



Volume 29 | Issue 2

Article 2

12-6-2018

New Jersey's Legal Duty to Manage its Coastline in Preparation for the Wrath of Climate Change

Sarah Weiss Rozalis

Follow this and additional works at: <https://digitalcommons.law.villanova.edu/elj>

 Part of the [Environmental Law Commons](#)

Recommended Citation

Sarah W. Rozalis, *New Jersey's Legal Duty to Manage its Coastline in Preparation for the Wrath of Climate Change*, 29 Vill. Envtl. L.J. 205 (2018).

Available at: <https://digitalcommons.law.villanova.edu/elj/vol29/iss2/2>

This Article is brought to you for free and open access by Villanova University Charles Widger School of Law Digital Repository. It has been accepted for inclusion in Villanova Environmental Law Journal by an authorized editor of Villanova University Charles Widger School of Law Digital Repository.

2018]

NEW JERSEY'S LEGAL DUTY TO MANAGE ITS COASTLINE IN
PREPARATION FOR THE WRATH OF CLIMATE CHANGE

SARAH WEISS ROZALIS†

INTRODUCTION

Unprecedented global temperature rise, sea level rise, warming oceans, and extreme weather events have already begun to change our climate. Climate change is no longer a problem confined merely to future generations.¹ Its threat is especially palpable in our nation's coastal states because they rely on attractive shorelines to maintain their economic health.² For centuries, the public trust doctrine has safeguarded access to and ensured the preservation of our vital shorelines.³ Though climate change can wreak havoc on coastal communities, this paper advances that state and local governments are legally equipped to limit its effects by taking preventive measures under the longstanding public trust doctrine.

New Jersey's public trust doctrine is quite expansive as compared to other coastal states. Thus, Part I of this article discusses the history, case law, and policy goals that give rise to New Jersey's public trust doctrine.⁴ Part II discusses case law that demonstrates New Jersey's legal obligation to manage its coastline under the public trust doctrine.⁵ Part III discusses the roles of the New Jersey Department of Environmental Protection and the Coastal Zone

* J.D., 2018, Rutgers Law School; B.A., 2010, George Washington University. The author would like to thank her professor, Kathryn Kovacs, for opening her eyes to this pressing topic and to many other fascinating areas of law.

1. See generally *Global Climate Change*, NASA (Mar. 5, 2018), <http://climate.nasa.gov/> (tracking changes such as sea level and global temperature to demonstrate record-breaking climate changes currently affecting our planet).

2. Tourism Economics, *The Economic Impact of Tourism in New Jersey*, VISIT NJ 2-4 (2016), <http://www.visitnj.org/sites/default/master/files/2016-nj-economic-impact.pdf> (demonstrating how shoreline attracts significant tourism which positively impacts New Jersey's economy).

3. *History and Legal Precedents*, STATE OF N.J. DEP'T OF ENVTL. PROT., <http://www.state.nj.us/dep/cmp/access/njparightslegal.htm> (last updated Jan. 15, 2018) (dating public trust doctrine's roots in civil law to 500 A.D. as it was established to ensure public's right to make full use of seashore).

4. For a discussion of the importance of New Jersey's coastline and the longstanding public trust doctrine, see *infra* notes 10-25 and accompanying text.

5. For a discussion of New Jersey's legal obligation to preserve the public trust doctrine according to case law, see *infra* notes 26-72 and accompanying text.

206 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

Management Program in managing the coastline.⁶ Part IV discusses the balance between the state's requirements under the public trust doctrine and private property owner rights.⁷ Part V discusses how climate change is most likely to affect New Jersey's coastline.⁸ Finally, Part VI discusses how the state's public trust duties translate into a legal obligation to manage the coastline in anticipation of climate change.⁹

Although this research focuses on New Jersey, it is applicable to all coastal states that preserve and maintain their shores in the name of the public trust doctrine.

I. THE IMPORTANCE OF NEW JERSEY'S COASTLINE AND THE PUBLIC TRUST DOCTRINE

New Jersey residents are keenly aware of how vital the state's coastline is to its future preservation and economic health. To be sure, twenty out of twenty-one New Jersey counties are deemed "coastal" by the National Oceanic and Atmospheric Administration (NOAA)¹⁰ and the vast majority of New Jersey's population resides within thirty miles of the coastline.¹¹ Business owners along the shore can attest to the economic boost the coastline continues to provide annually. In 2016 alone, forty-four billion dollars poured into the state through tourism.¹² Since 2009, tourist-related revenue has increased steadily each year, and with the tourism industry employing over 500,000 people, the state's residents are eager to

6. For a discussion of New Jersey's legal obligation to preserve the public trust doctrine in light of the State's Department of Environmental Protection and Coastal Zone Management Program, see *infra* notes 74-100 and accompanying text.

7. For a discussion of how New Jersey balances its duty to preserve the public trust with private property rights, see *infra* notes 102-118 and accompanying text.

8. For a discussion of how climate change is expected to affect the New Jersey coastline this century, see *infra* notes 121-155 and accompanying text.

9. For a discussion of how climate change alleviation efforts align with the state's legal duty to maintain and enforce the public trust doctrine, see *infra* notes 157-176 and accompanying text.

