commitments emphasized the importance of coordination and cooperation with New York, West Virginia, and Delaware in creating the tributary specific strategies. The scope of the CBP increased while the focus on restoration efforts was narrowed to address nutrient problem more effectively.

As a result of the influx of knowledge and expertise, new initiatives were developed by individual states through the Executive Council of the Bay Program during their annual meetings in the following years. These new initiatives were largely focused on reducing nutrient input to the bay ecosystem through individual state initiatives such as installing 3234 km of riparian buffer vegetation along streams and shorelines in the watershed (EPA 1994), tributary specific nutrient reduction strategies to achieve the bay-wide goal of 40% reduction (EPA 1997), and the understanding that restoring the living resources of the bay was the overall goal and that aquatic vegetation would be the primary indicator of the programs success (*Ibid*). All of these additional commitments would culminate in yet another revision to the Bay Program goals as the millennium approached. Many of the goals set in the 1987 Agreement and the 1992 Amendments were meant to be achieved by 2000, but as scientific monitoring was compiled in re-evaluation reports in the mid to late 90’s, it was clear that the program needed to reshape the targets based on the improved understanding of the dynamics involved in the Chesapeake ecosystem and the growing society affecting it

## **2.5 Movement without Action: Addressing Failures of the CBP 1992-2000**

The program re-evaluation through the nineties involved input and advice from an array of informants ranging from policy makers and scientific experts to interest groups and citizens. In 1998, the Chesapeake Bay was officially listed as an “impaired water body” under the Clean Water Act in the states of Maryland, Virginia, and the District of Columbia due to excessive pollutants of nitrogen, phosphorus, and sediment (Doyle and Drew 2008).

One consequence of being listed on the EPA’s impaired waters list is the legal obligation for the state in which the impaired water is located to develop a Total Maximum Daily Load implementation plan. Undertaken by the Virginia Consent Decree, a legal acknowledgement of failures of the state to maintain federal standards of water quality as required by the Clean Water Act the state established a deadline for the development of a TMDL for the bay by May 1, 2010<sup>‡</sup>. The TMDL process establishes a “pollution budget” for impaired waters that do not meet water quality standards and then attempts to devise strategies to balance the budget through aggressive monitoring and regulation of point sources and increase efforts promoting best management practices among landowners contributing to nonpoint sources. The TMDL management plan for the bay establishes a maximum pollutant loading for nitrogen, phosphorus and sediment will be identified for the watershed as a whole, and is then further divided between states in the watershed, which is then further into the major tributary basins – essentially breaking the problem down into smaller, more easily managed pieces.

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<sup>‡</sup> If the state can not develop and implement the TMDL plan then the EPA is required by law to create one in 2011.

While the concept of a TMDL for a specific waterway is attractive in its simplicity—identify impairment, set load limits for point sources and nonpoint source, and monitor—as a means accomplishing the goals of improving water quality, the process of developing a TMDL implementation plan itself does not ensure success. In fact, there have been over 20,000 TMDL's developed in the U.S. since the establishment of the CWA and yet, on a national scale roughly 40% of waters remain impaired (EPA Project 2006). This stems largely from the fact that the TMDL requirement was established with the Clean Water Act in 1977, when point source pollution was thought to be the main problem with degraded waters. The method of pollution budgets address point sources well, but fail to effectively incorporate more diffuse nonpoint sources.

In part, the problem associated with TMDL effectiveness is due to the large uncertainty inherent in the calculations of watershed-specific pollution budgets. Lack of data in order to quantify nonpoint pollution loads, lack of site specificity, and the lack of defined water quality standards for specific bodies of water all contribute to the uncertainties and inefficiencies of TMDL remediation of impaired waters (*Ibid*). A report to the EPA regarding the characteristics of successful TMDL projects makes its first critique that a “one size implementation plan doesn’t fit all” and that secondly, “stakeholder engagement is crucial in privately owned lands” (*bid*). Further, since it is the responsibility of the state to develop and enforce TMDL projects there is often budgetary and resource limitations that influence a projects success (*Ibid*).

Since the listing made it clear that previous agreements had not achieved the targeted goals and there was now pending legal obligation to improve waters by 2010, the signatory states refocused their efforts in a new political commitment titled the *Chesapeake 2000 Agreement* (most commonly referred to as C2K), which reiterated the importance of restoring the bay’s living resources as the primary indicator of the programs success (EPA 2000) and called for more aggressive action. Under the *Water Quality Protection and Restoration* section of the new agreement the signatories confess, “we have agreed to the goal of improving water quality in the Bay and its tributaries so that these waters may be removed from the impaired waters list prior to the time when regulatory mechanisms under Section 303(d) of the Clean Water Act would be applied” (EPA 2000).

In order to avoid regulatory action from the EPA, a redefined vision of restoration was incorporated into the new agreement that recognized the need for a long term perspective, community involvement, and a new conceptualization of what successful restoration might look like. The overarching goal of the C2K was to “restore, enhance and protect the finfish, shellfish and other living resources, their habitats and ecological relationships to sustain all fisheries and provide for a balanced ecosystem,” but in order to achieve this goal there was a reframing of the problems and new emphasis on the need to “work with local governments, community groups and watershed organizations to develop and implement locally supported watershed management plans” (EPA 2000).

In addition to calling for traditional, government sponsored regulatory measures and methods of water quality restoration via TMDL's, the C2K agreement sought the cooperative participation of signatories to address stakeholders involved with nonpoint source pollution in the watershed. As the preamble of C2K states

To do this, there can be no greater goal in this recommitment than to engage everyone — individuals, businesses, schools and universities, communities and governments — in our effort. We must encourage all citizens of the Chesapeake Bay watershed to work toward a shared vision — a system with abundant, diverse populations of living resources, fed by

healthy streams and rivers, sustaining strong local and regional economies, and our unique quality of life (EPA 2000).

Integral to the success of this long term objective were the more specific goals established in the C2K document that, theoretically, serve as precursors to the success of bay restoration. While the framing of the problem was once more expanded to address a growing number of factors that were scientifically discovered to influence the bay, the solutions to many of these was narrowed to address individual citizens causing the problem. The management of the bay shifted from a focus on technocratic solutions to participatory processes aimed at specific demographics. The primary focus was once more on improving water quality which was viewed as, “the most critical element in the overall protection and restoration of the Chesapeake Bay and its tributaries” but there are in total over 120 specific objectives that the C2K agreement seeks to accomplish in the coming decades.

## **2.6 Calling All Citizens: Engaging the Most Influential Stakeholders 2000 – Present**

Comparing the Preamble of the C2K and the original 1983 Agreement it is clear that the focus of restoration efforts shifted dramatically from creating institutional structures for collaborative management, evaluation and enforcement, to engaging all stakeholders in the bay to participate in restoration efforts. A distinct reframing of the solution from bureaucratic management to citizen engagement is apparent. As a result, several programs addressing communities were developed by the CBP in order to enroll citizens in the restoration efforts. Many of these efforts were focused on establishing a connection between citizens and the environment. Programs varied in their target groups from adults to children, activists to businesses, the CBP and other NGO organizations greatly expanded efforts to engage as many stakeholders at the micro level as possible since the most influential barrier was identified as the aggregate actions of individual choices (EPA 2000).

Population growth in the watershed and the coupled increase in environmental demands and impacts were identified as a major driver of the problem. The Chesapeake Bay doubled its population from 8 million in 1950 to over 16 million in 2000 and has experienced the largest population growth of any coastal watershed in the U.S. in the last 20 years, and if the trends continue they will likely grow by another 60% by 2030 (Boesch and Greer 2003). The increasing density of inhabitants created a political environment on the meso scale that resembles the “race to the bottom” archetype of development (Potoski 2001); counties and municipalities in the watershed attempted to attract businesses and residential development by emphasizing their lower tax rates and the value of living in rural, open spaces over congested urban environments.

The result was an increase in impervious surface area four times the population growth (Boesch and Greer 2003). Often referred to as the “dark side of the American dream,” the so-called out migration from high density urban centers to the suburban fringes and the accompanying loss of open spaces to low density housing projects and the accompanying increases in traffic and demand for public infrastructure improvements are all a major problem in the watershed (Sierra Club 1998). There is often a conflict between the CBP goals and local governments, who welcome growth as a means of increasing the tax base and profile of their community. The economic benefits of growth also come with local cultural as well as environmental costs, suburban sprawl destroys the very things that draw people to move there. (this topic will be discussed in depth in Chapter 4). In response, the C2K agreement addresses citizen stakeholders directly through efforts aimed at fostering stewardship and civic engagement. *The Stewardship and Community Engagement* goals of the C2K seek to, “promote individual stewardship and

assist individuals, community-based organizations, businesses, local governments and schools to undertake initiatives to achieve the goals and commitments of this agreement” (EPA 2000).

Many programs were developed and funded by federal and state agencies to address these goals. Most of these programs focus on various ways to facilitate educational experiences outside in the watershed. These programs ranged from developing a watershed gateway and water trail programs, to allocating funds for teachers who want to provide meaningful watershed experiences for students in the field (EPA 2001). One of the more high profile, and highly praised successes if the community engagement goals, is the Small Watershed Grants Program (EPA 2009). This program was developed to fund community efforts that “encourage innovative, locally-based programs or projects that improve water quality and restore important habitats within the Chesapeake Bay basin” (EPA 2000). Since 2000, the Small Watershed Grants Program budget has increased from 1.6 million USD to 2.2 million USD in 2008 and has provided a total of 20.8 million USD to community efforts in the bay watershed (EPA2009).

While there have been many success stories that have come out of local community projects and experiential education, this approach from the CBP is too passive in its pursuit of community engagement goals. If engaging citizens to participate in restoration efforts through their individual choices is seen as the key to achieving many of the goals set forth in the C2K Agreement, then a more permanent, dedicated political commitment from the macro level is needed. The approach set forth in the C2K lacks a specific mechanism to address the bay’s problems at a deeper level beyond funding specific community projects on a yearly basis. Such an approach is effective for temporary success in localities, but does not engage communities in a way that promotes change in the community itself. Public participation has become a requirement in many environmental decision making processes, but the standardization itself takes away from the very potential that is inherent within it. The bureaucratization of participatory processes dulls the point which its inclusion was initially trying to make: that local, place-based knowledge is necessary for effective policy outcomes.

While the CBP is attempting to incorporate communities in participatory processes it lacks a flexible mechanism that engages citizens in a way that “foster[s] within all citizens a deeper understanding of their roles as trustees of their own local environments” (EPA 2000). This critique will be backed by the successful efforts of the C2K’s land conservation goals and show that community acceptance and the transformation of norms through community dynamics is the most efficient way to achieve the permanent change needed for restoration efforts. Thus, rather than simple participatory representation, tailoring policy to utilize community values, norms and networks is essential to the success of the CBP goals.

The *Sound Land Use* goals of the C2K seek to, “Develop, promote and achieve sound land use practices which protect and restore watershed resources and water quality, maintain reduced pollutant loadings for the bay and its tributaries, and restore and preserve aquatic living resources” (EPA 2000). In order to do this the CBP, EPA, and signatory states sought to, “provide financial assistance or new revenue sources to expand the use of voluntary and market-based mechanisms such as easements, purchase or transfer of development rights and other approaches to protect and preserve natural resource lands,” and to, “strengthen programs for land acquisition and preservation within each state that are supported by funding and target the most valued lands for protection. Permanently preserve from development 20 percent of the land area in the watershed by 2010” (*Ibid*).

