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Shoreline Setbacks vs. Regulatory Takings Law in Massachusetts

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SHORELINE SETBACKS

VS.

REGULATORY TAKINGS LAW IN MASSACHUSETTS

BY

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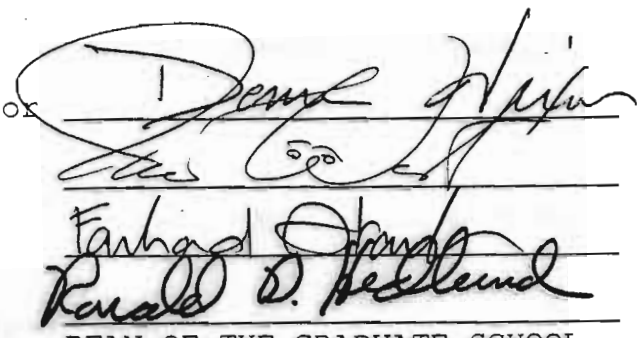

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ABSTRACT

This thesis examines whether the current shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act may be deemed unconstitutional under the Takings Clause of the Fifth Amendment to the *U.S. Constitution* in light of recent holdings of the U.S. Supreme Court. In so doing, the thesis addresses what latitude regulators in Massachusetts may have under the emerging case law. Because this area of law -- regulatory takings -- is still evolving, it was necessary to look at the evolution of the law in the U.S. Supreme Court and the Massachusetts appellate level courts. Research reveals that regulatory takings is a particularly perplexing area of law, decided primarily on an *ad hoc* basis. However, the U.S. Supreme Court has made clear that regulators can expect a higher level of judicial scrutiny on the means by which they choose to advance state's interest, the limitations they impose, the exactions they require, and the economic impacts they cause property owners to bear. Consequently, the shoreline setbacks in question, *in certain instances,* may not withstand constitutional challenges.

PREFACE

The Takings Clause of the Fifth Amendment to the *U.S. Constitution* provides that "private property [shall not] be taken for public use, without just compensation." According to one journalist writing for *The New Republic,* the Fifth Amendment is "not one of your more fashionable constitutional freedoms," but in recent years it has attained "a cult following among conservatives" who see it as a vehicle to strike down burdensome government regulations that may be deemed to have "taken" away one or more property rights.

This concept of "regulatory takings" is also receiving a great deal of attention from the legal community. Attempts to define the limits of government versus the limits of the Takings Clause have generated vast amounts of legal script in recent years. Just how far could government go to protect the public well-being through regulation of private property may have always been a controversial issue; but, as the fight for increasingly limited resources approaches the 21st Century, the controversy has reached a threshold.

Thus, it may prove useful at this time of diminishing resources and heightened anti-government sentiment to look at one controversial regulatory measure in one state -- i.e., the shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act -- to determine what leeway government may have in regulating private property under the emerging takings law.

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CHAPTER ONE

INTRODUCTION

I. REGULATORY TAKINGS

The Takings Clause of the Fifth Amendment to the *U.S. Constitution* provides that "private property [shall not] be taken for public use, without just compensation."[1] According to one journalist writing for *The New Republic,* the Fifth Amendment is "not one of your more fashionable constitutional freedoms," but in recent years it has attained "a cult following among conservatives" who see it as a vehicle to strike down burdensome government regulations that may be deemed to have "taken" away one or more property rights.[2]

This concept of "regulatory takings" is also receiving a great deal of attention from the legal community. Attempts to define the limits of government versus the limits of the Takings Clause have generated vast amounts of legal script in recent years. Just how far could government go to protect the public well-being through regulation of private property may have always been a controversial issue; but, as the fight for increasingly limited resources approaches the 21st Century, the controversy has reached a threshold.

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[1]*U.S. Constitution,* amend. V.

[2]Michael Kinsley, "Taking Exception," *The New Republic* (January 6 and 13, 1992), as appeared in *Regulatory Takings: Land Use Restrictions,* Gregor I. McGregor et al. (Boston: Massachusetts Continuing Legal Education, Inc., 1992), 169.

The concept of regulatory takings was first introduced by the U.S. Supreme Court in *Pennsylvania Coal v. Mahon* (1922). It was in this case that Justice Oliver Wendell Holmes wrote the frequently cited passage, "[t]he general rule...is that while property may be regulated to a certain extent, if regulation goes *too far* [emphasis added] it will be recognized as a taking."[3] Prior Supreme Court decisions had held that, unless the government physically invaded your property, no taking had occurred.[4]

Following *Pennsylvania Coal,* the Supreme Court fell silent on the issue of regulatory takings for almost fifty years, leaving the question raised -- just how far is too far -- unanswered. Though certain state courts remained quite active in this area of law, many adopted the Supreme Court's passive position.[5] However, in the past two decades, with the emergence of a myriad of regulations resulting from the environmental movement in the 1970's[6] and the restrictions spawned from the growth management movement in the 1980's,[7]

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[3]*Pennsylvania Coal v. Mahon,* 260 U.S. at 415 (1922).

[4]Hope M. Babcock, "Has the U.S. Supreme Court Finally Drained the Swamp of Taking Jurisprudence?: The Impact of *Lucas v. South Carolina Coastal Council* on Wetlands and Coastal Barrier Beaches," *Harvard Environmental Law Review* 19 (1995): 7.

[5]Dennis J. Coyle, *Property Rights and the Constitution: Shaping Society Through Land Use Regulation* (Albany: State University of New York Press, 1993), 4; William Fulton, *Guide to California Planning* (Point Arena, California: Solano Press Books, 1991), 54.

[6]Beginning in the late 1960's, after eight generations of intensive economic development and population growth, the public's attitude towards the environment shifted as the country became increasingly aware of the relationship between the environment and human welfare. Donald L. Connor et al., *Coastal Laws and Regulations: Important New Developments* (Boston: Massachusetts Continuing Legal Education, Inc., 1990), 5 and 6.

[7]Beginning in the 1950's and continuing through the 1980's, there was a dramatic population shift from the cities to the suburbs, and more recently to rural areas. In

federal and state justices have felt increasing pressure to revisit the takings issue.[8]

By the late 1970's the Supreme Court began hearing regulatory taking cases once again. This renewed interest by the Court has provided us with some insight as to when a regulation goes too far. However, in so doing, the Court has arguably strengthened the rights of property owners at the expense of land use regulation, including those regulations devised to protect our coastal resources.

Among those decisions handed down by the Supreme Court in the past twenty years that is of particular interest to the coastal management community is *Lucas v. South Carolina Coastal Council* (1992). In *Lucas* the Supreme Court held that a construction setback line established under the state's 1988 Beachfront Management Act was an unconstitutional taking of property without just compensation.[9]

The *Lucas* decision attacked land use regulations on a number of fronts. Most notably, it set forth a new categorical rule for regulatory takings: unless a regulation is justified under existing nuisance laws or other concepts of state property law, when the regulation denies "all economically beneficial use"[10] of land, a regulatory taking has occurred and compensation is due a landowner.[11] In addition, the *Lucas* Court warned that even

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response to this pressure to develop, local communities initiated growth management measures, most notably exclusionary zoning (e.g., excluding multi-family homes or increasing required lot sizes). Thomas K. Rudel, *Situations and Strategies in American Land-Use Planning* (New York: Cambridge University Press, 1989), 1, 2, 92, 97.

[8]Coyle, 4; Fulton, 47.

[9]*Lucas v. South Carolina Coastal Council,* 112 S.Ct. at 2887 (1992).

[10]Ibid., 2895.

[11]Ibid., 2901.

those regulations that simply deny noneconomic interests will "invite exceedingly close scrutiny under the Takings Clause."[12]

The Supreme Court recently reaffirmed the direction it took in *Lucas* when it handed down its decision in *Dolan v. City of Tigard* (1994). The *Dolan* decision appears to elevate the rights of property owners even further by requiring that the government prove that there is "rough proportionality" between the conditions imposed on a construction permit and the impact of the construction project.[13]

Yet, despite the attention the Supreme Court has given the issue in recent years, regulatory takings remain an "extremely troublesome"[14] area of law for regulators and property owners, alike. According to Justice Scalia, writing for the majority in *Lucas,* "[i]n 70-odd years of succeeding 'regulatory takings' jurisprudence, we have generally eschewed any 'set formula' for determining how far is too far, preferring to 'engag[e] in...essentially ad hoc, factual inquiries.'"[15] Consequently, though it has been almost three-quarters of a century since the U.S. Supreme Court first struck down a regulation as an uncompensated taking, it is still unclear how far is "too far" when it comes to regulating the use of privately held natural resources.

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[12]Ibid., n. 8.

[13]*Dolan v. City of Tigard,* 114 S.Ct. at 2318-9 (1994).

[14]Babcock, 1.

[15]*Lucas,* 2893.

II. SETBACKS

A. In General

Against this legal backdrop, it is estimated that 90% of the U.S. shoreline along the East and Gulf coasts is now in a state of erosion.[16] Over the last 100 years, the Atlantic coast has receded an average of two to three feet per year, and an expected rise in sea level caused by global warming is expected to accelerate erosion rates.[17] Traditional method of protecting the shoreline, such as seawalls and jetties, have been largely criticized for their destructive impact on beaches.[18]

Complicating matters further, coastal counties account for almost half the U.S. population, but only 11% of the nation's land area; and the Office of Ocean and Coastal Resource Management under NOAA projects continued "dramatic" population growth along the nation's coasts.[19] As one author put it, "[p]eople move to the littoral like moths to a porch light."[20]

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[16]Dennis J. Hwang, "Shoreline Setback Regulations and Taking Analysis," *University of Hawaii Law Review* 13 (1991): 2.

[17]Ibid.

[18]Ibid., 3.

[19]U.S. Dept. of Commerce, Under Secretary for Oceans and Atmosphere, *1992-3 Biennial Report to Congress on the Administration of the Coastal Zone Management Act,* April 1994, vol. 1, 1 and vol. 2, 20.

[20]Jennifer Ackerman, *Notes from the Shore* (New York: Viking Penguin, 1995), 30.

In response, an increasing number of coastal states have established *setback*[21] lines that move construction of buildings sufficiently inland so that they have reasonable life span before being threatened by erosion; and, in so doing, protect the natural features, such as dunes, wetlands and barrier islands, that buffer the impact of the ocean's erosive forces.[22] While erosion has traditionally been the primary problem that shoreline setbacks address, it is important to note that they are also used to combat a number of other, often related, threats to the coastal environment, including protection of wildlife habitat and pollution abatement.[23]

B. In Massachusetts

Though Massachusetts does not have a state-wide shoreline setback program *per se,* it does have a number of regulatory schemes in place that work toward limiting shoreline development, including, most notably, its Wetlands Protection Act.

The Massachusetts Wetlands Protection Act provides a permitting process by which activities within 100 feet of designated inland and coastal "resource areas" -- including beaches, wetlands, tidal flats, dunes -- are regulated to protect against, among other things, storm damage, flooding, pollution, interference with water supply, and damage to wildlife

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[21]For purposes of this thesis, the term "setback" will mean areas of restricted land use between a place of disturbance (e.g., a construction site) and an area of concern (here, a coastal water body). Alan Desbonnet et al., "Development of Coastal Vegetated Buffer Programs," *Coastal Management* 23 (1995): 107.

[22]Hwang, 4.

[23]Ibid., 25-27; Desbonnet et al., 92.

and fisheries habitat.[24] Under the Act, authority is typically given to a local conservation commission to determine whether a resource area would be adversely affected by a proposed activity (e.g., building a house).[25] If the local commission finds that the activity will alter the resource area, then it may impose such conditions on the activity as it deems appropriate to protect the area, including, in some instances, the imposition of shoreline setbacks.[26]

III. RESEARCH PROBLEM

This thesis examines if the current shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act may be deemed unconstitutional under the Takings Clause of the Fifth Amendment to the *U.S. Constitution* in light of the recent holdings of *Lucas* and *Dolan* and their progeny.

IV. HYPOTHESIS

In response to the research problem stated above, it is hypothesized that such shoreline setback scheme will be deemed unconstitutional under the emerging case law and, thus, will impact Massachusetts' ability to meet its management objectives under its Wetlands Protection Act.

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[24]*Massachusetts General Laws Annotated,* Chapter 31, Section 40.

[25]Ibid.

[26]Ibid.; 310 *Code of Massachusetts Regulations* 10.28, 10.30, 10.32, and 10.33.

V. SIGNIFICANCE OF RESEARCH

The growing conservative, anti-government fervor in this country is hard to ignore. In the fall session of the 1995 congressional year, the U.S. Congress was considering no fewer than eight proposals to limit the ability of government to regulate private property.[27] While it is difficult to get a fix on these moving targets, never mind project their impact, a slower evolving, but no less important, indicator of the latitude that land use regulators will have under the current political climate is the Takings Clause of the *U.S. Constitution* as interpreted by the courts.

Thus, it may prove especially useful at this time of diminishing resources and heightened anti-government sentiment to look at one controversial regulatory measure, i.e., shoreline setbacks, in one state to determine what leeway government may have in regulating private property under the emerging takings law. To that end, this thesis will reveal areas within the shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act that can be refined in order to (i) better meet constitutional challenges and (ii) better meet management objectives within the parameters provided for under the emerging takings law.

VI. THESIS OUTLINE

To begin to meet these research objectives, Part A of Chapter Two will look at landmark U.S. Supreme Court decisions relating to the Takings Clause. Part B of the Chapter will then focus on how the Massachusetts appellate level courts have interpreted

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[27]Betty Barrer, "Life, Liberty and the Pursuit of Property," *Sanctuary* 35 (September/October 1995): 14.

and applied these Supreme Court decisions. In addition, Part B will also include a review of Massachusetts appellate level decisions relating to certain concepts in state property law, i.e., nuisance, the public trust and custom. This review will attempt to answer a key question put forth by the U.S. Supreme Court in *Lucas:* that is, when is a regulation justified under existing state property law? As a convenience to the reader, appendices of relevant court cases in each area of law discussed in Chapter Two can be found preceding the bibliography.

To assist in identifying areas in which the Massachusetts Wetlands Protection Act can be refined under the emerging takings law, Chapter Three will examine shoreline setbacks as a management tool. Specifically, this Chapter will identify (i) what problems setbacks may address, (ii) types of setbacks, (iii) variables affecting setback efficiency, and (iv) what administrative components are desirable for an effective setback program?

Chapter Four will then examine the shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act. Specifically, this Chapter will look at (i) what are the problems faced by Massachusetts that shoreline setbacks may help address, (ii) what are the objectives of the Wetlands Protection Act and how is it administered, and (iii) are the administrative components desirable for a successful setback program, which were identified in Chapter Three, present here?

Chapter Five will conclude the thesis by reconciling the findings of Chapter Two with the findings of Chapter Four. Among the questions to be answered in this Chapter are: (i) Can the shoreline setback scheme as currently administered under the Massachusetts Wetlands Protection Act withstand an uncompensated takings claim? (ii) Are there areas

in which the state may need to refine the shoreline setback scheme in order to better meet constitutional challenges of this kind? (iii) Are there areas in which the shoreline setback scheme can be expanded under the emerging regulatory takings law to better meet the objectives of the Wetlands Protection Act?

CHAPTER TWO

PART A:
THE UNITED STATE SUPREME COURT
AND REGULATORY TAKINGS

I. INTRODUCTION

Property rights are not solely derived from, or limited by, constitutional law, but in recent years property owners and land use regulators have often pitted their respective constitutional rights against one another in the fight for limited natural resources.

The "police powers," derived from the 10th Amendment to the *U.S. Constitution,* provide state government with the authority to regulate private activity in order to protect the public well-being.[28] According to one author working in the land use field, "[n]o legal term is more important to planners," and, though the legal basis for police power is strong, "[t]he balance of power between the property owner and the land-use regulator often changes, depending on the prevailing political and legal winds."[29]

Though the framers of the *Constitution* saw a role of government to be the guardian of public welfare, as evidence by the police powers, they also acknowledged the potential for abuse of power.[30] To safeguard against such abuse, they delineated certain rights to

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[28]Fulton, 21. The 10th Amendment -- the so-called "reserved powers doctrine" -- states that any powers not expressly granted to the federal government in the Constitution are reserved by the states. Chief among these is the police powers. *U.S. Constitution,* amend. X.; Fulton, 21.

[29]Fulton, 21 and 46.

[30]Ibid.; Coyle 14-15.

individuals.[31] Among those rights is the Takings Clause of the Fifth Amendment and the Due Process Clauses of the Fifth and Fourteenth Amendments.[32] While the Takings Clause protects individuals from uncompensated takings of their property, the Due Process Clauses protect individuals from arbitrary or capricious federal and state governmental action.[33]

These are the major clauses in the *U.S. Constitution* under which property rights have received protection.[34] Though the Takings Clause and the Due Process Clauses often work in tandem, it is the Taking Clause that has received a great deal of attention in recent years and, as such, is the primary focus of this paper.

It is the U.S. Supreme Court that has ultimate jurisdiction on matters of constitutionality; and, after nearly fifty years of silence, the Court has returned since the late 1970's as a major player in the field of constitutional property rights.[35] So, it is to the landmark regulatory takings decisions of the U.S. Supreme Court that we now turn.

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[31]Ibid.

[32]The Fifth Amendment states in part: "No person shall...be deprived of life, liberty, or property, without due process of the law; nor shall private property be taken for public use, without just compensation." *U.S. Constitution amend. V.* The provisions of the Fifth Amendment were made applicable to each state by the Fourteenth Amendment, which states in part: "Nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws." *U.S. Constitution amend. XIV.* In addition, each state has incorporated parallel provisions into its own constitution. Joseph Kalo, *Coastal and Ocean Law* (Houston: The John Marshall Publishing Company, 1990), 67.

[33]Coyle, 15.

[34]Ibid.

[35]Ibid., 9.

II. LANDMARK U.S. SUPREME COURT DECISIONS

Until the last quarter of the nineteenth century, the general rule was that no compensation was due a property owner unless the government expressly seized possession of his property.[36] However, according to Professor Babcock, between 1871 and 1922, the U.S. Supreme Court handed down three landmark decisions that would become the foundation of the modern takings doctrine and move the emphasis away from the requirement of physical possession of property by government.[37]

A. *Pumpelly v. Green Bay Company* (1871). The first landmark decision to come out of the Supreme Court was *Pumpelly v. Green Bay Company.*[38] In *Pumpelly,* the Court held that a property owner was due compensation under the Takings Clause when his property was violently flooded as a result of construction of a state authorized dam by an upstream property owner.[39] The Court ruled that to hold the Takings Clause to its narrowest construction as had been the case prior to *Pumpelly*[40] -- that is, that the government would have to deliberately *take* possession of the property -- but to allow the government to "inflict irreparable or permanent injury" without compensation would

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[36]Babcock, 7.

[37]Ibid.

[38]Ibid.

[39]*Pumpelly v. Green Bay Company,* 80 U.S. (12 Wall.) at 166 (1871).

[40]Babcock, 7.

"pervert" the Clause and make "the Constitution...an instrument of oppression rather than protection to individual rights."[41]

This case is noted for establishing the first *per se* regulatory takings rule: where there has been permanent, physical occupation of land as the result of government action, compensation is automatically due the landowner.[42] The Court, with few exceptions, has upheld this *per se* taking rule.[43] As recent as 1992, the Court held in *Lucas v. South Carolina Coastal Council* that, with regard to such invasions, "[i]n general...no matter how minute the intrusion, and no matter how weighty the public purpose behind it we have required compensation."[44]

B. *Mugler v. Kansas* (1887). The second landmark takings case from this period is *Mugler v. Kansas.*[45] In *Mugler,* the Supreme Court held that an owner of a brewery was not entitled to compensation when a newly enacted state law prohibited the owner from manufacturing or selling alcohol.[46] The Court reasoned that because it is "essential to the peace and safety of society, that all property in this country is held under

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[41]*Pumpelly,* 177-179.

[42]Babcock, 7.

[43]*Lucas,* 2893.

[44]Ibid.

[45]Babcock, 8.

[46]*Mugler v. Kansas,* 123 U.S. at 623 (1887).

the implied obligation that the owner's use of it shall not be injurious to the community," no compensation was due the plaintiff.[47] Further, the Court ruled that:

> It belongs to [the legislative branch] to exert what are known as the police powers of the State, and to determine, primarily, what measures are appropriate or needful for the protection of the public morals, the public health, or the public safety....[and] it is difficult to perceive any ground for the judiciary to declare that the prohibition by Kansas...is not fairly adapted to the end of protecting the community against the evils which confessedly result from the excessive use of ardent spirits.[48]

Mugler is noted for introducing the "harmful" or "noxious use" principle, also referred to as the "nuisance exception" to the Taking Clause.[49] This principle maintains that regardless of the extent of impact on the property owner, if the government action is intended to protect the public from harm, then no compensation is due the owner.[50] Until the *Lucas* Court partially overturned this ruling by holding that, with regards to "total takings,"[51] the nuisance exception "cannot be newly legislated,"[52] it was applied repeatedly to sustain a wide variety of regulations, including some that physically invaded private property and others that severely restricted the property use.[53]

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[47]Ibid., 665, 675.

[48]Ibid., 661-662.

[49]Babcock, 8.

[50]Ibid., 8-9.

[51]That is, when a regulation denies all economically beneficial use of the land.

[52]*Lucas,* 2900.

[53]Babcock, 9.

C. *Pennsylvania Coal Co. v. Mahon* (1922). The third, and perhaps best known, decision in the trilogy to contribute to the modern takings doctrine is *Pennsylvania Coal v. Mahon.*[54] This case is generally referred to as the touchstone of the takings doctrine, for it was the first decision in which the Supreme Court struck down a regulation as an uncompensated taking.[55] As mentioned in Chapter One, it was in *Pennsylvannia Coal* that Justice Holmes wrote his perplexing, though frequently cited, passage: "The general rule at least is that while property may be regulated to a certain extent, if regulation goes *too far* [emphasis added] it will be recognized as a taking."[56]

In *Pennsylvania Coal,* the Supreme Court considered the constitutionality of a Pennsylvania statute, the Kohler Act, which prohibited coal mining when its removal would cause "subsidence of any dwelling or other structures used for human habitation...."[57] At issue in this case was a deed that granted the surface rights to the homeowner, but expressly reserved the rights to the underlying coal.[58] The deed further specified that "the grantee takes the premises with the risk and waives all claim for damages that may arise from mining out the coal."[59]

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[54]Ibid., 10.

[55]Ibid.

[56]*Pennsylvania Coal,* 415.

[57]Ibid., 417.

[58]Ibid., 412.

[59]Ibid.

According to Justice Holmes, "[a]s applied to this case the statute is admitted to destroy previously existing rights of property and contract."[60] Thus, the key question for the Court to decide was Could the police power be stretched that far?[61] Holmes thought not.[62]

> As long recognized some values are enjoyed under an implied limitation and must yield to the police power. But obviously the implied limitation must have its limits or the contract and due process clauses are gone. One fact for consideration in determining such limits is the extent of the *diminution* [emphasis added]. When it reaches a certain magnitude in most if not all cases there must be...compensation. So the question depends on the particular facts.[63]

In weighing the facts of the case, which involved a single private house, Holmes concluded that "the damage was not common or public"; however, "[o]n the other hand the extent of the taking was great."[64] But Holmes did not stop there. He extended the ruling to apply to the general validity of the statute, stating "[i]t is our opinion that the [statute] cannot be sustained as an exercise of the police power, so far as it affects the mining of coal under streets or cities in places where the right to mine such coal has been reserved."[65]

In so ruling, the Court establish a new standard by which to judge whether a compensation was due: that is, the extent to which the government's action diminishes the

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[60]Ibid., 413.

[61]Ibid.

[62]Ibid., 414.

[63]Ibid., 413.

[64]Ibid., 414.

[65]Ibid.

value of the property would be a measure of how far is too far.[66] But, while Holmes provided a measurable test, he left open the question At what point is the threshold met?[67]

In addition, also left unanswered was how to reconcile the nuisance exception introduced in *Mugler* and the economic diminution test established in *Pennsylvania Coal.* Holmes did not even mention *Mugler* in the majority opinion, though Justice Brandeis' dissent raised *Mugler* and its progeny in defense of the statute.[68]

It would be sometime before the Supreme Court would attempt to answer these questions. As mentioned in Chapter One, shortly after its landmark decision in *Pennsylvania Coal,* the Supreme Court fell silent on the issue of regulatory takings for nearly fifty years, providing little guidance as to (i) when does a regulation go "too far" and (ii) how do you reconcile the *Mugler* nuisance exception and the *Pennsylvania Coal* economic diminution test.

Between 1928 and 1974, the U.S. Supreme Court heard only two land use disputes and not a single zoning case.[69] However, as natural resources became more scarce and, correspondingly, as environmental and land use regulations became more prolific, federal and state justices felt increasing pressure to address the regulatory takings issue.[70]

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[66]Babcock, 10.

[67]Ibid., 11.

[68]Ibid.; *Pennsylvania Coal,* 418 (Brandeis dissenting).

[69]Coyle, 4; Fulton, 54.

