

HISTORIC PRESERVATION FOR ENVIRONMENTAL SCIENTISTS: TOOLS
AND PERSPECTIVES TO BETTER UNDERSTAND, PRESERVE, AND
MANAGE THE ENVIRONMENT

by

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Table of Contents

Part I – Overview Essay

Chapter 1 – Synthesis statement	1
---------------------------------	---

Part II – Course Papers

Chapter 2 – Maine’s Working Waterfronts Law: A solution for Maryland?	14
---	----

Chapter 3 – Howard County Ordinance Review	21
--	----

Chapter 4 – Kolos House Report	49
--------------------------------	----

Chapter 5 – Deforestation and Consequences	53
--	----

Chapter 6 – Industrial Archeology and the Environment	69
---	----

References Cited	77
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Part I – Overview Essay

Chapter 1:

Synthesis Statement

There is a substantial intersection between historic preservation and environmental protection that is rarely explored in the literature or in existing courses, though the relationship between the two disciplines is evident throughout the practice of each. One federal agency, the National Park Service (NPS), is tasked with preserving both natural and cultural resources, and manages the majority of both of these that are set aside for future generations in the US. Many of the same federal laws that are used to preserve historic sites are also used to preserve the environment. When historic sites are protected, this often inevitably protects a portion of the natural environment as well, and when areas are set aside for natural protection, this often has the result of preserving archaeological resources that these areas may contain. Many of the research tools used by historic preservationists can be of use to environmental scientists, and scientific results are sometimes used when decisions are made regarding the preservation, alteration, or demolition of historic sites and structures. Ultimately, the fate of many historic sites and structures depends on a process that has been revealed by the work of many environmental scientists over the past half century—climate change. As we reshape our world, our laws and cultures will have to change to suit a very different future.

The natural resources most threatened by climate change may be our coasts, where rising seas are poisoning freshwater resources with invading seawater, ruining agricultural landscapes that have been productive for centuries, and threatening

population centers that depend on these freshwater resources. Saltwater invasion is one of the first steps in this process, but land loss follows soon after as shores erode and seas continue to rise and inundate landscapes that were formerly safely above water. While we will eventually have to relocate from these areas, and either abandon or move infrastructure (Center for Naval Analysis, 2007), we can still buy time for threatened communities and resources by supporting those who thrive by living on the edge and whose livelihoods depend on access to open water. Chapter 2 discusses the role that preservation laws can play in maintaining working waterfronts, those sections of the shore where water-dependent businesses such as fishing fleets and aquaculturists are located, along with supporting businesses and infrastructure. These in turn support the work of a variety of artisans, from the metalworkers who repair fishing equipment to the carpenters who maintain wooden boats. These communities don't just depend on natural resources, which are heavily degraded in Chesapeake Bay, but also on societal support for what they do. Without preservation laws to offer tax breaks to working waterfront landowners or to prohibit the destruction of coastal infrastructure, developers simply outcompete the water-dependent businesses and destroy these communities, which have often maintained their industries with little change for generations. Fishing towns are converted to resorts and tourist destinations, and while heritage tourism can help to maintain some vestiges of what once was, what remains is largely devoid of the function and value that was associated with the people that built and worked in these communities for most of their histories (Harrington, 1983).

The hotels and other developments that move in are water-enhanced businesses, able to charge more for their services due to their proximity to water, but don't actually depend on or use the water for anything more than aesthetic value. The overall effect is to remove adjacent waters and submerged lands from production by removing access and supporting industries necessary to maintain the active management of those resources. This in turn is likely to lead to the abandonment of these resources and the loss of the stakeholders who once advocated for their protection—the watermen¹. This is occurring just as states are beginning to implement private property rights for improved management of submerged land (Beck et al., 2004), allowing individuals to manage submerged leases and to have the exclusive right to harvest from those areas. Historically, fisheries have not been sustainable, and over-fishing has been a large part of the decline of the fishing industry. This is because it has been an extractive industry, with minimal management. The new land management models related to submerged leases and aquaculture have been a lifeline for many watermen, and while they represent a change in the industry, they also represent one of the only viable paths forward for preserving the industry and its associated cultural resources. The stronger this industry and these communities are, the longer they will be able to survive in spite of

¹ While this term is unfortunately gendered, today the profession includes women and other historically underrepresented groups. Waterperson might be a better alternative, but it does not seem to have been used in any previous literature and I have avoided it in the main text to prevent confusion.

climate change. Historic preservation is about more than just structures, it is about the people and the traditions that built and maintain them.

These traditions are far more difficult to restore than they are to preserve. This can be highlighted by comparing the oyster fishery to the clam fishery in Maryland. Little is known about the oyster fishery prior to the late 1800s, though archaeological evidence, shell sizes from middens, indicates that Native Americans used the oyster resource sustainably for several thousand years prior to European colonization (Rick et al., 2016). Post-European colonization, the oyster fishery provided a third of US fish earnings in the years leading up to the 1880s, when oysters and many other fisheries began to decline (Keiner, 1998). As fishing and transportation technology improved, aquatic resources were overharvested and shipped by rail to other parts of the country (Kirby and Linares, 2004). Prior to the technologies that enabled this overharvest, resource use was limited largely to local populations and was sustainable. Even in Europe, oyster populations were used sustainably for centuries before the advent of rail transportation (Went, 1963). By the early 1990s the oyster fishery had declined 98% from its peak, and today the Maryland oyster population represents less than 1% of what it was a century and a half ago (Rick et al., 2016).

However, oyster consumption continues to be a part of Maryland's culture, and the fishery still maintains a small supply and enough infrastructure to process it. Many watermen still make at least a portion of their income from the oyster fishery, either wild caught, produced from aquaculture, or a combination of the two. There is public support for government policies to protect and grow the fishery, and there are industry partners willing to work with researchers to achieve that result. Maryland

now has an oyster aquaculture industry that is growing at an accelerating rate, providing growing support to working waterfronts and their communities.

In contrast, Maryland's clam fishery (consisting of three species: the stout razor clam, hard-shell clam, and soft-shell clam) collapsed nearly completely in the 1990s (Pipkin, 2016). Eating clams is fading in Maryland's culture, from a high in the 1950-60s when the state would name a "clam queen." At that time, the Chesapeake Biological Laboratory was actively pursuing research into conservation practices for oysters, hard-shell clams, and soft-shell clams (1954). Infrastructure necessary to process clams, including the depuration plants used to flush mud, sand, and pathogens from them prior to consumption, was shut down and subsequently lost. Watermen skilled in clamming are aging and being lost as well. There is very little public support remaining for rebuilding the clam industry, and environmental researchers attempting to work on this issue are finding it increasingly difficult to find industry partners to work with. The industry may have passed a tipping point, and been lost to history for the foreseeable future.

Higher in the watersheds, away from the coasts, a substantial portion of the Ellicott City Historic District in Howard County, Maryland is also threatened. Chapter three highlights the weaknesses and irregularities in the county's historic preservation ordinance, which lays out a clear purpose and establishes a Historic Preservation Commission. It does not include strong provisions for the protection of environmental settings and appurtenances (i.e. accessories including gates, sheds, and wells), and its weaknesses make it susceptible to legal challenges. The historic district

has been hit with two catastrophic floods in recent years, in 2016 and 2018. Though it has flooded historically, these recent floods were different, exacerbated by both climate change and by development in the small and steep valley where this historic mill town is located (Logan, 2019). Climate change is leading to more intense rainstorms, which dump more water in shorter periods of time, leading to flash floods (Center for Naval Analysis, 2007). The development of the river valley has had a more direct effect, by sealing much of the land surface and ensuring that when it rains, the water runs off immediately rather than infiltrating into the ground (Kaushal and Belt, 2012).

Most of this development has occurred in recent years, ironically to take advantage of high property values in proximity to the historic district, and almost immediately degrading this cultural resource. Despite several hydrologic/engineering studies demonstrating the role that development played in intensifying these newly disastrous floods (McCormic Taylor, 2017; Zick, 2020), the county council has yet to enact a proposed moratorium on development in the valley, and the problem appears likely to worsen. If Howard County had had a robust historic preservation ordinance in place that met the criteria of the National Park Service (NPS) certified local government program (this program encourages local governments to adopt best practices for historic preservation efforts), and if scientists and environmentalists had known how to navigate preservation issues, the valley surrounding the Ellicott City Historic District might have been preserved as a contributing environmental setting (i.e. as a feature vital to the character of the historic district itself). This would have bought the community time as it attempted to cope with the impacts of climate

change. Instead, the problem was made much worse, and current management proposals include the complete or partial demolition of a considerable number of the contributing structures within the historic district.

As these examples illustrate, environmental and scientific issues can benefit from a historic preservation perspective, and environmental professionals can utilize historical research methods to enhance their research. Chapter four explains the results of a research project on a historic house in the Riverdale Park Historic District in Maryland. It has had an interesting set of owners, including a World War I veteran who died of the 1918 Spanish influenza after serving on the Mexican border during Pancho Villa's raids. While this project didn't tie directly to environmental issues, the tools used to complete it certainly did.

Archival resources are some of the richest sources of information in the world, and can be of great use to environmental scientists and historic preservationists alike. Tax records and deeds can show when a site was developed or abandoned, can contain detailed descriptions of the environmental setting and conditions at a point in time, and can be used to supplement scientific research. One hot topic in soil science is the reestablishment of natural processes and vegetation in restored urban soils. Sites can be sampled and compared to one another, but it is difficult to draw comparisons or make inferences about rates of change if the date of destruction and regrading is unknown. With tax records, that date can be identified or narrowed to a limited range by determining when the property value plummeted, allowing much better research results to be obtained.

Scientists regularly do one sort of historic research, where we pursue a thread of citations to the earliest appearance of an idea or method in the scientific literature and trace its development through time. This can be illustrative, particularly when terminology has changed and translations are necessary to understand earlier published work. In soil science, the symbols used to describe soil horizons (naturally formed layers) have changed several times through history, and it is necessary to find early description manuals in order to understand and use historical data. Such studies are vital to understanding environmental change through time, particularly in systems that change as slowly as soils. Responses to changes in climate or human impacts on the landscape may take decades or centuries to become evident, in studies that cannot be conducted on a laboratory bench.

In my PhD research, I have utilized historic maps to evaluate environmental change through time. Bathymetric surveys have been conducted for national defense purposes since the late 1700s, first by the Hydrographic Office of the United Kingdom but today by the National Ocean Service of the National Oceanic and Atmospheric Administration in the US. In the Rhode River, the subestuary of Chesapeake Bay that is the focus of my research, these maps date back to 1846. Comparing these historic surveys through time, and to contemporary data in particular, allows estimates to be made of how shorelines have changed, how landscapes have been used and developed, and how estuaries have filled with silt as a result of human activities in the upland environment. In addition to the maps themselves, descriptive reports were often generated to include details on how the surveys were completed, and these reports contain environmental data that can be

gleaned, including details on bottom type, woody debris, and other navigation hazards. This allows comparison to the currently degraded state of the environment.

The US isn't the first nation to alter its environment to the point of threatening and losing large portions of our natural and cultural resources. Ancient Greece and Rome dealt with their own issues, explained in chapter 5. The Greeks did not seem to understand how they impacted the environment, deforesting it and disrupting the water cycle that provided them with fresh water. When the ancient Greeks deforested much of their landscape, rainwater no longer soaked into the ground as effectively and quickly ran off into rivers and the sea.

Beyond the written record left behind, the archaeological record demonstrates how some peoples coped with these environmental changes. The Minoan people of the island of Pseira built an advanced system of reservoirs and dams to catch rainwater and hold it on the landscape, surviving for nearly a century thanks to their ingenuity before being destroyed by war. The Romans, having also deforested their lands (prior to instituting reforestation programs to maintain a supply of lumber for ships), began a dredging program to clean silt from their rivers and harbors and maintain navigability. The marks that they left in the seafloor are still evident in the sedimentary rock record (Morhange and Marriner 2010), and the remains of several of their dredging vessels have been discovered. When flooding became severe due to land degradation and threatened to contaminate clean water supplies in Rome with sewage, aqueducts were built to supply clean water to the city. Nonetheless, both Greece and Rome were stressed by environmental crises to which they ultimately failed to adequately respond, which may have contributed to their eventual decline.

The archaeological record contains lessons for modern and future civilizations, and needs to be preserved and studied.

Building on this recognition of the value of the archaeological record, I have incorporated the study of ancient aquaculture and agriculture production systems into my academic work. This has recently resulted in a collaborative paper discussing how humans have categorized landscapes and natural resources through the Holocene, and how certain perspectives may have led to more sustainable communities. I contributed a case study on the Kwakwaka'wakw people of the Pacific Northwest, who maintained an advanced aquaculture production system for centuries or longer by building and maintaining clam gardens. These were anthropogenic landforms, built by rolling stones into deeper water from the shore to form a retaining wall. This wall captured sand and built a broad platform that extended out into the water, flooding at high tide but exposed for clam harvest at low tide. The Kwakwaka'wakw people increased the clam population through selective harvest and by regularly disturbing the sediment, allowing finer materials to wash away, leaving an ideal sandy habitat for the clams, as well as landforms that are still evident on national park land (Jackley et al., 2016). Few Kwakwaka'wakw people remain, but the elders still recently told stories of working the clam gardens as children. Some in the tribe want to resume working the clam gardens, though the NPS prohibits this. I think that a carefully considered, values-centered preservation perspective could be supportive of this activity, despite the NPS mandate to protect natural resources. The cultural resource of the clam garden and the indigenous people who maintain it is something valuable and worth preserving as well.

Also worthy of preservation are industrial sites, often disregarded due to their unusual architecture and engineering, and the potential for contamination, which can make them difficult locations for adaptive reuse. Chapter 6 contains the syllabus for a course intended to help tackle this stigma, *Industrial Archaeology and the Environment*. The course addresses a need for education that bridges historic preservation and environmental science. Many environmentalists don't understand the historic values that industrial sites have, from their use as interpretive sites to understand lost industries that literally built portions of the US, to their value as a warning to future generations as to the severity of environmental damage that can be done by unchecked industrial activity. At the same time, students in historic preservation can benefit from understanding some of the issues relating to soils, water, and ecology that relate to industrial sites.