The programs approach to land use management was to incentivize conservation practices so that citizens have the motivation to express their commitment to improving the bay by adopting conservation practices on their land. The CBP also encouraged states to work with local planning boards to develop smart growth

plans, but the primary method of controlling land use change was by market mechanisms and voluntary approaches. This method has been highly successful relative to many of the CBP's other goals since C2K.

This finding led me to pose two questions:

- 1) How, specifically has the market approach of providing financial incentives for voluntary land conservation worked?
- 2) What was the mechanism of success—purely financial motivations of individuals, or something else?

The remainder of this research will focus on the time period from the C2K Agreement present in order to explore these questions. Looking at the State of Virginia, I will use private land conservation as a metric for how the state policies fit in to the macro CBP policies. I then attempt to gauge what the mechanisms at the meso scale of implementation have aided the adoption of land conservation on the micro scale.

## **2.7 A Discussion on the Macro Developments of the Chesapeake Bay Program**

Often, legislation at the national level is seen as a symbolic action that establishes an agenda for a direction that society should head (Cortner and Moote 1994). The Chesapeake Bay Program was established as model program to facilitate other national restoration efforts to achieve the CWA goals of eliminating the,

“discharge of pollutants into the navigable waters [...] by 1985” (CWA 101, 33 U.S.C. § 1251). While the Clean Water Act and the Chesapeake Bay Program were initially ambitious in their goals, the iterative learning structure and flexibility of the programs operations continually incorporated new scientific findings into the policy process. The program has been hailed as a successful example of adaptive management in practice (Hennessey 1994) and some have viewed the circular nature of scientific understanding and the policy process as success (Morgan and Owens 2001) While the bay has not worsened in its environmental condition since the inception of the CBP, it remains an impaired body of water by federal standards and has not improved despite billions of dollars spent on coordinated restoration efforts (Ernst 2003). Any claims of success are relative to specific facets of the bay SES, and not pertinent to the bay watershed and the societies within it as a system.

This presentation of the historical developments of the CBP has identified four periods that exemplify the iterative nature of the program, consisting of scientific study, policy development, and reevaluation processes that have reframed the problem several times and significantly improved our understanding of the barriers involved in restoration efforts. The key developments are summarized in table 1.

**Table 1. Developments of CBP**

| Period         | Key Developments                                                                                                                                                                                                                                                                                                                                                       |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1976-1983      | Improved understanding of cultural eutrophication of the Chesapeake Bay system and a cooperative approach to generating regulatory mechanisms to restrict nutrients causing the problem.                                                                                                                                                                               |
| 1983-1992      | In understanding the complex nature of the bay's SES there was improved coordination between government organizations to address restoration efforts. Quantitative goals were set based on scientific understanding and political commitments symbolically dedicated the commitment to restoration on a macro scale.                                                   |
| 1992-2000      | The traditional, technocratic approach through TMDL's failed to achieve the programs goals due to the large uncertainties inherent in the approach. In addition, the impact from the aggregate actions of individuals in the watershed was larger than expected; limitations of regulatory measures became apparent and the focus on community levels of action began. |
| 2000 – Present | The CBP focused on improving community participation as a means of achieving the goals set forth in C2K. Macro policies focused on allocating resources to create market mechanisms for voluntary participation. How to best operationalize this approach to achieve the goals of the program remains a question.                                                      |

Moving from the once conceived simple matter of regulating chemicals and pollutants from large industries through command and control approaches, to creating voluntary, market-based incentives to change the behaviors of citizens in the community has been the trend in the CBP (see figure #). The macro policy has restricted the potential freedoms of individuals when the scientific evidence is conclusive, but has turned to creating financial structures that encourage individual behavior on the landscape to improve in general, non-specific ways. The target of the CBP's policy focus has become smaller over time. There has been an improved understanding of efficient scales of action to address the growing complexities of the system uncovered by science. At the heart of these efforts lies community engagement—where this research will now focus.

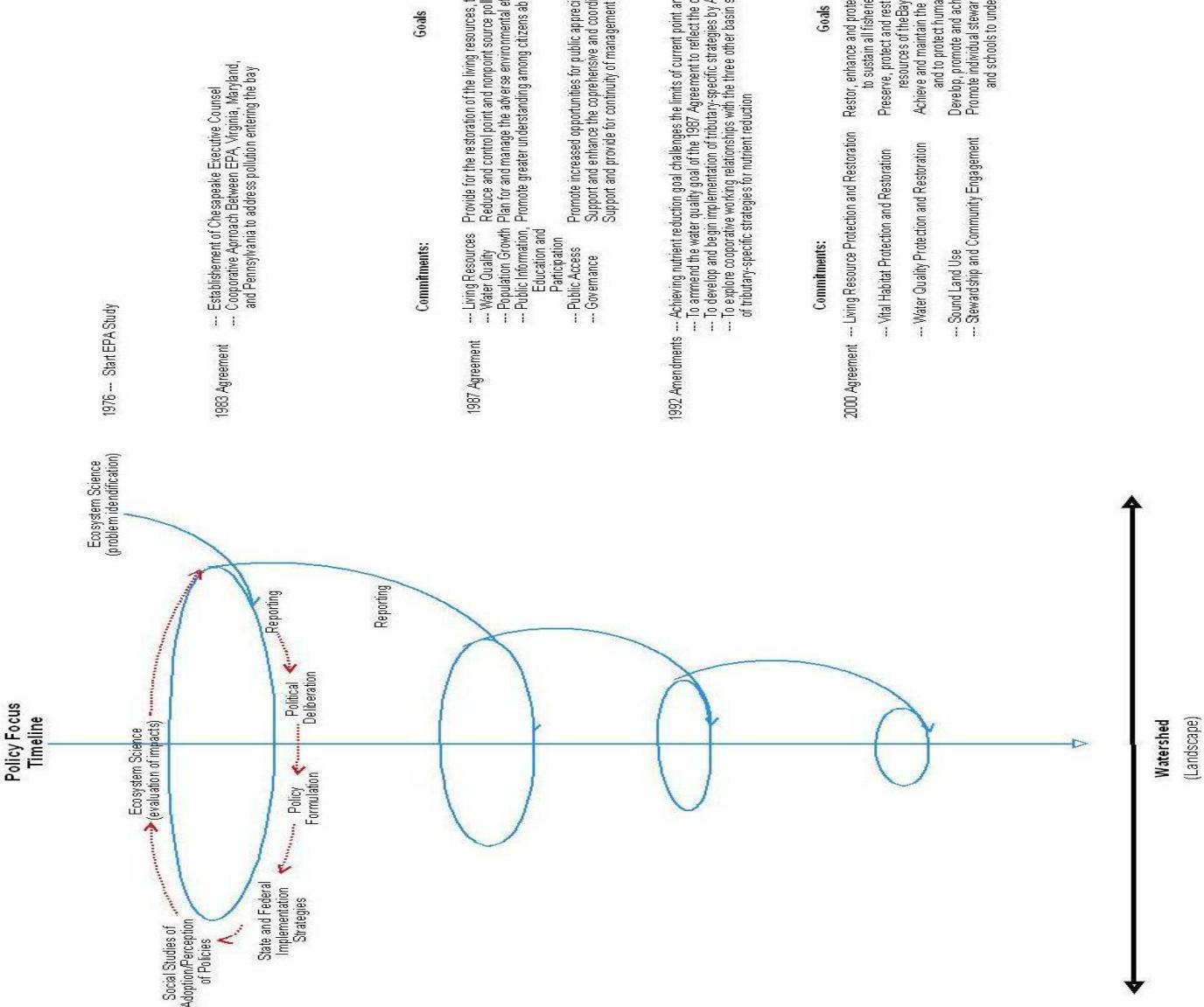


Figure 7. Dynamics of the CBP showing the iterative policy process of the CBP and its focus on smaller scales in the watershed thru time corresponding to key Agreements.

## Chapter 3 — Mechanisms of Change: Examining Meso Structures

### 3.1 The Necessity of Private Land Conservation and the Importance of the State Policies

Of the 5.6 million hectares of Virginia land in the bay watershed, approximately 12% is owned by the federal government and 5.5% is owned by state and local governments (VLCF 2009). The remaining 82% of the land in the Virginia portion of the Chesapeake Bay watershed is owned by private interests. This chapter will examine how the meso level has tried to provide effective incentives and policy structures to aid the CBP in realizing its goals in the area of land conservation.

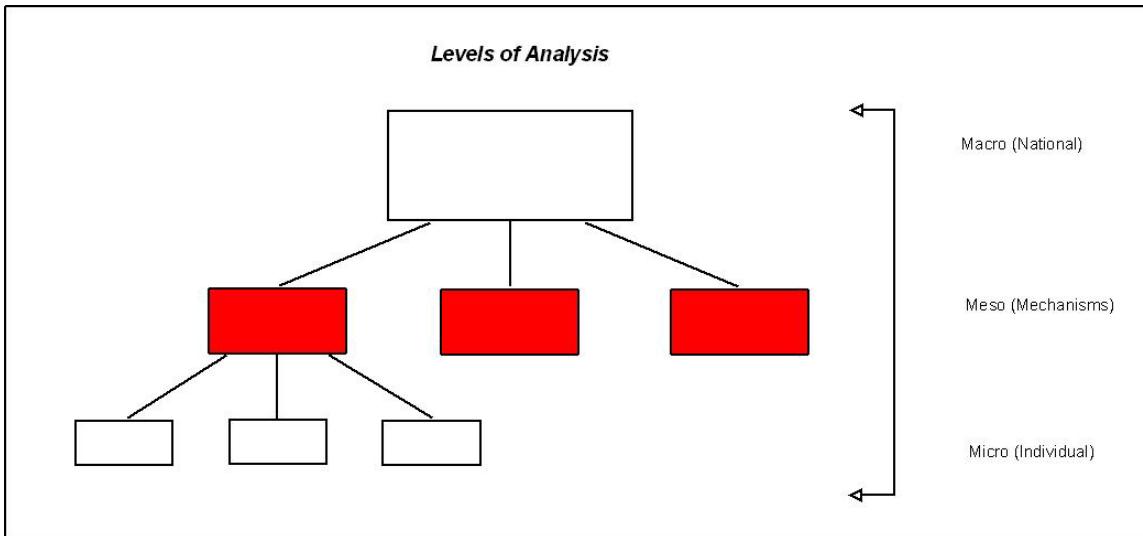


Figure 8. Illustrating the meso level of analysis and their roles as intermediaries between macro and micro levels described in Chapter 3.

While the CBP is a collaborative partnership between actors at the federal and state level, the real action in the landscape, the actions by landowners, is most heavily influenced by the political policies of individual states. As discussed previously there are limits to the effectiveness of federal actions and a need to integrate more local actors in policy process and facilitate their participation in order to achieve the overarching goals of the program. The participation of states in creating and enforcing legislation as well as incentive structures that complement the collaborative goals and federal policies is essential—especially when discussing land conservation. This chapter will analyze the policy progression in the state of Virginia as it has attempted to develop its own management strategies to meet the commitments made to the Chesapeake Bay Agreements by promoting conservation in the landscape on privately owned lands.