[70]Coyle, 14 and 15; Fulton, 47.

Consequently, by the late 1970's, the Supreme Court "awoke from its constitutional slumber"[71] and began hearing taking cases once again.

D. *Penn Central Transportation Co. v. New York City* (1978). Among those decisions handed down by the Supreme Court since its resurgence in the area of regulatory taking of particular importance is *Penn Central Transportation Co. v. New York City.* Here, softening the approach it had taken in *Pennsylvania Coal,*[72] the Supreme Court upheld New York City landmark law that prohibited the owners of Grand Central Station from building an office tower on the site.[73]

Justice Brennan, writing for the majority in *Penn Central,* stated that, though the Court had been "unable to develop any 'set formula'" for regulatory takings cases, it had in previous cases established several factors to be considered.[74] Those factors enumerated by Brennan, and frequently cited in subsequent cases, are:

(1) the economic impact of the regulation;

(2) the extent to which the regulation interferes with distinct investment-backed expectations; and

(3) the character of the government action.[75]

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[71]Coyle, 169.

[72]Amelia T.R. Starr, "'Ruin Hath Taught Me Thus to Ruminate': Rejecting Regulatory/Eminent Domain Dichotomy for Coastal Land," *1992/1993 Annual Survey of American Law* (April 1993): 120.

[73]*Penn Central Transportation Co. v. New York City,* 438 U.S. at 104-105 (1978).

[74]Ibid., 124.

[75]Ibid. With respect to the character of the government action, Brennan asserts that "[a] 'taking' may more readily be found when the interference with property can be

With these factors in mind, the Court concluded that the challenged statute did not "interfere with what must be regarded as Penn Central's primary expectation concerning the use of the parcel"[76] as a train and passenger terminal. Thus, the plaintiffs could still earn a "reasonable return on its investment."[77] It is important to note that, in considering the impact of the statute, the Court looked at the entire parcel, rather than considering the affected unit of property -- the air space -- separately.[78]

E. *Agins v. City of Tiburon* (1980). Two years later, the U.S. Supreme Court followed with *Agins v. City of Tiburon.* Here, too, the Court did not find that the enactment of zoning ordinances, which restricted development on Agins' five acre tract of land to single family residences and open space, constituted an uncompensated taking.[79]

However, the Court did provide further insight as to what will be deemed a taking in future cases. In *Agins,* the Supreme Court, synthesizing holdings of earlier decisions, held that a land use regulation violates the Takings Clause when it "[i] does not substantially advance legitimate state interests[80] or [ii] denies an owner economically viable use of his

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characterized as a physical invasion by government...than when interference arises from some public program adjusting the benefits and burdens of economic life to promote a common good." Ibid.

[76]Ibid., 136.

[77]Ibid.

[78]Ibid., 130.

[79]*Agins v. City of Tiburon,* 100 S.Ct. at 2140-41 (1980).

[80]In other words, the land use restriction must be based on a valid police power purpose -- public health, safety, welfare, or morals.

land."[81] The Court conditioned the second test on the three factors set forth in *Penn Central.*[82] If there is an affirmative finding on either of these two tests, then, according to the *Agins* decision, a taking has occurred.[83]

Applying these two tests to the facts at hand in *Agins,* the Supreme Court found that the ordinances (i) "substantially advance legitimate state interests" by protecting the residents of Tiburon from the "ill effects of urbanization"; and (ii) do not prohibit the plaintiffs from pursuing their "reasonable investment expectations" by allowing them to build one to five houses on their land.[84] Thus, the Court concluded, no uncompensated taking had occurred.[85]

In this same case, the Supreme Court refused to overturn the lower court's ruling that held that even if the ordinances constituted a taking, a regulation by definition, because it can be invalidated, cannot create a taking.[86] It would not be until *First English Evangelical Lutheran Church of Glendale v. Los Angeles County* (1987), which is discussed below, that the Court recognized the concept of a "temporary taking."

F. *Keystone Bituminous Coal Assn. v. DeBenedictis* (1987). In *Keystone*, the Court had to decide whether the mining restrictions of Pennsylvania's Bituminous Mine

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[81]*Agins,* 2141.

[82]Ibid.

[83]Starr, 133,

[84]*Agins,* 2142.

[85]Ibid.

[86]Ibid., 2143.

Subsidence and Land Conservation Act (the "Subsidence Act") deprived coal companies of their property in violation of the Takings Clause.[87] The Subsidence Act resembled the disputed Kohler Act in *Pennsylvannia Coal*, but unlike the Kohler Act, the challenged provision of the Subsidence Act required 50% of the coal beneath certain surface structures, i.e., "pre-existing public buildings, dwellings and cemeteries," to be kept in place to provide surface support.[88]

The Court, citing the two prong *Agins* test, ruled that *Pennsylvania Coal* did not control and upheld the constitutionality of the Subsidence Act. According to the *Keystone* Court "[t]he two factors [set forth in *Agins*] that the Court considered relevant, have become integral parts of our taking analysis."[89] Applying these two factors, i.e., (i) if the regulation "substantially advances legitimate state interests," or (ii) does not deny an owner "economically viable use of his land," the Court asserted, the Kohler Act and the Subsidence Act differ significantly.[90]

First, unlike the Kohler Act, "the Subsidence Act does not merely involve a balancing of the private economic interests of coal companies against private interests of the surface owners."[91] Rather, "[h]ere, by contrast, the Commonwealth is acting to protect the

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[87]*Keystone Bituminous Coal Assn. v. DeBenedictis,* 470 U.S. at 474 (1987).

[88]Ibid., 470.

[89]Ibid., 485.

[90]Ibid.

[91]Ibid.

public interest in health, the environment and the fiscal integrity of the area."[92] In other words, the Court found that the state was doing no more than abating an "activity akin to a public nuisance."[93] And, in so ruling, the Supreme Court relied on the *Mugler* line of reasoning[94] to sustain the Act.[95]

However, unlike *Mugler,* it also weighed the economic impact as well. Applying the second factor of the *Agins* test, the *Keystone* Court found "no record in this case to support a finding, similar to the one the Court made in *Pennsylvania Coal,* that the Subsidence Act makes it impossible for petitioners to profitably engage in their business, or that their has been undue interference with their investment-backed expectations."[96]

Though it did not fully support the *Mugler* decision, *Keystone*, together with *Agins* and *Penn Central,* did create a favorable climate for land-use regulations, but a cold front was rapidly approaching.

G. *First English Evangelical Lutheran Church of Glendale v. Los Angeles County* (1987). Less than a year after *Keystone,* the Supreme Court handed down its decision in *First English.* This case centered on an interim ordinance adopted by Los Angeles County in response to flooding hazards caused by fires in the canyon in which a

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[92]Ibid., 488.

[93]Ibid.

[94]That is, if the government action is intended to protect the public from harm, then no compensation is due the property owner.

[95]Ibid., 487-490; Babcock, 11-12, n. 50.

[96]*Keystone,* 485.

First English Church retreat was located.[97] The ordinance prohibited the church from rebuilding its retreat which was destroyed by floods resulting from the fires.[98]

First English is noted for establishing the concept of "temporary takings." In it the Court held that, even if a regulation is later overturned or changed, the government must compensate the landowner for the loss of his or her property during that period in which the regulation was deemed to have "taken" property.[99]

H. *Nollan v. California Coastal Commission* (1987). Following on the heels of *First English,* the Supreme Court in *Nollan v. California Coastal Commission* appeared to strengthened private property rights further by holding land use regulations to stricter scrutiny than that set forth in *Keystone* and its predecessors. The *Nollan* Court held that a permit conditioned on the permittees granting a public easement to their beachfront property violated the Takings Clause because it did not serve "to advance [the] legitimate state interest" standard set forth in *Agins.*[100]

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[97]*First English Evangelical Lutheran Church of Glendale v. Los Angeles County*, 382 U.S. at 307 (1987).

[98]Ibid.

[99]Ibid., 319. However, the Supreme Court in *First English* provided no further insight into the question of when does a regulation go "too far." In fact, the Court did not decide whether a taking actually occurred. Ibid. 322. It left that question up to the state court, which later ruled that no taking had occurred because the construction ban was an interim measure, did not deprive the church of all use, and substantially advanced the government's interest in public safety. Coyle, 193.

[100]*Nollan v. California Coastal Commission,* 483 U.S. at 837, 841-42 (1987).

According to Justice Scalia, writing for the majority, the California Coastal Commission failed to meet this standard because there was no "essential nexus" between the easement, i.e., physical access, and the state's interest, i.e., visual access, which would be blocked by the proposed construction.[101] Without this "essential nexus" between the state's action and the state's interest, Justice Scalia asserted, "the building restriction is not a valid regulation of land use but 'an out-and-out plan of extortion.'"[102] Thus, the Court ruled that 'if [the California Coastal Commission] wants an easement across the Nollan's property, it must pay for it."[103]

I. *Lucas v. South Carolina Coastal Council* (1992). Five years after *Nollan,* the Supreme Court further challenged land use regulations when it handed down its decision in *Lucas.* The facts of *Lucas* are familiar to many coastal managers. In 1986, David Lucas purchased two residential lots on a barrier island in South Carolina.[104] Two years later, the state enacted the Beachfront Management Act, under which setback lines were established along the "'point[s] of erosion...during the past forty years.'"[105] Because Lucas' lots were located seaward of the setback line, he was now barred from developing his property.[106] Though the state later amended the Act to allow for such development, Lucas proceeded

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[101]Ibid., 837-38.

[102]Ibid., 837.

[103]Ibid., 842.

[104]*Lucas,* 2889.

[105]Ibid., quoting the *South Carolina Beachfront Management Act.*

[106]Ibid.

through the courts with his claim that his land had been temporarily taken for the period of time prior to the amendment.[107] The Supreme Court tentatively agreed with Lucas, remanding the case back to the state court to make the final determination in light of the higher court's holdings.[108]

The Supreme Court's decision in *Lucas* attacked land use regulations on a number of fronts. Most notably, *Lucas* established a new *per se* takings rule when a regulation deprives a property owner of "all economically beneficial use" of her land.[109] In such instances, the *Lucas* Court, in effect, eliminated the qualifying factors to the second prong of its two-prong test set forth *Agins.*[110] Prior to *Lucas,* when determining whether a regulation "denies an owner economically viable use,"[111] the Court would consider the three factors set forth in *Penn Central,* i.e., (i) the character of the government action, (ii) the extent to which the regulation interferes with reasonable investment-backed expectations, and (iii) the economic impact of the regulation.[112]

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[107]Ibid., 2890-91.

[108]Ibid., 2890, 2891, 2901 and 2902.

[109]Ibid. 2900.

[110]Karen R. Palmersheim, "Lucas v. South Carolina Coastal Council: How Lucas' Effect on Regulatory Takings Will Change California Coastal and Endangered Species Regulation," *Southwestern University Law Review* 23 (1993): 183.

[111]*Agins,* 2141.

[112]Ibid.; Palmersheim, 183.

The *Lucas* Court did provide an exception to this *per se* takings rule when the "proscribed use interests were not part of [the property owner's] title to begin with."[113] According to Justice Scalia, writing for the majority in *Lucas,* compensation is not due a property owner when the regulation in question embodies the "background principles of the State's law of property and nuisance already in place upon land ownership."[114]

In the matter at hand, the *Lucas* Court conjectured, such proscriptive common law principles likely did not exist, primarily because South Carolina allowed "other landowners, similarly situated...to continue the use denied the claimant."[115] (In other words, the state did not require Lucas' neighbors to abandon their homes.) However, the Supreme Court left the matter up to the state court to decide.[116] In doing so, *Lucas* shifted the burden to the state to show that its regulations are justified under existing nuisance or state property laws.[117]

Though *Lucas* maintains a state's police power authority to restrict property use without compensation, in instances where the restriction is "so severe" as to prohibit "all economically beneficial use," such prohibition "cannot be newly legislated."[118] Thus, the nuisance exception provided under *Lucas* is not nearly as flexible as the nuisance

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[113]*Lucas,* 2899.

[114]Ibid., 2900.

[115]Ibid., 2901.

[116]Ibid., 2901-02.

[117]Palmersheim, 188.

[118]Ibid., 2900.

justification cited in *Mugler* or *Keystone.*[119] A *Mugler* or *Keystone* nuisance can be anything that the legislature designates, so long as there is a sufficient factual and policy basis to support it.[120] However, while *Lucas* limits the power of the legislature, it arguably provides the courts with greater discretion. A *Lucas* nuisance requires an analysis of existing *common law,* i.e., law based on court decisions and historic usage, and not on a finding of facts.[121]

In addition, where a prohibition merely limits value, *Lucas* diminishes the significance of the *Mugler* line of cases by labelling the *Mugler* nuisance exception[122] "simply the progenitor of our more contemporary statements that 'land-use regulation does not effect a taking if it substantially advance[s] legitimate state interests'" -- along with the attendant economic diminution factors to be weighed -- in order to justify a taking.[123] The *Mugler* nuisance exception sustains a government action designed to protect the public from harm regardless of the extent of the interference.[124]

Further, even in instances where a prohibition deprives noneconomic interests, Justice Scalia wrote:

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[119]Starr, 125; *Mugler,* 661-62; *Keystone,* 488.

[120]Starr, 125.

[121]Ibid.

[122]Which sustains government action designed to protect the public from harm regardless of the extent of the interference. Babcock, 8-9.

[123]*Lucas,* 2897; Babcock, 8 and 9, n. 35.

[124]Babcock, 8-9.

> Though our prior takings cases evince an abiding concern for the productive use of, and economic interest in, land, there are plainly a number of noneconomic interests in land whose impairment will invite *exceedingly close scrutiny* [emphasis added] under the Takings Clause.[125]

J. *Dolan v. City of Tigard* (1994). Most recently, the Supreme Court's decision in *Dolan v. City of Tigard* appears to elevate the rights of property owners even further by requiring not only an "essential nexus" between a permit condition and the state's interest, but also requiring that the government demonstrates that there be a "rough proportionality" between the conditions imposed on a permit and the potential impact of the project.[126]

At issue in *Dolan* were seemingly routine conditions imposed on the issuance of a building permit.[127] Specifically, in order to move forward on plans to expand a hardware business, the City of Tigard required that Florence Dolan, among other things, dedicate (i) a portion of her property lying within the 100 year floodplain for improvement of a storm drainage system along a creek and (ii) an additional fifteen-foot strip of land adjacent to the floodplain for a pedestrian/bicycle path.[128] The City Planning Commission reasoned that the floodplain dedication would help offset the increased runoff from the parking lot expansion and the bicycle path dedication would lessen the increased traffic congestion.[129] These

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[125]*Lucas,* 2895, n. 8.

[126]*Dolan v. City of Tigard,* 114 S.Ct. at 2318-19 (1994).

[127]Brian C. Levey, "Limiting Conditions on Land Use Permits and the Supreme Court's Decision in *Dolan v. Tigard," Massachusetts Lawyers Weekly,* December 5, 1994, Real Estate Section, 2.

[128]*Dolan,* 2313.

[129]Ibid., 2314-15.

conditions were based on comprehensive plans developed by the city to control the threats of continued urbanization.[130]

The question that the Supreme Court attempted to answer in *Dolan* was "What is the required degree of connection" between conditions imposed by a government entity and a project's impact?[131] In order to avoid paying compensation under the Takings Clause, the Court ruled, government must demonstrate that there exist a "rough proportionality" between the two.[132] According to the Court:

> No precise mathematical calculation is required, but the city must make some sort of individual determination that the required dedication is related both in nature and extent to the proposed development.[133]

Applying this new standard to the situation at hand, the Court found that, though the proposed expansion project would increase runoff and traffic congestion, the city did not meet its burden of demonstrating that such dedications were reasonable related to the impacts.[134] With regards to the floodplain dedication, a key failing of the city was never asserting why "a public greenway, as oppose to a private one, was required in the interest of flood control."[135] With regards to the bicycle path dedication, the Court found that, though "[d]edications for streets, sidewalks, and other public ways are generally reasonable

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[130]Ibid., 2313.

[131]Ibid., 2312.

[132]Ibid., 2319.

[133]Ibid., 2319-20.

[134]Ibid., 2321-2322.

[135]Ibid., 2320.

exactions to avoid excess congestion," in the matter at hand, the city has failed to meet "its burden of demonstrating that the additional number of vehicle and bicycles trips generated by the petitioner's development reasonably relate to the city's requirement for dedication."[136]

Prior to *Dolan,* at least in Massachusetts, "[t]ypically, every presumption [was] made in favor of the validity of [land use] regulations, and the challenger [bore] the heavy burden of proof in attempting to invalidate it."[137] The *Dolan* Court shifted this burden by holding that the government bears the burden of persuading the courts that the conditions are lawful.[138]

III. SUMMARY/CONCLUSION

Just where do these recent Supreme Court decision leave us? For instance, how will the lower courts interpret and apply the "rough proportionality" test set forth in *Dolan? Lucas,* in particular, left many questions unanswered. Most notably, (i) what is meant by "all economically beneficial or productive use," and (ii) what must be shown to bring a case within the *Lucas* exception?[139]

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[136]Ibid., 2321.

[137]Levey, 2.

[138]Ibid.

[139]Robert C. Barber, "*Americo Lopes v. City of Peabody:* the SJC Interprets and Applies the *Lucas* Decision," *Boston Bar Journal* (January/February 1995): 12; Gregor I. McGregor et al., *Regulatory Takings: Land Use Restrictions in a Post-Lucas World* (Boston: Massachusetts Continuing Legal Education, Inc., 1992), 5.

Many commentators feel *Lucas* and *Dolan* may severely restrain regulators from pursuing policies that protect important natural resources, such as coastlines.[140] Others are more optimistic.[141] However, even those that minimize the impact of these decisions temper their optimism. For instance, Professor Babcock asserts that:

> [T]he *Lucas* case need not be perceived as casting a constitutional cloud over laws protecting important ecosystems like wetlands and barrier beaches....[However, t]he rhetoric of the majority language, the palpable distrust of state legislators and regulators, and the obvious efforts in the majority's decision to let Lucas win all send strong pro-property rights signals to the lower courts.[142]

Unquestionably, a lot has been left to the state courts to decide. Authority is placed in the hands of the state judiciary because of the general lack of concrete guidelines coming out of the Supreme Court. According to Loren Smith, Chief Judge of the United States Claims Court, despite the attention the Supreme Court has given to the issue in recent years, the area of regulatory takings "is really the antithesis of law...every case is its own law."[143]

Further, *Lucas'* emphasis on concepts in state property law provides state courts with more discretion in ruling on whether a taking has occurred. State trials of regulatory takings cases will become more important, "since the relevant inquiry is largely factual,

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[140]See, e.g., Starr; and Edward J. Sullivan, "Substantive Due Process Resurrected Through the Takings Clause: *Nollan, Dolan, and Ehrlich,*" as appeared in Larry Watters et al., "Colloquium on *Dolan:* The Takings Clause Doctrine of the Supreme Court and the Federal Circuit," *Environmental Law* 25 (1995): 155-160.

[141]See, e.g., Babcock; and William Funk, "Reading *Dolan v. City of Tigard,* as appears in Watters et al.

[142]Babcock, 4, n. 12.

[143]Richard Miniter, "The Shifting Ground of Property Rights," *Insight/Washington Times*, August 23, 1993.

involving the reasonableness of the investment-backed expectations, in the face of state nuisance and property."[144]

On remand, South Carolina was unable to justify the building restriction on Lucas' land under its existing laws of nuisance and property,[145] but what about Massachusetts?

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[144]McGregor et al., 6-7.

[145]Babcock, 17.

PART B:
THE COMMONWEALTH OF MASSACHUSETTS AND REGULATORY TAKINGS

I. STATE REGULATORY TAKINGS CASES

It used to be rare for a Massachusetts court to find that a land use regulation resulted in an unconstitutional taking of property.[146] However, after the direction the U.S. Supreme Court took in *Lucas* and *Dolan,* Massachusetts courts may have begun to lower what had been a high threshold necessary to prove regulatory taking cases in the state.[147]

A. Before *Lucas* and *Dolan*

Prior to *Lucas,* the Massachusetts Supreme Judicial Court (the "SJC"), the state's highest court,[148] had been reluctant to find a regulatory taking.[149] In fact, it was the Massachusetts SJC that Supreme Court Justice Blackmun turned to in his dissent in *Lucas* when he pointed out that "[s]tate courts frequently have recognized that land has economic value where the only residual economic uses are recreation or camping. See, e.g., *Turnpike*

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[146]Patricia A. Cantor, "Where Are Courts Going with Regulatory Takings After *Lopes*?" *Massachusetts Lawyers Weekly,* July 31, 1995, B8.

[147]Ibid.

[148]Margot Botsford et al., editors, *Handbook of Legal Research in Massachusetts,* 1991 Supplement (Boston: Massachusetts Continuing Legal Education, Inc., 1991), Section 4-4.

[149]Cantor, B9.

Realty Co. v. Dedham, 362 Mass. 221...."[150] In *Turnpike Realty* (1972), the SJC held that no taking occurred when the establishment of a floodplain district and its attendant zoning restrictions prohibited an owner from developing its property.[151]

In addition to *Turnpike Realty,* two other regulatory takings cases to make a significant contribution to the pre-*Lucas* legal landscape in the state were *Lovequist v. Conservation Commission of Dennis* (1979) and *Moskow v. Commissioner of Environmental Management* (1981).[152] In *Lovequist,* the property owner challenged as an uncompensated taking a denial of a road construction permit by the local conservation commission.[153] The SJC, citing *Penn Central,* ruled that though the owners were in effect denied most beneficial use of their land, i.e., to ultimately build a subdivision, they still retained some use and potential profit, e.g., a single family home or a camp, thus no taking had occurred.[154]

In *Moskow,* the SJC held that a lower court erred in looking only at the portion of the property affected by the wetlands restrictions at issue.[155] The court, again citing *Penn Central,* asserted that "'taking jurisprudence does not divide a single parcel into discrete

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[150]*Lucas,* 2908 (Blackmun dissenting); Cantor, B9.

[151]*Turnpike Realty Co. v. Dedham,* 362 Mass. at 223-24, 236-37 (1972), *cert. denied,* 409 U.S. 1108 (1973).

[152]Cantor, B8. See also *Fragopoulous v. Rent Control Board of Cambridge,* 408 Mass. 302 (1990). Ibid.

[153]*Lovequist v. Conservation Commission of Dennis,* 379 Mass. at 19 (1979).

[154]Ibid., 19-20.

[155]*Moskow v. Commissioner of Environmental Management,* 384 Mass. at 533 (1981).

segments and attempt to determine whether rights in a particular segment have been entirely abrogated.'"[156] Consequently, though the property owner was barred from developing 55% of his property, he could still build on the land remaining; thus, the interference was not so great as to constitute a taking.[157]

These three cases typified the approach taken in Massachusetts prior to *Lucas.*[158] Before *Lucas* it was fairly clear that the Massachusetts courts would generally look at the owner's primary investment-backed expectations and consider whether the law prevented the owner from obtaining any reasonable return on that investment.[159] However, after *Lucas,* "what had over the years proved to be a workable approach became, as many commentators have observed, significantly altered and, as nearly all agree, certainly more muddled."[160]

B. After *Lucas* and *Dolan*

Wilson v. Commonwealth (1992) was the first takings case that the Massachusetts SJC heard after the U.S. Supreme Court handed down its decision in *Lucas.*[161] At issue in *Wilson* was the state's processing of an administrative appeal, under the state's Wetlands Protection Act, to allow a group of property owners to build a stone revetment to protect

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[156]Ibid., quoting *Penn Central* at 130-31.

[157]Ibid., 533.

[158]Cantor, B8.

[159]Ibid.

[160]Ibid.

[161]Ibid., B9

their homes from beach erosion.[162] The homes were placed at risk when a storm washed away a portion of the barrier island that had protected the property.[163] Pending the appeal, the homes were lost to the ocean and the property ceased to exist.[164] Thus, the homeowners contended, as a result of the state's action, or inaction, their property literally and figuratively had been taken.[165]

The SJC gave some credence to the property owners' takings claim by remanding the case to the trial court to determine if there were any improper delays in the administrative appeals process that could have substantiated the claim.[166] However, with its next pen stroke, the SJC summarily dismissed *Lucas* as inapplicable, reasoning that, unlike the case at hand, *Lucas* did not involve "any administrative proceeding concerning the use of property, the total loss of the value of the property due to natural forces while such proceeding were pending, or any alleged dilatory agency conduct."[167] On remand to the trial court, the state prevailed.[168]

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[162]*Wilson v. Commonwealth,* 413 Mass. at 353 (1992).

[163]Ibid.

[164]Ibid.

[165]Ibid.

[166]Ibid., 356.

[167]Ibid., 358.

[168]Cantor, B9.