The course opens with a general section on the intersections of historic preservation and environmental science, with special attention to the historical research methods necessary to explore industrial history. The following sections focus on soil and water alteration by industrial activity. This includes the formation of anthropogenic soil profiles that can have highly unusual properties, such as soils formed in coal ash that resemble volcanic soils in both morphology and mineralogy. Students will learn some of the terminology used to describe these soils so that they can report basic observations if they encounter such a site. They will also learn about the State Soil Scientists, who can be contacted to provide professional advice and collaboration on these sites if appropriate. Water issues are also covered, and students will learn the general processes of water quality degradation that occur as a watershed

is urbanized or industrialized. Some attention will be given to methods used to restore these systems to somewhat more natural function, which is vitally important to their adaptive reuse.

The course then moves onto preservation issues and philosophy, including value-centered preservation as a central concept. Values-centered preservation is an effort to recognize that different resources have a variety of different values (environmental, historic, and others) to different people. Some of these values are complimentary, and others may be in conflict with one another. It is the concept that allows a nearly seamless integration of historic and environmental preservation (Mason, 2006), and will be key throughout the remainder of the course. Students will be challenged with case studies that strain the relationship between historic preservation and environmental restoration. Questions will include such topics as the tension between preserving dams and restoring rivers. Are dams historic structures worthy of preservation (particularly if they are still operating), or environmental hazards disrupting fish habitat? They are a little bit of both, and discussions will focus on comparing and contrasting values and attempting to balance them as students are encouraged to make up their own minds, developing their critical thinking skills. The following section focuses on contaminated sites, perhaps some of the most controversial. An invited speaker with HAZWOPER (Hazardous Waste Operations and Emergency Response) or equivalent certification to work in contaminated sites would be a good fit for one of these lectures.

The remainder of the course focuses on specific technologies and classes of structures that have been a part of industrialization in the US, from railroads and

airports to mines and power plants. Students will lead some of these lectures and discussions, having identified topics earlier in the semester and conducted some of their own research to present to the class. Student projects will focus on student interests, following the topics that they choose to present on. The course closes on the impacts of climate change and how historic preservation may be impacted by it, ensuring that students are thinking about preparing for the future as they work towards preserving the past.

Part II – Course Papers

Chapter 2:

Maine's Working Waterfront Law: A solution for Maryland?

HISP 600 Introductory Seminar in Historic Preservation: Theory, History, and Practice

The Maryland Waterman's Association (MWA) has been at the forefront of protecting Maryland's seafood industry, the businesses that it supports, and preserving our maritime heritage since 1973. Watermen themselves have served as advocates for these causes for much longer. While the MWA is not a historic preservation organization in the conventional sense (such as the Maryland Historical Society is) it nonetheless plays a vital role in the preservation of a threatened piece of Maryland's heritage and culture, the seafood industry. The MWA supports artisanal industries that extend beyond the seafood-producing watermen themselves. These artisans include the shipwrights that maintain the remnant skipjack fleet, the blacksmiths that build and repair dredges and other marine equipment, and the myriad other trades that are necessary to keep a seafood industry in operation (Carr, 1982). Historic buildings and structures that are maintained by this industry include wharves, ships, icehouses, marine railroads, lighthouses, piers, dredged channels, and all the other infrastructure that maintains its use-value (i.e. ability to satisfy human wants/needs) thanks to watermen (Chiarappa and Szylvian, 2009). Together, these resources make up our working waterfronts, the areas of our shores that support water-dependent businesses and activities, which in turn support the preservation of these resources as vital components of their way of life. The best way to preserve our

historic resources is to find an economically viable use for them, and watermen do this every day that they wake up and go to work.

Beyond ensuring a use for the built structures and the traditional trades that make up our maritime cultural resources, watermen working through the MWA exert their influence on the laws and regulations that influence their industry. They are committed to the future of the seafood industry in Maryland, which places them among the most important stakeholders who are concerned about the environmental health of Chesapeake Bay and Maryland's Atlantic coast. The balancing act between allowing enough of a catch to support the industry, while limiting it to a low enough level that the fisheries survive and can repopulate, is a difficult one that is continually monitored and revised by the state, and informed by the observations and experiences of those who work on the water. Every time a waterman returns to dock and steps off of their boat, they bring their observations back with them and can communicate them to the rest of their community, informing policies and serving as a bellwether for the condition of our marine resources (Chiarappa and Szylvian, 2009).

Despite the MWA's several decades of advocacy and policy work, marine cultural and environmental resources face continued and substantial threats. John S. Carter, a former president of the Council of American Maritime Museums, observed that "support for maritime preservation in this country has been a national disgrace" (Carter, 1991). Nearly 30 years have passed since he made that observation, and while progress has been made on some fronts, many thinkers on the topic are still of the opinion that we lack adequate protection of these resources at the federal level (Ounanian, 2015).

There are success stories relating to the protection of shipwrecks (Foster, 1992), of historic waterfront neighborhoods (Harrington, 1983), and of American Heritage Rivers (Hartig, 2002), but the MWA would be unlikely to consider many of these cases to be successes. While these cases do protect archaeological and architectural resources, they often do not protect working waterfronts. Dock space is reduced or eliminated as tourism is promoted, many watermen can no longer afford increasing mooring or slip fees, and the structures and areas that remain lose their original function as they are preserved as parks or museums. The sounds of carpentry in the shipyard, the smells of bushels of crabs and oysters being offloaded from boats, and the sights of watermen working on the water are gone from most of these sites. As we lose our working waterfront, the market for its products is satisfied with imported products that are deceptively labeled, as is the case with imported blue crab served in a “Maryland-style crab recipe” that does nothing but undercut Maryland watermen (Paolisso, 2007). Real maritime heritage is a living thing, preserved in our culture, informed by the past but not bound to it (Chambers, 2006). The type of preservation success that the MWA strives for is one that allows the seafood industry to operate in a modern world while serving as a living and working reminder of our past.

It is clear now that market forces alone won’t protect working waterfronts in the age of international trade. Indeed, there are several examples where the connection to a larger market has devastated natural resources. The oyster industry has been an essential part of working waterfronts since before its heyday in the early 1800s, but the oyster population is now estimated to be 0.3% of what it once was,

with the majority of decline occurring from 1890-1990 (Brooks, 1996). This is attributed to the connection of the regional market to national (and subsequently international) markets by rail and other modern transportation systems, which allowed a poorly-regulated early seafood industry to increase their catch to supply national demand, quickly depleting the resource and eventually triggering laws and policies to protect what remained (Kirby and Linares, 2004). Similarly, the increase in value of waterfront property has induced many landowners to sell to developers who restrict access to the water by building hotels, other businesses, and private homes. This onslaught of investment increases property values, which increases property taxes, and eventually forces watermen off of the waterfront in a so-far irreversible process (Snyder, 2011).

In Maine, these forces have destroyed most of the state's working waterfronts, leaving only 20 miles of the 5,300 mile coast accessible to watermen. A report on this (Island Institute, 2007) so alarmed the people of Maine that they passed an amendment to their state constitution authorizing the protection of their working waterfronts in "the public interest." This enabled legislation to keep property taxes low on working waterfronts by valuing them based on their current use, not based on their value if they were to be developed by the highest bidder (which is the traditional practice). Properties that are at least 90% dedicated to water-dependent businesses receive a 20% reduction in the market value used to assess their property taxes, and properties that are at least 50% dedicated to supporting water-dependent businesses receive a 10% reduction in taxes (Maine's Working Waterfront Tax Law, 2007). Considering that the average household income of a Maine lobsterman is only around

\$70,000, this tax reduction goes a long way towards keeping their way of life economically viable.

Further, the law authorizes the state to fund the Lands for Maine's Future program to purchase the development rights of working waterfronts. This unusual voluntary program leaves the land and most of its management decisions in the hands of the current owners, while allowing them to sell the right to develop that land to a trust managed by the state of Maine, which holds that right in perpetuity. This means that the owners of working waterfronts can obtain a windfall similar to what they would obtain by selling to a developer, but they retain ownership of the land and can continue to operate it as a working waterfront. Functioning similarly to an easement, the land can be passed on or sold to anyone in the future, but the state will never relinquish the right to develop it as anything but working waterfront. The owner is free to modify, demolish, or rebuild buildings as they desire, as long as the changes don't disrupt the functioning of the site as a working waterfront. Further, any property that has sold its development rights in this way automatically qualifies for the 20% property tax reduction under the Working Waterfront Tax Law (Snyder, 2011).

Maine's Working Waterfront Tax Law has been successful on a broad scale, and has been vital to the preservation of the Port Clyde Fisherman's Cooperative in Port Clyde, Maine. Port Clyde is a community that supports about 350 people, two thirds of which earn their living from the local fisheries. The Cooperative rented wharf space for the first 50 years of their operations, before purchasing their own wharf in the 1990s. The elder leaders of the Cooperative initially preserved this wharf from development by keeping the cooperative in debt, ensuring that the sale of the

wharf would not turn a profit for one unscrupulous generation of leaders who might decide to sell. This worked until the property value ballooned into the millions of dollars, at which point the debt scheme was untenable. The Cooperative applied for and received \$250,000 from the state, and used matching funds from the Island Institute and their own coffers to expand their wharf and to purchase the development rights to be held in perpetuity. This community now supports the last of the groundfish (e.g. flounder, halibut, cod) fleet existing between Port Clyde and Canada, as well as several other fishing fleets. The project has built a community, spawning another cooperative fishery and helping different fishermen to see one another as allies rather than as competitors. The opportunity was used to teach and to learn about this part of Maine's heritage, and the fishermen led a massive public outreach campaign. They now sell more of their products directly to local restaurants, and the people of the region have a stronger connection to their natural resources directly through their heritage resources (Snyder, 2011).

In Maryland, people widely understand that their natural and heritage resources are valuable, yet Maryland still lacks the strong protection of working waterfronts that Maine's law provides. Maryland waterfronts are still susceptible to development, with the only legal protection being a state law that authorizes counties to offer property tax discounts to marinas that maintain access for watermen. Most counties have not yet done so, and instead have focused on county planning and local zoning to attempt to curb development (Maryland Working Waterfront Commission, 2008). The result is that Maryland is still losing its working waterfronts. Even where watermen are able to utilize dock and slip space after development, there is still a

certain degree of uncertainty related to access to the water because marina ownership may change hands or new development pressures may continue to arise. A number of fishermen and shellfish farmers in and outside of Maryland have been forced out of marinas they have used when new patrons (e.g. recreational boaters, new community residents) have voiced their complaints about the presence of commercial vessels (personal communication 11/16/2019, Adriane Michaelis, University of Maryland Department of Anthropology). If Maryland watermen don't want their access to the waterfront determined by the whims of developers, the MWA should advocate for a Maryland law similar to Maine's Working Waterfront Tax Law, to ensure that Maryland protects what remains of its maritime heritage, and offers the seafood industry the opportunity for future growth that the advent of aquaculture and the return of the eelgrass beds indicate is possible.

Chapter 3:

Preservation Ordinance Review

HISP 640 Historic Preservation Law, Advocacy, and Public Policy

Introduction

Howard County, Maryland is not listed by the National Park Service (NPS) as a Certified Local Government (CLG), but the Howard County Code of Ordinances does contain a historic preservation ordinance. To evaluate the likely effectiveness of this ordinance, we can compare it to those from other local governments. Neighboring Prince George's County, Maryland became a CLG in 1985. It is similar to Howard County in many ways, and will offer an example of an ordinance that meets more rigorous guidelines under similar circumstances. Additionally, two urban ordinances will be added to the comparison: Cleveland and Cincinnati, Ohio. Both are CLGs, are highly urbanized, and have industrial pasts that may present different opportunities and challenges for preservation policy.

Even a cursory look at local preservation ordinances reveals that there is a patchwork of local preservation law in the US. Some CLGs, such as Washington County, Maryland, don't actually seem to have preservation ordinances in their code, and haven't reported any activity to the NPS in recent years. This suggests that the NPS needs better reporting requirements and decertification procedures for CLGs that fail to continue to meet the requirements of the program. Other communities that seem to have a strong focus on heritage and preservation are often not CLGs, and if they have any preservation ordinance at all, it may simply be a paragraph in their code that lacks most details beyond a title and a purpose to preserve historic

properties. “Heritage tourism” destinations like Holland Island and Crisfield, Maryland seem to fall into this category. Many such small communities are fiercely proud of their heritage, yet fiercely opposed to government intervention in their lives.

These include many communities that depend on working waterfronts. These are areas where water-dependent businesses such as ship transportation, fisheries fleets, and seafood processors can access the water and build their infrastructure. The US is losing working waterfronts at an unprecedented rate as this land is developed, and communities have responded by passing a variety of laws to preserve these sites. Maine is at the forefront of this, having passed legislation authorizing the state to purchase the development rights from the owners of working waterfronts. In Maine, only about 20 miles of this shoreline remains, clustered in only a few waterfront communities. None of these communities are CLGs, and none of them with electronically accessible codes of ordinances have a historic preservation ordinance that would meet CLG requirements. By failing to adopt historic preservation ordinances, these communities have failed to take one of the most straightforward and effective steps in preserving their heritage.

Additionally, entire regions of the US seem to lack local preservation laws. Looking beyond the states, no community in the colonies/territories² seems to have a local preservation ordinance, and none are listed as CLGs. A few of the territories, such as the Northern Mariana Islands, have the equivalent of a state preservation law (though an analysis of those is beyond the scope of this chapter). All have Historic Preservation Officers, as do the three Pacific nations that have compacts of free association with the US (the Federated States of Micronesia, Republic of the Marshall Islands, and Republic of Palau), but this has not yet fostered the development of local preservation movements. Historic preservation has many inroads yet to take in serving diverse and historically underrepresented communities.