When discussing land use change and development patterns in the bay watershed those who have the most influence in the decision of development and land management are local planning boards and zoning commissions, which operate within the uniform development guidelines established by the state. States are able to develop more stringent regulatory standards and are more capable of enforcing them (Gerber and Teske 2000). Many states develop much more rigid policies and regulations, and more lucrative fiscal incentives focused on addressing certain areas of environmental concern than those in place at the federal level in order to more effectively address the specific environmental pressures facing the state; yet, state policies can also be more lax in other areas of environmental policy as a means of enticing industry to move into the state (Hammond 1986). In addition, many of the fiscal policy tools developed at the macro scale in attempts to influence land use practices, such as private property taxation, agricultural subsidies

and aid, and forestry guidelines and management plans are all fine tuned and implemented at the state level. Land use policies in Virginia aiming to increase conservation have come to demonstrate this well.

### 3.2 The Actions of Virginia

In 1966 the Virginia Outdoors Foundation (VOF) was established by an act of legislation. The VOF was, “established to promote the preservation of open-space lands and to encourage private gifts of money, securities, land or other property to preserve the natural, scenic, historic, scientific, open-space and recreational areas of the Commonwealth,” (Virginia Code § 10.1-1800). The VOF was created as an independent ‘body politic’ making it both a state agency and an independent organization. As a public foundation, the VOF has vested powers, “to accept, hold, and administer gifts and bequests of money, securities, or other property, absolutely or in trust, for the purposes for which the Foundation is created” (Virginia Code § 10.1-1801.4). Essentially, the role of the VOF is to remain a steward of open spaces and the ecosystem services they provide in maintaining the commitment of the constitution of Virginia to its citizens. Its function is to preserve the ‘uncommon wealth’ of rural open spaces that define the character of the state and the ecosystem services they provide, which have, historically, been a critical element of Virginia’s history and development.

With over 2,000 separate properties under easement, the VOF holds more than 80% of all easements in Virginia. The remaining 20% are held by small regional land trusts and various state agencies. The large number of conservation easement held by the VOF is due to legislative action of Virginia extending back to 1966 when the Open Space Land Act was passed along with the formation of the organization. That piece of legislation allowed public agencies from the state to municipal level to hold the development rights (usually through the purchase from a landowner). The purpose of the legislation was to ensure that public agencies of the state would be active in, “retaining or protecting, natural or open-space values of real property, assuring its availability for agricultural, forested, recreational, or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural or archaeological aspects of real property (Virginia Code § 10.1-1700).

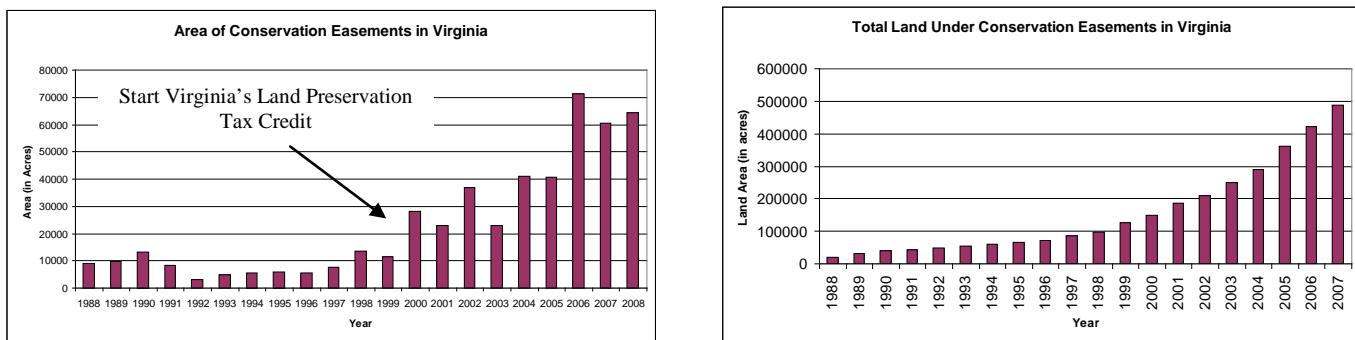


Figure 9 Conservation Easement Trends. The graph on the right shows how the area protected by conservation easements per year increased dramatically after the Land Preservation Tax Credit. While the graph on the right shows how the total number of acres preserved in Virginia has increased toward the 20% goal set forth in the C2K agreement. In 2008, Virginia had achieved 85% of its total land acquisition goal to satisfy the C2K Agreement (Source Data: VOF 2009)

While the Open Space Land Act and the Virginia Outdoors Foundation were progressive actions at the state level for their time, conservation easements themselves were not all that popular until the 80's when the state formalized the Virginia Conservation Easement Act. The Conservation Easement Act of 1988 allows for development rights to be held by private, non-profit conservation organizations in addition to public agencies and greatly expanded the options available to landowners looking to sell or donate their

development rights and permanently conserve their land (Virginia Code § 10.1-1700). The motivation behind this legislation was a direct result of the growing development pressures in the state, the commitments to the CBP Agreements, and the neoliberal dominance of politic policies of the Regan era. The act also enabled many citizen organizations to form non-profit organizations as a means to start to promote conservation easements in their community, which has been a major reason for the growth of conservation easements nation-wide (Faifax et al. 2004).

Despite being one of the leaders in creating legislation aimed at conservation, Virginia ranked dead last in the nation in per capita expenditure for conservation until 1999, relying heavily on voluntary mechanisms (U.S. Census). In 1999, the state authorized the Virginia Land Conservation Incentives Act, which allows land owners who donate a conservation easement on their property in Virginia to claim a credit against Virginia taxes equal to 40% of the easement value (Virginia Code § 58.1- 510-513). To further incentivize conservation in light of the C2K Agreement the state amended the Land Conservation Incentives Act to allow for the transfer of state tax credits from one holder to another to offset state tax obligations in 2002. Thus, a landowner who cannot utilize all of the credits afforded to him through the donation of a conservation easement is free to sell them to another resident in need of relieving state tax obligations for cash. This action was taken in order to incentivize land conservation to those who have the most to offer in terms of ecological services: land rich, but cash poor landowners and farmers in the state.

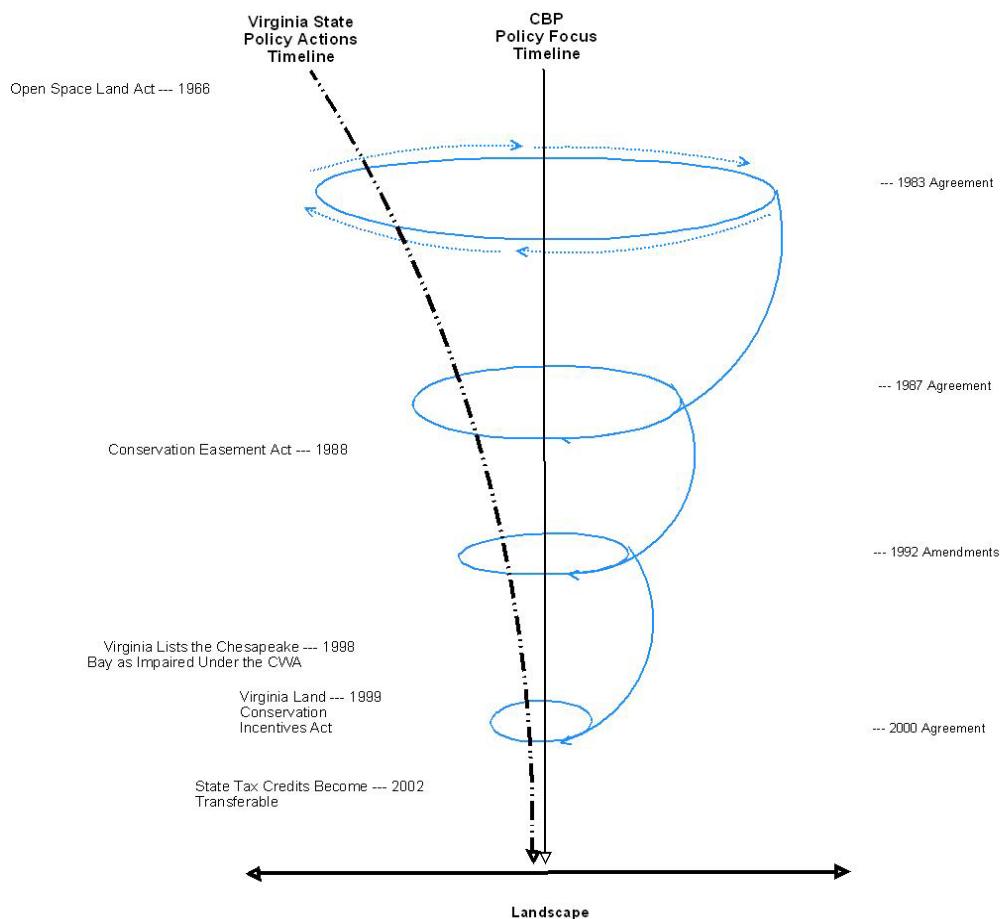


Figure 10. Key dates of Virginia legislation on land conservation policy relative to CBP efforts.

### 3.3 Spreading the Message: The Role of the Land Trust Movement in Virginia

While there is a national community of land trusts that operate on the macro scale, holding high profile properties, lobbying for more beneficial legislation, and provide research and coordination efforts, the major success of the land trust movement has come from the efforts of smaller land trusts reaching out to landowners and informing them of the options available (Fairfax et al 2004). In Virginia, the success of the Virginia Outdoors Foundation has been, in part, due to the efforts of regional land trusts. The number of regional land trusts in Virginia has been increasing since the 90's, allowing for each land trust to redefine their service areas to smaller geographic areas of focus. By reducing the service area of each land trust, the efforts of regional land trusts are better focused on achieving their individual missions—almost all of which are concerned with promoting conservation and preserving the environmental benefits associated with conservation areas.

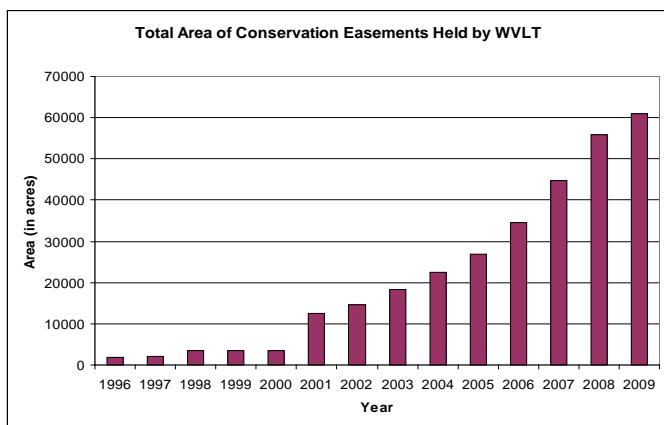


Figure 11. Total area of conservation easements held by WVLT, mirroring state level trends (Source Data: WVLT Correspondence)

state (see fig 10). The primary goal of the organization is to educate landowners and professionals about conservation easements, their importance, the process, and the financial incentives available from the state and federal government, not to acquire them directly. Their mission is one of facilitation, so we now turn to the micro level, which is where the actions on the landscape—the actions that matter—take place.