In addition to *Wilson,* two other Massachusetts appellate level decisions refused to apply *Lucas.*[169] In so ruling, the Massachusetts appeals courts indicated that they did not consider *Lucas* to be the watershed takings case that it was proclaimed to be; that is, at least not until the U.S. Supreme Court's grant of certiorari in *Lopes v. Peabody* directed otherwise.[170]

Initially, the Massachusetts Land Court,[171] the Massachusetts Appeals Court,[172] and the SJC, each, in turn, denied Lopes' takings claim.[173] It was only after Lopes petitioned the U.S. Supreme Court and the Supreme Court remanded the case to the state for consideration in light of *Lucas* that the state judiciary regard the *Lucas* decision more somberly.[174] On remand, the Massachusetts SJC found that a takings claim might be supported by further factual inquiry and, thus, directed the Land Court to take another look at the claim.[175]

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[169]Ibid., n. 2. See *Steinbergh v. Cambridge,* 413 Mass. 736 (1992), cert. denied, 113 S.Ct. 2338 (1993); and *Municipal Light Co. of Ashburnham v. Commonwealth,* 34 Mass. App. Ct. 162 (1993).

[170]*Lopes v. City of Peabody, Massachusetts,* 113 S.Ct. 1574 (1993); Cantor, B9.

[171]The Massachusetts Land Court is part of the state's trial court system and has original jurisdiction over issues of real estate. Botsford et al., Section 4.5.4.

[172]The Massachusetts Appeals Court is part of the state's appellate level court system and has concurrent jurisdiction with the SJC, subject to the discretion of, and further review by, the SJC. Botsford et al., 4.4.1.

[173]*Lopes v. Peabody,* 32 Mass. App. Ct. 1124 (1992); *Lopes v. Peabody,* 413 Mass. 1105 (1992); Cantor, B9.

[174]*Lopes v. City of Peabody, Massachusetts,* 113 S.Ct. 1574 (1993); Cantor, B9.

[175]*Lopes v. Peabody,* 417 Mass. at 304 (1994).

The salient facts of the *Lopes* case are these. Americo Lopes acquired a one-quarter acre lot on Devil's Dishfull Pond in Peabody, Massachusetts, six years after the after the city adopted a wetlands ordinance that forbid construction of any new building within 30 feet of the pond or below an elevation of 88.5 feet above sea level.[176] The elevation of all but a small portion of the lot was below this 88.5 foot contour rendering the lot undevelopable under the ordinance, except for farming, nurseries, and recreation.[177]

On remand, in light of *Lucas,* the SJC instructed the Land Court to determine if the land has "no economically beneficial use," a term, which the SJC noted, the U.S. Supreme Court had not defined.[178] If such a determination was made by the Land Court, then, according to the SJC, the ordinance can be upheld only if, as dictated by *Lucas,* it substantially advances legitimate state interests *and* if its application to the case at hand reflects established principles in state property and nuisance law.[179]

The Land Court, in turn, looked to two post-*Lucas* U.S. Appeals Court cases, *Loveladies Harbor, Inc. v. U.S.* (1994) and *Florida Rock Industries v. U.S.* (1994), for an indication of how the federal courts were interpreting and applying *Lucas.*[180] Both these

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[176]Ibid., 299 and 300, n. 3.

[177]Ibid.

[178]Ibid., 304.

[179]Ibid.

[180]*Lopes v. City of Peabody,* 3 LCR at 79 (1995).

federal cases support the post-*Lucas* view that a court is more likely to find a taking when the value is diminished.[181]

> Under the two above cited cases, it has been held that where a regulation deprives an owner of a substantial part [but not essentially all][182] of economic use or value of property, the courts must decide whether or not the government has acted in a responsible way, limiting constraints on property ownership to things necessary to achieve public purpose and has not allocated to some individuals, less than all, burdens that should be borne by all.[183]

Consequently, though the Land Court found that the diminution of value was not complete -- the fair market value without the wetlands restriction was $70,000 and with the restriction, $2,000 to $3,000 -- such taking was total.[184]

However, the Land Court did not inquire as to whether such a taking was exempt under existing concepts in state property law. Instead, it ruled that the 88.5 foot contour was based on an outdated methodology and that a 86.6 foot contour based on the latest technology was sufficient to meet the objectives of the ordinance, though the same court had earlier held that the 88.5 foot contour was valid exercise of the police power.[185] In making this small adjustment, Lopes was now able to develop his land.[186]

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[181]Cantor, B9.

[182]*Florida Rock Industries v. U.S.,* 18 F3d at 1561 (1994).

[183]3 LCR at 80, citing *Florida Rock.*

[184]Ibid.

[185]Ibid., 81.

[186]Ibid.

The holdings *Lopes,*[187] *Loveladies,* and *Florida Rock,* each by finding a taking when value is diminished, but not extinguished, all place greater emphasis on the state nuisance and property law exemption provided for under *Lucas.*[188] Unfortunately, *Lopes* stopped short of a full takings analysis by failing to provide any indication of whether such an exemption can be supported in the state; thus, a review of background principles in Massachusetts nuisance and property law may prove insightful.

II. BACKGROUND PRINCIPLES IN STATE PROPERTY LAW

As stated earlier, while the *Lucas* Court provided a new categorical rule requiring a takings finding when a "regulation denies all economically beneficial or productive use of land,"[189] it also provided an exception to this rule. According to the majority opinion in *Lucas,* "[w]here the State seeks to sustain a regulation that deprives land of all economically beneficial use, we think it may resist compensation only if the logically antecedent inquiry into the nature of the owner's estate shows that the proscribed use interests were not part of his title to begin with."[190] In making this determination, the *Lucas* Court directed state courts to look at "the restrictions that background principles of the State's law of property or nuisance already place upon land ownership."[191]

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[187]It is important to note that the holdings of the Land Court do not possess the weight of appellate level decisions and may not be deemed precedent setting in the eyes of the state appeals courts.

[188]Cantor, B11.

[189]*Lucas,* 2893.

[190]Ibid., 2899.

[191]Ibid., 2900.

In other words, compensation is not due a property owner when a regulation prohibits uses that are inherently unlawful under state law. This simple logic, taken without regard to its underlying implications,[192] that property owners cannot claim compensation for rights they never had, is hard to refute; but applying it becomes rather complicated.

There are a variety of state property law principles that have been employed to prevent development of private property. These include site-specific prohibitions, such as *easement by prescription,*[193] *implied dedication,*[194] and *adverse possession.*[195] However, those principles that hold the most promise for justifying government regulation of private development are those that can be applied across property boundaries: specifically, the concepts of nuisance, public trust and custom. We turn first to concept of nuisance.

A. The State Common Law Concept of Nuisance

> A law or decree with such an effect [of denying all economically beneficial use of land] must...do no more than duplicate the results that could have been achieved by the courts -- by adjacent landowners (or other uniquely affected persons) under the

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[192]Specifically, those implications that arise from limiting the power of legislature to "do no more than duplicate the result that could have been achieved in court." *Lucas,* 2900.

[193]Continuous, adverse, personal use over a period of time prescribed by law, which use is restricted to claimant and his or her ancestors or grantors. Babcock, 30; *Black's Law Dictionary,* s.v. "easement by prescription."

[194]"[R]egular use of property by public in reliance on owner's acquiescence." Babcock, 30.

[195]Nonpermissive use which is actual, open, notorious, exclusive and adverse for a period of time prescribed by law. *Black's Law Dictionary,* s.v. "adverse possession."

State's law of private nuisance, or by the State under its complementary power to abate public nuisances that affect the public generally, or otherwise.[196]

1. Nuisance in General. In the passage above the *Lucas* Court explicitly provided an exception to its takings finding for both *private* and *public* nuisances. In general, an action that diminishes or destroys the property of another individual or a few people is considered a *private nuisance*; whereas, an action that affects the general public is considered a *public* or *common nuisance.*[197] However, these definitions are deceptively simple. According to Keeton et al.:

> There is perhaps no more impenetrable jungle in the entire law than that which surrounds the word "nuisance." It has meant all things to all people, and has been applied indiscriminately to everything from an alarming advertisement to a cockroach in a pie.[198]

One of the key questions raised by *Lucas* is What must a state show in order to bring a case (or a regulation) within the nuisance exception?[199] The *Lucas* Court did provide some guidance to states attempting to answer this question:

> The "total taking" inquiry we require today will ordinarily entail (as the application of state nuisance law ordinarily entails) analysis of, among other things, [i] the degree of harm to public lands and resources, or adjacent private property, posed by claimant's proposed activities...[ii] the social value of the claimant's activities and their suitability to the locality in question...and [iii] the relative ease with which the

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[196]*Lucas,* 2900; The phrase "or otherwise" refers to instances where the state is absolved "of liability for the destruction of 'real and personal property, in cases of actual necessity, to prevent the spreading of fire' or to forestall other grave threats to the lives and property of others." Ibid., n. 16.

[197]*Black's Law Dictionary,* s.v. "nuisance," "private nuisance," and "public nuisance."

[198]W. Page Keeton et al., *Prosser & Keeton on the Law of Torts* Section 616, 5th edition, 1984, as quoted in *Lucas,* 2914 n. 19 (Blackmun dissenting).

[199]McGregor et al., 23.

> alleged harm can be avoided through measures taken by the claimant and the government (or adjacent private landowners) alike....[200]

However, the Court warned that, as appears to be the case in the prohibition at issue in *Lucas,* "[t]he fact that a particular use has long been engaged in by similarly situated owners ordinarily imports a lack of any common-law prohibition (though changed circumstances or new knowledge may make what was permissible no longer so)...."[201]

Though this may provide some insight into what constitutes a nuisance under the *Lucas* standard, as implied above, "[t]here is general agreement that it is incapable of any exact or comprehensive definition."[202] That is, it is an "extremely subjective, fluid doctrine."[203] Even the U.S. Supreme Court has held "[a] nuisance may be merely a right thing in the wrong place, like a pig in the parlor instead of a barnyard."[204]

The doctrine's malleability results in large part to what the *Lucas* Court referred to parenthetically above: "though changed circumstance or new knowledge make what was previously permissible no longer so."[205] According to Babcock, the nuisance doctrine "shifts over time to reflect changing mores and expectations....it depends upon a judge's determination at *a given point in time* [emphasis added] of the acceptability of consequences

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[200]*Lucas,* 2901.

[201]Ibid.

[202]Keeton et al., 616.

[203]Babcock, 19.

[204]*Village of Euclid, Ohio v. Ambler Realty Co.,* 272 U.S. at 338 (1926).

[205]*Lucas,* 2901.

arising out of otherwise nonprohibited conduct."[206] This ephemeral, ever-evolving quality of the nuisance doctrine seems to contradict the "antecedent inquiry" prescribed by Justice Scalia in the *Lucas* decision.

Further, contrary to U.S. Supreme Court sanctioned state law,[207] which allows the legislature to define what constitutes a nuisance,[208] Scalia argues that "[a]ny limitation so severe [as to prohibit all economically beneficial use] cannot be newly legislated."[209]

But, let us set aside any disputes regarding whether nuisance can or cannot be newly legislated and focus instead on an "antecedent inquiry" of nuisance as strictly a common law concept, as prescribed in the *Lucas* exception.

2. *Nuisance in Massachusetts.* Before we crack open a single volume of state appellate level decisions, we must first identify what are the threats to the public well-being

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[206]Babcock, 21.

[207]John A. Humbach, "Evolving Thresholds of Nuisance and the Takings Clause," *Columbia Journal of Environmental Law* 18 (1993): 3, citing *Munn v. Illinois,* 94 U.S. 113, 134 (1876).

[208]The Massachusetts "[l]egislature may provide that particular uses of property constitute public or common nuisances and may make that conduct subject to injunction without any proof that, in particular case, the conduct caused actual harm to public or private interests." *Commonwealth v. United Food Corp.,* 374 Mass at 778-79. See also *Massachusetts General Laws Annotated,* Chapter 139. Under this authority, the Massachusetts legislature deemed that "[e]very erection made and all work done within tide water, or within the waters of a great pond or outlet thereof, or on or within the banks of the Connecticut River, or the Merrimack River, below the high water mark, not authorized by the [legislature] or by the [Department of Environmental Protection], or made or done in a manner not sanctioned by the department, if a license is required as hereinbefore provided, shall be considered a public nuisance." *Massachusetts General Law Annotated,* Chapter 91, Section 23.

[209]*Lucas,* 2900.

that shoreline setbacks attempt to address. In other words, what nuisances do setbacks abate? As will be demonstrated in Chapter Three, setbacks are an effective management tool for dealing with a variety of problems that result from coastal development. The Massachusetts Wetlands Protection Act, which provides for shoreline setbacks in the state, identifies eight protected, public interests:

1. Protection of public and private water supplies;
2. Protection of ground water supply;
3. Flood control;
4. Storm damage protection;
5. Prevention of pollution;
6. Protection of land containing shellfish;
7. Protection of fisheries; and
8. Protection of wildlife habitat.[210]

This list of public interests set forth under the Act is often added to by local authorities.[211] These additional interests have included such things as erosion and sedimentation control.[212]

A review of Massachusetts appellate level court decisions indicates that certain activities that have a deleterious effect on the public interests in the resources that the Wetlands Protection Act purport to protect may indeed qualify as private or public

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[210]310 *Code of Massachusetts Regulations* 10.01:(2).

[211]Ann H. Williams et al., *Wetlands: A Guide to Understanding the Complex Federal, State and Local Requirements Governing Activities Affecting Wetlands* (Boston: Massachusetts Continuing Legal Education, Inc., 1995), 219.

[212]Ibid.

nuisances. For instance, with regards to protection of groundwater supply and pollution prevention, the SJC in *Nassr v. Commonwealth* (1985) held that an unlicensed hazardous waste site that risks "groundwater contamination, fires and explosions, and life threatening disease"[213] is a public nuisance.[214]

With respect to flood control, the SJC in *Turnpike Realty Co. v. Dedham* (1972) held that the state does not commit a taking when it regulates property to prevent flooding and storm damage.[215] The case involved the establishment of a flood plain district in which "no structure or building shall be erected."[216] Though it did not expressly deem the proposed construction to be a nuisance, it implied as much by its ruling that "a government cannot be deemed to have 'taken anything when it asserts its power to enjoining nuisance-like activity.'"[217]

In *Weinstein v. Lake Pearl Park, Inc.* (1964) the SJC ruled that relief was due property owners whose lands had been made wetter as a result of an adjoining owner's putting fill in a "great pond" without a license.[218] It should be noted that, though the circumstances *may* have "rendered the guilty party liable...of a common nuisance,"[219] the

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[213]*Nassr v. Commonwealth,* 394 Mass at 771 (1985).

[214]Ibid., 767, 769 and 774.

[215]*Turnpike Realty Co.,* 224, 236-37.

[216]Ibid., 223, 224.

[217]*Wilson v. Commonwealth,* Supplemental Brief of the Defendant-Appellee on Petition for Further Appellate Review, 16-17, as appears in McGregor et al., 106-107.

[218]*Weinstein v. Lake Pearl Park, Inc.,* 347 Mass. at 95 (1964).

[219]Ibid.

case was decided under an obligation created under statutory law, i.e., failure to obtain the requisite license.[220] There have been a number of appellate level cases in Massachusetts that address the issue of surface water runoff. *Tucker v. Badoian* (1978) is a landmark decision in the state with regard to this issue. In it, the Supreme Judicial Court relaxed the established *common enemy* rule, which holds that a property owner may improve his property "with impunity...even though he thereby diverts surface water onto his neighbor's land," and imposed liability on property owners who used artificial channels to cause surface waters to accumulate and flow on adjacent lands.[221]

In addition, in a concurring opinion that has since been followed in a number of state cases,[222] six of the seven justices in *Tucker* advocated abandoning the *common enemy* rule completely in favor of the "more flexible *reasonable use* [emphasis added] doctrine."[223] The *reasonable use* rule holds that a property owner may "make reasonable use of his land, even though the flow of surface water is altered thereby and causes some harm to others, but incurs liability when his harmful interference with the flow of surface water is unreasonable."[224] Though the *Tucker* decision did not expressly use the term "nuisance," it set forth a new standard by which to judge whether an activity can be deemed a "nuisance."

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[220]Ibid.

[221]*Tucker v. Badoian,* 376 Mass. at 912-13 (1978).

[222]See, e.g., *Schleissner v. Provincetown,* 27 Mass. App. Ct. 392 (1989) and *Lummis v. Lilly,* 385 Mass. 41 (1982) discussed herein.

[223]*Tucker,* 914, 916.

[224]Ibid., 917-18, n. 2 (concurring opinion).

Accordingly, in *Schleissner v. Provincetown* (1989), the Massachusetts Appeals Court applied the reasonable use rule advocated in *Tucker* to uphold a trial court finding that the town had created a private nuisance arising out of the town's improperly maintaining a storm water disposal system which periodically flooded the plaintiff's backyard and basement.[225] Key to the court's ruling in this case, and in nuisance cases in the state in general, was a finding that the damage was not *de minimis,* i.e., minor.[226]

In *Triangle Center, Inc. v. Department of Public Works* (1982) the SJC, applying the reasonable use rule, held that additional drainage onto the plaintiff's land, attributable to the construction and maintenance of the road, caused identifiable and more than *de minimis* damage.[227] Applying the reasonable use rule in matters such as this one involving public sector defendants, the court ruled that it was not necessary to balance the cost to a public entity because it is always free to limit its cost by acquiring the land through eminent domain.[228] However, the court advised:

> [I]t is unreasonable to impose on private individuals a disproportionate share of this public benefit. In nuisance actions against private defendants, it is relevant, although not decisive, to compare the cost to defendant of an injunctive remedy with the damage to the plaintiff.[229]

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[225]*Schleissner,* 394-95.

[226]Ibid., 395; See also *Jacobs v. Pine Manor College,* 399 Mass. 411 (1987).

[227]*Triangle Center, Inc. v. Department of Public Works,* 386 Mass. at 858. See also *von Heneberg v. Generazio*, 403 Mass. 519 (1988), in which the Massachusetts Appeals Court held that construction activities by private party, including raising and paving of a driveway, filling a drainage trench and building berm alongside plaintiff's property constituted a nuisance.

[228]Ibid., 864; *Schleissner,* 394.

[229]*Triangle Center,* 864.

Similarly, in *Lummis v. Lilly* (1982), the SJC held that an owner who builds an erosion control structure on his oceanfront property *may* be held liable under nuisance law for harming the downdrift properties by depriving them of a source of the sediment nourishment.[230] The key issue decided by the appellate court in *Lummis* was that the reasonable use rule should be applied to oceanfront property.[231] In so ruling, the question left for the trial court to decide was whether the defendant had made reasonable use of his land by erecting a stone groin on it.[232] In order to answer that question, the appellate court instructed the lower court to look at a number of factors, including:

> [T]he purpose of the use, the suitability of the use to the water course, the economic value of the use, the social value of the use, the extent and amount of harm it causes, the practicality of avoiding harm by adjusting the use or method of use of one owner or the other, the practicality of adjusting the quantity of water used by each owner, the protection of existing values of water uses, land, investments, and enterprise, and the justice of requiring the user who is causing the harm to bear the loss.[233]

In *Asiala v. Fitchburg* (1987), the Massachusetts Appeals Court held that the town of Fitchburg created a private nuisance when it inadequately constructed a retaining wall that resulted in injury to plaintiff's property.[234] *Asiala* also provided another definition of private nuisance which other state judges have used.[235] According to the *Asiala* decision, in general, "[a] private nuisance is actionable when a property owner creates, permits, or

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[230]*Lummis v. Lilly,* 385 Mass. at 46.

[231]Ibid., 43 (1982).

[232]Ibid.

[233]Ibid., 47.

[234]*Asiala v. Fitchburg,* 24 Mass. App. Ct. at 16 (1987).

[235]See *Tarzia v. Town of Hingham,* 35 Mass. App. Ct. 506 (1993).

maintains a condition or activity on his property that causes a substantial and unreasonable interference with use enjoyment of property of another."[236]

In *Tarzia v. Town of Hingham* (1993), the Massachusetts Appeals Court applied the "unreasonable interference" test set forth in *Asiala,* and concluded that the town was liable for the nuisance when it failed to clear a pond -- for which it had an established, on-going obligation to maintain -- of accumulated silt and vegetation which caused flooding of plaintiff's property.[237]

3. Summary. The Massachusetts appellate level decisions do provide us with certain definitions and factual settings regarding what constitutes a nuisance in the state, and it appears that these decisions may, in some instances, allow the shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act to withstand a takings challenge under the *Lucas* nuisance exception. However, it may depend on the particulars of given case.[238] Further, the Supreme Court's emphasis on "existing" background principles may make it difficult to succeed in factual settings other than those already deemed a nuisance in the state, but using the standards provided to date. Such an emphasis may also discourage standards from changing. If so, what does this mean for the common-law ability of nuisance to evolve?

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[236]*Asiala,* 17.

[237]*Tarzia,* 512.

[238]McGregor et al., 23.

Though a review of nuisance cases in Massachusetts does provide some insight, it raises more questions than it answers. What must a state show in order to bring a case within the nuisance exception remains, perhaps, the trickiest aspect of *Lucas.*[239]

B. Common Law Doctrine of Public Trust

> [The Shore] cannot be said to belong to anyone as private property. -- *Institutes of Justinian,* November 21, AD 533[240]

1. Introduction. Given the uncertainties surrounding nuisance law, many legal commentators have looked to the public trust doctrine as a possible safe haven under the *Lucas* decision for coastal land use regulations.[241]

Initially, the public trust doctrine was most often used in this country to prevent states from conveying away certain publicly held resources to private interests; but, since the publication in 1970 of Joseph Sax's vanguard article on the subject, the doctrine has gained prominence as a possible means to justify state control of natural resources.[242] A recent release of an unpublished dissent by Supreme Court Justice Brennan reveals that he proposed using the doctrine to uphold California's exercise of regulatory power in *Nollan*:

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[239]Ibid.

[240]As cited in *Boston Waterfront Development Corporation v. Commonwealth,* 378 Mass. at 631 (1979).

[241]See, e.g., Jack H. Archer, et al., *The Public Trust Doctrine and the Management of America's Coast* (Amherst, Massachusetts: University of Massachusetts Press, 1994); Babcock; and McGregor et al.

[242]Babcock, 40, referring to Joseph L. Sax, "The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention," *Michigan Law Review* 68 (1970): 471-566.

> The California constitution codifies a right whose genesis may be traced back to Roman law: the public's right of access to the sea. The State has adopted a regulatory scheme intended to preserve this longstanding public expectation in the face of increasingly intense development along the California coast. As a result, no landowner in the coastal zone has any reasonable expectation of a right to use property in such a way as to deny access to the ocean.[243]

2. The Public Trust Doctrine Generally. As alluded to by Justice Brennan, the public trust doctrine is an ancient property law principle, which came to this country through our English common law heritage.[244] Land acquired by the original thirteen states, as successors to the English Crown, came with certain conditions of ownership, including the public trust doctrine, as prescribed by English common law.[245] Each subsequent state, upon its admission to the Union, acquired similar ownership rights.[246]

In general, the doctrine holds that all tidelands and lands under the navigable waters are held in trust by each state for the benefit of its citizens with respect to certain rights: traditionally, maritime commerce, navigation and fishing.[247] Title to these lands -- that is, the *jus privatum* -- may be conveyed to private interest, but, typically, the established public rights to these lands -- the *jus publicum* -- must be reserved.[248]

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[243]Ibid., 42.

[244]*Shively v. Bowlby,* 152 US at 11 (1894); Archer et al., 3.

[245]*Shively,* 57; Archer et al., 3.

[246]Ibid.

[247]*Shively,* 57.

[248]*Shively*, 11, 57, 58; Archer et al., 3.

Since its introduction on this side of the Atlantic, the public trust doctrine has exhibited its common law capacity to adapt to changing social conditions.[249] The doctrine made its debut in colony America in the Massachusetts Bay Colony Ordinance of 1641 and 1647, and it was in that ordinance that the doctrine began to depart from its English roots.[250] Unable to finance the development of its waterfront, the newly formed colony government granted title of its tidelands between the low and high water mark to upland owners in order to stimulate commerce by encouraging wharf building.[251] The ordinance did reserve the traditional public rights to these lands of "free fowling and fishing"[252] and "passages of boats or other vessels."[253]

Though the public trust doctrine was first introduced in colony America in statutory form, it has evolved mainly through case law.[254] Over the years, federal and state courts have expanded the doctrine's geographic range and its scope of protected public interests.[255] For instance, in New Jersey its boundary has been extended to include dry sand areas and its scope has been expanded to include public rights to recreational uses, such as sunbathing

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[249]*Shively,* 10, 11; Archer et al., 4.

[250]Archer et al., 5, 166.

[251]Massachusetts Colonial Ordinance of 1641 and 1647, as appears in Arthur L. Eno, Jr. et al., *Massachusetts Practice,* vol. 28, *Real Estate Law,* 3rd ed. (St. Paul: West Publishing Co., 1995), 653-654; *Boston Waterfront,* 635, 636.

[252]Colonial Ordinance.

[253]Ibid.

[254]Archer et al., 6.