Ordinance Titles

The titles to different ordinances can be found at different levels within a given local government's code. The Howard County historic preservation ordinance can be found under the Howard County Code of Ordinances, Title 16 – Planning, Zoning and Subdivisions and Land Development Regulations. It is titled Subtitle 6 – Historic Preservation Commission. The Prince George's County ordinance is more

² The US Federal government prefers to refer to these as unincorporated or incorporated territories which can be organized or unorganized, but the United Nations refers to most of them as Non-Self Governing Territories subject to the decolonization process. These include Puerto Rico, Guam, American Samoa, the US Virgin Islands, and the Northern Mariana Islands.

prominent, titled Subtitle 29—Preservation of Historic Resources. Subtitles in the Prince George’s code appear where Titles do in the Howard County code, so the Prince George’s preservation occurs one level higher in the hierarchy. The Cleveland ordinance is found under Part One: Administrative code, Title IX: Boards and Commissions, Chapter 161, titled Landmarks Commission. The Cincinnati ordinance is found under Title XIV: Zoning Code of the City of Cincinnati, Chapter 1435, titled Historic Preservation. The Prince George’s ordinance is the most prominent in its code, being displayed in the first level of the code’s table of contents. This organization does not necessarily reflect the value that a local government places on its ordinance, but it does impact how easily members of the general public can access and learn about these ordinances.

Statements of Purpose

In the Howard County Code, the title is followed by Sec. 16.600 – Purpose, which begins with an explanation of article 25A of The Annotated Code of Maryland as the enabling legislation for the ordinance. The purpose is:

“...to safeguard the heritage of the County by preserving districts herein which reflect elements of its cultural, social, economic, political or architectural history; to stabilize and improve the property values in such districts in the County; to foster civic beauty; to strengthen the local economy; and to promote the use and preservation of such historic districts in the County for the education, welfare and pleasure of the residents of the County.”

This purpose encompasses a number of values, notably mentioning property values and the economy, but omitting public morals (though it could be argued that this is encompassed by cultural or social factors which are mentioned). The purpose section goes on to outline the establishment of the Historic Preservation Commission (HPC), and to task it with maintaining the historic preservation plan and with providing advice and counsel to government and private entities.

The purpose of the Prince George's County ordinance is closer to the model ordinance, and more clearly highlights several points, such as:

“...to provide for the identification, designation, and regulation, for purposes of protection, preservation, and continued use and enhancement of, those sites, structures (including their appurtenances and environmental settings), and districts of historical, archaeological, architectural, or cultural value.”

The purpose goes on to mention that this is being done in the interest of quality of life, cultural heritage, civic beauty, welfare, and so forth. This language is stronger than that in the Howard County code. The Prince George's ordinance exists to *identify, designate, and regulate* a variety of types of properties for a variety of reasons, and these are stated. The Howard County ordinance exists to “safeguard the heritage” through historic districts, lacking many relevant definitions or examples. Both ordinances list a number of values related to the public welfare that justify their existence.

The purposes of the Cleveland and Cincinnati ordinances are similar to those for the Maryland ordinances. They highlight public welfare, economic interests, character and fabric of the cities, and aesthetics. The Cincinnati ordinance includes

“engineering” as an important component of districts and landmarks, reflecting the highly-built nature of the urban environment. It also includes “to conserve valuable material and energy resources by ongoing use and maintenance of the built environment,” invoking sustainability as a value. Cleveland’s purpose includes a clause that the ordinance will:

“Take whatever steps are necessary to safeguard the property rights of the owners whose property is declared to be a landmark or is located in an area designated as a landmark district.”

This is an interesting clause that seems to go beyond a requirement to provide due process throughout the regulation of property. It may ultimately undermine the regulatory goals of the ordinance and offers support to owners seeking to challenge the ordinance.

Definitions

Definitions for the Howard County ordinance are listed in Sec. 16.601, including many items commonly seen in ordinances. *Minor alterations* lists a number of examples, and *Routine maintenance* also outlines examples such as minor landscaping and paving repair with like materials. *Appurtenances and environmental settings* includes pavement, trees, waterways, rocks, and landscaping, so the ordinance is able to protect many characteristics of a property, not just structures. *Structure* is defined broadly as well, not simply including buildings but anything which is affixed to the ground, including benches and trash cans. Notably absent is a definition or guidelines for the historic preservation plan, which the HPC is tasked

with maintaining. Also missing are many now-common terms from the Secretary's Standards, such as Rehabilitation, Reconstruction, and Restoration.

The Prince George's County ordinance contains similar definitions, but notably includes *Demolition by Neglect* and *Master Plan for Historic Preservation*. These were substantial omissions from the Howard County ordinance. Cincinnati's ordinance defines *Adversely Affected Person* as anyone who has appeared before the Historic Conservation Board directly, via designee, or in writing. Demolition by neglect is captured in its definition of *Demolition*, which includes the language "...or the substantial deterioration of a Historic Asset..." *Historic significance* is also defined, with a definition closely resembling the required criteria to be listed on the National Register, including a clause about a property yielding or being likely to yield important information. This clause is cited for many Federal preservation decisions that are based on archaeological resources, and the Cincinnati ordinance is the only one of the four herein considered that contains such language. The list of definitions in Cleveland's ordinance is rather short in comparison, mostly identifying terms for people or properties relevant to the ordinance.

Procedures for establishing Board/Commission

The Howard County HPC is established by Sec. 16.604. General provisions for the Commission are cited elsewhere in the Howard County Code, under Subtitle 3, Boards and Commissions. The HPC shall have seven members. In theory, this language prevents it from being understaffed for any extended period of time. Members serve for 5 years, at the pleasure of the County Executive. Qualifications

are listed, including that members be residents of the County and that they be professionals or have a “special interest, knowledge, or training” in a variety of relevant disciplines (listed in the ordinance). They must also have knowledge and demonstrated interest in preservation in the county.

Membership is stratified by historic district, with a requirement that the HPC include a resident or property owner from every district with multiple sites in the County. When a new multisite historic district is created, the County Executive has three months to appoint an additional voting member to the commission from that district until a new permanent member can be appointed and confirmed, which must occur within three years of the creation of the district. This raises an obvious paradox; what happens when there are more than seven multisite historic districts in the County? The ordinance clearly states in one place that there shall be seven members of the HPC, and in another that there shall be one member from each of these districts. The HPC website currently lists only five members, which seems to be in violation of the ordinance. Depending on how long the other two positions have been vacant, a preservation organization could probably bring suit to compel the County to fill those positions. Three members constitutes a quorum, with simple majority votes for decisions. The ordinance also creates an Executive Secretary to the Commission, a position held by the Director of the Department of Planning and Zoning or their designee, who attends all HPC meetings and may make recommendations to the HPC.

The Historic Preservation Commission of Prince George’s County has nine members. These are appointed by the County Executive and confirmed by the County Council. Unlike the Howard County ordinance, these details are explained in the

Prince George's ordinance, and the other sections from which this process is adopted are cited (Sections 504 and 322 of the County Charter). There is a County residency requirement, and the members are stratified by discipline. Three must be preservation experts with interest, knowledge, or training in a field such as history, architecture, or archaeology (the list goes on). Three must be representatives of economic, community, or law interests. One is selected from the County's Historical and Cultural Trust board, one from the Minority Building Industry Association, and one from the Board of Realtors. There is a process for appointing the Chairman and Vice Chairman of the HPC. Terms are three years, with three expiring each year. There are clauses for filling vacancies, removing members for cause, compensation (none but expenses), meetings, staff, and the adoption of regulations and design guidelines. The Howard County ordinance lacks most of these details, though some can be found in other parts of the Howard County Code. In particular, there is no requirement that residents of historic districts serve on the HPC. This peculiar clause in the Howard County ordinance may inhibit the diversity of membership sought by the Prince George's ordinance.

Cincinnati has established both an Urban Conservator and a Historic Conservation Board (HCB), though like the Howard County Code the specifics are cited elsewhere in the code. The Urban Conservator is described under Article XXI, Sec. 4 as being housed in the division of permits and inspections, and as having a staff. They are required to meet the Secretary of the Interior's Standards for historic preservation professionals, and the Cincinnati Code cites 36 CFR Part 61. The HCB is described in Article XXX Sec. 4 of the Cincinnati Code. It consists of seven

members, stratified by profession. There is a historic preservationist, a historian, two architects, one attorney, one person involved in real estate or construction, and one economic or financial professional. They serve for three year terms.

The Cleveland ordinance establishes the Cleveland Landmarks Commission (CLC), the largest of the four. It consists of 11 members. Seven of these are appointed by the Mayor and confirmed by the City Council. The remaining members are the Commissioner of Architecture, the Director of the City Planning Commission, and two appointees by the City Council President. The Director of the City Planning Commission serves as Secretary. This structure is somewhat reminiscent of that of the Federal Advisory Council on Historic Preservation, with representatives drawn from various government agencies. The Mayor's appointees are limited to a pool of nominees from the Cleveland Chapter of the American Institute of Architects, the Early Settlers Association, and the Western Reserve Historical Society. They must represent five groups: property owners, architects, historians, real estate brokers, and attorneys. All must have demonstrated an interest in preservation. Terms are four years and are uncompensated. Members select their own Chair and Vice-Chair.

Powers and duties of Board/Commission

The Howard County HPC is charged with 7 duties by Sec. 16.606—Powers of the Commission. 1) The HPC reviews applications for “certificates of approval” for applications to alter historic structures, either within or outside of a historic district. 2) The HPC may consult with the Maryland Historical Trust to analyze structures within the county and to make recommendations regarding their preservation. 3) The HPC

evaluates petitions to create or alter historic districts, and makes recommendations to the County Council. For individual historic sites, the HPC makes similar recommendations on boundaries to the Zoning Board. 4) The HPC is generally tasked with providing advice on historical resources to any part of the County government that requests it. It advises the Department of Planning and Zoning on subdivision or development plans in historic districts, identifying historic resources. Additionally, it provides advice to applicants and developers, both before and during the application process when they seek a certificate of approval. 5) Relevant to sections 20.112 and 20.113 of the County Code, which create a historic tax credit program, the HPC is tasked with adopting rules to implement this program. 6) Similarly, the HPC may approve tax credit applications. 7) Finally, the HPC is tasked with maintaining the historic sites inventory.

The Prince George's HPC is given far more power than the Howard County HPC. In Howard County, the HPC largely plays an advisory and consultative role, with the power to approve or deny applications for certificates of approval. In Prince George's County, the HPC is charged with researching historic resources and making recommendations for their classification based on stated criteria. There are rules for dealing with historic resources in municipalities, and a process for resolving disagreements. The HPC is tasked with maintaining an inventory of historic resources, evaluating applications for Historic Area Work Permits (HAWPs), appointing advisory committees, recommending programs and legislation to the County and Planning Board, reviewing proposals from other authorities, providing information on preservation throughout the County, hiring personnel or consultants

where needed, administering funds and tax programs, delineating environmental settings for historic resources, and making recommendations regarding publicly-owned resources. There is some overlap with Howard County, but the Prince George's HPC has considerably more power and authority.

In Cincinnati, duties are split between the Urban Conservator and the HCB. The Urban Conservator is tasked with maintaining designation and conservation guidelines, administering preservation regulations, reviewing applications for certificates of appropriateness, participating in the National Environmental Policy Act (NEPA) process through environmental reviews as they relate to historic resources, advising the HCB, and representing the city on historic matters. This is similar to the role of Howard County's Executive Secretary to the Commission, but the duties of the Urban Conservator are much more clearly stated. The HCB is tasked with advising other city boards and agencies on historic preservation issues, reviewing certain applications for certificates of appropriateness, suggesting guidelines for historic resources, acquiring and managing easements, and suggesting how historic sites and districts can be redeveloped appropriately in conjunction with new development. This last duty, to suggest redevelopment plans, diverges from the common duties of a preservation commission. The implication here is that historic resources are actively fit into development plans, rather than the more common approach where developers are generally asked to fit their plans to existing historic resources. The HCB also has the duty to evaluate zoning applications for variances, special exemptions, and conditional uses in Historic Districts; this duty is otherwise carried out by the Zoning Hearing Examiner.

In Cleveland, the Landmarks Commission has the duty to provide a continuing survey of all places, structures, art, and objects that may be designated as landmarks. It publishes a register of landmarks and landmark districts, educates the public on history, evaluates applications for certificates of appropriateness, and hires or employs experts as needed to carry out its other duties. The Secretary of the Landmarks Commission is further tasked with commissioning plaques to identify Cleveland landmarks, for a \$200 fee.

Criteria for identification, review, and designation

The Howard County ordinance contains almost no text about identifying, reviewing, and designating historic properties or districts. Sec. 16.602—Establishment of Historic Districts refers to title 16, subtitle 2 of the County Code. This is the County Zoning Enabling Act, which doesn't have any specific criteria for or clauses about historic districts. The HPC Rules of Procedure also omit anything about this. This represents a substantial omission in the Howard County ordinance. Historic Districts seem to be established in an ad hoc manner, with no consistent criteria in mind. The ordinance focuses on treatment of these districts, but without guidelines on how they are created, it would be reasonable for a property owner to challenge the decisions of the HPC as they pertain to their property.

The Prince George's ordinance contains a broadly applicable list of criteria by which sites and districts can be classified as historic. The first criteria of *Historical and Cultural Significance* has four subsections describing significance as it relates to the history of development, historic events, influential persons, and other local heritage. The second criteria, *Architectural and Design Significance*, highlights value

as distinctive, representing a craftsman or period, having artistic values, representing an entity that has significance, or is a familiar part of a landscape. A resource that meets any of these criteria may be classified as historic. The criteria listed here resemble those for the National Register of Historic Places, but do not mirror them.

The criteria used for identifying and designating landmarks in Cincinnati are brief. They are presented in the definition of *Historic significance* in the ordinance (covered above in Definitions) and reiterated later in the ordinance. Landmark or district applications can be made by property owners, selected city employees and Councilmembers, and community organizations. Perhaps more interesting, the ordinance contains a list of criteria that *do not* alone make a structure or group of structures historically significant. Cemeteries, birthplaces, and graves of historical figures, and most religious properties that are still used as such, are not considered to be significant unless there are other reasons why they would be. Structures that have been moved, reconstructed, were commemorative, or are less than 50 years old are also not considered to be significant unless they meet certain other criteria. These restrictions on significant structures are not surprising for a highly urbanized environment. There isn't much land left to work with, and the density of urban populations would eventually make it burdensome to landmark all of the famous homes and resting places. Howard County only has two historic districts and plenty of open space (for now), so it doesn't need these explicit restrictions on structures which should not be deemed historically significant.