## Chapter 4 — The Power of Social Capital: Landowner Narratives on Conservation

### 4.1 Theoretical Framework: Looking Backwards to Improve the Future

Participation and engagement in political decision making processes has become a focus of the CBP, as shown. This strategy is not new, but rather a revival of long standing ideas foundational to democratic processes. Alex De Tocqueville, in his observations of the early American political environment, credited the engagement of citizens in civic organizations and political groups as vital to the continuance of democracy (Callinicos 1999). Tocqueville viewed participation in voluntary civic organizations as important to political processes for two reasons: 1) participation improves trust and bonds between individuals in a community; and, 2) it improves the efficiency with which communities respond – through their shared norms, trust, and social networks – to the external challenges, pressures, and changes they face. Thus, what the CBP is attempting to do through their goals of improving community engagement

and participatory processes lies, foundationally, on reviving civic engagement specific to watershed restoration efforts. To show how this ambition can better be operationalized, the concept of social capital is used as a theoretical framework in the following section as a way in which the CBP can better achieve environmental outcomes in the bay watershed.

## **4.2 Social Capital**

Social capital is a concept that has been around for many years as way to gauge the tightness of community structures and culture. The concept of social capital, essentially, is all about who you know not necessarily what you know or what your status is. As Putnam (2000:19) defines it, “[...] social capital refers to connections among individuals—social networks, and the norms of reciprocity and trustworthiness that arise from them” Individuals with tight social networks within a community that share common norms and values invest a social resource from which they can draw from in tough times and contribute to in good times. The idea is that individuals personally benefit from participating in communities and through their participation benefit others as well. Social capital is a useful way for researchers interested in understanding how individuals benefit from participating in group efforts. The theory has become hugely popular in academia as the growing number of published studies demonstrate (Rupasingha et al 2006), most of which have shown that communities with high social capital positively influence participation in political processes, educational outcomes (Sander and Minicucci 2007), economic growth and development, higher community health (Petrou and Kupek 2008), and lower crime rates (Brehm and Rahn 1997; Putnam 2000; Woolcock 2001). Recently, social capital has gained prominence in several studies examining its relation to sustainability and pro environmental behavior (Thoyre 2008; De Groot and Tadepally 2008; Rydin and Pennington 2000; Larsen et al 2004; Pretty 2003; Dietz et al 2003). Due to the plethora of research on positive benefits of social capital showing its benefits for both individual as well as community outcomes the concept is useful for explaining the way in which private land conservation has grown in recent years. Specifically, this research draws from the conclusions of Thoyre (2008), which showed that high social capital has the potential to change individual attitudes toward the environment.

## **4.3 Background on Fieldwork**

Home to the Blue Ridge and Appalachian mountain ranges, the Western portion of Virginia was settled by Scotch-Irish and German immigrants in the early late 18th century (Constantz 1994). The early setters of Appalachia cleared the extensive old growth forests to feed the developing industries of ship building and iron works in the east and scrounges a living in the harsh mountainous land. The people of Appalachia have long been misunderstood by the urban majority. Sociologist David Walls was one of the first to examine community environments of the Southern Appalachians within the emerging capitalist economy context. He labeled Appalachian communities as being on the “fringe” of American society, comprising small, poor, rural economies that specialize in providing an essential material to the larger national economy thus, being both vital as well as meaningless depending on which lens one chooses to examine them (Walls 1976). The persistent poverty of the Appalachian region became focus of national attention since the 1960’s when efforts to eradicate poverty by President Lyndon Johnson’s famous War on Poverty were the center of national discussion. The persistent poverty of the region and the failures to develop relative to national standards has been the source of many empirical studies that have helped develop sociological theories, the most notable of which are subculture of poverty model (Gans 1962), regional development model (Hansen 1970), and the inter-colonial model (Caudil 1965). The Appalachian region has long been considered an area of social, economic, and political backwardness, yet addressing these

communities is essential for the efforts of the Chesapeake Bay Program efforts, as the region covers almost half of the entire watershed (Canaan Valley Institute 2002).

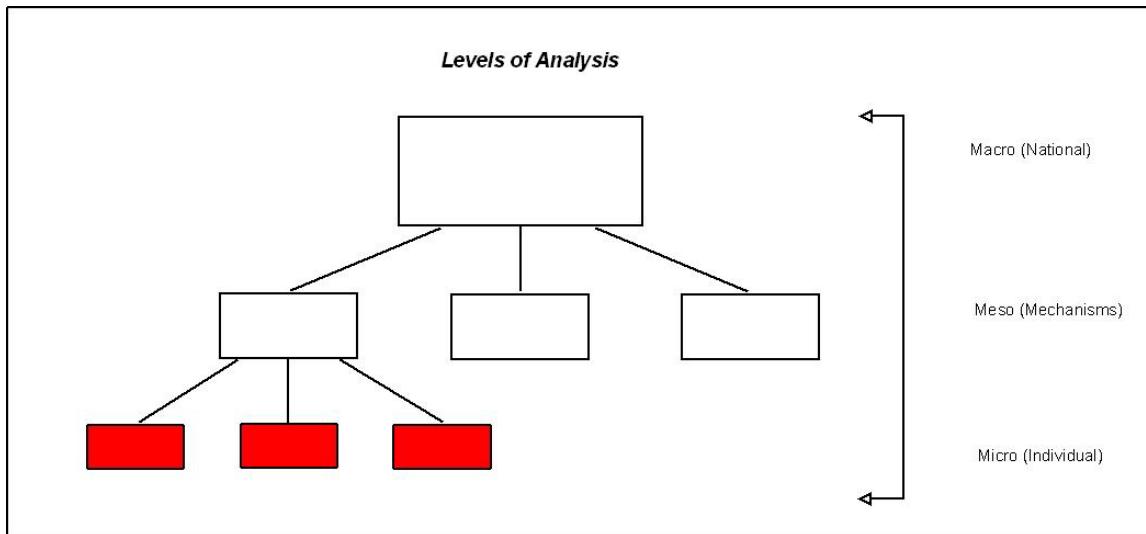


Figure 12. Highlighting the micro scale of analysis described in Chapter 4.

Through my exploration of private land conservation in the mountains of Western Virginia, I find that there is a deeper explanation for the rise in conservation easements in Virginia beyond the economic incentives put in place by the State of Virginia. Through discussions with landowners who have placed conservation easements on their property, I find that the concept of social capital is useful for explaining why there has been a growth in easements in the region. Financial incentives, for most land owners, are a secondary benefit. The primary motivation is related to personal values of the individual and using conservation easements as a tool to express those values and make a change in the physical landscape in the only way they can. I relate the importance of this finding to policy makers who are working on the macro scale trying to engage communities on the micro level, and how improving trust between community members, NGO's, and government agencies is essential for policy success in the study area.

While the concept of social capital has many critics for its lack of consistency in academic studies, and its actual usefulness for science as a calculable, quantitative measurement related to disciplinary studies is contested (Mencken et al. 2006), the dynamics it embodies—trust, community ties, and participation in civic organizations—serves as a prime theoretical framework in which to examine the recent efforts of the CBP and explain the success of private land conservation in Virginia. While this study does not measure the social capital of the study site, it does assume that social capital is high in the region because of the well known and well studied unique culture, strong sense of place, and historic economic conditions (Billings 1974; Lewis and Billings, 1997).

#### **4.4 Method of data collection**

The counties of Botetourt, Craig, and Rockbridge, Virginia, which are located in the far western portion of the Chesapeake Bay watershed were the geographic regions of my fieldwork exploring the dynamics of the micro level. A combination of primary and secondary data was used in this research. The qualitative component consisted of semi-structured interviews with landowners and individuals involved in promoting private land conservation as well as observational studies at community meetings from organizations around community partnerships and a proposed Blueway trail system on the James River

through Botetourt County. While statistical information from national and local governments was collected from personal communication as well as government census reports for the quantitative information presented.

Further, the tensioned uncovered in the coming narratives are representative of the new phenomenon of population growth and development pressures in the study areas. This research assumes that though population has increased in these regions, the deep rooted values of the community has not been severely diluted and social capital in the study areas remains high. While population pressures in the study sites have been increasing in recent years, they are largely occurring in suburban housing, creating the tension that will be expressed in the coming narratives. Thus, I assume that the social capital of the rural population continues to maintain high social capital amongst their insider community, despite newcomers to the area. This assumption is of high social capital reinforced by the research process itself<sup>§</sup> as I interviewed landowners in the field.

Important to this research processes was the access I was able to gain through my connection to the communities in the study site. It is well documented in social science literature that the characteristics of interviewers, such as ethnicity, socioeconomic status, gender, etc., can have an effect on respondents replies (Bryman 2008:210). One of the advantages of my research approach and why I chose to interview people in western Virginia is because of the connections that I have to the area. Being from the Appalachians in Virginia and having a connection to the land, people, and culture allowed me to gain access to respondents in a way that many researchers and policy makers can not. Through reflection, I identified my role as a “observer participant” to the research, in that I mainly interviewed individual land owners and attended community meetings and observed the dynamics involved (Bryman 2008:411).

Flexibility and gaining trust from respondents was an important step to gathering insights that were useful to my research. As Bryman (2008:201) notes, establishing a rapport with the interviewee is essential to successful qualitative research. The initial interviews with those whom I contacted personally were unique and varied in the approach and order of questions asked based on my perceptions of the landowners behavior and general body language to the interview process. In part, I believe that this was because of the initial skepticism of rural landowners to perceived outsider coming onto their property to ask them questions. Most interviews required a significant effort on my part to establish a rapport with the interviewee (Bryman 2008). Once I proved my knowledge of the geographic area, discussed issues important to the specific community and my personal relations to other members in the community, rapport was established and common bonds between the respondent and I were expounded on as the interview process moved forward. There was more than one occasion where the interview process was initially curt and the interviewee was closed and guarded revealing any personal information about their property or opinions. Once they were accepting, however, every interviewee was passionate about their actions to place a conservation easement on their land and involved an interpretive walk with the landowners who would discuss the details of their land and expound on the initial research questions asked.

#### **4.5 Perspectives of Conservation Easement Holders: Narratives from the Mountains**

The historical perceptions of backwardness from the rest of society combined with the growing tensions between development and historical landowners has created a political environment of skepticism towards

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<sup>§</sup> See Appendix B for examples of how the field work was spread through the local social networks and received by local community media

government programs from landowners in Western Virginia, even if the financial incentives available would greatly benefit them individually. These shared values and attitude around a common issue are evidence of my assumption for high social capital. As I will show in this section through the narratives uncovered in the interviews, the adoption of conservation easements is a factor of trust between landowners and conservation organizations, personal values, and norms of the community. These narratives will help explain why policies devised at the macro scale need, by necessity, intermediaries that can bridge the skepticism from landowners who are facing pressures from a changing landscape, can benefit from the incentive structures in place, and contribute to the overarching goals of the Chesapeake Bay Program.

As the number of local land trusts in Virginia has increased it has allowed for more concentrated outreach efforts in promoting and educating landowners about conservation easements. Conservation easements, however, while not new legislatively, are a new phenomenon in many rural areas in Virginia. Many landowners are skeptical of land trusts the same way they are skeptical of development and new comers to the community; the promotion of land trusts is a reaction to growing development, but in the eyes of an outsider, they are both new and represent change, which invites skepticism, initially.