[255]Hwang, 45.

on trust land.[256] In California, the doctrine's scope has been expanded to include ecological preservation as a protected public interest.[257]

According to Archer et al., four U.S. Supreme Court cases form our current understanding of the public trust doctrine.[258] Chief among these four is *Shively v. Bowlby* (1894). In order to determine whether the land at issue in *Shively* was subject to the public trust, the Court undertook an extensive review of prior federal and state court decisions and English common law.[259] As a result, *Shively* is considered "the seminal case in American public trust jurisprudence."[260]

The *Shively* Court provided us with some general guidelines regarding the application of the American public trust doctrine, which echoed its English common law ancestry:

> Such [tidal] waters, and the lands which they cover, either at all times or at least when the tide is in, are incapable of ordinary and private occupation, cultivation and improvement; and their natural and primary uses are public in their nature, for highways of navigation and commerce, domestic and foreign and for the purpose of fishing by all the King's subjects.[261]

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[256]Ibid.; William L. Lahey, "Waterfront Development and the Public Trust Doctrine," *Massachusetts Law Review* 70 (June 1985): 60-61.

[257]Lahey, 60-61.

[258]Archer et al., 10.

[259]*Shively,* 10, 11.

[260]*Phillips Petroleum Co. v. Mississippi,* 484 U.S. at 473 (1988).

[261]*Shively,* 11.

However, the *Shively* Court also noted the doctrine's adaptability in this country, stating that "there is no universal and uniform law on the subject....[E]ach state has dealt with the lands under the tide waters within its borders according to its own views of justice and policy."[262] Therefore, the Court warned, "[g]reat caution...is necessary in applying precedents in one State to cases arising in another."[263]

Shortly before *Shively,* the Supreme Court handed down its decision in *Illinois Central Railroad Company v. Illinois* (1892). Here, too, the American public trust doctrine's departure from its English common law roots is evident. The submerged land in question in this case was under Lake Michigan. Though it was a freshwater body, not "tidelands" as English common law prescribed, the Court held that such land was subject to the doctrine.[264] According to the Court, the Great Lakes are important to interstate and foreign commerce.[265] Consequently, "[t]hese lakes possess all the general characteristics of open seas except in the freshness of their waters, and the absence of the ebb and flow of the tide";[266] unlike England where, because of its geography, "tide water and navigable water are synonymous."[267]

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[262]Ibid., 26.

[263]Ibid.

[264]*Illinois Central Railroad Company v. Illinois,* 146 U.S. at 435 (1892).

[265]Ibid.

[266]Ibid.

[267]Ibid.

Having deemed the Lake Michigan lakebed as held by the state in trust, the Supreme Court struck down a legislative grant of a large portion of the lakebed to Illinois Central Railroad.[268] The Court reasoned that a state may grant parcels of submerged lands to private interests for building wharves and docks because these grants further the public's interest in navigation and commerce; however, a state may not convey the submerged lands of an entire harbor.[269] The Court's decision turned on not just the quantity of land conveyed, but the loss of a state's ability to control an entire waterfront area in perpetuity:

> It would not be listened to that control and management of the harbor of that great city [of Chicago] -- a subject of concern to the whole people of the State -- should thus be placed elsewhere than in the State itself....The legislation which may be needed one day for the harbor may be different from the legislation that may be required at another day.[270]

Less than thirty years later in *Appleby v. City of New York* (1926) the Supreme Court upheld that state's unconditional conveyance of a small portion of submerged land to private interest.[271] *Appleby* is one of the four key Supreme Court cases cited by Archer et al. because it provided a counterbalance to *Illinois Central.*[272] According to the *Appleby* Court, if the conveyance is made for valuable consideration and in support of an identifiable public interest then the state no longer has the right to regulate the water over the conveyed

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[268]Ibid., 452.

[269]Ibid., 452, 455, 460.

[270]Ibid., 455, 460; Archer et al., 11.

[271]*Appleby v. City of New York,* 271 US at 399 (1926).

[272]Archer et al., 18.

land.[273] In effect, the state in *Appleby* had parted with both the *jus publicum* and *jus privatum* ownership rights in trust land.[274]

Phillips Petroleum Co. v. Mississippi (1988) is the most recent decision handed down by the Supreme Court on the doctrine and its broad interpretation of *Shively* may have "significant implications" for state authority over public trust land.[275]

One of the key aspects of the Court's ruling in *Phillips Petroleum* was its adoption of an "ebb and flow" test to expand the geographic reaches of the doctrine to include tidal limits of waterways, and its rejection of the narrower standard of navigability.[276] The Court dismissed the argument made by the plaintiff, Phillips Petroleum, that the original states did not claim nonnavigable tidal water as trust lands, and, therefore, could not lay a claim to them now.[277] Rather, relying on *Shively,* the Court reasoned, that "it has long been established that individual States have the authority to define the limits of the lands held in public trust and recognize private rights in such lands as they see fit."[278]

Further, in setting forth its argument to extend the boundaries to tidal, nonnavigable land, the Supreme Court sanctioned nontraditional public rights in such land:

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[273]*Appleby,* 379-399.

[274]Ibid., 397, 399.

[275]Archer et al., 12.

[276]*Phillips Petroleum,* 475; Babcock, 41-43; Archer et al., 12.

[277]*Phillips Petroleum,* 475.

[278]Ibid.

> Moreover, cases which have discussed the State's public trust interest in these lands have described uses of them not related to navigability, such as bathing, swimming, recreation...and mineral development.[279]

The *Phillips* Court also noted that lands beneath tidal waters had in some states, such as Massachusetts, been validly filled and conveyed "to create land for urban expansion."[280] According to the Court, a state may increase the number of public trust uses beyond the traditional areas of navigation, commerce and fishing, as well as narrow its involvement by conveying away public rights in these lands.[281]

Thus, in light of each state's considerable discretion in applying the public trust doctrine, as provided for by the Supreme Court -- particularly, in *Shively* and *Phillips Petroleum* -- we turn to Massachusetts.

3. The Public Trust Doctrine in Massachusetts. Massachusetts has a rich and rather complicated history regarding its application of the public trust doctrine. Over the past three centuries, the courts, the legislature, and various administrative bodies have all contributed to the doctrine's development in the state, often with limited overall coordination.[282]

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[279]Ibid., 482.

[280]Ibid., 476.

[281]Ibid., 476; Archer et al., 13.

[282]Ibid., 165.

As mentioned earlier, Massachusetts was the first colony to codify the doctrine in this country and did so to encourage private development along its trust lands.[283] The Colonial Ordinance of 1641 and 1647 gave upland owners title to the mean low water mark or 100 rods (1,650 feet) seaward of the mean high water mark, whichever was less, subject to public rights of fishing, fowling and navigation.[284] In so adopting the ordinance, Massachusetts was the only colony of the original thirteen that failed to guarantee public access to the "wet sand" beach between the mean high and mean low water mark.[285]

Until the mid-1800's, the Massachusetts courts generally recognized that "[t]he main object of the ordinance has always been understood to induce the erection of wharves for benefit of commerce."[286] This resulted in allowing such construction even when it might diminish the other traditional public rights to trust lands.[287]

> [A]ll the inhabitants of the commonwealth, had a right to pass and repass on the waters so long as the owner of the adjoining land leaves them open and unobstructed, yet the owner of the adjoining land may, whenever he pleases, inclose, build, and obstruct to low watermark, and exclude all mankind.[288]

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[283]Colonial Ordinance; *Boston Waterfront*, 630; Archer et al., 5.

[284]Colonial Ordinance.

[285]Starr, 138.

[286]*Commonwealth v. City of Roxbury*, 9 Gray at 515 (1857), note of Horace Gray Jr., Reporter of Decisions, as cited in *Boston Waterfront,* 636; Archer et al., 167.

[287]Archer et al., 167.

[288]*Ebenezer Austin & Al. v. John Carter & Al.,* 1 Mass. at 231 and 232 (1804). See also *Commonwealth v. Cyrus Alger,* 61 Mass. 53 (1851).

In addition to this pro-development interpretation of the ordinance by the state courts, the legislature, during the early 1800's, passed a series of special acts authorizing the building of wharves below the mean low water mark.[289]

These actions by the state courts and the legislature resulted in such rapid development in Boston Harbor that by the mid-1800's the legislature recognized regulation of harbor development was now in the public interest.[290] In response, the legislature enacted a series of measures that resulted in the establishment of harbor lines "beyond which no wharves shall be extended into and over the tide waters of the Commonwealth."[291]

Inevitably, litigation arose questioning the legislature's power to extinguish an upland owner's rights to the tidelands seaward of the harbor line.[292] In *Commonwealth v. Cyrus Alger* (1851), the defendant argued that he had a right to extend his wharf beyond the harbor line because it was above the low water mark and thus was within his property title as granted under the Colonial Ordinance.[293] According to the defendant, "[t]he state cannot interfere with vested rights, for the purpose of protecting the harbor or any other public interest, without compensation."[294]

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[289]Archer et al., 167; Eno et al., 185.

[290]*Boston Waterfront,* 629.

[291]Resolution 1835, chapter 40, as cited in *Boston Waterfront,* 638.

[292]Archer et al., 168.

[293]*Alger,* 58-59.

[294]Ibid., 59.

The Massachusetts SJC rejected this claim and confirmed that the legislature had the authority to regulate such tideland property.[295] Recognizing the shore is of "great public interest,"[296] the court ruled that:

> [T]he Legislature has power, by general law affecting all riparian proprietors on the same line of shore equally and alike, to make reasonable regulations, declaring the public rights, and providing for its preservation by reasonable restraints....[297]

While tidelands shoreward of the harbor lines remained unregulated, *Alger* did provide the legal precedent for such legislation.[298] In 1866, in response to continued pressure to develop, the legislature created a permanent Board of Harbor Commissioners, whose approval was required by every person seeking to build on or fill in tidelands.[299] These assertions of regulatory authority by the state were reinforced by the U.S. Supreme Court decision in *Illinois Central* in 1892, which "imposed a fiduciary duty on the states to protect tidelands for public use."[300]

However, despite legislative declarations to the contrary, licenses issued by the Board of Harbor Commissioners and its predecessors were assumed to be irrevocable, and the practice was to treat any such license to fill "as providing the functional equivalent of

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[295]Ibid., 95.

[296]Ibid.

[297]Ibid.

[298]Archer et al., 169.

[299]*Boston Waterfront,* 640-641.

[300]Lahey, 57.

a fee simple title"[301] -- in essence, a conveyance to the license holder of both the *jus privatum* and *jus publicum* ownership rights.

The opinion of the Supreme Judicial Court in *Commissioner of Public Works v. Cities Services Oil Co.* (1941) undermined this prevailing assumption by asserting that these licenses could be revoked without compensation.[302] To get around this decision, developers began to request special acts from the legislature to declare their tidelands licenses "irrevocable."[303] This was done to provide a level of certainty to tidelands titles required in financing development projects.[304] Between 1959 and 1969, 45 "irrevocable" licenses were issued.[305]

Apart from this licensing issue, the public trust doctrine in Massachusetts "remained both static and limited" from adoption of the 1866 licensing legislation until the end of the 1970's.[306] During this time, an upland owner could obtain a license provided that the proposed project "did not interfere with navigation and was structurally sound."[307] The

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[301]John A. Pike et al., "Massachusetts Tidelands Laws and Regulations," *Massachusetts Law Review* 77 (September 1992): 98; According to *Black's Law Dictionary,* "[t]ypically words 'fee simple' standing alone create an *absolute* estate....in which the owner is entitled to the entire property, with unconditional power of disposition...." *Black's Law Dictionary,* 6th ed., s.v. "fee simple."

[302]Pike et al., 98.

[303]Archer et al., 170.

[304]Ibid.

[305]Ibid.

[306]Ibid.

[307]Ibid.

public's other reserved public trust interests, fishing and fowling, continued to be subordinate to development and were not considered in weighing the decision to license a project or not.[308]

However, the SJC's 1979 decision in *Boston Waterfront Development Corporation v. Commonwealth* changed all that. Relying on the U.S. Supreme Court's decision in *Illinois Central,* the state court concluded that public trust lands could not be unconditionally conveyed to private interests.[309] Consequently, though the nineteenth century legislative grants at issue conveyed title to land below the then low water mark, the title was burdened with an "implied condition subsequent that it be used for the public purpose for which it was granted."[310]

This decision came as "a shock and a surprise" to the local legal and financial communities.[311] Though it involved a dispute over a small parcel of land, the decision contained "very sweeping and imprecise language" that would be construed to "mean that

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[308]Ibid.

[309]*Boston Waterfront,* 646-647; Lahey, 57, 59. The state court did not reconcile its decision in *Boston Waterfront* with that of the U.S. Supreme Court in *Appleby,* though they were similar in that they both dealt with seemingly discrete parcels of property. However, perhaps a distinction could be made between the wording of the grants in the respective cases. The *Boston Waterfront* court held that the statutes at issue therein did not "explicitly convey land"; whereas, the deeds at issue in *Appleby* were perhaps a more persuasive conveyance of unconditional title. In addition, the Supreme Court in *Appleby* was merely confirming two earlier New York court rulings, whose power to interpret the public trust doctrine as the state saw fit had been sanctioned in *Shively. Boston Waterfront,* 639; *Appleby,* 365; *Shively,* 26.

[310]*Boston Waterfront,* 649; Lahey, 59.

[311]Pike et al., 98.

all areas seaward of the ancient high-water mark, including areas filled long ago...were subject to a broad public trust."[312]

Although the *Boston Waterfront* case reasserted the public's rights to trust lands, it created a number of uncertainties, including what were the public and private rights in large areas of former submerged land in and around Boston.[313] The legislature responded with an emergency bill, the purpose of which was to provide "immediate certainty" as to title to such lands.[314] The bill purported to release the state's residual rights in filled tidelands, but as a precaution the legislature asked the Supreme Judicial Court for advisory opinion on the bill given the holdings of *Boston Waterfront* and earlier decisions.[315]

The SJC responded with *Opinion of the Justices* (1981). In it the court opined that "the Legislature has the power to transfer or relinquish the Commonwealth's and the public's interests in tidelands within the Commonwealth."[316] However, in so ruling, the court made a distinction between tidal flats and submerged land.

With respect to *tidal flats,* i.e., "the area between mean high water and mean low water (or 100 rods from mean high water, if lesser)," the court concluded that "the public rights are of a limited nature."[317] It had long been established that an upland owner, duly

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[312]Ibid.; *Boston Waterfront,* 630.

[313]Ibid.; Archer et al., 98.

[314]*Opinion of the Justices,* 383 Mass. at 897 (1981).

[315]Archer et al., 171.

[316]*Opinion,* 902.

[317]Ibid.

authorized, may build on adjoining tidal flats so as to exclude the public completely; therefore, the court reasoned, "the public interest in flats reclaimed pursuant to lawful authority may be extinguished...."[318]

With respect to *submerged lands,* "which may be described as land lying seaward of flats," the court concluded that "no littoral landowner or anyone else has any special rights unless granted by the Legislature."[319] However, the court noted that the authority of the Legislature to extinguish the public interest in submerged land "is not without limits."[320] Accordingly:

> Where the Commonwealth has proposed the transfer of land from one public use to another, [i] the legislation must be explicit concerning the land involved; [ii] it must acknowledge the interest being surrendered; and [iii] it must recognize the public use to which the land is to be put as a result of the transfer....[iv] A further and significant limitation on legislative action in the disposition of a public asset is that the action must be for a valid public purpose, and, where there may be benefits to private parties, those private benefits must not be primary but merely incidental to the achievement of the public purpose.[321]

The court confined this ruling to "lawfully filled, formerly submerged land,"[322] which suggest another condition to a valid conveyance of public trust land: the public trust interest in the land conveyed must be greatly diminished.[323]

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[318]Ibid., 902-903.

[319]Ibid., 902-903.

[320]Ibid., 905.

[321]Ibid.

[322]Ibid., 904.

[323]Ibid.; Lahey, 59.

Arguably one of the more important aspect of the decision was setting forth who was empowered to administer the public trust doctrine in the state.[324] This set in motion the rulings articulated by the court.[325] As proposed in the legislation at issue in the 1981 *Opinion,* the court found it permissible to delegate to the state Secretary of Environmental Affairs the authority to make transfers or releases of the nature discussed above.[326] Consequently, the Massachusetts Coastal Zone Management Program under the Secretary of Environmental Affairs took advantage of the latitude provided for under the 1981 *Opinion,* as well as *Boston Waterfront,* to update the state's "Chapter 91" tidelands licensing program.[327]

As a result of this effort, the legislature passed amendments to its Chapter 91 program in 1983 and 1986.[328] These amendments fundamentally changed the licensing program in place since 1866.[329] As stated earlier, prior to the 1980's the Chapter 91 licensing program principally served to protect navigation and insure that the proposed project was structurally sound.[330] In contrast, a primary objective of the amendments was

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[324]Archer et al., 173.

[325]Ibid.

[326]*Opinion,* 910-914.

[327]Archer et al., 173.

[328]Ibid.

[329]Archer et al., 173; Lahey, 62.

[330]Archer et al., 170; Lahey, 61.

to increase protection of public interests in tidelands -- in particular, public access -- through the establishment of procedural safeguards.[331]

According to the 1983 and 1986 amendments, Chapter 91 licensing requirements extend to (1) certain present and former submerged lands and tidal flats that are owned by the commonwealth, (2) privately owned tidal flats lying below the present mean high water mark, and (3) privately owned present and former submerged lands that are "subject to an express or implied condition subsequent that [they] be used for a public purpose."[332]

4. Summary. While permitting authority on trust land is provided to the state under its Chapter 91 licensing program, this does not preclude other programs, such as the Massachusetts Wetlands Protection Act, from restricting use on trust land. However, despite the state's efforts in recent years to codify and aggressively assert jurisdiction on trust lands, in comparison to other states, such as New Jersey and California, protected public rights on public trust land in Massachusetts remain limited, and its geographic scope "remains somewhat cloudy."[333]

The *Boston Waterfront* decision did breath new life into the public trust doctrine in Massachusetts. It emphasized the tenacity of the doctrine by finding that the public purpose withstood an explicit legislative grant over 100 years old.[334] Further, the U.S. Supreme

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[331]Lahey, 67.

[332]*Boston Waterfront,* 649; Pike et al., 106.

[333]Eno et al., 187; Archer et al., 165.

[334]Lahey, 62.

Court's recent decision in *Phillips* appears to give states even greater flexibility by allowing them to define the limits of the doctrine "as they see fit."[335] However, this flexibility appears to be in contrast to the antecedent, common law inquiry prescribed by *Lucas.*[336]

C. Common Law Concept of Custom.

> [Custom] is law that arises from immemorial usage of the community. At once different from, yet coequal with, the uniform common law, custom is not created by...judges: it is judicially noticed by them. The significance of custom is not merely that it is law from a time before legal memory, but that it is law 'from below': its origins and legitimacy derive from the praxis of community.[337]

According to Professor Babcock, the ancient doctrine of custom has "intriguing possibilities"[338] as a potential "background principles of the State's law of property"[339] under the *Lucas* exemption.[340] Customary rights, by definition, i.e., a long established use in a community, is the essence of "citizens' historic understandings"[341] prescribed by *Lucas.*[342] In other words, if a customary right can be established for a piece of land, then the doctrine

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[335]*Phillips Petroleum,* 475.

[336]*Lucas,* 2899.

[337]Andrea C. Loux, "The Persistence of the Ancient Regime: Custom, Utility, and the Common Law in the Nineteenth Century," *Cornell Law Review* 79 (November 1993): 183.

[338]Babcock, 31.

[339]*Lucas,* 2900.

[340]Babcock, 31.

[341]*Lucas,* 2899.

[342]Babcock, 35.

can be applied to preserve the land for that use without effecting a taking.[343] In addition, like the public trust and nuisance law, its impact is far reaching. Babcock asserts that "once custom is found to apply to a given beach, then it should automatically apply to all other beaches in the state."[344]

Like the public trust, the concept of custom came to the United States through an ancient English legal doctrine, "whereby residents of given localities could claim rights as 'customs of the manor.'"[345] In order to be upheld by royal judges, "a customary right must have existed without dispute for a time...beyond memory, and it had to be well-defined and 'reasonable.'"[346] Customary rights in England have included manorial tenants rights to graze animals, gather wood, draw water and engage in a variety of recreational activities.[347]

However, custom, as it relates to property rights, has had limited application in the United States.[348] Almost in the same breath that Babcock proclaimed its "intriguing possibilities," she warned that "constraints inherent in the doctrine and its lack of widespread acceptance [in this country] may limit it to a 'background principle' of narrow utility in all but a few jurisdictions."[349] American courts have been reluctant to acknowledge customary

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[343]Ibid., 34-35.

[344]Ibid., 35.

[345]Carol M. Rose, "The Comedy of the Commons: Custom, Commerce, and Inherently Public Property," *University of Chicago Law Review* 53 (1986): 740.

[346]Ibid.

[347]Babcock, 31; Loux, 205.

[348]Babcock, 31.

[349]Ibid.

claims, perhaps because they are uncomfortable with its origin in feudalism.[350] Unlike the public trust doctrine, custom has been used successfully in only a handful of states to gain access to coastal resources.[351]

Unfortunately, Massachusetts is not among those states, though it has acknowledged the possibility of customary claims to the shoreline.[352] In *Freary & Al. v. Cooke* (1779), the Supreme Judicial Court entertained a claim of custom with regards to an individual's *exclusive* right to use another's private property to lay out his nets for seine fishing on the Connecticut River.[353] The court appeared to accept customary claims in principle, but threw out the claim at issue as unreasonable because it would in effect limit access to a public fishery.[354]

> [T]o support a verdict of custom is impossible. It militates with the charter which gives the right of fishing to the inhabitants of the province generally, and therefor the custom could not have a reasonable commencement.[355]

Two hundred years later, the same court in *Boston Waterfront* conjectured that the grant of property to upland owners to the low water mark rather than the traditional high water was perhaps the result of local custom.[356]

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[350]Rose, 741.

[351]Ibid., 739.

[352]Rose, 739-40, n. 135; *Freary & Al. v. Cooke*, 14 Mass. at 488 (1779).

[353]*Freary,* 488-89.

[354]*Ibid.,* 490; Rose, 740, n. 135.

[355]*Freary,* 490.

[356]*Boston Waterfront,* 635.

> This alteration of common law ownership rules, perhaps originally just a matter of colonial custom, found official expression in the colonial ordinance of 1647, which declared that landowners adjoining 'all Creeks, Coves, and other places, about and upon Saltwater...shall have propriety to the low water mark....'"[357]

However, these were the only appellate level decisions identified in Massachusetts that acknowledged the possibility of customary claims to the coast. The state appeals courts have upheld customary claims in other areas, and, in so doing, have provided us with some insight as to what constitutes a valid customary claim in the state. In a case involving a dispute over the proper handling of rotten goat skins, the Supreme Judicial Court offered this definition: "'Custom' is defined to be '[s]uch usage as by common consent and uniform practice has become law of place or of subject-matter to which it relates.'"[358]

But, as Babcock reminds us, unlike the public trust doctrine which can lie dormant for centuries, a customary use has to be uninterrupted; thus, the possibility of a valid customary claim to the Massachusetts shore seems remote.[359] It has disadvantages in even those states that have upheld customary claims to the shore. Again, "[u]nlike the public trust doctrine, which has grown increasing amphibious over time, custom has stayed rooted in the sand"[360] in the United States and its scope has been limited to the issue of public access.[361]

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[357]Ibid.

[358]*Agoos Kid Co. v. Blumenthal Import Corp.,* 282 Mass. at 18 (1933).

[359]Babcock, 33-34.

[360]Ibid., 34.

[361]Ibid., 32.

III. SUMMARY

It remains to be seen how the Massachusetts courts will interpret and apply *Dolan*. To date, only one Massachusetts appellate level decision has cited the case and it was only as an aside.[362]

However, it appears that *Lucas* has had a discernable impact on the legal landscape in Massachusetts, as we have seen from *Lopes*. Unfortunately, the *Lopes* decision stopped short of a full takings analysis and did not provide us with an indication of whether the wetlands restriction at issue in that case would have been upheld under "the background principles of the State's law of property or nuisance."[363] As we have seen, these "background principles" may hold some promise in Massachusetts, but none appears to offer absolution under *Lucas*. In fact, the principles of nuisance and public trust appear to raise more questions than they answer.

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[362]See *Sullivan v. Planning Board of Acton,* 38 Mass. App. Ct. at 921, n. 6. (1995), which held that no uncompensated taking had occurred when a town planning board required a subdivision applicant to grant an easement for greater access to the subdivision.

[363]*Lucas,* 2900.

CHAPTER THREE

SHORELINE SETBACKS

> If you could sit stock still and watch with a remembering eye, the forms of the beach would become momentary shapes like the shifting flames of a fire.[364]

In order to determine what impact the emerging regulatory takings law may have on the shoreline setback scheme currently provided for under the Massachusetts Wetlands Protection Act, we must first examine shoreline setbacks generally. To that end, this Chapter will look at (i) what problems shoreline setbacks may address, (ii) types of setbacks, (iii) variables affecting setback efficiency, and (iv) what administrative components are desirable for an effective setback program.