The Cleveland ordinance has none of the restrictions of the Cincinnati ordinance. The Landmarks Commission evaluates areas, structures, and objects based

on their “character, interest, or value as part of the development, heritage or cultural characteristics of the City, State, or the United States.” It subsequently lists a number of criteria including location of significant events, distinctive architecture, and relationship to other distinctive areas. Again, archaeological values, or the ability to produce information as a result of studies at the site, is missing.

Cincinnati and Cleveland both have mechanisms in their ordinances to revoke designations. In Cincinnati the HCB goes through a public hearing process using the same process as it would for a designation after a property owner petitions them to do so. The property owner must present “clear and convincing evidence” that the historically significant characteristics of the area or structure have been lost. The HPC makes a recommendation to the City Planning Commission, and then the City Council can vote to repeal the designation. The process is much less protective in Cleveland, where a simple City Council vote can repeal a designation, regardless of its condition.

Review and approval of work

The guidelines for the Howard County HPC to review and approve work are split into four sections of the ordinance and several additional publications. Sec. 16.603—Certificates of Approval outlines when a certificate is required or exempted. A certificate is required for “construction, moving, demolition, repair or alteration” of any structure in a historic district that affects the exterior appearance of the structure. Certificates are also required for construction or alteration of parking space or exterior signs. Any routine maintenance or minor alterations (as determined by the

Executive Secretary to the Commission) is exempt from the requirement to obtain a certificate. Most landscape and infrastructure work is also exempt from this requirement, including work on streets, sidewalks, stormwater infrastructure, tree planting or clearing, and utilities, as long as such work is consistent with an “approved subdivision plan, site development plan, forest conservation plan, or grading plan.” Additional clauses clarify that building permits and sign permits are not to be issued by other County departments if a HPC certificate of approval is required but has not been issued, that the certificate be posted on the property once work begins, and that a certificate will expire after 18 months (for most work) or after three years (for new buildings). Sec. 16.603A—Review of Development Plans requires applicants for subdivision or site development plans within or adjacent to a historic district, or containing a historic structure, to request HPC review prior to submitting their application. This is intended to give the HPC an opportunity to identify historic resources that may be affected, and to offer advice early in the process.

Sec. 16.607 – Standards for Review directs the HPC to consider the historic, architectural, or archaeological value of a structure and how it relates to the surrounding area when applications for certificates of approval are considered. There are few details beyond this, though the HPC is directed to adopt additional guidelines. A clause here also clarifies that the HPC shall only consider exterior features of a structure, and that the ordinance is not intended to limit work to the style of one period. Sec. 16.608 – Structures of Unusual Importance gives the HPC some flexibility in recognizing any structure of unusual importance (to the County, State, or

Federal Government). The HPC is authorized to negotiate with the owner to preserve these structures, including a 90-day demolition delay to find a means to preserve the building if no economically viable outcome can be found.

Detailed design guidelines are found in separate publications for the Ellicott City Historic District (Howard County Department of Planning and Zoning, 1998), Lawyers Hill Historic District (Howard County Department of Planning and Zoning, 1995), and a general guideline document for the use of solar panels in historic districts (Howard County Department of Planning and Zoning, 2009). These are rigorously written, with sections describing the history of these districts, the architectural styles present, and the materials and methods used. There are references to the Secretary's Standards, guidelines for new construction, landscapes, parking, and signs. Even though the guidelines for historic district designation are unclear, the guidelines for work done after designation are abundantly clear.

The Prince George's ordinance also clearly identifies what sorts of work require a HAWP application and what sorts of work are exempt from the approval process. Similar to the Howard County ordinance, an application is required for any work on publically or privately owned property that contains a historic site or is inside a historic district, aside from ordinary maintenance, repair, or traditional farming or landscaping. The HAWP requirement clearly includes work on signs and environmental settings. The ordinance includes guidance on how to file an application and on the timeline for its consideration. The procedure for review of the application is clearly explained, including due process details on public notice and the public's right to be heard. Meeting minutes are to be kept. The HPC has 45 days after an

application is filed to publish its decision, with a few clauses allowing small extensions for additional statements to be entered into the record. As with Howard County, a failure by the HPC to meet these deadlines automatically approves a HAWP. The criteria that are used to evaluate permits are clearly explained. They do not cite the Secretary's Standards but resemble them, and include additional language for considerations such as public health and safety and the general public welfare. The HPC is instructed to be lenient with applications for new construction or the alteration of buildings of little significance. It is the applicant's responsibility to support their own application. Finally, there is a requirement that if another party owns an easement on the property, the applicant must submit that party's approval along with their request for HPC approval of planned work.

Cincinnati has adopted very clear guidelines for evaluating applications for certificates of appropriateness. Whenever a designation is made, the HCB also adopts conservation guidelines and makes them available on its website (Historic Conservation Board Staff, 2019). These include a map with environmental boundaries for each historic resource, an introduction to the asset, a description of its characteristics, and a set of specific criteria. Many of these resemble those of the Secretary's Standards, though others are asset specific. Many include guidance on installation of modern conveniences including HVAC systems in as least-obtrusive a way as possible. An applicant must demonstrate that their proposed work will "substantially conform" to the guidelines for their asset.

If the Cleveland Landmarks Commission adopts guidelines for individual properties and districts, they don't make them available on the internet. However,

their ordinance does contain great detail on how applications are evaluated. The Secretary's Standards are written into the ordinance, and credit is given to the Department of the Interior. Building permit applications and permit applications for environmental changes, relating to landmarks, are forwarded from other agencies to the Landmarks Commission. Other ordinances don't say anything about application and review fees, but the Cleveland ordinance does. It includes a fee schedule, based on the estimated cost of the work to be done if a certificate of appropriateness is issued. The fee ranges from 1.5% of the cost for proposals under \$5,000, to \$3,625 + 0.02% of the amount over \$5,000,000 for projects that exceed \$5,000,000.

Enforcement and penalties

In the Howard County code, Sec. 16.610 – Enforcement states that the Department of Planning and Zoning may address any violation of the ordinance by instituting “appropriate action to prevent, enjoin, abate or remove the violation.” Alternatively or additionally, the Department may enforce the ordinance by treating violations as a Class C civil offence under title 24 of the Howard County Code. Title 24, Civil Penalties, states that this fine can range from \$100-250, and that each day of violation after a citation is issued constitutes a separate violation. This is a fairly strong enforcement clause, but does not appear to enable the County to recover costs or to place a lien on a property after removing a violation.

The enforcement clause in the Prince George's ordinance clearly outlines that any violation of the ordinance or a HAWP can incur a \$500 civil fine, with each day

of violation constitution a separate violation. Procedural provisions aren't outlined in the ordinance, but it refers to these in Subtitle 28 of the County Code.

The Cincinnati ordinance doesn't include an enforcement clause, though it is handled later in the code. The Director of Buildings and Inspections is tasked with enforcing all of the zoning code for the city, including historic designations. Violating the city ordinance constitutes both a civil and criminal offense (first-degree misdemeanor), with a separate offense occurring each day after notification. Offenses include alteration or demolition without a certificate of appropriateness, and demolition by neglect.

The Cleveland ordinance contains a relatively weak enforcement clause, with a fine that ranges from \$10 to \$500 per violation per day. Depending on how this is applied, it could be more draconian than the Prince George's or Howard County fines, which are often dismissed if a situation can be resolved. The Cleveland ordinance states that the fine shall not be less than \$10, so it should be routinely enforced at this minimum level or higher.

Appeals procedures

An appeals clause in the Howard County ordinance allows any person, persons, or organization that is "aggrieved by a decision of the" HPC to appeal to the County's Circuit Court. This appeal must occur within 30 days of the decision, or of the approval of an application due to delay by the HPC. Elsewhere (Sec. 16.603), the ordinance states that the decision to require a certificate of approval cannot be appealed.

The Prince George's ordinance handles appeals in several ways. Any appeals relating to HAWP applications or demolition by neglect may be filed with the Circuit Court within 30 days of the HPC's decision. The court is charged with reviewing the decision based on the record of the HPC's proceedings, so this prevents applicants from making a different case with different evidence before the court. Another track for appeals is used when the aggravation (i.e. the grievance claimed by the aggrieved) is caused by a decision to classify a previously unclassified historic resource. The HPC first goes through due process and makes these decisions. Any person of record may then, within 30 days, appeal that decision to the District Council. The Zoning Hearing Examiner then goes through due process again in a *de novo* hearing before the District Council issues its decision. After this, the decision can still be appealed to the Circuit Court within 30 days, though again the court is limited to examining the record related to the District Council's decision.

Any adversely affected person can appeal a decision of the Cincinnati HCB to the Zoning Board of Appeals. The Cleveland ordinance doesn't have an appeals clause, nor does the Cleveland Code. The city also has a Zoning Board of Appeals, so presumably it would handle appeals, but the code establishing this board doesn't contain explicit language to this effect.

Severability

The Howard County and Cincinnati ordinances contain severability clauses, which state that if a portion of the ordinance is struck down by a court, that the remainder of the ordinance is severed from that portion and left intact. Severability

helps to prevent courts from striking down entire laws when only portions of those laws may be deemed unconstitutional or otherwise illegal. The Prince George's ordinance does not, but the County Code contains a severability clause that applies throughout the code in Subtitle 1, Sec. 1-122. Similarly, the Cleveland Code contains a severability clause in Title 1, General Provisions, which applies to all ordinances.

Minimum maintenance

The Howard County ordinance contains no general provisions for minimum maintenance, demolition by neglect, or economic hardship. There is a clause for economic hardship under Sec. 16.608, exclusively for Structures of Unusual Importance, which allows the HPC to approve alteration or demolition if retention would cause undue hardship. This section also allows demolition if the property is interfering with a major improvement project or if the structure's retention is not in the majority interest of the community. Because the guidelines are scant here, the HPC appears to be able to allow the demolition of any property by first recognizing it as unusually important, and then allowing demolition under one of the aforementioned special circumstances.

The Prince George's ordinance contains a large section on demolition by neglect. Procedures to notify the owner are explained in detail, and they are given an opportunity to request a hearing on the HPC decision that demolition by neglect is occurring and should be prevented. Structures of little significance are not protected by this clause unless their loss would impair a historic district. A hardship argument can be made, and the HPC has "reasonable time" to find some solution that would

preserve the building. If none can be found, demolition is permitted, but the HPC is first afforded an opportunity to document the property. If the demolition is not permitted yet continues, the Director can have remedial work completed and defray the costs through a tax bill or tax lien on the property.

Cincinnati's ordinance has a robust demolition-by-neglect section. Demolition can be permitted through a hardship application, but the applicant must demonstrate this, and must further demonstrate that the hardship wasn't created or exacerbated by them. Even if demolition would be permitted, the city can invoke a 180-day demolition delay period to try to find an alternative option. Demolition by neglect incurs both civil and criminal penalties, and the Urban Conservator maintains a list of neglected properties that is published online. Cincinnati Code Sec. 1101-63, Dangerous and Unsafe Premises, allows the city to make emergency repairs or demolition, and to place a lien on the property. This section specifies that in the case of historic buildings, repair will be preferred to demolition whenever possible, and repairs will follow the standards in the preservation ordinance.

Cleveland's ordinance also contains minimum maintenance requirements. Owners are responsible for keeping the exterior in good repair, as well as for keeping any portion of the interior which could affect the exterior in good repair. Many specific items are covered, from a watertight roof to clean gutters and from vegetation clearing to pest control. Further guidelines apply generally to all buildings regardless of historic character, including securing first-floor windows, installing intrusion alarms and smoke alarms, and providing suitable interior ventilation. To correct deficiencies in the interest of public peace, property, health, or safety, the

Commissioner of Building and Housing can obtain a \$15,000 penal bond from the property owner, approved by the Director of Law, to make the needed repairs. There is a further clause that in the case of conflicts with other zoning laws, the stricter provision will always apply.

Other sections

The Prince George's ordinance contains several additional sections of note. One requires that a property seller disclose to a potential buyer if a property is a Historic Site or resource, or if it is in a Historic District. The procedure of notification is explained. Additionally, misrepresentation of property as historic when it is not is prohibited, and violations constitute civil violations. The other notable section establishes the Historic Agricultural Resource Preservation Program (HARPP). This program empowers the County to purchase preservation easements from willing sellers in order to preserve agricultural, rural, and natural resources. The criteria by which these resources are ranked for the program extend beyond the criteria for other historic resources to include the preservation of vistas, rural character and culture, and agricultural enterprises. This is similar to the legislative approach taken in Maine for the preservation of working waterfronts through easement purchases. The Howard County historic preservation ordinance doesn't directly account for agricultural resources, though Title 15, Subtitle 5 of the Howard County Code, Agricultural Land Preservation, does address this issue.

This is one area where the Howard County code may be superior to the Prince George's code. The Howard County agricultural preservation program establishes an

Agricultural Land Preservation Board, outlining qualifications, duties, and so forth. The Prince George's agricultural preservation code is nested in the historic preservation ordinance, but it is independent of the HPC. The program is run by a Program Administrator and the Planning Board. Perhaps the HPC offers advice on their proposals, but this is not listed as one of their duties. Further, the Howard County code requires agricultural land to meet certain soil criteria for an easement to be purchased, while the Prince George's code only states that the Planning Board may consider data from the Soil Conservation District. In ranking agricultural land for preservation in perpetuity, this and other natural resource information is vital to making informed decisions. The Prince George's County Code does have Agricultural Land Preservation under Division 2 of Subtitle 30, and this establishes an Agricultural Preservation Advisory Board. This division resembles the Howard County Agricultural Land Preservation ordinance, and also defines the Program Administrator as the District Manager of the Prince George's Soil Conservation district or their designee (a definition missing from the preservation ordinance). It isn't clear how these two sections of the Prince George's code relate to one another. They seem to function similarly but have different decision makers, and so are presumably semi-autonomous. Prince George's County weighs historic values when making agricultural land preservation decisions, but could integrate this better with the rest of the agricultural preservation program.