The Western Virginia Land Trust holds many public landowner meetings throughout the year. It sometimes takes landowners a decade or more of attending these landowner meetings, hearing the same presentation and discussion about land trusts, and testimonies from land trust holders before they finally overcome their skepticism and contact the WVLT to discuss, in detail, the possibility of an easement on their property (Holnback 2009). Even with their increased efforts, the employees of WVLT are sometimes seen as outsiders since the main office is located in Roanoke City and many individuals are turned off from the prospect by that simple fact alone (*Ibid*). But it is through the efforts of the local land trust in Western Virginia that the numbers in the area have increased dramatically in recent years and has, through its efforts acquired the largest conservation easement, at Carvin's Cove, ever in the state of Virginia (Adams 2008)

While the WVLT has spread the word through its visible efforts, the most effective means of conservation easement education often comes from word of mouth through the community (Holnback 2009). The following narratives illustrate the influence that landowners have on one another in rural Virginia and how they become advocates for easements in the community and spread the word.

#### **4.5-1 A Matter of Trust in the Process**

Through my research I found that most landowners had, at some point in the past, heard about conservation easements through various media. However, it was neighbors and fellow farmers, who had themselves, adopted an easement on their property that had convinced respondents to look into easements themselves. Several interviewees themselves had continued the process and arrange for small, private meetings between adjacent landowners with conservation organizations in the past. One of the barriers to the process though is lack of trust from rural landowners to the outside organization that they must work with in the easement process. This lack of trust in outside programs is deeply rooted in historical evidence, as introduced. Fellow landowners can help bridge the gap, but even with their close connections these private meetings sometimes face hurdles of trust. As one easement holder in Botetourt County explained:

I had two landowners over here to meet with a fella from [a private conservation easement organization], a great guy, I really like him, but he can talk to the doctors and lawyers [but not farmers], and we hadn't gotten fifteen minutes into the conversation when I said, 'this is

over'. And these folks came to hear it because of me. I mean, they just trusted me and it was made very clear that I had no stake in it. But I had done it [adopted a conservation easement], they knew it, and I said 'look this is something you need to listen to it and decide if it's for you, for all the things we talked about', and they were very confident. I feel that they would have done it. Okay, the selfish part for me, they were joined landowners, so it's a bigger block. And they just got totally turned off. It was like, 'well I don't trust this, this is another government scheme, its not for me, I'm going to loose my rights,' and that is a huge, huge thing for someone who's spent their entire life; its more than a piece of property, and they want to be able to have some say...it's a great idea, but the guy totally lost them and I don't know if I'll be able to get them back or not (Eagle Rock, March 2009).

Even though the incentives are there for the landowner to benefit, and even amongst close social relationships, the hesitation and skepticism of willfully signing away development rights is a very big decision for individuals who have little in the way of capital aside from their land. As another landowner emphasized, the decision to place a conservation easement on one's property extends beyond the financial considerations to matters of security and trust in the process:

The frustration to me is, and I think this is really big, the landowners that would benefit the most, who would do the most good for the Bay thing that you're concerned about, are totally left out in the cold and have no representation. And that's where this thing is bogged down...If you want the zillionaires, and you want the tax breaks, simple, just a little bit of paperwork. For the people that really need it, to sell their credits; they worked all their life, they don't have any retirement, and their sitting on a million dollars and they can't do anything about it 'till they die. And this is a way that they could get what they've earned all of their life and maintain their dream of—nearly every farmer in the state does not want their land to turn into development. You know that. And that is my frustration with it. And that is what I would like to have someway to change a little of it (Springwood, March 2009).

To some landowners conservation easements, and the inherent legal processes that involve state and federal government (for the benefit of the landowner), are seen as a luxury choice for those who have other means of living other than the land itself. However, as the number of conservation easements in an area grows the general perceptions can also start to shift, especially when a well respected member of that community adopts a conservation easement.

#### **4.5-2 The Need to Understand Social Capital and Community Dynamics**

The action of key individuals who have strong ties to the community legitimizes conservation easements as a sound option for landowners and has a significant influence the community perceptions about easements. This influence is often overlooked by planners and policymakers who attempt to promote conservation easements from behind a desk. In describing the perceptions of one easement holder who was active in the conservation efforts of Botetourt County reflected about protecting both sides of the James River in its entirety through the county with conservation easements:

With the right kind of approach we could block this thing out from Glenn Wilton to the County line. I mean I sincerely believe that, but the methods and the folks that they have now that try to talk to these old land owners its not going to fly. That's why you hear me

act like a complete oddball at the Blueways\*\*. I mean I passionately care exactly what you are talking about. And it could happen [...] they just don't understand how to talk to these farmers (Interview: Eagle Rock, March 2009)

In addition to the perceived lack of representation and consideration beyond the financial incentives from policy makers and conservation easement proponents, it is not a simple matter of a business choice from the individual, but also involves a complex web of family dynamics and values comes into the decision-making process as well. Many of the landowners touched on the family issue when discussing the easement process. Some were cautious in their considerations of easements and inclusive of other family members in the decision making process because they feel the land is the only investment that they have to pass on to their offspring:

You can't fault a lot of these folks because the land is their only retirement asset in order for them to leave something for their family... It's a big commitment, that's why we consulted with our kids because we felt that they were of the age where they had a lot of input, but they just love it so much out here and want to keep it in tact because it is developing so much out here...We wanted to consult with them because eventually it will be theirs (Interview: Broughs Mill, March 2009).

Whiles many landowners include their relatives in the decision making process because of their considerations about future inheritance, others view an easement as a way to ensure that their will is carried out and protected from the wants of relatives who have different values and perspectives of the land. In discussing the primary motivation for placing an easement on his family farm one landowner re-emphasized the minor role that financial incentives play and the large influence of family and community dynamics:

Interestingly enough, the tax credits were a minor issue. We knew they existed and after my meeting with [a representative from a local land trust] and then doing some research I found out a lot more about it. That was not a motivating factor for us at all. But I am proud that Dad got almost exactly the amount of money from selling the tax credits that he paid when he bought the farm back in 1959. Even though it was not a motivating factor, I am glad that we were able to do that for him. The main reason was, Dad farmed all of his life, he farmed this entire place ever since 1959 and Dad was always a conservation oriented guy. He had a high school education but he was a good farmer and just knew intuitively things like, our cattle just didn't get to the creek. As far as plowing and leaving buffer strips, that was just a way of life. He knew it was the right thing to do and so we did it. So the primary reason that he did it was that he has prepared a will, and I've talked frankly with him, he was uncertain as to what would happen to the property if it were not protected. The primary reason that he did it was to keep it from being subdivided and sold because he's uncertain about some of his offspring.

#### **4.5-3 A Tool of Expression Rather than a Means for Profit**

Many Appalachian communities have remained at the periphery of population growth and development pressures, but have been at the core of the agricultural problems. Those trends have shifted in recent years as the urban population is moving out into the countryside searching for open space and relaxed pace of life. The changing land use patterns have created tensions in communities between those landowners who

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\*\* A participatory planning committee in Botetourt working on a Blueway trail designed to increase recreation on the river and foster stewardship. The program is receiving funding partially through CBP grants.

have lived on the land all of their lives farming, timbering, raising cattle, or simply living, and those who move to the countryside but want all of the amenities of the city, spurring higher land values, increasing tax rates, and even more development. Thus, the majority of problems that contribute to issues of the Chesapeake Bay on a macro scale are taking place on the micro level in the mountains of Western Virginia in recent years.

There going to go in a put in a sports complex and its going to have baseball fields and football fields and lights and concessions and all this kind of thing, and its being touted as one of the greatest things, but in my opinion I like that field just the way it is. And if I had my drathers, if you want that for your kids, and that is really part of that mantra, people come from the cities out to the rural places like that Isaac, and what's the first thing they want to do? They want to have what they just left. And the reason they move there is because it is so pretty and so open and so there it goes. It's like you can't stop this force. What I want to tell them is look, if its so important for you that your kid have five soccer fields, three baseball fields and a hotdog stand, then go on back to where all that is, its just across Catawba Mountain, there in the Roanoke Valley. But no, there going to bring it out there with them and that affects things like the tax base and there are all kinds of other complications from that. ...In any given situation there aren't but a couple of landowners that can have an impact on that environment right there. I am one of them and my Dad was one of them. I don't care what county you talk about though, there are just a handful of folks that own certain key pieces of property (Interview: New Castle, March 2009)

These narratives help illustrate that market-voluntary approaches via financial incentives and structures to entice landowners to behave more environmentally friendly do not account for the actual motivations of individuals and the importance that norms, values, and family dynamics play in the way that individuals use their land. It also ignores the importance of trust and the role that nonprofit organizations like the WVLT play in persistently promoting easements and through discussing the details one landowner at a time. Something that is very important in the rural areas of Virginia where land ownership is something valued and well known in small communities. Taking an action to permanently preserve land is making a statement to the community, which is not always well understood:

A hundred years from now, two hundred years from now, that field will always be open if I do it the right way. What a great thing. People drive by there, look at that field and think, 'look at that field.' The guy who owns that much be rich, oh he'll sell that and be a millionaire,' and I could. But to be honest, that's not even on the radar scope. And so, the older I get the more inclined I am to think that it would be the right thing to do. And to those who think I'm crazy, well that's okay. I've been accused of that before. That don't bother me at all. The open space factor is what appeals to me about it. (Interview: New Castle, March 2009)

The market-based view of individuals placing their land in conservation easements strictly for the economic incentives cannot fully explain the success of land conservation. The opportunity costs that landowners forfeit in adopting an easement is magnitudes greater than what they could get by selling the land for development. Thus, if it was a simple matter of maximizing utility according to market mechanisms, they would sell their land and move. What the institutional structures of conservation easements provide for is a way for landowners to use easements as a tool to express their values and connection to the land, and receive some monetary benefit for conserving land. Almost every conservation easement property proudly displays a sign along the frontage road declaring that the land is under conservation easement (see appendix # for an example). One landowner exemplified the reactionary motivations in taking action and the values expressed when doing so:

One of the things that kind of got us interested in the easement was when they started the developments out here. It started moving out there, and as you know, all up and down Broughs mill and everything now. We won't mention any names but a big development started near us and it had been farmland belonging to an older farmer who sold it off you can't blame them, that's their retirement. Yeah, and so we saw that was going to happen along with several other places around us and we thought the potential for development was incredible, especially the two properties that we just recently [purchased and] put into easement.. When the appraiser came out to value our property during the easement process, he walked back on that property, it goes way back, and its really beautiful back there, and he said, have all of your neighbors written you a thank you note? Because he said the potential for development was so great. (Interview: Broughs Mill, March 2009)

#### **4.6 Findings from the Mountains**

Conservation easements can be seen as a useful way for rural communities to protect the land that they value in perpetuity. The institutional structures that provide the legal and financial means for conservation easements are created at the macro and meso levels but made known to the communities through the efforts of local land trusts and private land owners. The fieldwork finds three key points important to understanding the success of private land conservation in the study areas:

- !) The adoption of conservation easements is enhanced by the high social capital in the rural areas of Western Virginia and the structures developed at the macro and meso levels allow for individual landowners to express their values publicly and receive a small monetary reward for ensuring the conservation in perpetuity.
- 2) They reinforce community bonds by providing a tool that landowners can employ to fight against a perceived threat to their personal and community values and at the same time achieve the larger watershed goals of the CBP through conserving land.
- 3) Through implementing a conservation easement, private landowners provide a common good to all residents and preserve the values of the community which reinforce the likelihood of others adopting a conservation easement in time.