I. THE PROBLEMS

The problem is the sea has too much to offer -- aesthetically, recreationally, ecologically, and economically.[365] According to latest studies, "the demographic flight to the coast, begun in early civilization, continues unabated worldwide."[366] In the United States coastal counties, excluding Alaska, account for only 11 percent of the U.S. land mass

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[364]Ackerman, 25.

[365]Zalkin, 211.

[366]David G. Aubrey, "Coastal Erosion's Influencing Factors Include Development, Dams, Wells, and Climate Change," *Oceanus* 36 (Summer 1993): 5.

but support 50 percent of the nation's population.[367] In recent years, there has been tremendous pressure to develop along the nation's coasts, and this pressure will most likely increase.[368] NOAA projects that between 1960 and 2010 the U.S. population in coastal communities will grow by 60 percent.[369]

Yet, "[w]hile the U.S. population has moved closer to the coast, the U.S. coast has also, in most areas, moved closer to the population."[370] It is estimated that 90 percent of the U.S. shoreline along the East and Gulf coasts is now in a state of erosion.[371] Over the last 100 years, the Atlantic coast has receded an average of two to three feet annually, while the Gulf coast has receded an average of four to five feet annually.[372]

As a transition zone between liquid and solid realms, the shoreline moves. It has been "sculpted, resculpted, submerged, and exhumed by climate, geological processes, and

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[367]Coastal Ocean Policy Roundtable, *The 1992 Coastal Status Report: A Pilot Study of the U.S. Coastal Zone and Its Resources* (Newark, Delaware: University of Delaware, September 1992), 6.

[368]Aubrey, 5; Robert G. Dean, "Beach Response to Sea Level Change," chap. in *Ocean Engineering Science,* Vol. 9, Part B, *The Sea,* edited by Bernard Le Mehaute et al. (New York: John Wiley & Sons, Inc, 1990), 869.

[369]United States Department of Commerce, The Under Secretary for Oceans and Atmosphere, *1992-1993 Biennial Report to Congress on the Administration of the Coastal Zone Management Act,* Vol. I (Washington, D.C.: National Oceanic and Atmosphere Administration, Office of Ocean and Coastal Resources Management, April 1994), 1.

[370]Coastal Ocean Policy Roundtable, 62.

[371]Hwang, 2.

[372]Ibid.

the inexorable erosive force of the sea."[373] During recent geologic time, largely as a result of climate change, the sea has fluctuated from 300 feet below to 20 feet above its present level.[374]

Scientists theorize that past climate changes were the result of natural fluctuations, such as varied amounts of energy the earth received from the sun, catastrophic events such as volcanic eruptions, or changes in ocean currents and fluctuating biological processes.[375] However, many scientists now believe that human activities may influence present and future climate change.[376] The consensus among a growing number of climatologists is that increased concentrations of carbon dioxide[377] and other "greenhouse gases"[378] in the atmosphere will lead to accelerated global warming.[379] And, as the earth warms, the sea level rises as a result of the melting of polar ice and the thermal expansion of ocean waters.[380]

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[373]Zalkin, 207.

[374]Hudson Slay, *Sea Level Rise Issues and Potential Management Options for Local Government* (Washington, D.C.: U.S. Environmental Protection Agency, April 1992), 1.

[375]Ibid., 2.

[376]Ibid.

[377]Resulting from such activities as burning fossil fuels and cutting down rain forests, which are thought to absorb large quantities of carbon dioxide.

[378]Other gases that trap solar radiation include methane and nitrous oxide. James G. Titus, "Greenhouse Effect, Sea Level Rise, and Barrier Islands: Case Study of Long Beach Island, New Jersey," *Coastal Management* 18 (1990): 66.

[379]Kenneth H. Young, editor, *1992 Zoning and Planning Handbook* (Deerfield, Illinois: Clark Boardman Callaghan, 1992), 513; Slay, 1.

[380]Young, 513.

In fact, the earth does appear to be warming.[381] National Public Radio reported recently that 1995 was the warmest year on record, though only by a fraction of a degree.[382] The earth's temperature has increased approximately a half degree Celsius since the late 1800's.[383] These changes do not seem significant until you consider that ice age temperatures five degrees Celsius lower than today resulted in a global sea level about 300 feet below present levels and periods in which the global temperature was one degree warmer than today resulted in a sea level 20 feet above current levels.[384]

To what extent human activities have impacted current global warming is a subject of ongoing debate in the scientific community; however, it does appear that we are at least partially to blame for this latest warming trend.[385]

In the early 1980's, the Environmental Protection Agency reported that, as a result of global warming, we could expect increases in global sea level of up to 13 feet during the next 100 years.[386] This estimate has been tempered by later studies, and recent credible estimates suggest that approximately 10 to 20 percent of the EPA's earlier maximum seems most reasonable.[387] However, just a one-foot rise in sea level could result in a shoreline

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[381]Slay, 2.

[382]David Baron, National Public Radio, Washington, D.C., January 4, 1996.

[383]Slay, 2.

[384]Ibid.

[385]Ibid.

[386]Aubrey, 5.

[387]Ibid.

retreat of 75 feet in parts of New Jersey, 200 feet along the coast of South Carolina, and 1,000 feet along parts of Florida.[388]

In discussions of sea level rise it is important to distinguish between *global* (or absolute) sea level change, which is based on worldwide averages, and *relative* sea level change, which is based on a combination of local land movement and global sea level rise.[389] In some locations, the vertical ground motion resulting from plate tectonics may surpass by manyfold the global sea level rise rate.[390]

In addition, according to Robert Dean with the University of Florida, local shoreline response to relative sea level rise depends on such things as shoreline profile (width and slope), the presence of sediment sources, and the rate of sea level rise relative to any constructive processes.[391] Looking at a number of states, including Massachusetts, it is clear that a simple relationship does not exist between shoreline change and relative sea level rise.[392] In fact, three states in Dean's study (New York, Delaware, and Georgia) were found to be accreting even though relative sea level was rising in those areas.[393]

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[388]Hwang, 2-3.

[389]Dean, 870; Aubrey, 5.

[390]Dean, 870.

[391]Ibid., 880-885.

[392]Ibid., 884.

[393]Ibid., 885.

In many areas, local conditions will dominate the effects of global sea level rise for decades to come.[394] However, even those areas with favorable local conditions will experience an increase tendency toward erosion with increasing sea level rise.[395] Thus, assuming that for the foreseeable future global sea level rise is inevitable, at least to some extent, what's a coastal manager to do? In order to answer that question, we must first look at the potential impacts of sea level rise, as well as other forces shaping the shoreline.

A. Erosion. Erosion is probably the most noticeable effect of sea level rise, but, of course, erosion is also the result of other natural and human-induced processes.[396] Natural erosion is the recession of shoreline in response to a *dynamic equilibrium* among several variables, including sea level rise; materials such as sand supply, silt and flotsam; energy provided by wind, waves, currents, and tides; and beach profile.[397] Most often, erosion is an episodic phenomenon that occurs in large chunks associated with storms and periods of exceptionally high tides.[398]

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[394]Aubrey, 5.

[395]Dean, 885.

[396]Rutherford H. Platt et al., "The Folly at Folly Beach and Other Failings of U.S. Coastal Erosion Policy," *Environment* 33 (November 1991): 8.

[397]Ibid.

[398]Ibid.

In addition to natural erosive forces, shoreline contour may be drastically affected by human activities.[399] For instance, river diversions and damming have reduced the flow of sediments to many beaches, thus, inhibiting their ability to regenerate after an erosive episode.[400] Shoreline development also causes accelerated erosion, the specifics of which are discussed below.

B. Flooding. Flooding of coastal lowlands is expected to increase with relative sea level rise because each storm surge will occur at a higher baseline.[401] Flooding may also increase with changing storm activity which may accompany global warming.[402] This increase in coastal flooding may accelerate upland loss, cause vegetation changes within coastal wetlands and, in many instances, eliminate wetlands completely.[403] Loss of these natural buffers will further increase the threat of erosion and flooding.[404]

C. Saltwater Intrusion. A rise in relative sea level may increase the landward extent of ocean influences subjecting some areas to increases in salinity.[405] With respect to

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[399]Ibid.

[400]Aubrey, 6.

[401]Slay, 5.

[402]Ibid.

[403]Ibid.

[404]Ibid., 8.

[405]Ibid., 7.

sea level rise, saltwater intrusion refers to either (i) shifts in estuarine salinity or (ii) an increase in the salinity of drinking water aquifers.[406]

Estuaries are those shallow water areas where rivers meet the sea.[407] Shifts in estuarine salinity may have a significant impact on these ecosystems, which are vital to sustaining marine life, providing storm and flood protection, and dissipating land-based pollutants.[408]

Saltwater may also intrude groundwater.[409] In coastal areas, freshwater aquifers usually flow toward neighboring water bodies.[410] Excessive groundwater pumping can cause a reversal of this flow and may result in saltwater intrusion when the aquifer recharge area is in a location susceptible to salinity changes.[411] Though saltwater intrusion of this sort is thought to be drought dependent, an increase in coastal storm activity and an elevated base for storm surges, both projected to accompany global warming, will pose a greater threat of saltwater contamination of groundwater.[412]

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[406]Ibid.

[407]Department of Commerce, vol. I, 4.

[408]Ibid.; Slay, 7.

[409]Slay, 6 and 7.

[410]Ibid., 8.

[411]Ibid.

[412]Ibid.

D. Wetlands Migration. As sea level rises, coastal wetlands migrate.[413] Low marsh is converted to either open water or tidal flats, high marsh is converted to low marsh, and transition/upland area is converted to high marsh.[414] Landward migration of wetlands may be prevented by natural barriers (e.g., steep, rocky shores) and man-made barriers (e.g., houses and seawalls).[415] In the presence of barriers, migration is prevented as the wetlands get squeezed between the rising sea and the barrier resulting in decreased acreage of these valuable ecosystems.[416] Coastal wetlands serve as vital economic and ecological links at the land-water interface.[417] They serve as buffers during high tides and storm surges, filter pollutants and provide critical wildlife habitat.[418] A large percentage of commercial and recreational fisheries depend on coastal wetlands for nursery areas.[419]

Through migration, coastal wetlands have been able to respond to the relatively slow rates of sea level rise during the past 5,000 years; however, substantial loss is now expected to occur with accelerated sea level rise.[420] The EPA estimates that even the slightest rise scenario (50 centimeters) is expected to result in 17 to 43 percent loss of coastal wetlands

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[413]Ibid.

[414]Ibid.

[415]Ibid.

[416]Ibid.

[417]Ibid.

[418]Ibid.

[419]Ibid.; Department of Commerce, vol. I, 1.

[420]Slay, 8.

in the U.S. by the year 2010, and losses increase when the shoreline is "protected" with erosion control structures.[421]

Wetlands migration is illustrative of the importance of the shore to remain unencumbered. Even without sea level rise, shoreline processes such as wetlands migration, flooding, and loss of sand due to wave action and long shore currents are inevitable.[422] The survival of the shoreline depends on its ability to regenerate.[423] Normally, the shore provides its own natural defenses.[424] For instance, under natural conditions, the mechanism of littoral drift[425] will ensure some balance between erosion and accretion, and the ability of wetlands to migrate ensures ecosystem survival.[426]

However, against these transitory, regenerative forces, we build houses, hotels, and nuclear plants. Not surprisingly then, these man-made structures often dramatically impact the contour of the shoreline. Shorefront development puts the integrity of the shore at risks in several ways.[427] For instance, (i) shorefront development tends to lead to the destruction

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[421]Ibid.

[422]Frank E. Maloney, et al., "Drawing the Line at the Oceanfront: The Role of Coastal Construction Setback Lines in Regulating Development of the Coastal Zone," *University of Florida Law Review* 30 (1978): 389.

[423]Ibid.

[424]Ibid.

[425]The alongshore movement of beach sand resulting from waves breaking obliquely to the shore.

[426]Maloney, 389.

[427]Zalkin, 214.

of the stabilizing dune vegetation, as well as wetlands vegetation mentioned above, hastening the erosion of these natural buffers and increasing the risk of storm flooding; (ii) when a structure is built on a dune, the foundation will necessarily displace and destroy part of the dune; and (iii) development on barrier islands cause gaps to form in an otherwise coherent sand dune barrier by preventing parts of the dune from migrating with the rest of the barrier island system.[428]

In addition, in many instances developers deliberately change the contour of the shoreline, which can increase the risks of flooding and erosion.[429] For example, developers often fill, and then develop, the marshy land bordering the lagoon or bay between a barrier island and mainland.[430] This practice makes the bay more shallow and, thus, reduces its storm-water capacity, leading ultimately to a larger area of the built-up land being inundated in any storm.[431]

"Erosion control" devices, such as bulkheads, seawalls, groins, and jetties, have often been used to protect development. Unfortunately, these structures are usually expensive and do not prevent coastal erosion; in fact, they often accelerate erosion adjacent to the structure or elsewhere within the coastal system.[432] For instances, groins and jetties built perpendicular to the shore intercept shifting sand on the updrift side, but deny sand to the

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[428]Ibid.

[429]Ibid.

[430]Ibid.

[431]Ibid.

[432]Ibid.; Slay, 7.

downdrift side.[433] And, as mentioned above, these fixed structures can impede wetlands and barrier beach migration, ultimately leading to accelerated erosion.[434] Still, these structures may be cost effective in protecting large metropolitan areas such as Boston, but the cost effectiveness of protecting smaller communities is, at best, questionable, especially considering that the cost to maintain these structures will rise in the future as sea level continues to rise.[435]

Renourishing beaches with sand has been offered as a possible nonstructural, cost effective way to control erosion.[436] However, once beach nourishment projects are initiated, they require long-term financial commitments and continual maintenance, and if sea level rise continues at an accelerated rate, the cost of maintenance will also rise.[437] As with those fixed erosion control structures discussed above, the high cost of sand replenishment makes it impractical for all but the most densely populated coastal areas.[438]

However, even if these erosion control measures worked more efficiently, erosion and associated flooding are not the only problems related to shoreline development. Such development degrades coastal ecosystems in other often related ways, such as loss of wetlands and dune vegetation mentioned above.

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[433]Platt et al., 8.

[434]Slay, 8.

[435]Slay, 31.

[436]Platt et al., 9.

[437]Ibid.

[438]Hwang, 3.

In addition, shoreline development contributes to point source[439] and nonpoint source[440] pollution of coastal waters.[441] While much progress has been made in the past 25 years to control point source pollution, nonpoint source pollution has only recently been targeted for abatement,[442] though it accounts for over half the pollutants found in coastal waters.[443] Nonpoint source pollution results from rainwater and melting snow running over lawns, parking lots, streets, and farm fields, picking up and carrying pollutants into rivers and coastal waters.[444] These pollutants include sediments, nutrients (e.g., nitrogen and phosphorus from fertilizers), and chemicals (pesticides, oil, salts, and metals).[445]

With all the problems posed by shoreline development, it is important to keep in mind that the integrity of the shore is not solely the concern of the resident community. Coastal areas are a vital national resource, providing a host of economic and environmental benefits.[446] Its waters are among the nation's most biologically productive regions,

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[439]Pollution from discrete pipes or outfalls.

[440]Pollution from diffuse sources or runoff.

[441]Department of Commerce, vol. II, 36.

[442]Ibid. Recognizing the need to address the impact of nonpoint source pollution on coastal resources, Congress expanded the Coastal Zone Management Act in 1990 to include a new Section 6217, which requires that states with existing federally approved coastal management programs adopt measures to control coastal nonpoint source pollution. Ibid.

[443]Coastal Ocean Policy Roundtable, 70.

[444]Department of Commerce, vol. II, 36.

[445]Ibid.

[446]Ibid., vol. I, 1.

providing the nutrients, nurseries and spawning grounds for the vast majority of all marine life, including 70 percent of the U.S. commercial and recreational fisheries harvests.[447]

II. TYPES OF SETBACKS

To deal with the increasing stresses on the nation's coastal areas brought on by shoreline development, many coastal states, with the encouragement of the federal government,[448] have enacted various setback strategies to control development along their shorelines.[449] The stated objectives of these setbacks programs varies among states, but the focus generally has been on problems associated with erosion and property loss.[450] Typical objectives include reducing the loss of lives and property from coastal hazards, protecting natural resources such as sand dunes, protecting recreational beaches or reducing expenditures of public funds for disaster or flood relief programs.[451] Programs of this sort adopt either a *fixed* setback from the shoreline, or a *floating* setback that varies with the local rate of erosion.[452]

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[447]Ibid.

[448]Primarily in the form of monetary subsidies and technical assistance provided under the federal Coastal Zone Management Act of 1972, as amended.

[449]Department of Commerce, vol. II, 2.

[450]John M. Houlahan, "Comparison of State Construction Setbacks to Manage Development in Coastal Hazard Areas," *Coastal Management* 17 (1989): 220.

[451]Ibid.

[452]Hwang, 5.

A. Fixed Setbacks

Maine, Delaware, Alabama, and Hawaii have each established fixed setback lines.[453] Fixed setbacks require that construction be placed a certain distance landward of a baseline, such as a vegetation line, dune line, mean high tide line, or a roadway.[454] What distinguishes these setbacks from floating setbacks is that the line is *fixed* prior to applying for a permit.[455]

In 1985, the Maine legislature declared that the state's *shoreland* areas are subject to special zoning and land use controls.[456] These *shoreland* area "include those areas within 250 feet of the normal high-water line of any great pond, river or saltwater body [and] within 250 feet of the upland edge of a coastal wetland...."[457] The stated purposes for the shoreland controls go beyond erosion and flood control and include, among other things, to further the maintenance of safe and healthful conditions; prevent and control water pollution; to protect fish spawning grounds, aquatic life, bird and other wildlife habitat; and to anticipate and respond to the impacts of development in shoreland areas.[458] Under the shoreland statutes, the Maine Board of Environmental Protection mandates the minimum setback guidelines, including establishment of land use zones and building size, and the

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[453]Houlahan, 221.

[454]Hwang, 5-6; Houlahan, 221.

[455]Houlahan, 220.

[456]*Maine Revised Statutes Annotated,* Title 38, Section 435.

[457]Ibid.

[458]Ibid.

individual municipalities then adopt ordinances that are at least as stringent as the state mandated guidelines.[459]

The primary advantage of using a fixed setback line is clarity for regulators and property owners, alike.[460] Unfortunately, fixed setback lines are unresponsive to beach dynamics; thus, a coastal storm, beach nourishment project, or a new erosion control structure may quickly render the fixed setback line obsolete unless it is periodically revisited.[461]

B. Floating Setbacks

New York, New Jersey, North Carolina, South Carolina, and Rhode Island use floating setback lines.[462] These lines are calculated when a permit is requested and are based on long-term average annual shoreline recession rates.[463] These states require that construction be set back 30 to 100 times the annual erosion rate.[464] States with floating setbacks use natural features exclusively as the baseline, such as the crestline of the primary dune, the receding bluff edge, the vegetation line, or the mean high tide line.[465]

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[459]Hwang, 8.

[460]Alan Desbonnet et al., "Development of Coastal Vegetated Buffer Programs," *Coastal Management* 23 (1995): 96.

[461]Houlahan, 221.

[462]Ibid., 222, 224-25; Hwang, 9.

[463]Houlahan, 220.

[464]Hwang, 9.

[465]Houlahan, 223.

At issue in *Lucas v. South Carolina Council* was that state's floating setback line established under its 1988 Beachfront Management Act. The 1988 Act set forth the state's intention to "protect, preserve, restore, and enhance the beach/dune system" and to "create a comprehensive, long-range beach management plan...[to] promote wise use of the state's beachfront.... includ[ing] a gradual retreat from the [beach/dune] system over a forty year period."[466] Achievement of this purpose was focused on the statute's floating setback requirement.[467]

As a part of its forty year retreat policy, the South Carolina legislature established the baseline along "the crest of the primary oceanfront sand dune."[468] Where these primary dunes had been eliminated, the legislature authorized the South Carolina Coastal Council to draw the baseline where such dunes used to exist.[469] The setback line was drawn at least 20 feet inland from the baseline, but, in no event, farther inland than 40 times the average annual rate of erosion of the shore.[470] The initial version of the 1988 Beachfront Management Act prohibited construction of habitable structures in the zone between the setback and the baselines.[471] The 1990 amendments to the 1988 Act softened this stance by

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[466]Code of Laws of South Carolina Annotated, Section 48-39-260 (1) and (2) (1990).

[467]Ibid., Section 480-39-280; Starr, 131.

[468]Ibid.

[469]Ibid.

[470]Ibid.

[471]Ibid.

permitting construction, such as that proposed by Lucas, seaward of the setback line provided such structures do not exceed 5,000 square feet, are placed as far landward as the property will permit, and are not seaward of the baseline.[472]

An advantage to using a natural feature versus a fixed setback marker as a baseline is that natural features respond to changing erosion rates and are in a sense "self-updating."[473] Disadvantages to using natural feature baselines include the financial and administrative burden of managing and monitoring this dynamic line and the vulnerability of natural features to coastal storms.[474]

Both fixed and floating setbacks are useful to a certain extent, but they tend to be one dimensional both in form and function.[475] According to Desbonnet et al., setbacks of this sort, in which vegetation is often removed, are not generally useful as a means to achieve long-term goals of habitat protection, pollution abatement, improved visual appeal, or, even, erosion control.[476]

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[472]Ibid.

[473]Houlahan, 223.

[474]Ibid.

[475]This is not meant as a criticism of either Maine's or South Carolina's coastal management program. Both states are noted for their progressive programs, which use setbacks in conjunction with other management measures, including the use of vegetated buffers prescribed in the next section.

[476]Desbonnet et al., 92.

C. Vegetated Buffers

Desbonnet et al. advocate a more multidimensional approach to controlling shoreline development that integrates the use of *vegetated buffers.*[477] These buffers can be used in conjunction with either fixed or floating setback programs, and have been routinely used in forestry and agriculture to abate nonpoint source degradation, control erosion, and improve aquatic habitat of inland water ways.[478]

Though the research and their application in coastal waterways is relatively meager, research documenting the benefits of vegetated buffers along inland waterways is extensive.[479] Studies show that vegetation can increase the effectiveness of a setback program in several ways.[480] Vegetation (i) provides habitat for wildlife; (ii) holds banks in place and prevents erosion; (iii) reduces the velocity of runoff further reducing the threat of

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[477]Ibid., 91-102. See also Desbonnet et al., *Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography* (Narragansett, Rhode Island: Coastal Resource Center, Rhode Island Sea Grant, University of Rhode Island, July, 1994). Desbonnet et al. define *vegetated buffers* as those "vegetated areas containing native species that have been, or are being, permanently set aside along the coast. The vegetation in the buffer may be comprised of grass, brush or trees....[and w]here natural and or native vegetation is lacking, the intent is to develop a vegetated area that mimics native vegetation appropriate to the same locale." Desbonnet et al., "Development of Coastal Vegetated Buffer Programs," 107, n. 2.

[478]Ibid., 92.

[479]Ibid.

[480]Joan Channing Kimball et al., "Riverways Community Guide: Strategies for Drafting and Passing Local River Protection Bylaws," as appeared in *Wetland Buffer Zones,* edited by Sally Zielinski, a course book prepared for the Massachusetts Association of Conservation Commissions Third Annual Fall Conference, October 14, 1995, 75.

erosion; and (iv) attenuates nonpoint source pollutants from surface and underground water flow.[481]

III. SETBACK EFFICIENCY

Desbonnet et al. have developed a matrix of pollutant removal effectiveness and wildlife habitat value for given widths of vegetated buffer.[482] (See Appendix F.) According to this matrix, on average, a buffer width of five meters provides poor general wildlife habitat but removes approximately 50 percent of certain nonpoint source pollutants;[483] while a buffer of 75 meters provides fair to good general wildlife habitat and removes 80 percent of such pollutants.[484] This matrix suggests that there is an inverse exponential relationship between increasing vegetated buffer width and the percentage of pollutants removed.[485] That is, ever greater buffer width is required to achieve ever smaller increases in pollutant removal efficiency.[486] In general, optimal buffer efficiency occurs at about 80 percent

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[481]Ibid. Vegetation mitigates the effects of nonpoint source pollution by removing pollutants from runoff through plant and microbial uptake, microbial degradation and conversion, physical trapping, and chemical absorption. Desbonnet et al., *Vegetated Buffers in the Coastal Zone,* 5.

[482]Desbonnet et al., "Development of Coastal Vegetated Buffer Programs," 97.

[483]That is, sediment, total suspended solids, nitrogen, and phosphorus. Ibid., 94.

[484]Ibid., 97. Likewise, though Desbonnet et al. do not offer similar matrices for the other benefits they attributed to vegetated buffers, they note that both aesthetic improvement and erosion control can be assumed to increase with increasing buffer width. Ibid., 96.

[485]Ibid., 93.