Additional sections of the Prince George's ordinance recognize and define the master plan for historic preservation, and authorize the historic property grant program. These are not addressed in the Howard County ordinance.

Related ordinances

In addition to the historic preservation ordinance, the Howard County Code also contains subtitle 13, Cemetery Preservation, and subtitle 14, Scenic Roads. These provide for the inventorying and preservation of these historical resources. Beyond some mention under Cemetery Preservation, archaeological resources have no additional protection. The Prince George's Code also contains sections on cemetery preservation, woodland protection, and green streets, though lacks recognition and protection of scenic roads. Both Cincinnati and Cleveland have ordinances for cemeteries. Neither seems to have any special protection for agricultural land, which is no surprise considering that urban agricultural land is generally restricted to a handful of community gardens.

Conclusion

The Howard County historic preservation ordinance is the weakest of the four compared in this chapter, but it can still protect historic resources. It has some major omissions, including the initial criteria used to decide if a historic district should be created. It doesn't address individual historic properties very well, being focused on historic districts. This is by design, considering the requirement that the HPC contain representatives who live in the historic districts. It has the effect of skewing the ideas on the HPC, to the exclusion of contrasting voices who would advocate for the designation of individual structures outside of the historic districts. The County Executive has extensive leeway in who they put on the HPC, with few professional requirements and no requirement that members represent a variety of disciplines. The

ordinance is further lacking in procedural details, leaving the interested reader to sift through the rest of the County Code to find important details about the preservation ordinance, such as how long the HPC members serve for. The Prince George's County ordinance was the only one to consistently include all necessary details in one place. The Howard County ordinance further fails to address demolition by neglect, and has failed to address development around its historic districts (Broadwater et al., 2016), to their detriment.

The urban ordinances are clearly written to face different challenges. The urban environment is old and overbuilt, and in the face of deindustrialization, there is a need for cities to redevelop neighborhoods. This is clear in the Cincinnati ordinance, which excludes many properties from protection and tasks its HCB with coming up with ideas for revitalizing historic districts. They also lack other ordinances for agricultural protection, scenic roads, and the like because these resources are scant if not extirpated in urban settings.

In general, all of these ordinances could be better integrated with other parts of their local codes that seek preservation as a goal. There is a lack of clarity about how things like agricultural preservation work when it is split between several sections of the code, and yet it is clearly justified as a part of a historic preservation ordinance. Local preservation ordinances seem to be heavily influenced by federal preservation law, which focused on buildings and districts instead of industries and lifestyles. The next steps of preservation in the United States will be to ensure that local preservation movements are informed and empowered to consider protection of non-conventional aspects of their heritage, like farms and fishing piers, as subjects for

historic preservation. When well written, these laws can provide excellent protection to a huge variety of resources, and can promote not just historic preservation in general, but can protect economic interests and natural resources as well.

Unfortunately, the Howard County preservation ordinance is a far cry from this. It has managed to preserve two historic districts fairly well, but as the villages of Columbia pass 50 years of age, it may be worth updating this ordinance to ensure that more of the County's heritage can be preserved into the future.

Chapter 4:

Kolos House Significance and Description

HISP 611 Historical Research Methods

An unimposing single-family home located at 4507 Oliver Street in Riverdale Park, MD is known as the Kolos House, named for the family that has owned it since 1953. The house was constructed in the range of 1912-1914 (Prince George's County Land Records, 2019) and is a contributing resource to the Riverdale Park National Historic District. A non-contributing shed is also located on the property. The home was built in the Craftsman style. This architectural style showcases the handiwork that goes into the construction of a home, and is characterized by low-pitched roofs, wide eaves, exposed rafters, a covered front porch with pillars lining the entry, double-hanging windows, and abundant natural materials. This home showcases all of these features, including original window frames (though the glass has been replaced), front dormers, and original bullseye molding throughout the interior of the house. These features are made of chestnut wood. It has three bedrooms on the second floor. While many original features have been preserved, there have been alterations as well. A pantry off of the back porch was converted into a powder room, the attic has been finished to provide a “dorm style” room, and a 20 ft x 20 ft addition was added to the back of the home in 1974-1975 to hold a pool table (though the room has since been repurposed as a family room and a bathroom has been added). The extension projects from the original rectangular plan of the house. The current roof is made of asphalt shingles. The home has a ramp for access, constructed approximately 30 years ago to assure safe access for a Kolos family member. The

foundation exterior is coated with a plaster layer, any underlying material is hidden. Similarly, the home has modern siding with a blue and white color scheme. The interior and exterior appear to be in excellent condition.

The historical significance of this home stems mainly from its first owners, John J. Connors and his wife Eleanor G. Connors. They were married in April 1914 in the District of Columbia (Ancestry.com, 2014), and purchased the house in May 1914 (Prince George's County Land Records, 1914b). Their lives tie this home to Francisco “Pancho” Villa and the Mexican Revolution, World War I, and the Spanish flu pandemic of 1918. Though they only owned the home for a short time, selling it in 1914 (Prince George's County Land Records, 1914a) for unknown reasons, their ownership highlights some of the historic events that impacted not just Riverdale Park, but the entire world. The home is significant under the areas of health/medicine and military history.

John J. Connors was born in 1894 and spent most of his life in service to his country. At 16, the 1910 census records his job as a messenger for the US Department of Agriculture (Ancestry.com, 2006). In January 1915, a newspaper article announces that he is among several applicants to the National Guard of the District of Columbia (sometimes referred to as the DC Militia) (Evening Star, 1915a). In March 1915 his son, also named John J. Connors, was born (Evening Star, 1915b). By June 1916 Pancho Villa’s revolutionaries were threatening the US border with Mexico, and John was one of a number of local National Guardsmen who worked for the Agriculture Department to respond to a presidential call for volunteers at the border. These volunteers were lauded in the newspapers of the time (The Washington Times, 1916).

Details of John's service in World War I are scant. Most military records of this period were burned in the National Personnel Records Center fire of 1973 (see <https://www.archives.gov/personnel-records-center/fire-1973>), and correspondence with the National Archives and Records Administration in St. Louis, Missouri has yet to yield further results. John's 1917 draft card lists his service at the time in the DC Militia and his employer as the Agriculture Department, indicating that he had not switched to active duty by then (Ancestry.com, 2005). In October 1917 a newspaper article lists him as a representative from the International Order of Good Templars to a church meeting (Evening Star, 1917). This was a prohibitionist organization, and may indicate prohibitionist tendencies on John's part, but there is minimal evidence to work with. Regardless, his presence in the US at that time and his subsequent death in Virginia make it unlikely that he was ever deployed to Europe. He would have become active duty in late 1917 or sometime in 1918, just as the war was ending. He was in Saltville, VA when he died in October, 1918. His Certificate of Death lists the primary cause as influenza, with a contributing cause of pneumonia, after 6 days of hospitalization (Ancestry.com, 2015). This is almost certainly due to the Spanish influenza, which was at that time sweeping the world and killing millions. He is buried at Arlington National Cemetery (National Cemetery Administration, 2006), where his tombstone states that he served in the Army Ordinance Corps. In recognition of his service and sacrifice, his name is listed (in the Army section) with the many other DC residents lost in World War I on the District of Columbia War Memorial in West Potomac Park, DC.

Eleanor and John the younger survived John the elder by decades. John the younger died in 1965 (Ancestry.com, 2015) and Eleanor in 1986 at the age of 92 (Ancestry.com, 2019). There is no evidence of her ever remarrying, and no descendants have been identified living today. The lives of these people, connected to this home, highlight one of the more tragic outcomes of war and disease. The Connors family succumbed to these events, and their story serves as a reminder of what could have happened to any American family at that time, and indeed what did happen to many of them. We descendants of those who survived should count ourselves lucky, and remember the historical events that have shaped our communities through time.

Chapter 5:

Deforestation and Consequences from Antiquity to Modernity – How Mismanagement of One Resource Degraded Others, Stressed Civilizations, and Reshaped the World

ENST 440 Crops, Soils, and Civilization

Introduction

Since prehistoric times, humans and their precursors have depended heavily on forests and forest products. Before bipedalism developed and we took to the plains, our ancestors lived and slept in the trees. Use of fuel wood, perhaps as early as 1.8 million years ago, is evidenced by charred bones and hearths found in Koobi Fora in Africa (Gowlett and Wrangham, 2013). Back when cooking and spear-making were the pinnacle of technology, forest and wood resources were essentially infinite to hunter-gatherers. This changed once agriculture was invented and people began to settle for longer periods of time. Land was cleared of trees for agriculture, building materials, and increasing fuel wood requirements. This led to a myriad of problems including a scarcity of wood, reduced precipitation infiltration, and soil erosion. These in turn led to conflict, intensified wildfires, degradation of water supplies, and a radical transformation of many landscapes, terrestrial and subaqueous. The Greeks and the Romans were among the first to face these problems; their creative responses to them, both successful and not, can shed light on the way that modern civilizations are dealing with these same issues.

Ancient Greek and Roman Forest Management

The ancient Greeks were avid consumers of forest products, and their management practices resulted in widespread deforestation throughout Greece. Trees were a source of fuel, timber for homes and ships, wood for smaller items such as tools, and food. Olive, oak, and walnut trees grew throughout Greece, with evergreens at higher elevations. Woody shrubs were found throughout the region, and thanks to trade, the Greeks also had access to cypresses grown in Crete and cedars in Lebanon. In some areas forest cover was maintained by replacing existing stands of trees with olive plantations, mimicking some of the functions of natural ecosystems. These plantations received legal protection, but overall forest cover still decreased (Thommen, 2012).

This is not to say that deforestation was complete throughout the region, and this has made it a somewhat difficult topic to study. Deforestation seems to have been quite localized, with forests receding away from cities as residents had ever increasing demands for fuel wood. Many upland areas away from coastal cities remain relatively untouched to this day, providing evidence for those who claim that deforestation did not widely occur in the ancient world. Land use varied widely, with some areas being cleared for grazing or crop growth, while others were replanted with tree crops such as olives. Many other forest areas were simply thinned, maintaining some tree cover but being transformed to a more savannah-like ecosystem. Areas near rivers were preferentially deforested as the price of lumber rose and accessible areas were sought out (Hughes, 2011).

While all of the aforementioned uses of trees and wood were no doubt important, one of the most important uses that was recognized and discussed at the time was the production of lumber for shipbuilding. The Greeks were a seagoing people, and ships for travel, fishing, and warfare were instrumental to their way of life. Forced to do so during the Persian Wars, Athens established a navy consisting of 200 ships in 483-482 BCE. The lumber requirements of building and maintaining this fleet exceeded their own local supply, so Macedonia was used as a source of timber. Forests were recognized as being vital for defense, and battles were waged over their possession, with the intent of cutting off an enemy's source of lumber for ships (Thommen, 2012).

Wildfires also increased in severity after forest removal, exacerbating floods as rainwater hit exposed soil and ran off in muddy sheets and gullies. Plant species in the Mediterranean are adapted to the dry climate, with waxy leaves and many fragrant volatile oils in their tissues—this makes them highly flammable. Land that has been cleared of trees could be more easily devastated by fires, which were often deliberately set to clear brush or pastures. Without groundcover, these soils held less water and were more susceptible to erosion when the rains came (Hillel, 1992).

Water supplies were affected by deforestation as well. Pliny the Elder recorded in his *Natural History* many sites throughout Greece and the rest of the Mediterranean where freshwater could be obtained from submarine groundwater discharge zones. Upland water infiltration and groundwater flow were so effective that subterranean estuaries (marine zones with substantial enough freshwater discharge to lower salinity in the water column) supplied enough freshwater to some

coastal areas that it could be collected and used near the shore, having displaced the saltwater (Moore, 2009). Plato, in *Critias*, noted the disruption of the water cycle by deforestation. Perhaps some of the mechanisms were unknown to him, but the correlation between loss of trees and lowered streams was obvious (Thommen, 2012).

Water wasn't only a source of stress when it was in short supply; it was devastating when it came in floods. Healthy forests and thick soil covers buffer against floods by holding water on the landscape, a feature that is particularly useful in the steeply sloped landscape of much of Greece. While floods were always a natural phenomenon, the Greeks intensified the problem through deforestation. Noting the terrible floods of his day, Homer wrote about torrential rivers that washed away mature oak trees (Thommen, 2012). Unlike the reduction in stream baseflow that resulted from deforestation, the Greeks may not have realized the connection between floods and deforestation. Homer stated "Zeus pours the rains in resentment and wrath at the misdeeds of mortals," suggesting that floods were viewed as punishment from the gods and not as a result of land management (Aldrete, 2007).

Trees will ordinarily grow back if burned or cut, but in many areas the loss of forest cover was made permanent by soil erosion. Soil erosion occurred on cleared land, made vulnerable from flooding and fires. Soil fertility and depth were lost, leaving many rocky subsoils and much exposed bedrock throughout Greece. In these remnant soils the nutrients were lost, and forests could not reestablish themselves (Hillel, 1992). Given centuries to recover, both evergreen oak and Aleppo pine woods have since been successfully reforested in limited areas, but such a long recovery was of no use to the ancient Greeks (Thommen, 2012). Most of the nutrients in a forest are

in the living biomass, cycling quickly through the soils as leaves fall and decompose; but once the land is cleared, the nutrient cycle that once supported the forest is very difficult to reestablish. It may thus be that forest loss, and not soil loss, is what is still preventing the restoration of these forests in much of the region (Odum and Barrett, 2005). The pollen record, well-preserved in sediments, shows a clear decrease in tree pollen and an associated increase in the pollen of crop plants over time; so that while deforestation certainly occurred to some extent, it is difficult to estimate how extensive it was and how much soil loss actually took place as a result of it (Hughes, 2011).