Landowners who adopt a conservation easement want to see others do the same. Perhaps this can be explained, as one landowner admitted, out of self interest, but it is not the "rational self interest" that the neoliberal policies that create market based incentives rely on, but rather a value based self interest.

By creating the possibility for landowners to express their values and receive a small monetary reward for maintaining those values in perpetuity, the structures established to enable conservation easements have effectively tapped into the social capital of rural communities in Western Virginia. While there still remain barriers to convincing landowners due to the lingering issues of trust and family dynamics, the more landowners who adopt conservation easements the more the perception of the community begin to change permanently. As one landowner mentioned, "If one does it, then others start to pick up and get the ball rolling. The word has gotten out" (Interview: Alpine, March 2009).

While it is true that the benefits of conservation easements are not equal for everyone because they work within the market structures. The value of an easement is relative to the market value of the land and

fluctuates by location based on supply and demand variables. One could argue that the reason conservation easements have become more popular in recent years is a direct result of the increase in property values that has followed population growth in Virginia, so landowners are simply cashing in on their land. While it is true that the monetary benefits from a conservation easement have increased with the price of land, this research shows that it is the threat of losing open spaces and the rural character of the landscape in these rural areas that is the primary motivation for private land conservation, the monetary benefits may provide the motivation needed to permanently conserve a piece of land.

Another argument could be posed toward to strong values that interviewees expressed in these interviews. If their values are so strong then they would not sell their land anyway, and continue to care for and value the land, whether it is in an easement or not. While that is undoubtedly true for some landowners who remain skeptical about conservation easements, those who place their land in an easement make the action because it is permanent. As one landowner stated quite simply, "There are very few things you can do today that will matter in one hundred years, but a conservation easement is one of those" (Interview: Broughs Mill, March 2009). Thus, the act itself is important to many of the landowner who wish to see their land remain as it has been since their tenure into the future and not give way to development after their death. It allows for a perpetuation of values post mortem. From the CBP perspective, the permanence of the easement is necessary to achieve its long term goals. It is a way to ensure that the land will be only used in ways that maintain its ecological functions permanently into the future—an important factor in striving for sustainability. Conservation easements can thus be seen as a win-win-win for individuals, community, and the Chesapeake Bay.

## **Chapter 5 — Synthesizing the Levels: Conclusion and Discussion**

### **5.1 Conclusions**

As shown, through the various periods identified in Chapter 2 there was a general trend in the CBP as shifted its approach from command and control restrictions to a focus on community. This mirrored the improved scientific understanding identifying nonpoint pollution from the aggregate actions of the community in the watershed as the main problem contributing to eutrophication of the bay. Traditional command and control mechanisms have limits in their capability to address large numbers of actors. In addition, private property rights are a highly contentious issue to most individuals and are well guarded by constitutional rights. More effective was specific legislative actions to ban practices or products that are proven, scientifically to be harmful to the environment. Since the eutrophication problem remained after regulatory and legislative actions aimed at large actors, policy makers turned toward market solutions as a way to address the small actors contributing to the problems of the bay.

The use of incentives as a way to encourage the voluntary actions of individuals to change their behavior has become the primary way of addressing problems from the aggregate actions of individuals in the watershed. This market based approach, however, assumes that individuals will take the incentives because it is the rational action to take, but as shown through this research, often, individuals will forfeit large opportunity costs to permanently conserve their land due to their personal values regarding the land. What individuals go for is the value they see in the conservation easement, and the legal protection it provides for the land, rather than the financial incentive itself.

In addition to market based solutions the CBP has aimed for increasing participatory processes as a way to involve communities. Their notion of participation is individuals inter-communicating with state and

federal agencies in decision making processes, or through shortly funded cleanup projects, does not permanently engage community in a way that will result in the outcomes they seek (as the stagnant progress of the bay cleanup efforts demonstrate). Simply providing information does not guarantee acceptance and change by individuals. Instead, finding ways to utilize social capital in the community for its potential to change individual environmental behavior is a way in which the desired outcomes from policy makers are more likely to remain permanent.

As the success in individual voluntary action to conserve private land in the state of Virginia demonstrates, creating institutional structures as the state of Virginia did, enables individuals to express their values within the market structures. The mechanism for private land conservation success on the ground in Western Virginia rests in the high social capital of the area and the intra-community relations and communications that tap common values and spread the word of conservation easements. What the CBP and the State of Virginia has done then, in terms of their land conservation goals, has been to work with states to reorganize institutional structures and create incentives for individuals who operate and achieve the macro goals within a strong community context.

## 5.2 Implications for Sustainability Studies

Learning how to manage complex ecosystems has been a constant process for many governance structures attempting to preserve unique places in the world. There are many efforts around the world centering around watershed governance and attempting to rise to the challenge. Watersheds provide a perfect case study for this challenge as efforts must be streamlined to agree on political decision making across political boundaries as well as foster management plans that engage stakeholders at all levels of political action, from federal agencies to rural communities (Costanza and Greer 1995). The CBP has attempted to do this in its 26 year history. Like many other large scale ecosystem restoration efforts the CBP has enjoyed limited success because of the complex, often “wicked” nature of the problems associated with ecosystem management stemming from the multiple actors involved on the social side and the time lags and inertia’s inherent in natural systems (Rittel 1973; Kates et al. 2001). Instead, government policies which seek to achieve large-scale ecosystem restoration can be seen through a historian’s perspective, learning from policies in the past in order to improve the future. As shown, the CBP policies and approaches to harmonizing the SES of the bay watershed have continually been refined and re-evaluated based on improved scientific understanding over time. Like many large scale SES problems in the world, the focus has turned toward individuals, those who, in Hägerstands conception, are the ones that matter; the ones who impact the physical environment. He explains the challenge simply:

[...]as the special scale of problems grows, the cognitive and geographic distance also widens between those who possess the scientific knowledge and formulate management goals on one hand, and those who are requested to act – or refrain from action – on the other hand (2001).

While the CBP has been successful in changing its approach and exemplifying how learning organization functions, the program must now begin to incorporate elements of social leaning into its policy approach to understand how to effectively engage communities to achieve the environmental outcomes they seek. This research, focused on the period from C2K to present, has emphasized the importance that social capital plays in current CBP policy successes around land conservation. In returning to the initial exploration of the core question of sustainability science from which this research started, incentive structures which empower individuals to act on their pro-environmental values that contribute to the programs goals, also aids in the transformation of norms in communities which can then be guided in way

that improves environmental outcomes. This is now the challenge for science and policy in the Chesapeake Bay.

## Bibliography

- Adams, M. 2008. "Easement protects land at Carvins Cove" (April 22, 2008). Roanoke Times. Accessed online at: [://www.roanoke.com/news/roanoke/wb/159075](http://www.roanoke.com/news/roanoke/wb/159075). on 25 May 2009.
- Billings, D. Culture and Poverty in Appalachia: A Theoretical Discussion and Empirical Analysis. *Social Forces*. Vol. 53: 2. pp. 315-323.
- Brehm, J. and Rahn, W. 1997. Individual-level evidence for the causes and consequences of social capital. *American Journal of Political Science* Vol. 41. pp. 999-1023
- Bryman, A. 2004. *Social research methods*, 2nd ed. Oxford, Oxford University Press.
- Boesch, D 1999. The role of science in ocean governance. *Ecological Economics* Vol. 31 pp. 189–198.
- Boesch, D. et al. 2001. Chesapeake Bay eutrophication: scientific understanding, ecosystem restoration, and challenges for agriculture. *Journal of Environmental Quality* Vol. 30 pp. 303–320.
- Boesch, D. 2002. Challenges and opportunities for science in reducing Nutrient over-enrichment of coastal ecosystems. *Estuaries*. Vol 25 pp.744–758
- Boesch, D. and Greer, J. 2003, 'Chesapeake Futures: Choices for the 21st Century', Chesapeake Research Consortium, Inc., Edgewater, MD, USA. Accessed online at [://www.chesapeake.org/stac/futreport.html](http://www.chesapeake.org/stac/futreport.html). on 25 may 2009. ,
- Callinicos, A. 1999. *Social theory: A historical introduction*. Polity Press. Cambridge, UK
- Canaan Valley Institute. 2002. Mid-Atlantic Highlands Program: Transforming the Legacy. accessed online at: [://www.canaanvi.org/canaanvi\\_web/uploadedFiles/Highlands\\_Action\\_Program/HAP\\_Description/Final%20PDF%20Footnoted.pdf](http://www.canaanvi.org/canaanvi_web/uploadedFiles/Highlands_Action_Program/HAP_Description/Final%20PDF%20Footnoted.pdf). On 25 May 2009
- 
- Caudill, H. 1965. "Reflections on Poverty in America" in Shostak, A and Gomberg, W. (Eds,) *New Perspectives on Poverty*, Englewood Cliffs, Prentice-Hall.
- CBC. 2009. Chesapeake Executive Council. "History of the Commission". Retrieved from: [://www.chesbay.state.va.us/history.html](http://www.chesbay.state.va.us/history.html). on 25 May 2009
- CEC. Chesapeake Executive Council 1985. Chesapeake Bay Restoration and Protection Plan. EPA Chesapeake Bay Program, Annapolis, MD, July
- Clark, W. 2007 Sustainability science: a room of its own. PNAS Vol. 104, pp.1737–1738
- Cooper, S and Brush, G. 1993. A 2,500-year history of anoxia and eutrophication in the Chesapeake Bay. *Estuaries*, Vol. 16, pp. 617-626.
- Cortner, H. and Moote, M. 1994. Trends and issues in land and water resources management: setting the agenda for change. *Environmental Management*. Vol.18:2, pp. 167–173.
- Constantz, G. 1994. *Hollows, Peepers, and Highlanders: An Appalachian Mountain Ecology*. Mountain Press.

Costanza, R. and Greer, J. 1995. The Chesapeake Bay and its watershed: a model for sustainable ecosystem management? In Gunderson, L. ed. *Barriers and Bridges to the Renewal of Ecosystems and Institutions*. Columbia University Press, New York

Costanza, R. et al. 1998. Principles of sustainable governance of the oceans. *Science* 281:198–199.

CWA 1977 – Clean Water Act 101, 33 U.S.C. § 1251. accessed online at:  
[://www.law.cornell.edu/uscode/33/1251.html](http://www.law.cornell.edu/uscode/33/1251.html). On 25 May 2009.

De Groot, W.T. and Tadepally, H. 2006. Community action for environmental restoration: A case study on collective social capital in India. *Environment, Development and Sustainability*. Vol 10:4 pp. 519-563

Dietz, T. et al. 2003. The struggle to govern the commons. *Science* 302:1907–1912

Doyle, M. and Drew, C. 2008. *Large-scale ecosystem restoration: Five case studies from the United States*. Island Press. Washington DC.

EPA 1982. CBP Technical Studies: A Synthesis. USEPA, Wahsington DC.