[486]Ibid.

pollutant removal, after which overly large additions of buffer width are required to increase pollutant removal rates by even a few percentage points.[487]

Though Desbonnet's matrix is useful, it is important to note that the efficiency of any setback program (fixed, floating, and/or vegetated) is dependent upon a number of factors in addition to width.[488] In general, setback efficiency is also a function of:

1. Extent and Type of Vegetation. Studies show that for vegetation to work efficiently, 80% of the setback area should be vegetated. Further, forested setbacks provide the greatest variety of benefits; while short grasses, especially lawns, provide far fewer benefits.[489]

2. Soil Composition. Some soils are particularly erodible, e.g. loam; while others, e.g. gravel, do not erode easily. Additionally, the ability of soils to filter out sediment and pollutants is dependent upon the amount of organic material and the size and spaces between the grains of soil. Beach sand has relatively little organic material and allows water, viruses and other pollutants to travel quickly through it. Wetlands soil, on the other hand, contains a great deal of organic material and can store large quantities of water and can do a great deal to attenuate pollution. Further, this ability to store water also helps reduce the threat of flooding and erosion.[490]

3. Slope. The greater the slope of the setback area, the faster the water flows over the surface, thus increasing the threat of erosion and decreasing the time for attenuation of pollutants. Studies indicate that slopes of 10% or less work best for mitigating pollution.[491]

Several additional factors affect setback efficiency. For instance, pollutant removal rates are also affected by such things as the extent to which the setback area is covered with

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[487]Ibid.

[488]Kimball et al., 74-75.

[489]Ibid., 75.

[490]Ibid.

[491]Ibid.

impervious materials, e.g., parking lots and houses;[492] pollutant type[493] and concentrations contained in the runoff water entering the area; land use and size of areas draining into the area; and path of runoff into and through the area.[494]

Even without these additional considerations, the two rudimentary dimensions of a setback, baseline and width, are, by themselves, complicated matters. Regardless of whether they are established under a fixed or floating setback program, baseline and width are intrinsically linked to erosion rates, and estimating erosion rates is tricky business.[495] Aside from the difficulties associated with projecting the extent and effects of sea level rise, the other variables that play a part in the *dynamic equilibrium* dance must be evaluated. For example, materials that eroded from one shoreline may accrete on another shore or may be deposited on offshore bars, according to the influences of tides and currents.[496] Beach profiles fluctuate between summer and winter and may even accrete between erosive events.[497]

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[492]Regardless of the type of vegetation or soil, providing a setback over even a small amount of permeable surface allows some uptake of pollutants to occur. Ibid., 74.

[493]For instance, studies indicate that even at 220 feet sandy soils do not adequately attenuate viruses from septic systems. Ibid., 77.

[494]Desbonnet et al., *Vegetated Buffers in the Coastal Zone,* 9-10.

[495]Platt, 8.

[496]Ibid.

[497]Ibid.

There is also the near impossible task of long-term weather forecasting. Storm activity is strongly variable from year to year.[498] In addition, if global temperatures continue to increase, storm frequency, intensity and path may be affected, but there is much uncertainty.[499] Research has shown that tropical-storm intensity can be expected to increase under certain assumptions of climate change, but storm frequencies and pathways are not as predictable.[500]

Of course, as discussed earlier in this Chapter, sea level rise does more than simply accelerate erosion rates. It also threatens the integrity of coastal ecosystems, such as wetlands and estuaries, and drinking water aquifers, and diminishes the capacity of the coastal watershed to dissipate nonpoint source pollutants. Thus, the potential impacts of sea level rise also need to be considered when establishing pollutant removal rates, wildlife habitat values, and drinking water aquifer capacity.

If the interaction of all these highly variable factors determines the efficiency of a setback program, how then do you insure the greatest program efficiency in light of legal realities?

IV. IMPORTANT ADMINISTRATIVE COMPONENTS

As we have seen, the dynamics of the shore can vary drastically within a small area; what might be necessary to mitigate erosion, flooding, and nonpoint source pollution in one

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[498]Aubrey, 6.

[499]Ibid.

[500]Ibid.

location might not be necessary a short distance away.[501] Thus, a court decision that a fixed setback line has been properly established on one section of beach would not preclude a nearby property owner from challenging its application to her parcel.[502] Similarly, time often invalidates a setback line.[503]

However, a floating setback tailored to each site, which might be seen as the most "justifiable," is often data and cost intensive.[504] Further, setbacks established on a case-by-case basis may provide little guidance to property owners as to the reasonableness of their investment-backed expectation, which has been a critical factor in deciding regulatory takings cases.

How then do we design a setback program that takes into account the highly variable factors affecting efficiency without unduly threatening property owners? This is not an easy question to answer, but we can begin by identifying certain desirable features of a setback program. These include:

1. Take into account area land use and building size.[505] Maine does this by providing zoning provisions under its shoreland regulations. In addition, Rhode Island incorporates these factors into its coastal buffer program, which is described below.

2. Designate low and high hazard areas.[506] As stated earlier, erosion rates are difficult to estimate; however certain areas can be delineated that are particularly

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[501]Maloney, 392.

[502]Ibid.

[503]Ibid.

[504]Desbonnet et al., *Vegetated Buffers in the Coastal Zone,* 33.

[505]Houlahan, 223.

[506]Ibid.

susceptible to erosion and therefore subject to greater building constraints. Likewise, areas that appear to be less susceptible can be given greater latitude.

3. Encourage the use of vegetated buffers.

4. Periodically modify setback lines to allow ecosystem shifts and migration in response to sea level rise.[507]

5. Provide for program flexibility that will allow additional variables affecting setback efficiency to be taken into account.

6. Provide flexibility to property owner, such as that afforded under South Carolina's amended Beachfront Management Act. Given some leeway, most property owners will feel less threatened by the program's infringing upon their rights of ownership and use.[508]

7. Make the setback program understandable to the public.[509]

Rhode Island's recently redesigned vegetated buffer program offers a good example of striking a balance between legal and environmental considerations. Its goals are to provide for (i) 80% removal of total suspended solids[510] and (ii) at least minimal wildlife habitat along all coastal regions.[511] In meeting these goals, the Rhode Island Coastal Resource Management Program had to consider existing land use patterns, thus buffer width is tied to residential lot size and water use.[512] (See Appendix G.) The smaller the lot size,

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[507]Slay, 31.

[508]Desbonnet et al., *Vegetated Buffers in the Coastal Zone,* 38.

[509]Houlahan, 223.

[510]For consistency with Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. Desbonnet et al., "Development of Coastal Vegetated Buffer Programs," 92.

[511]Ibid., 100.

[512]Ibid., 100-01.

the narrower the vegetated buffer required.[513] Further, water use categories help determine buffer width, with coastal areas designated for "conservation" requiring the widest buffer in that lot size class.[514] Under this program, buffers requirements for residential development range from 15 feet to 200 feet.[515]

A shoreline setback program can be established using a variety of available resources, such as, U.S. Geological Survey topographic maps, town zoning maps, aerial photographic survey results, or Geographical Information Systems databases.[516] Using this data, habitat for rare, threatened, or endangered species; areas particularly prone to erosion and/or flooding; areas bordering poorly flushed estuaries or significant shellfish beds; and areas of particular historic or scenic significance may be identified as critical resource areas by coastal managers, and larger buffer widths implemented to provide for a greater degree of protection.[517]

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[513]Ibid.

[514]Ibid.

[515]Ibid.

[516]Desbonnet et al., *Vegetated Buffers in the Coastal Zone,* 37.

[517]Ibid.

CHAPTER FOUR

SHORELINE SETBACKS IN MASSACHUSETTS

Now that we have examined shoreline setbacks generally, we can now attempt to answer the question How does the shoreline setback scheme currently provided for under the Massachusetts Wetlands Protection Act measure up? Specifically, this Chapter will look at (i) what are the problems faced by Massachusetts that shoreline setbacks may help address, (ii) what are the objectives of the Wetlands Protection Act and how is it administered, and (iii) are the administrative components desirable for a successful setback program, which were identified in Chapter Three, present here?

I. PROBLEMS FACED BY MASSACHUSETTS

The Massachusetts coastline spans 1,500 miles from the New Hampshire to the Rhode Island border.[518] It includes rocky shores, 611 barrier beaches, 46,000 acres of salt marsh, large urban ports, smaller town harbors and marinas, over 40,000 acres of tidal flats and dozens of islands.[519]

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[518]Department of Commerce, vol. II, 124.

[519]Massachusetts Coastal Zone Management Office, "MCZM: A Comprehensive Tool to Protect Marine Resources," *Coastal Brief*, No. 8 (Boston, Massachusetts, June 1991), I; Massachusetts Executive Office of Environmental Affairs, *Coastal Zone Management Program and Final Environmental Impact Statement,* (Boston, Massachusetts, 1978), 2.

Seventy-five percent of the state's population lives in coastal communities, though these areas constitute less than half of the state's total land area.[520] And, like the trend nationally, Massachusetts coastal communities continue to outpace their inland counterparts in terms of population growth.[521] A recent U.S. Census report indicates that population growth is rampant on Cape Cod, Martha's Vineyard and Nantucket.[525] According to the report, Barnstable (Cape Cod), Dukes (Martha's Vineyard) and Nantucket counties are growing far faster than the state's other 11 counties.[526] Combined, these counties' populations have risen 33% in the past 14 years.[527] In Barnstable County, the town of Sandwich grew 77% from 1980 to 1990, and another 14.6% through 1994.[528] In contrast, the rest of the state gained 4.5% during that same 14 year period.[529] This skewed growth trends appears to be continuing. Fifty percent of all new construction is occurring in the state's coastal communities.[530]

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[520]Massachusetts Coastal Zone Management Office, *Guidelines for Barrier Beach Management in Massachusetts. A Report of the Massachusetts Barrier Beach Task Force* (Boston, Massachusetts, February 1994), 15.

[521]Ibid.

[525]Isaac Rosen, "Growth Wave Floods Cape, Islands," *Boston Globe,* October 22, 1995, 39.

[526]Ibid.

[527]Ibid.

[528]Ibid., 40.

[529]Ibid.

[530]*Barrier Beach Management in Massachusetts,* 15.

However, as population in these communities continues to grow, their land area is getting smaller. Geologically speaking, Cape Cod, Martha's Vineyard and Nantucket, formed as the glaciers melted 14,000 years ago, have no bedrock to anchor them and prevent the ocean from pushing them around.[531] Statewide, the shoreline is receding at a rate of almost three feet annually.[532] Massachusetts has experienced relative sea level rise approximately 0.11 inch each year for the past 60 years, and this rate is expected to increase during the next century due to global warming.[533]

Massachusetts may be particular vulnerable to the ravages of sea level rise. In addition to the lack of bedrock under certain of its more popular shorelines, there is only a very slight inclination of the sediment layers making up the Atlantic coastal plain and continental shelf system.[534] Its average slope is approximately one vertical foot for each 1,000 horizontal feet, which means for every foot the sea rises vertically, it would spread 1,000 feet over the land horizontally, if the inclining continental borders were perfectly smooth without islands, valleys, hills, and other configurations such as Cape Cod.[535]

The recent 1991/1992 storm season cost state taxpayers over $50 million (over and above monies paid from the Federal Flood Insurance Program) to repair roads, seawalls,

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[531]Scott Allen, "Losing Ground: Against All Odds, Nantucket Is Trying to Hold Back the Sea," *Boston Globe,* February 12, 1996, 39.

[532]Dean, 885.

[533]Slay, 18.

[534]Graham S. Giese, "The Eroding Shores of Outer Cape Cod," Informational Bulletin No. 5 (Orleans, MA: The Association for the Preservation of Cape Cod, 1974, reprint 1994) 10.

[535]Ibid.

sewers and water lines, buildings, and other public facilities.[536] The 1991/1992 storm season also caused billions of dollars in damage to private property.[537]

A dramatic example of the power of the sea's erosive forces is being witnessed in the town of Chatham on Cape Cod. In 1987, a northeaster ripped a channel through a barrier beach that protected Chatham Harbor.[538] Over the years, a dozen homes have been lost (including those at issue in *Wilson*) as that channel has expanded into a mile-and-a-half gap in the barrier beach, allowing ocean waves to transform the once-tranquil waters of the harbor.[539] If the ocean continues it's push landward, it will soon flood the town's main street.[540] Nantucket is faring even worse.[541] Thirty-five buildings on the island have been destroyed or condemned since the 1980's, roads have been washed out, and a lighthouse has tipped over.[542]

Of course, as we saw in Chapter Three, erosion and flooding are not the only problems facing the Massachusetts coastline. The constant flow of population to the coast has led to the loss of wetlands, loss of wildlife habitat, stressed recreational resources, and

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[536]*Barrier Beach Management in Massachusetts*, 15.

[537]Ibid.

[538]Geeta Anand, "Shore Erosion Threatens Chatham Home," *Boston Globe,* November 26, 1995, 34.

[539]Ibid.

[540]Ibid.

[541]Allen, 39.

[542]Ibid.

degraded coastal water quality.[543] Over the past 15 years, shellfish bed closings have increased dramatically in the state, largely as a result of nonpoint source pollution.[544]

The coast is the state's most significant economic natural resource. According to the Massachusetts Coastal Zone Management Program, over half the state's share of the gross national product originates from coast related activities.[545] Included among these activities are the nation's third largest fisheries industry and a sizeable tourism industry, both of which are strongly dependent on healthy coastal ecosystems.[546]

There are a number of federal and state laws that play a role in the protecting Massachusetts coastal resources. However, it is the state Wetlands Protection Act (the "WPA" or "Act") that plays the leading role in regulating construction activities affecting designated coastal *resource areas* (as defined below).

II. THE MASSACHUSETTS WETLANDS PROTECTION ACT

> No person shall remove, fill, dredge, or alter any bank, fresh water wetland, coastal wetland, beach, dune, flat, marsh, meadow or swamp bordering on the ocean or any estuary, creek, river, stream, pond, or lake or any land under said waters or any land subject to tidal action, coastal storm flowage, or flooding...without filing written notice of his intentions...and without receiving and complying with an order of conditions.[547]

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[543]*Coastal Brief*, No. 8, 2; Massachusetts Coastal Zone Management Office, "The Coastal Nonpoint Source Pollution Control Program," *Coastal Brief,* No. 12 (Boston, Massachusetts, October 1994), 7.

[544]*Coastal Brief,* No. 12, 7.

[545]*Barrier Beach Management in Massachusetts*, 19.

[546]Ibid.

[547]*Massachusetts General Laws Annotated,* Chapter 31, Section 40.

A. The Act, Generally.

The stated purpose of the WPA is provide a public review and decision making process by which construction activities affecting inland and coastal wetlands *resource areas* are regulated in order to contribute to the following public interests:

1. Protection of public and private water supplies;
2. Protection of ground water supply;
3. Flood control;
4. Storm damage protection;
5. Prevention of pollution;
6. Protection of land containing shellfish;
7. Protection of fisheries; and
8. Protection of wildlife habitat.[548]

Under the Act, local conservation commissions,[549] with oversight by the state Department of Environmental Protection, have responsibility for ensuring protection of *resource areas* through the issuance of permits for *activities*[550] in or within 100 feet of

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[548]310 *Code of Massachusetts Regulations* 10.01:(2).

[549]Typically, unpaid boards whose members are appointed by a town's board of selectmen or a city's mayor. *Massachusetts General Laws Annotated,* Chapter 40, Section 8C.

[550]That is, "any form of draining, dumping, dredging, damning, discharging, excavating, filling or grading; the erection, reconstruction or expansion of any buildings or structures; the driving of pilings; the construction or improvement of roads and other ways; the changing of run-off characteristics; the intercepting or diverging of ground or surface water; the installation of drainage, sewage and water systems; the discharging of pollutants; the destruction of plant life; and any other changing of the physical characteristics of land." 310 *Code of Massachusetts Regulations* 10.04.

resource areas.[551] The regulations promulgated under the Act are divided into three sections: the first of which pertains to all wetlands; the second, to coastal wetlands; and the third, to inland wetlands.[552] The Act goes beyond the scope of what we traditionally think of as wetlands. *Resource areas* identified in the coastal wetlands section of the regulations include any:

1. Coastal bank;
2. Coastal wetland;
3. Coastal beach;
4. Coastal dune;
5. Tidal flat;
6. Land under the ocean or under an estuary or under a salt pond;
7. Land subject to tidal action or coastal 100 year storm flowage; and
8. Land under certain streams, ponds, rivers, lakes, or creeks within the *coastal zone*[553] that are anadromous/catadromous fish runs.[554]

Resource areas are further delineated under the Act and its regulations by physical characteristics such as vegetation, hydrology, topography and/or geologic criteria.[555]

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[551]*Massachusetts General Laws Annotated,* Chapter 31, Section 40.

[552]310 *Code of Massachusetts Regulations* 10.00.

[553]Which generally extends 100 feet inland from the coast, but also extends as far as 100 feet inland of the 100 year floodplain along tidal rivers. 301 *Code of Massachusetts Regulations* 20.03.

[554]310 *Code of Massachusetts Regulations* 10.23.

[555]Ann H. Williams et al., *Wetlands: A Guide to Understanding the Complex Federal, State and Local Requirements Governing Activities Affecting Wetlands* (Boston: Massachusetts Continuing Legal Education, Inc., 1995), 106.

Each resource area is presumed to be, or presumed likely to be, *significant*[556] to one or more public interest protected under the Act, and such presumptions are set forth in the regulations.[557] For example, land under salt ponds is presumed to be "significant to the protection of marine fisheries and wildlife habitat and, where there are shellfish, to the protection of land containing shellfish."[558] All coastal beaches and dunes on barrier beaches are presumed to be significant to storm prevention and flood control.[559] However, these presumptions are rebuttable if the permit applicant can demonstrate that the resource area in question does not in fact play a role in protecting such public interest.[560]

The Department of Environmental Protection, in drafting the regulations under the Act, determined that:

> [i] activities in resource areas "are so likely to result in the removing, filling, dredging or altering of those areas that preconstruction review is always justified....[ii] activities within 100 feet of those areas...are sufficiently likely to alter said areas that preconstruction review may be necessary....[iii] activities outside the [resource area] and outside the [100 foot] buffer zone are so unlikely to result in the altering of the [resource area] that preconstruction review is not required."[561]

Thus, the regulations provide that construction activity proposed to be done in a resource area always requires the filing of a Notice of Intent with the local conservation

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[556]That is, "plays a role in the provision or protection, as appropriate, of [the public] interest." 310 *Code of Massachusetts Regulations* 10.04.

[557]310 *Code of Massachusetts Regulations* 10.03: (5).

[558]Ibid., Section 10.33: (1).

[559]Ibid., Section 10.29: (3).

[560]Ibid., Sections 10.03: (1) and (5) and 10.21 through 10.60.

[561]Ibid., Section 10.02.

commission.[562] Work cannot commence in the resource area until the conservation commission has issued a permit approving the project. Further, the regulations require the filing of either a Request for Determination of Applicability or a Notice of Intent before construction activity can commencement in the *buffer zone,* that is, land within 100 feet horizontally of a resource area.[563] Jurisdiction under the Act does not automatically extend outward 100 feet from the resource area.[564] Rather, this filing requirement for work in the buffer zone is a means by which a local conservation commission can make a determination whether such work *will* alter the resource area, and, if so, the commission can then claim permitting authority.[565] Work outside the resource area and outside the buffer zone can proceed without any preconstruction review.[566] The Act provides that jurisdiction over such work can be asserted only upon showing that a resource area has actually been altered.[567]

Permits issued by the local conservation commission come in the form of either an Order of Conditions or a conditional Negative Determination of Applicability. These permits set forth restrictions on activities and are based upon performance standards

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[562]Ibid., Section 10.02: (2)(a).

[563]Ibid., Section 10.05: (3)(a)(2).

[564]Ibid., Section 10:00.

[565]Ibid.

[566]Ibid.

[567]Ibid. The Department of Environmental Protection noted, in deciding the jurisdictional parameters of the regulations, "[w]hatever protective zone is established will by its very nature be somewhat arbitrary, however, and in the Department's judgment and experience, the likelihood of impact becomes so attenuated at distances greater than 100 feet that preconstruction review can no longer be justified. Ibid.

outlined in the regulations. Performance standards vary among and within resource areas. For instance, when a tidal flat is determined to be significant to marine fisheries or the protection of wildlife habitat, then any proposed project:

> [that is water-dependent[568] must] be designed and constructed, using best available measures[569] so as to minimize adverse effects, and if non-water-dependent, have no adverse effects, on marine fisheries and wildlife habitat caused by (a) alteration in water circulation, (b) alteration in the distribution of sediment grain size, and (c) changes in water quality, including, but not limited to, other than natural fluctuations in levels of dissolved oxygen, temperature or turbidity, or the addition of pollutants.[570]

Best available measures prescribed for water-dependent uses may be interpreted to include the use of setbacks.[571] In addition, in order to meet this "no adverse effect" performance standard for non-water-dependent projects, a local conservation commission may choose to impose a setback adequate in width in its estimation to meet this standard. Conservation commission routinely impose setbacks in their permits.[572] For most resource

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[568]Generally, "those uses and facilities which require direct access to, or location in, marine, tidal or inland water." 310 *Code of Massachusetts Regulations* 10.04.

[569]That is, "the most up-to-date technology or the best designs, measures or engineering practices that have been developed and that are commercially available." Ibid.

[570]310 *Code of Massachusetts Regulations* 10.27: (6).

[571]Gregor I. McGregor et al., "Wetlands Buffer Zones: Law, Science and Policy," as appeared in *Wetland Buffer Zones,* edited by Sally Zielinski, a course book prepared for the Massachusetts Association of Conservation Commissions Third Annual Fall Conference, October 14, 1995, 4-5.

[572]Ibid., 1.

areas there is no model form provided for under the Act or its regulation because it is the business of the local conservation commission to tailor the conditions to the situation at hand.[573]

The regulations themselves, however, do explicitly provide for setbacks in the most sensitive coastal areas.[574] Included among the performance standards for certain (i) coastal banks,[575] (ii) coastal dunes,[576] (iii) salt marshes,[577] and (iv) salt ponds[578] is the provision that no project within 100 feet of these resource areas[579] shall have an adverse effect on the public interest they serve to protect.[580]

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[573]Ibid.

[574]Ibid., 7-8.

[575]That is, those coastal banks determined to be significant to storm damage prevention or flood control (e.g., those located on barrier beaches). 310 *Code of Massachusetts Regulations* 10.30.

[576]That is, those coastal dunes determined to be significant to storm damage prevention, flood control, or protection of wildlife habitat (e.g., those located on barrier beaches). Ibid., Section 10.28.

[577]That is, those salt marshes determined to be significant to the protection of marine fisheries, the prevention of pollution, storm damage prevention, or ground water supply. Ibid., Section 10.32.

[578]That is, those salt ponds determined to be significant to the protection of marine fisheries or wildlife habitat. Ibid., Section 10.33.

[579]Or, in the case of salt ponds, within 100 feet of the mean high water line. Ibid., Section 10.33: (3).

[580]Ibid., Sections 10.28, 10.30, 10.32, and 10.33.

Aside from the setbacks implicitly and explicitly provided for in the Act and its regulations, local conservation commissions have the opportunity to develop and impose their own, even more restrictive, setback schemes.

B. Local Authority Under the Act

Massachusetts has a strong "Home Rule" tradition, which accedes much responsibility for protecting the public health and the environment to local communities. Under the Home Rule Amendment to the state constitution, a town has the power of the state (here the police power) to adopt local a bylaw,[581] as long as the function of the bylaw is not inconsistent with the state constitution, state laws, or with its municipal charter.[582]

The WPA does not preempt Home Rule wetland protection. In fact, the regulations under the Act provide:

> [N]othing contained herein should be construed as preempting or precluding more stringent protection of wetlands or other natural resource areas by local bylaw, ordinance or regulation.[583]

This language codifies the ruling of Massachusetts Supreme Judicial Court in *Lovequist v. Conservation Commission of Dennis,* in which the court interpreted the WPA as constituting minimum standards, "leaving local communities free to adopt more stringent

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[581]Any references herein to wetlands bylaws adopted by towns applies also to ordinances adopted by cities.

[582]Ann H. William et al., *Wetlands and Stormwater* (Boston: Massachusetts Continuing Legal Education, Inc., 1994), 191; McGregor et al., as appeared in *Wetland Buffer Zones,* 4.

[583]310 *Code of Massachusetts Regulations* 10.01: (2).

controls."[584] Many communities have taken advantage of this opportunity to pass Home Rule bylaws of their own.[585]

Like the Act, a local bylaw typically establishes a permitting scheme to be administered by the conservation commission.[586] It identifies the interests being protected, defines resource areas, establishes performance standards, and establishes a process for applications, public hearings and commission decisions.[587] The provisions of different communities' bylaws and the regulations under the Act may vary widely.[588]

As noted above, a local bylaw may regulate resource areas more strictly than the Act.[589] These local regulations may take on several forms.

1. Protected Interests. The list of protected interests set forth under the Act is often added to by local conservation commissions.[590] These additional interests have included such things as erosion and sediment control.[591]

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[584]*Lovequist* at 15; McGregor et al., as appeared in *Wetland Buffer Zone,* 3.

[585]McGregor et al., as appeared in *Wetland Buffer Zones,* 3; Williams et al., *Wetlands and Stormwater,* 192.

[586]Ibid.

[587]Ibid.

[588]Ibid., 193.