The Greeks did make some efforts to protect and to manage their forests, with varying degrees of success; however, the motivation for these efforts may have been solely to maintain the wood supply. Despite Plato's writings on the environmental damage caused by deforestation, the Greeks did not seem to view the situation as a grave environmental crisis, and did not seem to embrace the fact that deforestation was applying stress to their communities through the loss of freshwater resources, flooding, fires, and soil erosion. Deforestation was still seen as progress at that time (Thommen, 2012). Aristotle's writings indicate that forests were somehow monitored by Inspectors of Forests or Wardens of the Country, but we can only speculate on what people in these roles were actually charged with. All we know about these positions is that they were assigned guardhouses from which they worked; the specifics of their work seem to be lost to history (Aristotle and Lord, 2013).

In ancient Greece, perhaps the most creative response to deforestation and its associated problems came from the Minoan people of the island of Pseira, near Crete.

On this tiny island, less than two square kilometers in area, the worst effects of deforestation and the attempts of the Minoans to maintain their way of life remain well-preserved in the archaeological record. Charcoal bits have been recovered from kitchen fires and carbon-dated to times ranging from about 2000-1500 BCE, and have been used to show the types of fuel wood used on Pseira. Half of the identified charcoal bits belonged to olive trees, with much of the remainder being pine and oak. Extensive terracing of the slopes on the island indicate that it was farmed, and many of the trees were probably grown in the island's ravines, which would have been unsuitable for row crops. It is possible that wood was brought in from Crete or elsewhere in Greece, but the fact that so much of the burned wood was olive suggests that the locals were forced to prune these valuable crop trees as a source of fuel. Olive trees produced more valuable goods than wood, so the discovery that olive wood was a substantial proportion of firewood is evidence for trees on Pseira, which were burned in times of need. The judicious pruning of olive trees for fuel could have been a creative response, at least for a time, to the environmental stressors facing the Minoans.

This is certainly not the case today, with modern Pseira supporting only about twelve stunted trees, last surveyed in 2012. Efforts to plant additional trees have been unsuccessful. While the evidence for environmental degradation in much of Greece can be argued over, there is not much room for argument about Pseira. A landscape where trees once supported a small city with over 60 buildings has since been so degraded that the soils no longer support trees, even when carefully selected and deliberately planted. The island is an arid semi-desert with virtually no vegetation,

while nearby Crete still supports Mediterranean trees and other vegetation (Betancourt, 2012).

The Minoans didn't just idly watch their environment degrade, but responded purposefully to their situation. Sometime around 1600-1500 BCE they undertook two massive engineering projects to preserve their soil and water. The first was an expansion of their terracing throughout the landscape, holding both soil and water on the land after the conversion to agriculture. The second was to construct water retention systems along the entire length of several ravine systems on Pseira, consisting of several dozen retaining walls, check dams, and associated reservoirs. What little water did come as rain would be held on the landscape or in these reservoirs, and smaller check dams and retaining walls would have held soil and slowed the process of siltation of the reservoirs. It is believed that the reservoirs were used as watering holes for animals, and that some terracing along them would have improved soil moisture for crops planted there. Sediment that did collect behind the dams was removed and probably applied to build up the terraces and fertilize crops. While this system may have provided water for more than a century, the population of the island was destroyed by war around 1450 BCE. With no one to maintain the system, and an ever drier climate, the environment shifted to what it is today, and the long-term sustainability of the Minoan water management system was never tested (Betancourt, 2012). The fact that the island was never repopulated may indicate that the environmental stressors were seen as too daunting by any peoples that thereafter considered making a home there.

The ancient Roman relationship with forests and deforestation was in many ways similar to that of the Greeks, but still quite distinct. While the Greeks treated forests as natural resources that were necessary for the construction of ships and as a source of fuel, the Romans seem to have had a slightly more philosophical view of forests. They saw them at times as terrible places under the control of questionable gods, where the most dangerous military campaigns would be waged because there was always a risk of ambush. At the same time, some forests were made into public or private places of natural beauty and relaxation. Similar to the Greeks, many Romans thought that forests were home to the uncivilized barbarians, and Strabo wrote that their destruction was progress. Pliny the Elder offers a pleasant counter perspective in his *Natural History*, writing about forests as holy places out of which primitive man came (Thommen, 2012).

Unlike the Greeks, the Romans understood the connection between clearing land, increased flooding, and soil loss. Roman writers including Virgil, Ovid, and Lucan record raging floods and farms being washed away. Reforestation programs were implemented, though like the Greeks, tree planting and forest protection seemed largely motivated by the need to maintain a source of lumber. To supplement the supply from their own forests, additional lumber was obtained from newly invaded territory (Thommen, 2012).

Rather than address flooding through better land management or building placement, the Romans took an engineering approach to the problem. The Tiber flooded Rome with some regularity, made worse due to regional deforestation. These floods were truly catastrophic, submerging swaths of the city for days at a time,

contaminating water supplies, and destroying property and life. Such major floods occurred on average once every 20-40 years, and could occur during any season (Aldrete, 2007). Damages were compensated in Rome through charity from the Emperor or other powerful politicians, essentially the same method that the Greeks had used (Thommen, 2012). The Romans expended considerable effort trying to protect Rome from floods. Massive sewer systems such as the Cloaca Maxima were built to drain the city quickly after a flood, and these worked to some extent by reducing the duration of some floods to hours instead of days. Efforts were made to bring in monumental volumes of fill dirt and stone, and it is believed that the Roman Forum was raised by several meters specifically to protect it from flood waters. Many emperors proposed plans to divert the Tiber altogether away from Rome, or to dam tributaries that feed into the Tiber by implementing complex flood control systems, but none of these plans were ever enacted. Instead, the chosen method was to attempt to contain the Tiber with embankments, stone or concrete walls along the river. These were erected at great cost and many still exist, but in the end, they were ineffective at protecting Rome from major floods (Aldrete, 2007).

While the Romans failed to protect themselves from the immediate effects of floods, they were at least successful in protecting themselves from one of the delayed effects. In many regions of the world, flooding causes contamination of freshwater supplies and subsequent disease outbreaks. This is because fresh drinking water was sourced from the immediate vicinity of a city, so if a flood caused a sewage overflow it could spill or seep into the drinking water supply. Rome received its water from elsewhere, originally through one aqueduct that sourced fresh water from above the

Tiber, but eventually by 11 such aqueducts. Many of these were built as private donations from the wealthiest Roman citizens, some of them emperors. As a result, Rome avoided the diseases that often come with flooding, and instead was renowned for having the best water supply in the world (Ashby, 1973).

Finally, the end result of deforestation, wildfires, flooding, and soil erosion was, and is today, siltation. The Romans and the Greeks both had nearly perfect geography for ports and harbors, with steep slopes dipping into relatively calm water that was deep enough for ships to come near the shore, and with a small tidal range. They each depended heavily on access to the sea for trade and for the launching of warships (Thommen, 2012). The Romans improved on their natural harbors with quays for docking and unloading cargo, as well as extensive breakwaters in some ports to improve safe docking. Many of these features, and in fact many harbors in their entirety, are presently completely buried in silt that was transported from the upland environment by water (Taylor and World Confederation of Underwater Activities., 1965).

Responding to siltation, the Romans dredged at least some of the ports under their control, using a specialized boat that had a well built into the center of it through which a shovel was lowered. The structures of three of these boats have been recovered from the ancient harbor of Marseilles. While the mechanisms are not intact, it is presumed from the dredging taluses (scars preserved in the sedimentary record like shovel marks) that the technology was similar to that used in the eighteenth century. A large wheel could be turned to pull ropes attached to the shovel, ripping it through the sediment. Taluses up to half a meter deep are preserved in some places,

indicating that the Romans could bring considerable forces to bear to maintain their harbors (Morhange and Marriner 2010). Even so, the increased sediment loads due in part to deforestation proved to be too much for the Romans to handle in some harbors. Strabo records that Ostia was no longer a convenient harbor due to sediment delivered by the Tiber, and it was abandoned by the first century CE (Goiran et al., 2014). Many other bays and harbors eventually silted up and were abandoned as well (Thommen, 2012). The Romans were better than the Greeks at recognizing and trying to address the problems associated with deforestation, but in the end, they were also largely unsuccessful.

Deforestation, Ecological Design, and Subaqueous Soils

Many of the problems faced by the Greeks and Romans related to deforestation are still relevant in the modern world. In North America, wood supply is no longer much of a concern because we have laws that require the replanting of felled trees, and timber management companies recognize that it is in their interest to maintain a sustainable lumber supply. Demands for fuel wood have been reduced through the use of fossil fuels, and most wood today is used for paper or construction. Despite good management of our existing forests, we still face a relatively deforested landscape because these laws were passed after extensive damage had already been done. Most of the forests in the Eastern United States are relatively new, having recovered from a nearly treeless landscape just a few hundred years ago, and in many regions of the world, tree cover is only a third of what it once was (Hillel, 1992). During this phase of rampant deforestation, tremendous amounts of topsoil were lost and deposited in estuaries and rivers. At the same time, early American settlers were

building small mill dams along nearly every river in the country. These dams trapped and sorted enormous quantities of sediment, resulting in coarse and fine textured deposits throughout the landscape. The human impact was so great that in many places we do not know what the original landscape looked like. Despite the trapping effect of the dams, our ports and estuaries also filled with silt once the holding capacity of their associated reservoirs was overcome (Brush, 2009).

Addressing this siltation, the first recorded dredging of Baltimore harbor took place in 1783, when the Ellicott brothers used a horse-powered dredge to provide space for ships to dock and pick up their flour for export. By this time, decades of erosion had already taken place, and ships were beginning to increase in size, requiring deeper water to come into port. Rather than attempt to address the upland sources of sediment to Chesapeake Bay, an aggressive dredging effort was eventually begun and funded through a tax on imports and exports, as well as with federal assistance. Baltimore was already an established port, and it was seen as a good economic decision to continue making investments in maintaining and expanding it (Mountford 2000).

The expanding size of ships eventually forced dredging of some areas to levels below those that existed prior to European colonization, into dense geologic deposits below the unconsolidated material at the sediment surface. The dense geologic material could not be easily scooped or pumped out, and it challenged early dredging technology. The dredging technology was improved with steam power and became far more efficient, creating a conflict between oystermen and the dredgers. Dredgers were accused of destroying oyster beds with their machines and re-

suspended sediment, and oystermen were accused of collecting oysters too close to the main channel of the Bay, causing collapses that were filling and damaging it by destabilizing the underwater slopes. Shipping interests won this disagreement, and laws were passed to prevent oyster harvesting near shipping channels. While it is difficult to say how much of the decline of the Chesapeake oyster is to blame on dredging, it seems safe to assume that there was an impact. Prior to the Clean Water Act, dredged material was simply removed from one location and dropped nearby in the Bay or in a wetland so that it could be filled and developed (Mountford 2000).

Dredged materials from the Chesapeake Bay can also contain sulfidic materials and metal contaminants. These materials can be sequestered in the sediment and are relatively harmless while they are there; however, if they are carelessly dredged and deposited in an area where the reduced sulfides can oxidize to sulfates then sulfuric acid will be produced. This lowers the pH of the dredged materials, leaching acid and metals, and causing fish kills. These materials create new environmental problems, requiring further remediation and damaging waters and landscapes (Demas et al., 2004).

Without a doubt, the silted areas of the Chesapeake Bay and many other estuaries of the world are highly human-influenced environments, and it seems likely that they are in fact subaqueous soils. Simonson's four soil forming processes of material additions, material removals, material translocations, and material transformations have been demonstrated to be at work in coastal bays (Demas and Rabenhorst, 2001) and river impoundments (Erich et al., 2010), and the sediments in these systems are now being rightly recognized as soils, diverse materials that change

predictably across the landscape. With this recognition comes the development of proper land management strategies and interpretations including shellfish production, toxic and sulfidic material sequestration, bay grass restoration, and a multitude of other ecologically appropriate uses (Rabenhorst and Stolt, 2012). Where the Greeks and the Romans failed to recognize their impact on the environment and its feedback on society, we must adjust our mindsets to allow such an understanding.

Paired with deforestation is urbanization, where impermeable surfaces take the place of forests and agricultural fields. Even ten percent coverage in a drainage basin is enough to bring on an “urban stream syndrome,” characterized by increased concentrations of contaminants and nutrients in runoff, increased intensity of runoff that can cause flooding and scour ecosystems downstream, and greater erosion in non-hardened channels. These symptoms are evident in nearly every urbanized stream, degrading biodiversity and water quality, and placing a strain on our society by denying many people access to clean water and natural environments for recreation, and by damaging or contaminating fisheries (Walsh et al., 2005).

However, our society is not without creative response to these challenges. The young field of ecological engineering has developed a number of technologies to compensate for deforestation and urbanization. Land and city managers are beginning to recognize that the appropriate way to deal with water is to hold it on the landscape, allowing soils and ecosystems to treat it as it is slowly released or infiltrated into the ground. While not a true replacement for a forest, buildings are being built and retrofitted with green roofs that support plants, hold and treat water, and provide some habitat value. Wetlands are being engineered and restored to hold water, and in

many areas, it is required by law that new construction be paired with stormwater ponds or wetlands. Parking lots and sidewalks are increasingly being constructed with permeable pavements that allow water to infiltrate into groundwater, greatly reducing runoff. New techniques that use algae to filter nutrients and sediments from runoff and wastewater have shown promise in algal turf scrubbers, but these have yet to be implemented beyond a handful of demonstration units (Dietz, 2007). These and other technologies are just now beginning to be widely implemented, and while they can be demonstrated to work on a small scale, their effect on large regions has yet to be demonstrated.

Conclusion

Like the ancient Greeks and Romans, our civilization faces mounting environmental stresses from deforestation, urbanization, and the associated problems of water supply and water quality degradation, flooding, and siltation. The Greeks failed to understand that many of the environmental stressors that they faced were a result of their own land management practices, and while the Minoans made significant efforts to address some of these problems, the Greek civilization eventually lost its role as the major regional power.