- 1983a. Chesapeake Bay: A Profile of Environmental Change. USEPA Region 3 Philadelphia, PA
- 1983b 1983 Chesapeake Bay Agreement. Chesapeake Bay Program Office, 410 Severn Avenue, Suite 110, Annapolis, MD 21403
- 1983c. Choices for the Chesapeake: An Action Agenda. USEPA Region 3 Philadelphia, PA
- 1985 A Chesapeake Bay Restoration and Protection Plan. Chesapeake Executive Council, September
- 1987 Chesapeake Bay Agreement. Chesapeake Bay Program Office, 410 Severn Avenue, Suite 110, Annapolis, MD 21403
- 1988. Federal Work Plan: An Agreement Commitment Report From the Chesapeake Executive Council
- 1992a. A Progress Report of the Baywide Nutrient Reduction Reevaluation of the CBP
- 1992b. Chesapeake Bay Agreement: 1992 Amendments. Chesapeake Bay Program Office, 410 Severn Avenue, Suite 110,Annapolis, MD 21403
- 1994. CHESAPEAKE EXECUTIVE COUNCIL DIRECTIVE NO. 94-1 Riparian Forest Buffers. Chesapeake Bay Program Office, 410 Severn Avenue, Suite 110, Annapolis, MD 21403
- 1997a. Baywide Nutrient Reduction Progress and Future Directions. Chesapeake Bay Program Office, 410 Severn Avenue, Suite 109, Annapolis, MD 21403
- 1999. Chesapeake Bay Program Nutrient Trading Guidance Document.
- 2000. Chesapeake 2000 Agreement
- 2001. Stewardship and Meaningful Watershed Educational Experiences. CBP Educational Workgroup.
- 2009. Chesapeake Bay Small Watershed Grants Program Chesapeake Bay Program 410 Severn Avenue, Suite 109 Annapolis, Maryland 21403

EPA Project. 2006. TMDL Implementation – Characteristics of Successful Projects. Final Report. Retrieved online from [://www.tmdl.bse.vt.edu/uploads/File/pub\\_db\\_files/TMDL\\_Implementation\\_Report\\_Center\\_for\\_TMDL\\_and\\_Watershed\\_Studies\\_5-2-06.pdf](http://www.tmdl.bse.vt.edu/uploads/File/pub_db_files/TMDL_Implementation_Report_Center_for_TMDL_and_Watershed_Studies_5-2-06.pdf). on 25 May 2009.

Ernst, H. 2003 *Chesapeake Bay Blues: Science, Politics, and the Struggle to Save the Bay*. Rowman & Littlefield Publishers, Inc

Fairfax, S. et al. 2005. *Buying Nature: the Limits of Land Acquisition as a Conservation Strategy:1780– 2004*. MIT Press, Cambridge, Massachusetts.

Gerber, B. & Teske, P. 2000. Regulatory Policymaking in the American States: A Review of Theories and Evidence. *Political Research Quarterly*, Vol. 53:4 pp. 849-886.

- Hägerstrand, T. 2001. A look at the political geography of environmental management. In Buttmer, A. (Ed.) *Sustainable Landscapes and Lifeways: Scale and Appropriateness*. Cork, Ireland
- Harding et al. 1992. *Dissolved Oxygen in the Chesapeake Bay: A scientific consensus*. A Maryland Sea Grant Publication, College Park, MD.
- Hennessey, T. 1990. "The governance of estuarine ecosystems and the ecology of governance: a conceptual framework and application to the Chesapeake Bay Program." Coastal Resources Center. University of Rhode Island. Kingston, RI.
- Hennessey, T. 1994. Governance and adaptive management for estuarine ecosystems: the case of Chesapeake Bay. *Coastal Management*. Vol. 22 pp.119–145.
- Holnback, Roger. 2009. Personal Communication. 15 March 2009. Roanoke, Virginia.
- Imperial, M. et al. 1992. Managing coastal and estuary environmental quality in the United States: An evolutionary perspective on the development of the national estuary program. *Coastal Management*. Vol. 20:4 pp. 311-341
- Jackson, J. et al. 2001. Historical overfishing and the recent collapse of coastal ecosystems. *Science* 293:629–638.
- Kates, R. et al. 2001. Sustainability Science. *Science* 292:641-642
- Kemp, W. et al. 2005. Eutrophication of Chesapeake Bay: historical trends and ecological interactions. *Marine Ecology Progress Series*. Vol. 303 pp. 1-29.
- Larsen, L. et al. 2004. Bonding and bridging: Understanding the relationship between social capital and civic action. *Journal of Planning, Education and Research*. Vol. 24 pp. 64-77.
- Lewis, R. and Billings D. 1997. Appalachian culture and economic development: A retrospective view on the theory and literature. *Journal of Appalachian Studies* Vol. 3:42.
- Malone, T. et al. 1993. "Nutrient loading to surface waters: Chesapeake case study", In Uman, M (Ed.). *Keeping pace with science and engineering*. National Academy Press, Washington, DC.
- Menken, et al. 2006. Integrating civil society and economic growth in Appalachia. *Growth and Change*. Vol. 37:1. pp. 107–127
- Morgan, C. and Owens, N. 2001. Benefits of water quality policies: the Chesapeake Bay *Ecological Economics*. Vol. 39 pp. 271–284
- Ness, B. 2008. *Sustainability of the Swedish Sugar Sector: Assessment Tool Development and Case Study Appraisal*. PH.D. Thesis. Lund University.. Saarbrucken: VDM Verlag
- Nixon, S. et al. 1995. Coastal marine eutrophication: a definition, social causes, and future concerns. *Ophelia* Vol. 41 pp.199–219
- Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge
- Petrou, S, Kupek E. 2008. Social capital and its relationship with measure of health status: evidence from the health survey from England 2003. *Health Economics*, Vol. 17 pp. 127-143.

- Potoski, M. 2001. Clean Air Federalism: Do States Race to the Bottom? *Public Administration Review*. Vol. 61:3 pp. 335-342
- Pretty, J. (2003). Social capital and the collective management of resources. *Science* 302:1912-1914.
- Putnam, R. 2000. *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.
- Rittel, H. 1973. Delmmas in a general theory of planning. *Policy Sciences*. Vol. 4 pp. 155-169.
- Rydin, Y. and Pennington, M. 2000. Public participation and local environmental planning: the collective action problem and the potential of social capital. *Local Environment*. Vol. 5:2 pp.153-169.
- Rupasingha, A. et al. 2006. The Production of social capital in U.S. countries. *The Journal of Socio-Economics*. Vol..35 pp. 83 – 101.
- Sander, T. and Minicucci, S. 2007. Community Organizations and Social Capital: A Guide to Program Evaluation. *The Saguaro Seminar: Civic Engagement in America* website. Retrieved 20 May 2009, from [://www.hks.harvard.edu/saguaro/evalguide/evaluationguide.htm](http://www.hks.harvard.edu/saguaro/evalguide/evaluationguide.htm).
- Schönström, M. 2005. Creating knowledge networks: lessons from practice. *Journal of Knowledge Management*. Vol. 9:6. pp. 17-29
- Small, C. and R. Nicholls. 2003. Global analysis of human settlements on coastal zones. *Journal of Coastal Research*. Vol. 19:3 pp. 584-599.
- Sierra Club. 1998. “The Dark Side of the American Dream”. San Francisco, CA. retrieved from [://www.sierraclub.org/sprawl/report98/](http://www.sierraclub.org/sprawl/report98/) accessed on 25 May 2009
- Thoyre, A. 2008. Community effects on individual pro-environmental action: Social capital and environmental sustainability in the United States. LUMES Masters Thesis. Accessed at: [://www.lumes.lu.se/database/alumni/06.08/thesis/Autumn\\_Thoyre.pdf](http://www.lumes.lu.se/database/alumni/06.08/thesis/Autumn_Thoyre.pdf) on 25 May 2009.
- VLCF – Virginia Land Conservation Foundation. 2009. 2007 and 2008 Biennial Report on the Virginia Land Conservation Foundation. Accessed online at [://www.dcr.virginia.gov/virginia\\_land\\_conservation\\_foundation/documents/bienrpt07\\_08.pdf](http://www.dcr.virginia.gov/virginia_land_conservation_foundation/documents/bienrpt07_08.pdf) on 25 May 2009.
- VOF – Virginia Outdoors Foundation. 2009. “VOF Easements/Acres by Year”. Accessed at: [://www.virginiaoutdoorsfoundation.org/VOF\\_pub-statsbyyear.php](http://www.virginiaoutdoorsfoundation.org/VOF_pub-statsbyyear.php) on 25 May 2009.
- Virginia Code § 58.1-512 retrieved from [://C:/Documents%20and%20Settings/lum07ica/Desktop/Literature%20and%20References/Virginia%20Code%20-%2058.1-512.html](http://C:/Documents%20and%20Settings/lum07ica/Desktop/Literature%20and%20References/Virginia%20Code%20-%2058.1-512.html) on 25 May 2009
- § 10.1-1800. Retrieved on 25 May 2009 From [://leg1.state.va.us/000/cod/10.1-1800.HTM](http://leg1.state.va.us/000/cod/10.1-1800.HTM)
- § 10.1-1801 – “Powers of Foundation” retrieved from [://C:/Documents%20and%20Settings/lum07ica/Desktop/Literature%20and%20References/Virginia%20Code%20-%2010.1-1801.html](http://C:/Documents%20and%20Settings/lum07ica/Desktop/Literature%20and%20References/Virginia%20Code%20-%2010.1-1801.html) on 25 may 2009.
- § 10.1-1800 – “Establishment and administration of Foundation; appointment, terms, chairman, quorum, etc., of board” retrieved from

<:///C:/Documents%20and%20Settings/lum07ica/Desktop/Literature%20and%20References/Virginia%20Code%20-%2010.1-1800.html> on 25 May 2009.  
—§ 10.1-1700 “Virginia Open-Space Land Act and Virginia Conservation Easement Act”.

Walls, D. 1978. "Internal Colony or Internal Periphery?" in *Colonialism in Modern America: The Appalachian Case*, edited by Helen Matthews Lewis, Linda Johnson and Donald Askins. Appalachian Consortium Press, Boone, NC.

Wiley, N. 1988. The micro-macro problem in social theory. *Sociological Theory*. Vol. 6:2. pp.254-261.

Wetzel, R. 1983. *Limnology*. Saunders, Philadelphia, PA.

Woolcock, M. 2001. The Place of Social Capital in Understanding Social and Economic Outcomes. Development Research Group, The World Bank, and Kennedy School of Government, Harvard University.

WVLT Correspondence. 2009. “WVLT Data area report” from Roger Holnback on the 15<sup>th</sup> of April 2009. Roanoke, Virginia.

WVLT – Western Virginia Land Trust. 2006. Strategic Plan 2006/2007. Accessed at:

<://www.westernvirginalandtrust.org/Docs/Strategic%20Plan%20as%20approved%2010-06.pdf>. On 25 may 2009.

## **Appendix A: Interview Information, Informants and Basic Questions of Semi-Structured Interviews**

### **Landowners:**

Interviewee 1 – Renicks Run, Arcadia, Botetourt County, Virginia.

Interviewee 2 – Buchanan, Botetourt County, Virginia

Interviewee 3 – New Castle, Craig County, Virginia

Interviewee 4 – Broughs Mill, Botetourt County, Virginia

Interviewee 5 – Springwood, Botetourt County, Virginia

Interviewee 6 – Glenn Wilton, Rockbridge County, Virginia

Interviewee 7 – Eagle Rock, Botetourt County, Virginia

Interviewee 8 – Blue Ridge, Botetourt County, Virginia

Interviewee 9 – New Castle, Craig County, Virginia

### **Basic Question Structure:**

- 1) What first interested you in conservation easements?
- 2) How did you first hear of conservation easements?
- 3) What were your expectations in placing an easement on your property?
- 4) What impact do you feel your conservation easement makes on a watershed scale?
- 5) Have you talked with others about conservation easements?