[589]Ibid., 194.

[590]Williams et al., *Wetlands and Stormwater,* 195.

[591]Ibid.

2. Resource Areas/Jurisdiction. Many local bylaws include the area within 100 feet buffer zone as part of resource area itself.[592] Some local bylaws claim permitting authority beyond the 100 foot buffer zone.[593] For example, the City of Watertown regulates work within 150 feet of a resource area.[594]

3. Performance Standards. The state regulations include a number of performance standards for work in a resource area, including, as we have seen, the use in certain situations of setbacks and/or best available management practices. Local bylaws often expand upon these standards. For instance the Town of Barnstable has a local bylaw that requires a 50 foot undisturbed buffer be provided around most resource areas; while the Cape Cod Commission, which has permitting authority in Barnstable County for large development projects, requires a 100 foot undisturbed buffer between most resource areas and any development project reviewed by it.[595] This Commission is also advocating that its 15 member towns each adopt a Home Rule bylaw providing a similar 100 foot buffer requirement.[596] In addition, the Massachusetts Association of Conservation Commissions

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[592]McGregor et al., as appeared in *Wetland Buffer Zones,* 7.

[593]Williams et al., *Wetlands and Stormwater,* 196.

[594]Ibid.

[595]Cape Cod Commission, "Wetland Buffer Methodology Project and Description," and "Cape Cod Wetland Buffer Requirement Summary," both as appeared in *Wetland Buffer Zones,* 2 and 1, respectively.

[596]"Wetland Buffer Methodology Project Description," 3.

recommends that each local commission incorporate at least a 100 foot setback in its local bylaw.[597]

4. Significance. The Act permits conservation commissions to deny or impose conditions, such as setbacks, on a project if it finds that the resource area "is" significant to the protected interests.[598] Many local bylaws adopt a broader standard.[599] For example, Lexington's Home Rule bylaw permits the conservation commission to take action if the area is "probably significant" to those interests.[600]

III. SUMMARY

So, just how does the setback scheme provided for under the Massachusetts Wetlands Protection Act measure up? In other words, are the desirable features identified in Chapter Three present in the Act? Because local programs can vary widely, the Massachusetts Wetlands Protection Act does not neatly tie into an analysis of setback programs in general. While it would be difficult to comment on each coastal city and town wetlands program under the Act, certain general observations can be made. Thus, recalling those desirable features identified in Chapter Three:

1. *Take into account area land use and building size.* Though the Act and regulations thereunder do not specify such considerations, authority under the Act is vested in local conservation commissions and, as such, local land use may be given greater

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[597]McGregor et al., as appeared in *Wetland Buffer Zones,* 7.

[598]Williams et al., *Wetlands and Stormwater,* 197.

[599]Ibid.

[600]Ibid.

emphasis than if administered at the state level. However, there is no indication that building size would receive any greater consideration at the local level.

2. *Designate low and high hazard areas.* The regulations under the Act specify that certain resource areas located on barrier beaches are subject to 100 feet buffer zone. In addition, the presumption of the significance of a resource area to storm damage protection in high hazard areas would be harder for a permittee to rebut.

3. *Encourage the use of vegetated buffers.* Neither the Act nor its regulations specify the use of these buffers. However, in certain instances, the regulations do prescribe the use of best available and best practicable practices in the buffer zone and conservation commissions have routinely interpreted such practices to mean the use of vegetated buffers.[601]

4. *Periodically modify setbacks to allow ecosystem shifts and migration in response to sea level rise.* The WPA is a floating setback program of sorts, and, as such, tends to be more responsive to sea level rise than a fixed setback program. In addition, the WPA restricts the use of hardened erosion control structures.

5. *Provide for program flexibility that allows the additional variables affecting setback efficiency to be taken into account.* Again, local conservation commissions may be particularly well suited to tailor a setback to the particular demands and dimensions of a given area.

6. *Provide flexibility to property owner.* Outside the resource area, the Act appears to provide for considerable flexibility, though that flexibility is vested in the local conservation commission. The Act does provide for variances in certain instances including, but not limited to, those instances "necessary to avoid an Order that so restrict the use of property as to constitute an unconstitutional taking."[602] However, such variances are granted in rare cases.[603] Since 1981 through 1994 there were only 22 variances granted at the state level.[604] Further, such a provision may not provide a regulatory safety net under *Lucas*. The Supreme Court appeared to disregard Lucas' failure to pursue a variance.

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[601]Richard Tomczyk, "Regulatory Buffer Zones in Massachusetts," as appeared in *Wetland Buffer Zones,* 1.

[602]310 *Code of Massachusetts Regulations* 10.36: (3).

[603].Williams et al., *Wetlands and Stormwater,* 90, n 1.

[604]Ibid.

7. *Make the setback program understandable to the public.* As a floating setback program, it lacks the level of clarity that a fixed setback program may provide. However, the Department of Environmental Protection did note in the preface to its regulations that it had "considered the possibility of employing a matrix approach to work done outside of but in close proximity to a wetlands boundary, utilizing certain factors to arrive at a buffer distance that would vary with local topography and project size. This approach was ultimately discarded as far too complex and cumbersome for applicants to deal with and conservation commissions to administer."[605]

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[605]310 *Code of Massachusetts Regulations* 10.00.

CHAPTER FIVE

CONCLUSION

I. SUMMARY OF FINDINGS

It was hypothesized in Chapter One that the current shoreline setback scheme provided for under the Massachusetts Wetlands Protection Act may be deemed unconstitutional under the Taking Clause of the Fifth Amendment to the *U.S. Constitution* and thus would impact the state's ability to meet its management objectives under the Act. The conclusions reached in the preceding chapters support this hypothesis.

II. DISCUSSION OF FINDINGS IN SUPPORT OF HYPOTHESIS

A. Regulatory Takings Law

Because regulatory takings law is still evolving, it was necessary to review its historical underpinnings to determine its impact on the shoreline setback scheme in question. To that end, Chapter Two looked at evolution of the law in the U.S. Supreme Court and the Massachusetts appellate level courts.

1. The U.S. Supreme Court. Up until the 1920's the Supreme Court had held that unless the government physically invaded private property, no compensation was due a property owner under the Takings Clause. As we saw in *Mugler v. Kansas* (1887), government could regulate the *use* of private property without compensation regardless of

the economic impact on the property owner, provided that such regulation was intended to protect the public from harm.[606]

However, in 1922, Justice Holmes, writing for the majority in *Pennsylvania Coal v. Mahon*, asserted that a regulation that "goes too far" in restricting a property owner's *use* of his land may require compensation under the Takings Clause.[607] According to Holmes, one important consideration in determining the limits of government regulation is "the extent of diminution....When it reaches a certain magnitude in most if not all cases there must be...compensation."[608]

Holmes eschewed developing any "set formula" for determining when a compensable taking had occurred, ruling instead that, because it was a matter of the magnitude of diminution, "the question depends on the particular facts."[609] In weighing the facts at hand, which involved a statute that prohibited the mining of coal when its removal would cause the subsidence of surface structures, Holmes ruled that the government had indeed gone too far.[610]

Over fifty years later, the Supreme Court in *Penn Central Transportation Co. v. New York City* (1978) softened the position it had taken in *Pennsylvania Coal* by upholding a landmark law that prohibited the owners of Grand Central Station from building an office

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[606]*Mugler,* 623.

[607]*Pennsylvania Coal,* 415.

[608]Ibid., 413.

[609]Ibid.

[610]Ibid., 414.

tower on the site.[611] The *Penn Central* decision did, however, reaffirmed the earlier Court's reluctance to develop any "set formula" for determining whether a taking had occurred, preferring instead to rely on "ad hoc, factual inquiries" based on the specific facts of each case.[612] According to the *Penn Central* Court, in undertaking this "ad hoc" analysis, previous cases established three important factors to be considered:

(1) the economic impact of the regulation;

(2) the extent to which the regulation interferes with distinct investment-backed expectations; and

(3) the character of the government action.[613]

Two years later, in *Agins v City of Tiburon* (1980), the Supreme Court again upheld a local ordinance that limited development.[614] According to the *Agins* Court, a land use regulation violates the Takings Clause when it "[i] does not substantially advance legitimate state interest[615] or [ii] denies an owner economically viable use of his land."[616] The Court conditioned the second test on the three factors set forth in *Penn Central.*[617]

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[611]*Penn Central,* 104-105.

[612]Ibid., 124.

[613]Ibid.

[614]*Agins,* 2140-41.

[615]A term which the courts have defined broadly.

[616]Ibid., 2141.

[617]Ibid.

Applying the two-pronged *Agins* test, the Supreme Court in *Keystone Bituminous Coal Assn. v. De Benedictis* (1987) upheld a statute that resembled the one at issue in *Pennsylvania Coal.*[618] However, unlike the earlier statute, the act at issue here required 50% of the coal beneath certain surface structures to be kept in place to provide support.[619] The Supreme Court relied on the *Mugler* line of reasoning to sustain the act -- that is, if the government action is intended to protect the public from harm, then no compensation is due the property owner.[620] However, unlike *Mugler,* it also weighed the economic interests.

Though it did not fully support the *Mugler* decision, *Keystone,* together with *Agins* and *Penn Central,* did create a favorable climate for land use regulation, but, as we saw in Chapter Two, a cold front was rapidly approaching.

Within that same year, the Supreme Court had given us *First English Evangelical Lutheran Church of Glendale v. Los Angeles* (1987), which recognized the concept of "temporary takings," and *Nollan v. California Coastal Commission* (1987). The *Nollan* Court overturned a permit conditioned on the permittees granting a public easement to their beachfront property, holding that there was no "essential nexus" between the easement, i.e., physical access, and the state's interest, i.e., visual access. In so ruling, the Court appeared to hold the first prong of the *Agins* test -- that a regulation "substantially advance" a valid state interest -- to closer scrutiny than it had previously. This heightened judicial scrutiny

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[618]*Keystone,* 470.

[619]Ibid.

[620]Ibid., 487-90; Babcock 11-12, n. 50.

of the means/ends nexus foreshadowed the Court's more recent ruling in *Dolan v. City of Tigard* (1994).

Five years after *Nollan,* the Supreme Court further challenged land use regulations when it handed down its decision in *Lucas v. South Carolina Coastal Council* (1992). *Lucas* significance lies in Justice Scalia's interpretation of the factors forming the second prong of the *Agins* test.[621] Scalia announced that a *per se* taking occurs if a "regulation denies all economically beneficial or productive use of land," avoiding the need to balance this finding against any of the factors enumerated in *Penn Central.*[622]

Lucas did provide an exception to this *per se* taking rule when the regulation in question embodies the "background principles of the State's law of property or nuisance already in place upon the land ownership."[623] Though *Lucas* maintained a state's authority to restrict property use without compensation, in instances where the restriction is "so severe" as to prohibit "all economically beneficial use," such prohibition "cannot be newly legislated."[624] Thus, the nuisance exception provided for under *Lucas* is not nearly as flexible as the nuisance justification cited in *Mugler* or *Keystone.*[625]

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[621]David Hutchinson, "A Setback for the Rivers of Massachusetts? An Application of Regulatory Takings Doctrine to the Watershed Protection Act and the Massachusetts River Protection Act," *Boston University Law Review* 73 (1993): 255; Palmersheim, 183.

[622]Ibid.

[623]*Lucas,* 2900.

[624]Ibid.

[625]Starr, 125; *Mugler,* 661-62; *Keystone,* 488.

Most recently, the Supreme Court's decision in *Dolan* appears to elevate the rights of property owners even further by requiring not only an "essential nexus" between a permit condition and the state's interest, but also requiring that the government demonstrates that there is "rough proportionality" between the condition imposed on a permit and the potential impact of the project.[626] In other words, government cannot require an individual landowner to correct preexisting problems or require a contribution that is not roughly proportionate to the additional impacts that are likely to occur from a particular project.[627]

Dolan did not provide "any set formula" for determining "rough proportionality"; rather the Court stated that "[n]o precise mathematical calculation is required, but the city must make some sort of *individual determination* [emphasis added]...."[628] In so ruling, the *Dolan* decision echoed the Supreme Court's preference for "ad hoc, factual inquiries."

Thus, *Dolan* along with *Lucas* appear to have left considerable discretion in the hands of the state courts to perform this "ad hoc" analysis. However, the Supreme Court also appears to require state courts to hold regulations to closer scrutiny, as recently evidenced by the Supreme Court's remand of *Lopes v. Peabody* (1993) in light of *Lucas.*

2. Commonwealth of Massachusetts. Prior to *Lucas,* it was rare for a Massachusetts court to find that a land use regulation resulted in an unconstitutional taking

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[626]*Dolan,* 2318-19.

[627]Ibid., 2325-26.

[628]Ibid., 2319-20.

of private property.[629] Historically, the Massachusetts courts would generally look at the owner's primary investment-backed expectations and consider whether the law prevented the owner from obtaining some reasonable return on that investment, even if "the only residual economic uses are recreation or camping."[630]

Initially, the Massachusetts appellate level courts refused to apply *Lucas*.[631] In so ruling, the Massachusetts courts indicated that they did not consider *Lucas* to be the watershed takings case that it was proclaimed to be; that is, not until the U.S. Supreme Court remand of *Lopes v. Peabody* (1993) directed otherwise.[632]

On remand from the U.S. Supreme Court, the Massachusetts Supreme Judicial Court instructed the state's Land Court to determine if Lopes' land has "no economically beneficial use," a term, which the SJC noted, the *Lucas* decision had failed to define.[633] In order to make that determination, the Land Court turned to two post-*Lucas* U.S. Appeals Court cases: *Loveladies Harbor, Inc. v. U.S.* (1994) and *Florida Rock Industries v. U.S.* (1994). Both these federal cases support the post-*Lucas* view that a court is more likely to find a taking when a restriction "deprives an owner of a substantial part of [but not

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[629]Cantor, B8.

[630]*Turnpike Realty,* 221.

[631]See *Wilson v. Commonwealth,* 413 Mass. 362 (1992); *Steinbergh v. Cambridge,* 413 Mass. 736, cert. denied, 113 S.Ct. 2338 (1993); *Municipal Light Company of Ashburnham v. Commonwealth,* 34 Mass. App. Ct. 162 (1993); *Lopes v. Peabody,* 32 Mass. App. Ct. 1124 (1992); and *Lopes v. Peabody,* 413 Mass. 1105 (1992).

[632]*Lopes v. City of Peabody, Massachusetts,* 113 S.Ct. 1574 (1993); Cantor, B9.

[633]*Lopes v. Peabody,* 417 Mass. at 304 (1994).

essentially all] economic use or value."[634] Consequently, though the diminution of Lopes' property was not complete, the Land Court found that such a taking was total under *Lucas*.[635]

Unfortunately, the Land Court did not inquire as to whether such a restriction on use could have been upheld under "the background principles of the State's law of property or nuisance already place on land ownership," ruling instead that the setback line was based on outdated technology.[636] As we have seen in Chapter Two, these "background principles" -- nuisance, public trust, and custom -- do hold some promise in Massachusetts, but none appears to offer absolution under the *Lucas* exception, and may, in fact, raise more questions than they answer. In particular, what does the "antecedent inquiry" prescribed by *Lucas* mean to these common law principles ability to evolve?

The Massachusetts appellate level courts do provide us with certain definitions and considerable factual setting regarding what constitutes a nuisance in the state, and it appears that certain activities that have a deleterious effect on the public interests that the Wetlands Protection Act serve to protect may indeed qualify as a "nuisance." However, it may depend upon the particulars of a given case. Further, *Lucas'* emphasis on existing background principles may make it difficult to succeed in factual settings other than those already deemed a nuisance in the state, but using standards or definitions provided for to date.

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[634]3 LCR at 80 (1995), quoting *Florida Rock*.

[635]Ibid.

[636]Ibid., 81.

In general, nuisance is a particularly troubling area of law to look for guidance. It is an extremely subjective and malleable doctrine.[637] Even the U.S. Supreme Court has held that "[a] nuisance may be merely the right thing in the wrong place, like a pig in a parlor instead of a barnyard."[638]

Similarly, though the Supreme Court decision in *Phillips Petroleum Co. v. Mississippi* (1988) gave each state considerable flexibility with regards to the public trust doctrine -- by allowing each state, on an on-going basis, to define the limits of the public trust doctrine as it "see[s] fit"[639] -- the *Lucas* exemption appears to restricted the doctrine to established common law. However, in Massachusetts, the public trust doctrine is the result of actions taken over the past three centuries by the courts, the legislature, and various administrative bodies.[640] It would be difficult to cull out only those aspect brought about by common law.

Further, despite the state's efforts in recent years to aggressively assert jurisdiction on trust land, in comparison to other states, such as New Jersey and California, established protected public rights on public trust land in Massachusetts remains somewhat limited (navigation, fishing and fowling) and its geographic scope remains cloudy.[641] In fact, until

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[637]Babcock, 19.

[638]*Village of Euclid,* 338.

[639]*Phillips Petroleum,* 475.

[640]Archer et al., 165.

[641]Ibid.; Eno et al., 187.

recent years, unlike most coastal states, Massachusetts made little claim to the wet sand area between the low and high tide lines.

Of the three principles identified, custom appears to hold the least promise in state. Custom has been used in only a handful of states to gain access to the coastal resources and, unfortunately, Massachusetts in not among them. Further, unlike the public trust doctrine, which, at least in principle, can lie dormant for centuries -- as we saw in *Phillips Petroleum* and *Boston Waterfront* -- a customary claim use has to be long-established and uninterrupted; thus, the possibility of a valid customary claim to the Massachusetts shore seems remote.

3. Summary. The research revealed that regulatory takings law remains a perplexing area of law. The recent U.S. Supreme Court decisions have failed to provide the lower courts with concrete guidelines. However, the fact that property owners have won the last four decisions coming out of the Court involving regulatory takings of real property -- *First English, Nollan, Lucas,* and *Dolan* -- sends strong property rights signals to the state courts.[642]

In point of fact, *Lucas* has had an obvious impact on the legal landscape in Massachusetts, as we have seen from *Lopes*; and, though it remains to be seen how the Massachusetts courts will interpret and apply the *Dolan* "rough proportionality" test, it seems that likely land use regulations will undergo stricter judicial scrutiny in the state for the foreseeable future.

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[642]Babcock, 4, n. 12.

B. Shoreline Setbacks in Massachusetts

Against this legal backdrop, the Massachusetts shoreline is receding at a rate of almost three feet annually and this rate is expected to increase during the next century as a result of sea level rise.[643] Yet, despite its vulnerability, seventy-five percent of the state's population live in coastal communities, though these communities constitute less than half of the state's total land area.[644] And, like the trend nationally, Massachusetts coastal communities continue to outpace their inland counterparts in terms of population growth.[645] This constant flow of population to the coast has led to, among other things, loss of wetlands, loss of wildlife habitat, and degraded coastal water quality, largely as a result of nonpoint source pollution.[646]

As stated in Chapter Four, there are a number of state and federal laws that play a role in protecting Massachusetts coastal resources. However, it is the state Wetlands Protection Act that plays a leading role in regulating construction activities along its coast, and the shoreline setback scheme provided for under the Act is one of the primary means by which the Act attempts to meet its objectives.

Though the science is still emerging, shoreline setbacks are generally considered a best management practice.[647] As we saw in Chapter Three, they serve to protect a variety

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[643]Dean, 885; Slay, 18.

[644]*Barrier Beach Management in Massachusetts,* 15.

[645]Ibid.

[646]*Coastal Brief,* No. 8, 2.

[647]McGregor et al., as appeared in *Wetland Buffer Zones,* 4.

of interests. Most obviously, they move construction of buildings farther inland so that they have a greater life span before they are threaten by erosion. Setbacks also provide an unencumbered area of shoreline that allows a shoreline's regenerative processes to take place, such as wetlands migration and sand replenishment. In addition, they attenuate nonpoint source pollutants, provide wildlife habitat, and, generally, buffer coastal ecosystems from the encroaching stresses of development. As we saw in Chapter Three, these stresses become more acute with sea level rise.

Thus, while the extent of the impact of the recent regulatory takings cases is debatable, discouraging local conservation commissions from utilizing shoreline setbacks interferes with the attainment of the objectives of the Wetlands Protection Act.

III. POLICY RECOMMENDATIONS

In addition to determining whether the emerging regulatory takings law may have an impact on the Wetlands Protection Act, it was hoped that the research would reveal areas in which the Act might be refined to (i) better meet constitutional challenges under the Takings Clause and (ii) better meet its objectives within the parameters provided for under the emerging law.

Though the recent regulatory takings decisions may be discouraging to regulators, it is important to note that the Supreme Court has not ruled that regulations are invalid if they reduce profitability or scale down development.[648] However, regulators can expect a higher level of judicial scrutiny on the means by which they choose to advance state's

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[648]Gregor I. McGregor, "Taking the Mystery Out of the 'Taking Doctrine,'" *Massachusetts Lawyers Weekly,* March 25, 1996, B6.

interests, the limitations they impose, the exactions they require, and the economic impacts they cause property owners to bear.[649]

As we have seen, if a land use restriction would result in a "total taking" under *Lucas* -- that is, if it deprives a property owner of "a substantial part of" the economic value of her land -- then regulators may find little comfort in the protection offered them by "the background principles of the State's law of property or nuisance already place on land ownership." If, however, a land use restriction would not result in a "total taking" under *Lucas,* then regulators should keep in mind the *Agins* two-prong test as most recently applied in *Dolan.*

Local conservation commissions should be able to devise a number of ways to implement setbacks without compensation by leaving some usable space for the property owner. For instance, if Lopes was allowed to build a smaller, less permanent structure on his land than the one he had proposed, his property may not have been devalued to such an extent as to constitute a "total taking." Additionally, the conservation commission may have allowed Lopes to develop his property, but may have required a substantial vegetated buffer. As discussed in Chapter Three, the justifications for such setbacks are there and, if implemented cautiously, may withstand the *Dolan* rough proportionality test.

However, according to the Massachusetts Land Court's ruling in *Lopes,* modifications need to be made to land use restrictions reflecting the latest technology. Ironically, this technology could arguably be used to advocate even more restrictive setback lines. For instance, there is recent evidence that jurisdiction could be extended for certain

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[649]Ibid.

impacts, such as cumulative impacts of septic systems,[650] though under the *Dolan* rough proportionality test, measures meant to combat cumulative impacts may be more difficult to sustain. Unfortunately, this makes the fight to reduce nonpoint source pollution all the more difficult. In addition, measures taken to combat the difficult-to-project impacts of erosion and sea level rise may not withstand *Dolan*'s heightened judicial scrutiny.

It is important to note, however, that the Massachusetts Wetlands Protection Act does not lay down state-wide, absolute prohibitions. Rather, local conservation commissions may impose setbacks as conditions to permits they issue. It is this decentralized authority that is perhaps the Act's most distinguishing feature and perhaps makes it better suited (i) to accommodate the multitude of variables that affect setback efficiency and (ii) to meet the challenges of the *Dolan* rough proportionality test. Local conservation commissions are arguably more familiar with the demands and dimensions of their particular areas.

In fact, the Massachusetts Association of Conservation Commissions advocates that its members not wait for a definitive policy study to recommend a "one size fits all" setback for everywhere in Massachusetts. According to the Association, with 365 cities and towns in the state, "there are many experiences and many types of Resource Areas of differing significance deserving protection by setbacks."[651]

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[650]Scott Horsley, "Lateral Setbacks to Coastal Wetlands/Waters," as appeared in *Wetland Buffer Zones.*

[651]McGregor et al., as appeared in *Wetland Buffer Zones,* 7.

The flexibility provided by the Wetlands Protection Act may be the best approach to regulating shoreline development given both the *ad hoc* nature of the current regulatory takings law and the highly variable nature of the shoreline. However, local conservation commissions need to do their homework. The current takings law places the burden on local commissions to justify setbacks in each instance in which they are imposed. This may be a difficult task for a local commission whose members are typically comprised of volunteer lay people. Given the current legal climate, it may be prudent for the Massachusetts Department of Environmental Protection, the state agency charged with overseeing the Wetlands Protection Act, to provide greater guidance and technical advice to local commissions.

APPENDIX A

Selected Federal Regulatory Takings Cases

Agins v. Tiburon, 447 U.S. 255, 100 S.Ct. 2188 (1980).

Dolan v. City of Tigard, 114 S.Ct. 2309 (1994).

First English Evangelical Lutheran Church of Glendale v. Los Angeles County, 482 U.S. 304, 107 S.Ct. 2378 (1987).

Florida Rock Industries v. U.S., 18 F3d 1560 (1994).

Keystone Bituminous Coal Association v. DeBenedictis, 480 U.S. 470, 107 S.Ct. 1232 (1987).

Lopes v. Peabody, 113 S.Ct. 1574 (1993).

Loveladies Harbor Inc. v. U.S., 28 F3d 1171 (1994).

Lucas v. South Carolina Coastal Council, 112 S.Ct. 2886 (1992).

Mugler v. Kansas, 123 U.S. 623, 8 S.Ct. 273 (1887).

Nollan v. California Coastal Commission, 483 U.S. 825, 107 S.Ct. 3141 (1987).