The Romans understood that the floods, erosion, siltation, and other water issues that they faced were connected to deforestation, but the efforts that they made to address these stressors produced mixed results. Where the Romans tried aggressively to work against natural processes, such as in their efforts to control the Tiber or maintain the dredging of their harbors, they had to continually expend resources fighting an uphill battle. Where they embraced natural design and energy,

they were successful. By replacing forested areas with olive groves or vineyards, woody cover was maintained and at least some associated ecosystem services were maintained as well. By using gravity to deliver fresh water from pristine upland forests and rivers, they developed the greatest water supply system in the world, and it protected them from the disease outbreaks that accompany floods.

We can learn from our predecessors. If our civilization is to continue to thrive, we must not repeat the Greek mistake of ignoring environmental consequences of our actions, and we must not repeat the Roman mistake of attempting to address these consequences by continually fighting natural processes. What the Romans did right, in at least some cases, was to embrace ecological design. If we are to build a civilization that is sustainable for as long as or longer than the ancient civilizations, then we must learn to design within our environment, and to use nature to our advantage, rather than work against it.

Chapter 6:

Industrial Archaeology and the Environment: Developing a Course to Bridge

Historic Preservation and Environmental Science

HISP 629 Independent Study in Historic Preservation

Syllabus

HISP 619X Special Topics in Historic Preservation:

Industrial Archaeology and the Environment

School of Architecture, Planning, and Preservation

University of Maryland

Spring 2020, 3 credits

4:30-6:00 TuTh, Rm. TBD

Instructor: Barret Wessel

Office: 0109 H.J. Patterson Hall

Email: bwessel@umd.edu

Office hours: By appointment

Course Description:

This seminar course will give students a broad introduction to industrial sites from the perspectives of industrial archaeology, historic preservation, and environmental science. The course is organized into weekly topics, beginning with an introduction to the goals of the course and progressing through several parts of the natural environment and how they are altered by human activity. Students will then be introduced to preservation theory and issues relating to industrial sites, including health and safety concerns. The remaining weekly topics will be selected based on student interests, with each topic focusing on a major industrial activity, technology, or type of structure. Classes will be divided into discussions of readings, student presentations, instructor lectures, and guest lectures and discussions. Students will be evaluated based on their class participation and several writing assignments. Students will select their assignment topics in consultation with the instructor, and are encouraged to choose topics that relate to their own work and interests, as they fall within the scope of the course.

Students should leave the course with a better understanding of the ways that the environment has shaped the development of American industry, and of how American industry has shaped and continues to shape the environment. The interdisciplinary nature of this course will challenge students from different backgrounds in different ways, and will provide many opportunities to learn from one another.

Course Objectives:

- Gain an overview of the types of industrial structures and sites found in the American landscape

- Foster dialogue between environmental and cultural resource management professionals
- Develop a better understanding of the impacts that industrial activity has had on the environment
- Understand some of the issues surrounding the preservation of industrial sites, including interpretation, reuse, and rehabilitation
- Understand some of the personal health and safety risks involved in working on industrial sites
- Gain a better understanding of human-environment relations

Course Materials:

There are no required texts for this course. All required readings will be available on Canvas.

Recommended:

- Gordon, Robert B., and Patrick M. Malone. 1994. *The texture of industry : an archaeological view of the industrialization of North America*. New York: Oxford University Press.
- McVarish, Douglas C. 2008. *American industrial archaeology: a field guide*. Walnut Creek, California.: Left Coast Press, Inc.
- Weil, Ray R., and Brady, Nyle C. 2016. *The nature and properties of soils*. Fifteenth edition. ed. Columbus, Ohio: Pearson Education.

Class Participation and Readings (25% of final grade):

This course requires active participation in the classroom. Students are expected to meet the following expectations:

- Complete all readings prior to their appearance on the schedule. Read actively—mark important or confusing sections, write questions in the margins, and jot down some of what you take-away from each reading. Look up words you don't know, and take notes to help you remember the definitions. Mark sections that you may disagree with, and why. These notes will help you contribute to classroom discussions.
- Bring hardcopies or electronic copies of readings to class and be prepared to discuss them.
- Listen thoughtfully to other students and the instructor.
- Arrive at class on time and ready to begin.
- Be respectful and present your own thoughts respectfully.
- Accompany the class for one mandatory field trip to a local industrial site.

Assignments and Grading:

Midterm exam: This take-home exam will cover the introductory material on industrial archaeology, historic preservation, and environmental science contained in

the first half of the course. It will be organized as several essay questions and you will have one week to complete it.

Topical presentation (included in class participation): Each student will choose one of the weekly topics and prepare a 15-minute presentation that builds on the weekly readings and focuses on a case study or theme.

Case study papers: Each student will choose two industrial sites to study in detail. Site selections should relate to the themes and topics of the course. Students should check to be sure there is enough information available on a site to complete this assignment. Please email your selections to the instructor for approval. For each paper, discuss the history of the site; include previous or contemporary industrial structures or processes on the site. Consider the environmental impact of the history of the site, and discuss any current environmental issues. Discuss adaptive reuse, preservation, or interpretation as they relate to the site. Provide citations and a bibliography. These should be synthesis papers, with an overall focus on understanding the legacy of industrial activity and identifying connections between history and the environment. These papers should each be ~1,500 words long (excluding bibliography). Due as hardcopy in class.

Final project paper: Each student will write a proposal for an industrial site, focusing on their own plan for rehabilitation or reuse in light of the historical and environmental themes you have learned about this semester. This paper can build on one of your case studies. Discuss the lands, waters, structures, and/or archaeological resources at your site. Incorporate knowledge from other disciplines as you are able to (e.g. economics, regulatory issues, ecological design), but remember to write for a general, professional audience. Identify a funding organization (government, business, or non-profit) and write your proposal as though you were applying for funds to carry out your rehabilitation/reuse. Discuss how the history of the site will be interpreted, and how it will remain relevant to the future of the site. This paper should be 10-15 pages long, and should include maps, drawings, and other figures or tables as appropriate. Due as hardcopy in class.

Course Grading:

Midterm exam	20%
Class participation/topical presentation	25%
Case study paper 1:	15%
Case study paper 2:	15%
Final project paper:	25%

The UMD Historic Preservation Department uses letter grades based on the point system:

A+	97%-100%	C+	77%-79%
A	94%- 96%	C	74%-76%
A-	90%-93%	C-	70%-73%
B+	87%- 89%	D+	67%-69%
B	84%-86%	D	64%-67%
B-	80%-83%	D-	60%-63%

Academic Integrity:

Academic integrity is essential, and the absolute highest standard of integrity and ethical conduct is a requirement of this course. The University Honor Code must be followed in all your work (see the web for the code of academic integrity). Should the instructor determine that any form of academic dishonesty has taken place in this course, the student(s) involved will face one or more sanctions.

Students with Disabilities:

Students with disabilities who may need academic accommodations should discuss options with their professors during the first two (2) weeks of class so that the student's learning needs may be appropriately met. The student will need to provide documentation of a disability – assistance is available through Dr. Alan Marcus at Disability Support Service (301-314-7682).

Learning Assistance Service:

If you are experiencing difficulties in keeping up with the academic demands of this course, contact the Learning Assistance Service, 2202 Shoemaker Building, 301-314-7693. Their educational counselors can help with time management, reading, math learning skills, note-taking and exam preparation skills. All their services are free to UMD students.

Course Schedule

Date	Wk	Topic and Readings	Due/Notes
1/28	1	<p>Introduction</p> <p>Conard, Rebecca. 2001. "Applied Environmentalism, or Reconciliation Among "the Bios" and "the Culturals"." <i>The Public Historian</i> 23 (2): 9-18. https://doi.org/10.1525/tph.2001.23.2.9. http://www.jstor.org/stable/10.1525/tph.2001.23.2.9.</p> <p>McMahon, E.T., and Watson, A.E. 1993. In My Opinion: In Search of Collaboration: Historic Preservation and the Environmental Movement. <i>History News</i> 48 (6): 26-27.</p>	
1/30	1	Industrial Revolution	

		<p>Keating, Ann Durkin. 1994. "Introduction: Why explore the history of public works?" In <i>Invisible Networks: Exploring the history of local utilities and public works</i>, In Exploring Community History Series, 3-12. Malabar, Florida: Krieger Publishing Company.</p> <p>McVarish, Douglas C. 2008. "Industrial landscapes." In <i>American industrial archaeology: a field guide</i>, 373-382. Walnut Creek, California.: Left Coast Press, Inc.</p>	
2/4	2	<p>Land</p> <p>Soil Science Division Staff. 2017. "Soil and Soil Survey." In <i>Soil Survey Manual, Agriculture Handbook No. 18</i>, edited by Craig Ditzler and Larry West, 1-19. US Department of Agriculture.</p>	
2/6	2	<p>Land</p> <p>Galbraith, John, and Richard K. Shaw. 2017. "Human-Altered and Human-Transported Soils." In <i>Soil Survey Manual, Agriculture Handbook No. 18</i>, edited by Soil Science Division Staff, 525-554. US Department of Agriculture.</p>	<p>Meet in soils teaching lab, discuss/view industrial soil monoliths</p>
2/11	3	<p>Water</p> <p>Vannote, RL, GW Minshall, KW Cummins, JR Sedell, and CE Cushing. 1980. "River Continuum Concept." <i>Canadian Journal of Fisheries and Aquatic Sciences</i> 37 (1): 130-137. https://doi.org/10.1139/f80-017.</p> <p>Grant, H. Roger. 2003. "Natural Waterways." In <i>Getting Around: Exploring Transportation History</i>, In Exploring Community History Series, 9-26. Malabar, Florida: Krieger Publishing Company.</p>	
2/13	3	<p>Waterways</p> <p>McVarish, Douglas C. 2008. "Waterways." In <i>American industrial archaeology: a field guide</i>, 113-135. Walnut Creek, California: Left Coast Press, Inc.</p>	
2/18	4	<p>Preservation strategies</p> <p>Bowie, John R. 1985. "Documentation of America's Industrial Heritage: The Historic American Engineering Record." <i>Bulletin of the Association for Preservation Technology</i> 17 (1): 47-56. http://www.jstor.org/stable/1494067.</p>	

		Mason, Randall. 2006. "Theoretical and practical arguments for values-centered preservation." <i>CRM Journal</i> (Summer): 21-48.	
2/20	4	Preservation strategies Falk, N. 1984. II. Our Industrial Heritage: A resource for the future? <i>Journal of the Royal Society of Arts</i> 133: 31-46.	
2/25	5	Contaminated Sites Hillel, Daniel. 1991. "Abusing the living filter." In <i>Out of the Earth</i> , 251-258. Berkeley, California: University of California Press.	
2/27	5	Contaminated Sites Hardesty, Donald L. 2001. "Issues in Preserving Toxic Wastes as Heritage Sites." <i>The Public Historian</i> 23 (2): 19-28. http://www.jstor.org/stable/10.1525/tph.2001.23.2.19 .	
3/3	6	Industrial building construction McVarish, Douglas C. 2008. "Industrial building construction." In <i>American industrial archaeology: a field guide</i> , 348-372. Walnut Creek, California: Left Coast Press, Inc.	Case study 1 due
3/5	6	Shipyards and marine structures McVarish, Douglas C. 2008. "Shipyards and marine structures." In <i>American industrial archaeology: a field guide</i> , 136-152. Walnut Creek, California: Left Coast Press, Inc. Chiarappa, Michael J., and Kristin M. Szylvian. 2009. "Heeding the Landscape's Usable Past: Public History in the Service of a Working Waterfront." <i>Buildings & Landscapes: Journal of the Vernacular Architecture Forum</i> 16 (2): 86-113. http://www.jstor.org/stable/27804910 . Snyder, Robert. 2011. "Toward a working- waterfront ethic: Preserving access to Maine's coastal economy, heritage, and local seafood." <i>Maine Policy Review</i> 20 (1): 80-86.	Midterm assigned
3/10	7	Water supply and treatment McVarish, Douglas C. 2008. "Water supply and treatment." In <i>American industrial archaeology : a field guide</i> , 187-207. Walnut Creek, California: Left Coast Press, Inc.	
3/12	7	Cotton processing and textile production McVarish, Douglas C. 2008. "Cotton processing and textile production." In <i>American industrial</i>	Midterm due

		<i>archaeology: a field guide</i> , 218-236. Walnut Creek, California: Left Coast Press, Inc.	
3/17	8	Spring Break	
3/19	8	Spring Break	
3/24	9	Grain processing: Mills, elevators, and distilleries McVarish, Douglas C. 2008. "Gristmills, windmills, and grain elevators." In <i>American industrial archaeology: a field guide</i> , 237-258. Walnut Creek, California: Left Coast Press, Inc. -Distilleries -Guest speaker: Dennis Pogue -Selection from <i>Founding Spirits</i>	
3/26	9	Field Trip 1	
3/31	10	Power generation McVarish, Douglas C. 2008. "Power generation." In <i>American industrial archaeology : a field guide</i> , 153-186. Walnut Creek, California: Left Coast Press, Inc.	
4/2	10	Manufactured gas plants McVarish, Douglas C. 2008. "Manufactured gas plants." In <i>American industrial archaeology: a field guide</i> , 208-217. Walnut Creek, California: Left Coast Press, Inc. -Guest speaker: Don Linebaugh -Selection from <i>The Springfield Gas Machine</i>	
4/7	11	Bridges McVarish, Douglas C. 2008. "Bridges." In <i>American industrial archaeology: a field guide</i> , 20-67. Walnut Creek, California: Left Coast Press, Inc.	Case study 2 due
4/9	11	Railroads McVarish, Douglas C. 2008. "Railroads." In <i>American industrial archaeology: a field guide</i> , 68-93. Walnut Creek, California: Left Coast Press, Inc.	
4/14	12	Roads and highways McVarish, Douglas C. 2008. "Roads and highways." In <i>American industrial archaeology: a field guide</i> , 94-112. Walnut Creek, California: Left Coast Press, Inc.	
4/16	12	Aviation McVarish, Douglas C. 2008. "Aviation." In <i>American industrial archaeology: a field guide</i> , 324-347. Walnut Creek, California: Left Coast Press, Inc.	
4/21	13	Working Waterfronts Snyder, R. 2011. Toward a working- waterfront ethic: Preserving access to Maine's coastal economy,	