### **Informants:**

Roger Holnback, Executive Director, Western Virginia Land Trust

Erica More, Conservation Technician, Mountain Castles Soil and Water Conservation District

Genevieve Goss, Valley Conservation Council/Botetourt Community Partners.

Stacy Brown, Virginia Save Our Streams Program, Richmond, Virginia

### **Participant Observations:**

Upper James River Roundtable Meeting, 22 January 2009, Low Moore, Virginia

#### **Landowner Meetings with WVLT:**

7 March 2009 – John Deer Days, Buchanan, Virginia

26 March 2009 – Gereau Center, Rocky Mount, Virginia

31 March 2009 – Meadowbrook Public Library, Shawsville, Virginia

Blueway Trail Planning Meetings at Fincastle Library, Fincastle, Botetourt County, Virginia

Botetourt Community Partnership Meetings, Fincastle Library, Fincastle, Botetourt County, Virginia

## Appendix B: Media Related to Field Work



[« Photo: Girl Scout cookie booth | Risk Behavior Survey given to 6th, 8th, 10th, 12th graders last week »](#)

2009.04.15

### Don and Judi Race live on their commitment to conservation



Isaac Campbell in background, Genevieve Goss, Judi Race and Don Race in the sunroom of the Race's country home on a 238 acre land conservation easement farm east of Fincastle.

"There are few things you can do today that will matter in one hundred years," said Don and Judi Race of Fincastle, who have lived on their farm since 1978.

They have placed 238 acres of their Fincastle farm in conservation easements. She describes their farm as "a little piece of heaven," and viewed from the perspective of environmental stewardship an idea that has taken off in Europe but not so much in the United States, a priceless asset for future generations to enjoy.

Three decades ago when they moved to their farm off Brugh's Mill Road, they moved because they loved the area. Don, who is a physician, grabbed the interstate to get to work; both worked hard with Roanoke Catholic Cross Country athletic teams while their children were growing up and continue to do so. Judi heard Faye Cooper, an area conservation easement specialist, years ago and that plotted the course for what has transpired with their land. Judi Race has become a point woman herself for land conservation in Botetourt County.

Why? The Races were succinct in the answer: because development began to encroach along their neighborhood. The potential to save open space spoke more to their hearts than selling a farm into subdivided lots like many Botetourt farmers were doing. While they had no ill will towards those who were selling, they just didn't feel it was what they wanted to do with their property. She recommends "[Last Child in the Woods](#)," by Richard Louv, a book that describes saving the next generation from "nature deficit disorder."

The afternoon of a cool spring day glowed willow green while faint leaves inched forward from branches. As the car made the way up the drive and past a barn that proudly announced by signage the land is in conservation easement and crossed a small creek, the home place came into view. The Races have a farm house estimated to have been built about 1795 by a brick found in the chimney during the renovation of the beautiful old home. The cellar has been converted into living space and a huge sun room pops from beneath the house. Farm dogs and a cat laze on the back porch and in the sun room. It is a house well loved by its owners on a piece of land preserved for the future in easements provided by the Virginia Foundation and Valley Conservation Council.

Isaac Campbell of Salem, a Roanoke College alumni and a graduate student studying the Upper James River for his masters in Sustainability from Lund University in Stockholm, Sweden, sits at the antique kitchen table and asks the Races questions on how they arrived at their land conservation decisions. Genevieve Goss, also at the table, is a representative from Valley Conservation Council and a conservation steward from west of Fincastle; she smiles broadly as the Races describe their efforts.

The babbling creek that splashes past their sun room and garden is part of a stream that eventually meanders to the James River and finally into the Chesapeake Bay. Their part of the preservation of the watershed is not lost on the Races. They also have the remnant of an ancient coral reef, used for years by local famers as a source of lime to put on their farm acreage. Don Race describes the area "as a little wasteland, but kind of a neat place." He chuckles, "and we have an inordinate amount of ticks (on us) when we trek over to the land during the spring and summer."

Federal and state tax credits of up to 40 percent accompany conservation easements and that can be an attractive part of the deal for some land owners. The Races discussed the farm and land with their children, now adults, who thought it would be great for a conservation easement.

Over the years they have added pieces of land they purchased to the easement. Now at 238 acres they know a good sized piece of property is being preserved. They urge others to do so. "It's a big commitment," they say, "because it affects the salability and development potential," but it also makes them feel like they have made a long term commitment to the community in which they live. "It is worth the effort and there's a great deal of help to get an owner into a conservation easement," said Don Race.

For more information on conservation easements contact [Valley Conservation Council](#). Posted at 04:35 | Category: [History](#), [People](#), [farms and farm products](#), [nature](#) | 2 Comments

Accessed online at <http://blogs.roanoke.com/rblogs/botetourtview/2009/04/15/don-and-judi-race-live-their-commitment-to-conservation/#comments> on 15 May 2009.

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# The Vinton Messenger

Thursday, May 14, 2009 • Dogwood Capital of Virginia • Covering Vinton, Bonsack & Stewartsville



## RIVER SCIENTIST

**Anita J. Firebaugh**  
Correspondent

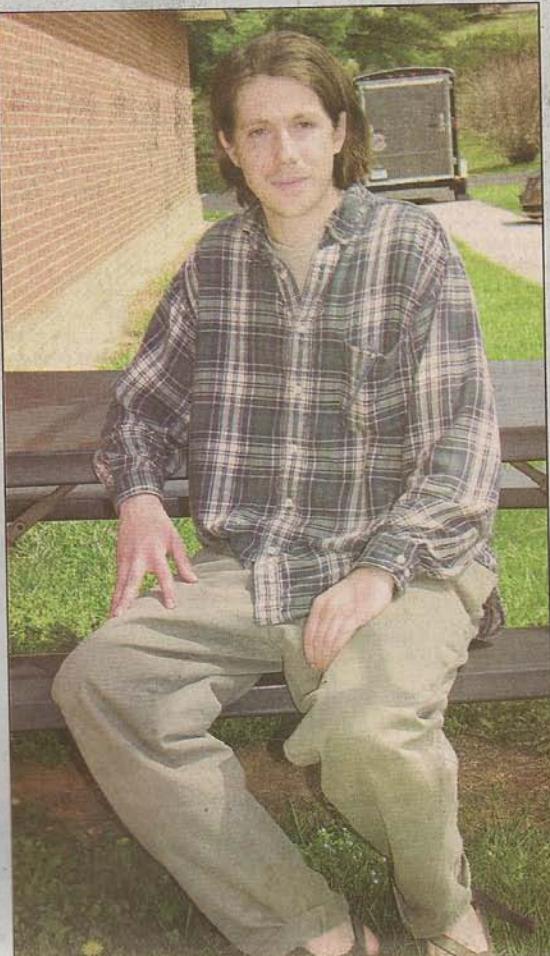
**I**saac Campbell of Vinton wants his children to grow up in a clean and green world. That's why the 25-year-old is studying sustainability science in Lund, Sweden.

Few United States universities offer this degree and those that do have relatively new programs. The program in Sweden has been available for 11 years, Campbell said.

This emerging earth and environmental science branch deals with "the interactions between natural and social systems, and with how those interactions affect the challenge of sustainability: meeting the needs of present and future generations while substantially reducing poverty and conserving the planet's life support systems," according to the National Academy of Sciences of the United States of America.

Campbell calls it a scientific effort to understand environmental problems and then move forward with solutions, too. "Scientists put it out there but don't remedy the social policies," he said. The sustainable science movement allows scientists to participate.

See River, page 7



**Isaac Campbell of Vinton has been studying the Upper James River watershed for his master's thesis. He is majoring in sustainability science at a university in Sweden. Above left, "Swinging Bridge, James River," a photo by Richard Kemper.**

Photo by Anita J. Firebaugh

# River

from page 1

But what is sustainable?

Environmentalists generally mean that an ecosystem will be able to sustain itself, or continue as it has been. Introducing wastes into an ecosystem often destroy or render parts of an area uninhabitable by all the species that were there before. So does overusing the natural products in an area. So "sustainable" could mean that living in the world in such a way that things return to their previous state as humanity uses or changes the natural order of things.

Campbell called it a subjective definition. "For me, it's a matter of preserving the creeks so that eventually my kids can play in it,"

he explained. The issue hits him in his heart. Growing up in Vinton in the shadow of Wolf and Chestnut Mountains, he played on Wolf Creek. "It was destroyed by development along the Blue Ridge Parkway," he said. Early in this century, the Wolf Creek sewer systems were under clean-up orders by the Virginia Department of Environmental Quality, so he saw what a disregard for the environment could do.

It's something he hopes to prevent in the future. To that end, he has spent the last three months in Botetourt County preparing to write his master's thesis on the Upper James River watershed as it pertains

to the Chesapeake Bay. He has sat in on Botetourt County's proposed Blue Way Trail discussions, which incorporate tourism and the James River, worked with Genevieve Goss with the Valley Conservation Council and listened to citizen concerns at a recent Botetourt Community Partnership meeting.

He learned that while there are large, sweeping policies in place that could help with sustainability issues, there are no hard and fast rules. Some programs offer funding for specific items, such as fencing in cattle so they no longer stamp through creek beds, but few people know about them. "There are not a

lot of people specifically informing landowners about the programs," he said. Landowners are skeptical when they learn what can be done and the grants that are offered. Programs sponsored by the government often do not sit well with local folks, he discovered. "We need to bridge that divide," he said.

The best ambassadors for sustainability efforts are landowners who have participated in projects, he has found. Folks who have placed con-

servation easements on property, for example, are better able to convince their neighbors to do the same, he said. He advocates more funding for

local efforts and stronger systems April 2 to begin the writing process for his thesis. He expects to produce a 50-page treatise that will examine the relationship between human use and this end of the James River. He

intends to return to Southwestern

Virginia when he has completed his education in order to bring this new science to the forefront. He hopes to be a teacher.

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of community grassroots efforts.

Regional watershed efforts will play a big role in his recommendations, he predicted. Botetourt County sits in two watersheds. Most of the county is in the Chesapeake Bay watershed,

but some water in the southern end flows to the Roanoke River watershed. The county is uniquely situated to impact two major waterways.

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# Store

from page 1

customers have demonstrated during construction," said Bruce Molnar, store manager. "Our customers have been very understanding."

Employment at the store has increased from 105 to 140 with the larger space. "Kroger is pleased to be adding jobs," said York. "In today's economy, each new job is significant." Approximately 70 people applied for the 35 new jobs.

Molnar is a 30-year veteran with Kroger. He has been manager of the Vinton store for a total of six years.

"The store is spacious and easy to navigate because the merchandise is spread out," Molnar says. "At the same time, the store has a warm feeling that welcomes customers," he added.

The new Vinton Kroger has an open atmosphere and is easy for shoppers to get around the store to find the items they are seeking.

The store offers a variety of new and expanded merchandise and departments, including:

- Specialty Grocery items
- Expanded Wine department
- New produce and organic department
- Additional frozen food variety
- Expanded meat and deli section
- New Gourmet Cheese Shoppe
- New Sushi Bar
- New Cosmetic section with health and beauty aids
- Expanded Hallmark greeting card section with a large selection of magazines
- First of its kind - home furnishings department and a kitchen place section with house wares and decorative items
- Shoppers also can select from a wide variety of seasonal foods. The "seasons on the go"