Penn Central Transportation Co. v. New York City, 438 U.S. 104, 98 S.Ct. 2646 (1978).

Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 43 S.Ct. 158 (1922).

Selected Federal Regulatory Takings Cases Continued

Pumpelly v. Green Bay Company, 80 U.S. (12 Wall.) 166 (1871).

Village of Euclid, Ohio v. Ambler Realty Co., 272 U.S. 365, 47 S.Ct. 114 (1926).

APPENDIX B

Selected Massachusetts Regulatory Takings Cases

Fragopoulous v. Rent Control Board of Cambridge, 408 Mass. 302 (1990).

Lopes v. Peabody, 32 Mass. App. Ct. 1124 (1992).

Lopes v. Peabody, 413 Mass. 1105 (1992).

Lopes v. Peabody, 417 Mass. 299 (1994).

Lopes v. Peabody, 3 LCR 78 (1995).

Lovequist v. Conservation Commission of Dennis, 379 Mass. 7 (1979).

Moskow v. Commissioner of Environmental Management, 384 Mass. 530 (1981).

Municipal Light Co. of Ashburnham v. Commonwealth, 34 Mass. App. Ct. 162 (1993).

Steinbergh v. Cambridge, 413 Mass. 736 (1992), *cert. denied,* 113 S.Ct. 2338 (1993).

Sullivan v. Planning Board of Acton, 38 Mass. App. Ct. 918 (1995).

Turnpike Realty Co. v. Dedham, 362 Mass. 221 (1972), *cert. denied,* 409 U.S. 1108 (1973).

Wilson v. Commonwealth, 413 Mass. 362 (1992).

APPENDIX C

Selected Massachusetts Nuisance Cases

Asiala v. Fitchburg, 24 Mass. App. Ct. 13 (1987).

Jacobs v. Pine Manor College, 399 Mass. 411 (1987).

Schleissner v. Provincetown, 27 Mass. App. Ct. 392 (1989).

Tarzia v. Town of Hingham, 35 Mass. App. Ct. 506 (1993).

Triangle Center, Inc. v. Department of Public Works, 386 Mass. 858 (1982).

Tucker v. Badoian, 376 Mass. 901 (1978).

Turnpike Realty Co. v. Dedham, 362 Mass. 221 (1972), *cert. denied,* 409 U.S. 1108 (1973).

Von Heneberg v. Generazio, 403 Mass 519 (1988).

Weinstein v. Lake Pearl Park, Inc., 347 Mass. 91 (1964).

APPENDIX D

Selected Federal and Massachusetts Public Trust Cases

Appleby v. City of New York, 271 U.S. 364 (1926).

Austin, Ebenezer & Al. v. John Carter & Al., 1 Mass. 231 (1804).

Boston Waterfront Development Corporation v. Commonwealth, 378 Mass. 629 (1979).

Commonwealth v. Cyrus Alger, 61 Mass. 53 (1851).

Illinois Central Railroad Company v. Illinois, 146 U.S. 387 (1892).

Opinion of the Justices, 383 Mass. 895 (1981).

Phillips Petroleum Co. v. Mississippi, 484 U.S. 469, 108 S.Ct. 791 (1988).

Shively v. Bowlby, 152 U.S. 1 (1894).

APPENDIX E

Selected Massachusetts Custom Cases

Agoos Kid Co. v. Blumenthal Import Corp., 282 Mass. 1 (1933).

Boston Waterfront Development Corporation v. Commonwealth, 378 Mass. 629 (1979).

Freary & Al. v. Cooke, 14 Mass. 488 (1779).

APPENDIX F

Summary of Pollutant[652] Removal Effectiveness and Wildlife Habitat Value for Given Widths of Vegetated Buffer

Buffer Width (m)	Pollutant Removal Effectiveness	Wildlife Habitat Value
5	Approximately 50% or greater sediment and pollutant removal	Poor general habitat; useful for temporary activities of wildlife
10	Approximately 60% or greater sediment and pollutant removal	Minimally protects stream habitat; poor general habitat value; useful for temporary activities of wildlife
15	Greater than 60% sediment and pollutant removal	Minimal general wildlife and avian habitat value
20	Approximately 70% or greater sediment and pollutant removal	Minimal general wildlife habitat value; some value as avian habitat
30	Approximately 70% or greater sediment and pollutant removal	May have use as a wildlife travel corridor as well as providing minimal to fair general wildlife habitat
50	Approximately 75% or greater sediment and pollutant removal	May have use as a wildlife travel corridor as well as providing minimal to fair general wildlife habitat

[652]Sediment, total suspended solids, nitrogen, and phosphorus.

Buffer Width (m)	Pollutant Removal Effectiveness	Wildlife Habitat Value
75	Approximately 80% sediment and pollutant removal	Fair-to-good general wildlife and avian habitat value
100	Approximately 80% sediment and pollutant removal	Good general wildlife value; may protect significant wildlife habitat
200	Approximately 90% sediment and pollutant removal	Excellent general wildlife value; likely to support a diverse community
600	Approximately 99% sediment and pollutant removal	Excellent general wildlife value; supports a diverse community; protection of significant species

Taken from Desbonnet et al., "Development of Coastal Vegetated Buffer Programs."

APPENDIX G

Required Vegetated Buffers for Single-Family Residential Development under the Rhode Island Coastal Resource Management Program

Residential Lot Size (square feet)	Water Use Types 1, 2	Water Use Types 3, 4, 5, 6[1]
<10,000	25 feet	15 feet
10,000 - 20,000	50 feet	25 feet
20,001 - 40,000	75 feet	50 feet
40,001 - 60,000	100 feet	75 feet
60,001 - 80,000	125 feet	100 feet
80,001 -200,000	150 feet	125 feet
>200,000	200 feet	150 feet

Taken from Desbonnet et al., "Development of Coastal Vegetated Buffer Programs."

[1]Type 1 denotes conservation; Type 2 denotes low intensity boating; Type 3, high intensity use; Type 4, multipurpose; Type 5, commercial and recreational harbors; Type 6, industrial waterfronts and commercial navigation channels.

BIBLIOGRAPHY

Ackerman, Jennifer. *Notes from the Shore.* New York: Viking Penguin, 1995.

Agins v. Tiburon, 447 U.S. 255, 100 S.Ct. 2188 (1980).

Agoos Kid Co. v. Blumenthal Import Corp., 282 Mass. 1 (1933).

Alexander, Gregory S. "Takings and the Post-Modern Dialectic of Property." *Constitutional Commentary* 9 (Summer 1992): 259-277.

Allen, Scott. "Land Grab: Property Rights Challenges Are Raising the Ante in Environmental Protection." *Boston Globe,* December 11, 1995, 29-31.

Allen, Scott. "Losing Ground: Against All Odds, Nantucket Is Trying to Hold Back the Sea." *Boston Globe,* February 12, 1996, 37 and 39.

Anand, Geeta. "Shore Erosion Threatens Chatham Home." *Boston Globe,* November 26, 1995, 34.

Annicelli v. South Kingstown, 463 A.2d 133 (1983).

Appleby v. City of New York, 271 U.S. 364 (1926).

Archer, Jack H., et al. The Public Trust Doctrine and the Management of America's Coast. Amherst, Massachusetts: University of Massachusetts Press, 1994.

Asiala v. Fitchburg, 24 Mass. App. Ct. 13 (1987).

Aubrey, David G. "Coastal Erosion's Influencing Factors Include Development, Dams, Wells, and Climate Change." *Oceanus* 36 (Summer 1993): 5-9.

Austin, Ebenezer & Al. v. John Carter & Al., 1 Mass. 231 (1804).

Babcock, Hope M. "Has the U.S. Supreme Court Finally Drained the Swamp of Takings Jurisprudence?: The Impact of Lucas v. South Carolina Coastal Council on Wetlands and Coastal Barrier Beaches." *Harvard Environmental Law Review* 19 (1995): 1-67.

Barber, Robert C. "*Americo Lopes v. City of Peabody:* the SJC Interprets and Applies the *Lucas* Decision." Boston Bar Journal (January/February 1995): 12-14.

Baron, David. National Public Radio. Washington, D.C., January 1, 1996.

Barrer, Betty. "Life, Liberty, and the Pursuit of Property." *Sanctuary* 35 (September/October 1995): 13-16.

Barrett, Paul M. "Developers Win Property Ruling in High Court: Justices' 5-4 Decision Not Likely to Revolutionize Regulation of Land Use." *Wall Street Journal,* 27 June 1994, A2.

Bergman, B.J. "Private Greed vs. Public Interest: The 'Takings' Crusade -- Or, Patriots for Pollution." *Sierra,* November/ December 1994, 8A and 8G.

Black's Law Dictionary. 6th edition, 1990.

Bobrowski, Mark. *Handbook of Massachusetts Land Use and Planning Law.* Boston: Little, Brown and Company, 1993.

Boston Waterfront Development Corporation v. Commonwealth, 378 Mass. 629 (1979).

Botsford, Margot, et al., editors. *Handbook of Legal Research in Massachusetts.* 1991 Supplement. Boston: Massachusetts Continuing Legal Education, Inc., 1991.

Cantor, Patricia A. "Where Are Courts Going with Regulatory Takings?" Massachusetts Lawyers Weekly, July 31, 1995, B8-B9, B11.

Coastal Ocean Policy Roundtable. *The 1992 Coastal Status Report: A Pilot Study of the U.S. Coastal Zone and Its Resources.* Newark, Delaware: University of Delaware, September 1992.

Commonwealth v. Cyrus Alger, 61 Mass. 53 (1851).

Connors, Donald L., et al. *Coastal Laws and Regulations: Important New Developments.* Boston: Massachusetts Continuing Legal Education, Inc., 1990.

Coyle, Dennis J. *Property Rights and the Constitution: Shaping Society Through Land Use Regulation.* Albany: State University of New York Press, 1993.

Dean, Robert G. "Beach Response to Sea Level Change." Chap. in *Ocean Engineering Science.* Vol. 9, Part B, *The Sea, e*dited by Bernard Le Mehaute et al. New York: John Wiley & Sons, Inc, 1990, 869-887.

Desbonnet, Alan, et al. "Development of Coastal Vegetated Buffer Programs." *Coastal Management* 23 (1995): 91-109.

Desbonnet, Alan, et al. *Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography.* Narragansett, Rhode Island: Coastal Resource Center, Rhode Island Sea Grant, University of Rhode Island, July, 1994.

Dierker, Carl F., et al. *Wetlands and Stormwater Update '92.* Boston: Massachusetts Continuing Legal Education, Inc., 1992.

Dolan v. City of Tigard, 114 S.Ct. 2309 (1994).

Egan, Timothy, "Unlikely Alliances Attack Property Rights Measures: Oppose Bills to Pay Owners for State Action." *New York Times,* May 15, 1995.

Eno, Jr., Arthur L., et al. *Massachusetts Practice.* Vol. 28, *Real Estate Law.* 3rd edition. St. Paul: West Publishing Co., 1995.

Farber, Daniel A. "Public Choice and Just Compensation." *Constitutional Commentary* 9 (Summer 1992): 279-308.

First English Evangelical Lutheran Church of Glendale v. Los Angeles County, 482 U.S. 304, 107 S.Ct. 2378 (1987).

Fisher, William W. "The Trouble with *Lucas.*" *Stanford Law Review* 45 (May 1993): 1393-1410.

Fishman, Robert A. "When Do Land Use Regs Go Too Far?" *Massachusetts Lawyers Weekly,* March 25, 1996, B1.

Florida Rock Industries v. U.S., 18 F3d 1560 (1994).

Fragopoulous v. Rent Control Board of Cambridge, 408 Mass. 302 (1990).

Freary & Al. v. Cooke, 14 Mass. 488 (1779).

Fulton, William. *Guide to California Planning.* Point Arena, California: Solano Press Books, 1991.

Giese, Graham S. "The Eroding Shores of Outer Cape Cod." Informational Bulletin No. 5. Orleans, MA: The Association for the Preservation of Cape Cod, 1974, reprint 1994.

Glendon, Mary Ann. *Rights Talk: The Impoverishment of Political Discourse.* New York: The Free Press, 1991.

Godschalk, David R. "Implementing Coastal Zone Management: 1972-1990." *Coastal Management* 20 (1992): 93-116.

Goehlert, Robert U., et al. *Congress and Law-Making: Researching the Legislative Process.* 2nd edition. Santa Barbara: ABC-Clio, 1989.

Gordon, Bart J., et al. *Selected Issues and Current Constitutional Concerns in Land Use.* Boston: Massachusetts Continuing Legal Education, Inc., 1991.

Harney, Ken. "What Does the GOP Mean for Property?" *Providence Journal,* November 20, 1994, G1-G2.

Houlahan, John M. "Comparison of State Construction Setbacks to Manage Development in Coastal Hazard Areas." *Coastal Management* 17 (1989): 219-228.

Hutchinson, David P. "A Setback for the Rivers of Massachusetts?: An Application of Regulatory Takings Doctrine to the Watershed Protection Act and the Massachusetts River Protection Act." *Boston University Law Review* 73 (1993): 237-270.

Humbach, John A. "Evolving Thresholds of Nuisance and the Takings Clause." *Columbia Journal of Environmental Law* 18 (1993): 1-29.

Hwang, Dennis J. "Shoreline Setback Regulations and Taking Analysis." *University of Hawaii Law Review* 13 (1991): 1-56.

Illinois Central Railroad Company v. Illinois, 146 U.S. 387 (1892).

Jacobs v. Pine Manor College, 399 Mass. 411 (1987).

Jacobstein, J. Myron, et al. *Legal Research Illustrated.* 5th edition. Westbury, New York: The Foundation Press, Inc., 1990.

Kalo, Joseph J. *Coastal and Ocean Law.* Houston: The John Marshall Publishing Company, 1990.

Keystone Bituminous Coal Association v. DeBenedictis, 480 U.S. 470, 107 S.Ct. 1232 (1987).

Lahey, William L. "Waterfront Development and the Public Trust Doctrine." *Massachusetts Law Review* 70 (June 1985): 55-66.

Leedy, Paul. *Practical Research: Planning and Design.* 5th edition. New York: Macmillan Publishing Company, 1993.

Levey, Brian C. "Limiting Conditions on Land Use Permits and the Supreme Court's Decision in *Dolan v. Tigard.*" *Massachusetts Lawyers Weekly,* December 5, 1994, Real Estate Section, 2 and 8.

Lopes v. Peabody, 32 Mass. App. Ct. 1124 (1992).

Lopes v. Peabody, 413 Mass. 1105 (1992).

Lopes v. Peabody, 113 S.Ct. 1574 (1993).

Lopes v. Peabody, 417 Mass. 299 (1994).

Lopes v. Peabody, 3 LCR 78 (1995).

Loux, Andrea C. "The Persistence of the Ancient Regime: Custom, Utility, and the Common Law in the Nineteenth Century." *Cornell Law Review* 79 (November 1993): 183-219.

Loveladies Harbor Inc. v. U.S., 28 F3d 1171 (1994).

Lovequist v. Conservation Commission of Dennis, 379 Mass. 7 (1979).

Lucas v. South Carolina Coastal Council, 112 S.Ct. 2886 (1992).

Maine Revised Statutes Annotated, Title 38, Section 435.

Massachusetts Coastal Zone Management Office. *Guidelines for Barrier Beach Management in Massachusetts. A Report of the Massachusetts Barrier Beach Task Force.* Boston, Massachusetts, February 1994.

Massachusetts Coastal Zone Management Office. "MCZM: A Comprehensive Tool to Protect Marine Resources." *Coastal Brief,* No. 8. Boston, Massachusetts, June 1991.

Massachusetts Coastal Zone Management Office. "The Coastal Nonpoint Source Pollution Control Program." *Coastal Brief,* No. 12. Boston, Massachusetts, October 1994.

Massachusetts Executive Office of Environmental Affairs. *Coastal Zone Management Program and Final Environmental Impact Statement.* Boston, Massachusetts, 1978.

Massachusetts. Statute relating to the establishment of the Massachusetts Coastal Zone Management Office. *Massachusetts General Laws Annotated,* Chapter 21A, Section 4A.

Massachusetts. Waterways. *Massachusetts General Laws Annotated,* Chapter 91.

Massachusetts. Waterways. 310 *Code of Massachusetts Regulations* 9.00.

Massachusetts. *Wetlands Protection Act. Massachusetts General Laws Annotated,* Chapter 131, Section 40.

Massachusetts. *Wetlands Protection.* 310 *Code of Massachusetts Regulations* 10.00.

Maloney, Frank E., et al. "Drawing the Line at the Oceanfront: The Role of Coastal Construction Setback Lines in Regulating Development of the Coastal Zone." *University of Florida Law Review* 30 (1978): 383-404.

McGregor, Gregor I., et al. *Regulatory Takings: Land Use Restrictions in a Post-Lucas World.* Boston: Massachusetts Continuing Legal Education, Inc., 1992.

McGregor, Gregor I. "Taking the Mystery Out of the 'Taking Doctrine.'" *Massachusetts Lawyers Weekly,* January 29, 1996, B4-5, B8, and March 25, 1996, B3, B5-6.

Millemann, Beth. "The National Flood Insurance Program." Oceanus 36 (Spring 1993): 6-8.

Miniter, Richard. "The Shifting Ground of Property Rights." Insight/Washington Times, August 23, 1993.

Moskow v. Commissioner of Environmental Management, 384 Mass. 530 (1981).

Mugler v. Kansas, 123 U.S. 623, 8 S.Ct. 273 (1887).

Municipal Light Co. of Ashburnham v. Commonwealth, 34 Mass. App. Ct. 162 (1993).

Nixon, Dennis W. *Marine and Coastal Law: Cases and Materials.* Westport, Connecticut: Praeger Publishers, 1994.

Nollan v. California Coastal Commission, 483 U.S. 825, 107 S.Ct. 3141 (1987).

Opinion of the Justices, 383 Mass. 895 (1981).

Palmersheim, Karen R. "*Lucas v. South Carolina Coastal Council*: How *Lucas'* Effect on Regulatory Takings Will Change California Coastal and Endangered Species Regulation." *Southwestern University Law Review* 23 (1993): 177-204.

Paulus, Deborah K. "Reflections on Takings: The Watuppa Ponds Cases." Western New England Law Review 17 (1995): 29-75.

Penn Central Transportation Co. v. New York City, 438 U.S. 104, 98 S.Ct. 2646 (1978).

Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 43 S.Ct. 158 (1922).

Phillips Petroleum Co. v. Mississippi, 484 U.S. 469, 108 S.Ct. 791 (1988).

Pike, John A., et al. "Massachusetts Tidelands Laws and Regulations." *Massachusetts Law Review* 77 (September 1992): 98-111.

Platt, Rutherford H. "The Folly at Folly Beach and Other Failings of U.S. Coastal Erosion Policy." *Environment* 33 (November 1991): 7-32.

Plummer, Jenny Lynn. "Establishing Vegetative Buffers on Existing Lots: A Policy for Mitigating Impacts to Coastal Resources." *Coastal Management* 22 (1994): 427-430.

Pope, Carl. "Wrong-Headed Right." *Sierra,* March/April 1994, 31-32.

Pumpelly v. Green Bay Company, 80 U.S. (12 Wall.) 166 (1871).

Rose, Carol M. "The Comedy of the Commons: Custom, Commerce, and Inherently Public Property." *University of Chicago Law Review* 53 (1986): 711-781.

Rosen, Isaac. "Growth Wave Floods Cape, Islands." *Boston Globe,* October 22, 1995, 39-40.

Rudel, Thomas K. *Situations and Strategies in American Land-Use Planning.* New York: Cambridge University Press, 1989.

Sax, Joseph L. "Property Rights and the Economy of Nature: Understanding *Lucas v. South Carolina Coastal Council.*" *Stanford Law Review* 45 (May 1993): 1433-1455.

Sax, Joseph L. "Takings and the Police Power." *Yale Law Review* 74 (November 1964): 36-76.

Schleissner v. Provincetown, 27 Mass. App. Ct. 392 (1989).

Schroeder, Jeanne L. "Chix Nix Bundle-O-Stix: A Feminist Critique of the Disaggregation of Property." *Michigan Law Review* 93 (November 1994): 239-319.

Shively v. Bowlby, 152 U.S. 1 (1894).

Skelton, Harold N. "Houses on the Sand: Takings Issues Surrounding Statutory Restrictions on the Use of Oceanfront Property." *Boston College Environmental Affairs Law Review* 18 (1990): 125-158.

Slay, Hudson. *Sea Level Rise Issues and Potential Management Options for Local Government.* Washington, D.C.: U.S. Environmental Protection Agency, April 1992.

South Carolina. *Code of Laws of South Carolina Annotated,* Section 48-39-260 (1) and (2).

Starr, Amelia T.R. "'Ruin Hath Taught Me Thus to Ruminate': Rejecting Regulatory/ Eminent Domain Dichotomy for Coastal Land. *1992/1993 Annual Survey of American Law,* April 1993, 117-151.

Steinbergh v. Cambridge, 413 Mass. 736 (1992), *cert. denied,* 113 S.Ct. 2338 (1993).

Stoddard, Gerard. "Coastal Policy Implications of Right to Rebuild Questions." *Shore & Beach* 63 (January 1995): 25-33.

Stutts, Alan T., et al. *Effect of Ocean Setback Standards On the Location of Permanent Structures: In Coastal North Carolina.* Raleigh, North Carolina: UNC Sea Grant College Publication, August 1983.

Sullivan v. Planning Board of Acton, 38 Mass. App. Ct. 918 (1995).

Tarzia v. Town of Hingham, 35 Mass. App. Ct. 506 (1993).

Tibbetts, John, editor. "Private Rights Versus Public Interests: Who Decides the Fate of the Coast?" *Coastal Management* 23 (1995): 1-17.

Titus, James G. "Greenhouse Effect, Sea Level Rise, and Barrier Islands: Case Study of Long Beach Island, New Jersey." *Coastal Management* 18 (1990): 65-90.

Triangle Center, Inc. v. Department of Public Works, 386 Mass. 858 (1982).

Tucker v. Badoian, 376 Mass. 901 (1978).

Turnpike Realty Co. v. Dedham, 362 Mass. 221 (1972), *cert. denied,* 409 U.S. 1108 (1973).

United States. *Coastal Zone Management Act,* 16 USC 1451 et seq.

United States Congress. House. Subcommittee on Department Operations and Nutrition of the Committee on Agriculture. Private Property Protection Act of 1993: Hearing before the Subcommittee on Department Operations and Nutrition. 103rd Congress, 1st Session, November 3, 1993.

United States Congress. House. Subcommittee on Fisheries and Wildlife Conservation and the Environment and the Subcommittee on Oceanography, Great Lakes and the Outer Continental Shelf of the Committee on Merchant Marine and Fisheries. Takings, Compensation, and Pending Wetlands Legislation: The Future Course of the Federal Wetlands Program: Hearing before the Subcommittee on Fisheries and Wildlife Conservation and the Environment and the Subcommittee on Oceanography, Great Lakes and Outer Continental Shelf. 102nd Congress, 2nd Session, May 21, 1992.

United States Department of Commerce. The Under Secretary for Oceans and Atmosphere. *1992-1993 Biennial Report to Congress on the Administration of the Coastal Zone Management Act.* Volumes I and II. Washington, D.C.: National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, April 1994.

Valentine, Andrew P. "Property Rights--The Effect of *Nollan v. California Coastal Commission* on Land Use Permits: A Proposed Constitutional Analysis." *Santa Clara Law Review* 32 (1992): 1163-1195.

Village of Euclid, Ohio v. Ambler Realty Co., 272 U.S. 365, 47 S.Ct. 114 (1926).

Von Heneberg v. Generazio, 403 Mass 519 (1988).

Watters, Larry, et al. "Colloquium on *Dolan:* The Takings Clause Doctrine of the Supreme Court and the Federal Circuit." *Environmental Law* 25 (1995): 111-169.

Weinstein v. Lake Pearl Park, Inc., 347 Mass. 91 (1964).

Williams, Ann H., et al. *Wetlands: A Guide to Understanding the Complex Federal, State and Local Requirements Governing Activities Affecting Wetlands.* Boston: Massachusetts Continuing Legal Education, Inc., 1995.

Williams, Ann H., et al. *Wetlands and Stormwater.* Boston: Massachusetts Continuing Legal Education, Inc., 1994.

Wilson v. Commonwealth, 413 Mass. 362 (1992).

Yin, Robert K. *Case Study Research: Design and Methods.* Revised edition. Newbury Park, California: Sage Publications, 1989.

Young, Kenneth H., editor. *1992 Zoning and Planning Handbook.* Deerfield, Illinois: Clark Boardman Callaghan, 1992.

Zalkin, Natasha. "Shifting Sands and Shifting Doctrines: The Supreme Court's Changing Takings Doctrine and South Carolina's Coastal Zone Statute." *California Law Review* 79 (1991): 205-266.

Zielinski, Sally A., editor. "Wetland Buffer Zones." Course book prepared for the Massachusetts Association of Conservation Commissions Third Annual Fall Conference, October 14, 1995.