		<p>heritage, and local seafood. <i>Maine Policy Review</i> 20: 80-86.</p> <p>Island Institute. 2007. The last 20 miles: Mapping Maine's working waterfront. Island Institute, Rockland, Maine.</p> <p>Carter, J. S. 1991. Is America losing its maritime heritage? Challenges from the field. <i>History News</i> 46: 12-16.</p>	
4/23	13	<p>Working Waterfronts</p> <p>Chiarappa, M. J., and K. M. Szylvian. 2009. Heeding the Landscape's Usable Past: Public History in the Service of a Working Waterfront. <i>Buildings & Landscapes: Journal of the Vernacular Architecture Forum</i> 16: 86-113.</p> <p>Kirby, M. X., and O. F. Linares. 2004. Fishing down the Coast: Historical Expansion and Collapse of Oyster Fisheries along Continental Margins. <i>Proceedings of the National Academy of Sciences of the United States of America</i> 101: 13096-13099.</p>	
4/28	14	Field Trip 2	
4/30	14	<p>Extractive industries</p> <p>McVarish, Douglas C. 2008. "Extractive industries." In <i>American industrial archaeology: a field guide</i>, 287-323. Walnut Creek, California: Left Coast Press, Inc.</p>	
5/5	15	<p>Iron and steel production</p> <p>McVarish, Douglas C. 2008. "Iron and steel production." In <i>American industrial archaeology: a field guide</i>, 259-286. Walnut Creek, California: Left Coast Press, Inc.</p>	
5/7	15	<p>Preservation and Climate Change</p> <p>Center for Naval Analysis, 2007. National security and the threat of climate change. The CNA Corporation.</p> <p>Page, B., 2015. Cultural Landscape Preservation in Context: Responding to a Changing Environment. <i>The George Wright Forum</i> 32 (1): 59-70.</p> <p>Park, S.C., 2018. Sustaining Historic Properties in an Era of Climate Change. <i>APT Bulletin: The Journal of Preservation Technology</i> 49 (2-3): 35-44.</p>	
5/12	16	Closing discussion	Final paper due

References Cited

1954. The Oyster Program. Maryland Tidewater News 11(1), 2-4.
- Aldrete, G.S., 2007. Floods of the Tiber in ancient Rome. Ancient society and history. Johns Hopkins University Press, Baltimore.
- Ancestry.com, 2005. U.S., World War I Draft Registration Cards, 1917-1918 [database on-line], Provo, UT, USA: Ancestry.com Operations Inc.
- Ancestry.com, 2006. 1910 United States Federal Census [database on-line], Lehi, UT, USA: Ancestry.com Operations Inc.
- Ancestry.com, 2014. District of Columbia, Compiled Marriage Index, 1830-1921 [database online], Provo, UT, USA: Ancestry.com Operations, Inc.
- Ancestry.com, 2015. Virginia, Death Records, 1912-2014 [database on-line], Provo, UT, USA: Ancestry.com Operations, Inc.
- Ancestry.com, 2019. U.S., Social Security Death Index, 1935-2014 [database on-line], Provo, UT, USA: Ancestry.com Operations Inc.
- Aristotle, Lord, C., 2013. Aristotle's Politics. Second edition. ed. The University of Chicago Press, Chicago.
- Ashby, T., 1973. The aqueducts of ancient Rome. McGrath Pub. Co., Washington.
- Beck, M.W., Marsh, T.D., Reisewitz, S.E., Bortman, M.L., 2004. New Tools for Marine Conservation: The Leasing and Ownership of Submerged Lands. Conservation Biology 18(5), 1214-1223.
- Betancourt, P.P., 2012. The dams and water management systems of Minoan Pseira. INSTAP Academic Press, Philadelphia.
- Broadwater, L., Dance, S., Wood, P., 2016. After deadly flash flood, concern about development's impact on Ellicott City, Baltimore Sun, <https://www.baltimoresun.com/maryland/howard/bs-md-ho-ellicott-city-development-20160813-story.html>.

- Brooks, W.K., 1996. The oyster : a popular summary of a scientific study. Maryland paperback bookshelf. Johns Hopkins University Press, Baltimore.
- Brush, G., 2009. Historical Land Use, Nitrogen, and Coastal Eutrophication: A Paleoecological Perspective. *Estuaries and Coasts* 32(1), 18-28.
- Carr, J.R., 1982. Historic maritime resources. *The George Wright Forum* 2(4), 43-51.
- Carter, J.S., 1991. Is America losing its maritime heritage? Challenges from the field. *History News* 46(2), 12-16.
- Center for Naval Analysis, 2007. National security and the threat of climate change. The CNA Corporation.
- Chambers, E., 2006. Heritage matters : heritage, culture, history, and Chesapeake Bay. Chesapeake perspectives. Maryland Sea Grant College, University of Maryland, College Park, Md.
- Chiarappa, M.J., Szylvian, K.M., 2009. Heeding the Landscape's Usable Past: Public History in the Service of a Working Waterfront. *Buildings & Landscapes: Journal of the Vernacular Architecture Forum* 16(2), 86-113.
- Demas, G.P., Rabenhorst, M.C., 2001. Factors of subaqueous soil formation: a system of quantitative pedology for submersed environments. *Geoderma* 102(3-4), 189-204.
- Demas, S.Y., Hall, A.M., Fanning, D.S., Rabenhorst, M.C., Dzantor, E.K., 2004. Acid sulfate soils in dredged materials from tidal Pocomoke Sound in Somerset County, MD, USA. *Australian Journal of Soil Research* 42(5-6), 537-545.
- Dietz, M.E., 2007. Low impact development practices: A review of current research and recommendations for future directions. *Water Air and Soil Pollution* 186(1-4), 351-363.
- Erich, E., Drohan, P.J., Ellis, L.R., Collins, M.E., Payne, M., Surabian, D., 2010. Subaqueous soils: their genesis and importance in ecosystem management. *Soil Use and Management* 26(3), 245-252.

- Evening Star, 1915a. January 24, 1915, Page 12, Image 12. Accessed at:
<https://chroniclingamerica.loc.gov/>.
- Evening Star, 1915b. March 25, 1915, Page 8, Image 8. Accessed at:
<https://chroniclingamerica.loc.gov/>.
- Evening Star, 1917. October 12, 1917, Image 21. Accessed at:
<https://chroniclingamerica.loc.gov/>.
- Foster, K.J., 1992. Threatened James River Shipwreck and Historical Sites. *Historical Archaeology* 26(4), 58-68.
- Goiran, J.-P., Salomon, F., Mazzini, I., Bravard, J.-P., Pleuger, E., Vittori, C., Boetto, G., Christiansen, J., Arnaud, P., Pellegrino, A., Pepe, C., Sadori, L., 2014. Geoarchaeology confirms location of the ancient harbour basin of Ostia (Italy). *Journal of Archaeological Science* 41, 389-398.
- Gowlett, J.A.J., Wrangham, R.W., 2013. Earliest fire in Africa: towards the convergence of archaeological evidence and the cooking hypothesis. *Azania: Archaeological Research in Africa* 48(1), 5-30.
- Harrington, F., 1983. Strawberry Banke: A Historic Waterfront Neighborhood. *Archaeology* 36(3), 52-59.
- Hartig, J.H., 2002. A River Runs Through It. *Water Environment & Technology* 14(11), 35-38.
- Hillel, D., 1992. *Out of the earth : civilization and the life of the soil*. University of California Press, Berkeley.
- Historic Conservation Board Staff, 2019. *Local Conservation Guidelines*. City of Cincinnati.
- Howard County Department of Planning and Zoning, 1995. *Lawyers Hill Historic District Design Guidelines*. Maryland,
<https://www.howardcountymd.gov/LinkClick.aspx?fileticket=O6NYMIXtqZM%3d&portalid=0>.

- Howard County Department of Planning and Zoning, 1998. Ellicott City Historic District Design Guidelines. Maryland, <https://www.howardcountymd.gov/LinkClick.aspx?fileticket=0PNgiauENPk%3d&portalid=0>.
- Howard County Department of Planning and Zoning, 2009. Use of solar panels and other solar devices in historic districts. Maryland, <https://www.howardcountymd.gov/LinkClick.aspx?fileticket=9HU7Jsb04NU%3d&portalid=0>.
- Hughes, J.D., 2011. Ancient Deforestation Revisited. *Journal of the History of Biology* 44(1), 43-57.
- Island Institute, 2007. The last 20 miles: Mapping Maine's working waterfront. Island Institute, Rockland, ME.
- Jackley, J., Gardner, L., Djunaedi, A.F., Salomon, A.K., 2016. Ancient clam gardens, traditional management portfolios, and the resilience of coupled human-ocean systems. *Ecology and Society* 21(4).
- Kaushal, S., Belt, K., 2012. The urban watershed continuum: evolving spatial and temporal dimensions. *Urban Ecosystems* 15(2), 409-435.
- Keiner, C., 1998. W. K. Brooks and the Oyster Question: Science, Politics, and Resource Management in Maryland, 1880-1930. *Journal of the History of Biology* 31(3), 383-424.
- Kirby, M.X., Linares, O.F., 2004. Fishing down the Coast: Historical Expansion and Collapse of Oyster Fisheries along Continental Margins. *Proceedings of the National Academy of Sciences of the United States of America* 101(35), 13096-13099.
- Logan, E.B., 2019. Experts weigh in on development's impact on Ellicott City flooding, *The Baltimore Sun*, <https://www.baltimoresun.com/maryland/howard/ph-ho-cf-flood-development-0523-story.html>.
- Maine's Working Waterfront Tax Law, 2007. Title 36, 1141-1152.

- Maryland Working Waterfront Commission, 2008. Final Report. Maryland Department of Natural Resources, <https://dnr.maryland.gov/ccs/Documents/MWWC120208finalversion2.pdf>.
- Mason, R., 2006. Theoretical and practical arguments for values-centered preservation. CRM Journal (Summer), 21-48.
- McCormic Taylor, 2017. 2016 Ellicott City Hydrology / Hydraulic Study and Concept Mitigation Analysis. Project number 5519-93.
- Moore, W.S., 2009. The Effect of Submarine Groundwater Discharge on the Ocean. Annual Review of Marine Science 2(1), 59-88.
- Morhange, C., Marriner, N., 2010. Mind the (stratigraphic) gap: Roman dredging in ancient Mediter- ranean harbours. Bollettino di Archeologia Online Speciale B.
- Mountford, K., 2000. History of dredging reveals deeper need to understand Bay's bottom line, Bay Journal.
- National Cemetery Administration, 2006. U.S. Veterans' Gravesites, ca.1775-2006 [database on-line], Provo, UT, USA: Ancestry.com Operations Inc.
- Odum, E.P., Barrett, G.W., 2005. Fundamentals of ecology. 5th ed. Thomson Brooks/Cole, Belmont, CA.
- Ounanian, K., 2015. Wither the Waterfront: Does the United States Need Federal Legislation to Preserve Working Waterfronts? Coastal Management 43(6), 668-684.
- Paolisso, M., 2007. Taste the Traditions: Crabs, Crab Cakes, and the Chesapeake Bay Blue Crab Fishery. American Anthropologist 109(4), 654-665.
- Pipkin, W., 2016. Soft shell clam making a modest comeback in Bay, on menus, Bay Journal, https://www.bayjournal.com/article/soft_shell_clam_making_a_modest_come_back_in_bay_on_menus.

- Prince George's County Land Records, 1914a. Deed of sale from John J. Connors et ux. to Riverdale Park Company, Nov. 20th, 1914, Prince George's County, Maryland Land Records, Liber 102 Folio 11. Accessed on MDLandRec.net.
- Prince George's County Land Records, 1914b. Deed of sale from Riverdale Park Company to John J. Connors et ux., May 1st, 1914, Prince George's County, Maryland Land Records, Liber 97 Folio 438. Accessed on MDLandRec.net.
- Prince George's County Land Records, 2019. Deeds and property tax records, MDLandRec.net.
- Rabenhorst, M.C., Stolt, M.H., 2012. Subaqueous Soils: Pedogenesis, Mapping, and Applications. *Hydropedology: Synergistic Integration of Soil Science and Hydrology*, 173-204.
- Rick, T.C., Reeder-Myers, L.A., Hofman, C.A., Breitburg, D., Lockwood, R., Henkes, G., Kellogg, L., Lowery, D., Luckenbach, M.W., Mann, R., Ogburn, M.B., Southworth, M., Wah, J., Wesson, J., Hines, A.H., 2016. Millennial-scale sustainability of the Chesapeake Bay Native American oyster fishery. *Proceedings of the National Academy of Sciences of the United States of America* 113(23), 6568-6573.
- Snyder, R., 2011. Toward a working- waterfront ethic: Preserving access to Maine's coastal economy, heritage, and local seafood. *Maine Policy Review* 20(1), 80-86.
- Taylor, J.d.P., World Confederation of Underwater Activities., 1965. *Marine archaeology; developments during sixty years in the Mediterranean*. Hutchinson, London,.
- The Washington Times, 1916. June 27, 1916, Home Edition, Page 3, Image 3. Accessed at: <https://chroniclingamerica.loc.gov/>.
- Thommen, L., 2012. *An environmental history of ancient Greece and Rome*. Rev. English ed. Cambridge University Press, Cambridge ; New York.
- Walsh, C., Roy, A., Feminella, J., Cottingham, P., Groffman, P., Morgan, R., 2005. The urban stream syndrome: current knowledge and the search for a cure. *Journal of the North American Benthological Society* 24(3), 706-723.

Went, A.E.J., 1963. Oyster Fisheries. Dublin Historical Record 18(2), 56-63.

Zick, S.E., 2020. Quantifying Extreme Precipitation Forecasting Skill in High-Resolution Models Using Spatial Patterns: A Case Study of the 2016 and 2018 Ellicott City Floods. Atmosphere 11(2).