10. Nat'l Oceanic and Atmospheric Admin., *NOAA's List of Coastal Counties for the Bureau of the Census Statistical Abstract Series*, U.S. CENSUS BUREAU (2012), https://www.census.gov/geo/landview/lv6help/coastal_cty.pdf (identifying each coastal county by state in alphabetical order).

11. Coastal Mgmt. Office of the N.J. Dep't of Env'tl. Prot., *Public Access in New Jersey: The Public Trust Doctrine and Practical Steps to Enhance Public Access*, THE STATE OF N.J. 1 (2006), http://www.state.nj.us/dep/cmp/access/public_access_handbook.pdf (explaining how allure of New Jersey's coastline is so great that vast majority of its residents live within thirty miles of coastline).

12. Tourism Economics, *supra* note 2, at 2 (presenting statistics on tourism-driven economic activity in 2016).

maintain this trend.¹³ Public access to the coastline has been a top priority in New Jersey for centuries. Prior to European colonization, native populations depended on the state's coastline and its bounty of natural resources for their basic survival.¹⁴

The public's legal right to access and make use of the coastline long precedes the United States. The first known evidence of the public trust doctrine dates back to the Roman Civil law of 500 A.D., codified by the Roman Emperor Justinian, which states, "By the law of nature these things are common to mankind — the air, running water, the sea, and consequently the shores of the sea. No one, therefore, is forbidden to approach the seashore"¹⁵ This fundamental Roman right eventually gave rise to English Common Law, wherein the king (or sovereign) possessed title to all tidally flowed lands for the benefit of his citizens.¹⁶ This concept spread to America upon its discovery and persisted throughout the original thirteen colonies.¹⁷ After the American Revolution, any royal rights to the coastline became vested in the states for the public's common use.¹⁸

In New Jersey, common public property, including the air, running water, sea, fish, and wild beasts, is "in the hands of the sovereign power, to be held, protected, and regulated for the common use and benefit."¹⁹ In short, the State of New Jersey holds coastal access rights 'in trust' for the benefit of its public. Throughout the United States, lands protected by the public trust doctrine typically extend either to a mean high-water line or a mean low-water line.²⁰

13. *See id.* at 28 (reporting employment driven by tourism in New Jersey in 2016).

14. Coastal Mgmt. Office of the N.J. Dep't of Env'tl. Prot., *supra* note 11, at 2 (explaining history of public trust doctrine as it relates to New Jersey's native population).

15. JUSTINIAN I, INSTITUTES, Book 2, Title 1 (John Baron Moyle trans., Oxford 1911) (535 A.D.), <http://amesfoundation.law.harvard.edu/digital/CJCiv/JInst.pdf> (marking first codification of public trust doctrine in civil law).

16. Coastal Mgmt. Office of the N.J. Dep't of Env'tl. Prot., *supra* note 11, at 10 (explaining history of public trust doctrine).

17. *Id.* (discussing public trust doctrine's place in English Common Law and adoption by original thirteen colonies).

18. *Id.* (explaining what happened to royal public trust rights after American Revolution).

19. *Arnold v. Mundy*, 6 N.J.L. 1, 71 (N.J. 1821) (recognizing existence of public trust doctrine in United States).

20. History and Legal Precedents, *supra* note 3 (explaining how states mark boundary of ordinary high water line).

208 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

In New Jersey, the state owns “all lands that are flowed by the tide up to the high-water line or mark” in fee simple.²¹

Compared to other coastal states, New Jersey takes an expansive view of what should be protected under the public trust doctrine. Traditionally, New Jersey assured public rights to tidal waterways and their shores for purposes of navigation, commerce, and fishing.²² Over time, New Jersey case law has expanded the purpose of the public trust doctrine to protect more modern recreational uses such as swimming, bathing, and sunbathing.²³ Depending on a factors test laid out in *Matthews v. Bayhead Improvement Association (Matthews)*,²⁴ the public trust doctrine even assures public access to privately owned upland dry sand areas “as reasonably necessary” for the enjoyment of the ocean.²⁵ These more recent expansions of the public trust doctrine illustrate New Jersey’s firm commitment to the preservation, protection, and accessibility of its coastline.

II. THE STATE’S LEGAL REQUIREMENTS IN MANAGING ITS COASTLINE UNDER THE PUBLIC TRUST DOCTRINE: THE CASE LAW

New Jersey’s legal history is ripe with examples of its policy goal to prioritize the coastline for the benefit of the public.²⁶ Courts have long recognized the advantages of coastal living, expressly indicating that waters “constitute an important part of the natural advantages of this territory, upon the faith of which its population has multiplied in numbers and increased in material and moral welfare.”²⁷ Thus, regulating New Jersey’s waterways to ensure their preservation and ongoing utility is “among the most important objects of government.”²⁸

21. *O’Neill v. State Highway Dep’t*, 235 A.2d 1, 9 (N.J. 1967) (defining mean high tide and boundary of state ownership).

22. *Borough of Neptune City v. Borough of Avon-By-The-Sea*, 294 A.2d 47, 52 (N.J. 1972) (discussing original scope of public trust doctrine).

23. *Id.* at 53 (expanding scope of public trust doctrine to include recreational activities such as swimming and bathing).

24. *Matthews v. Bay Head Improvement Assoc.*, 471 A.2d 355 (N.J. 1984).

25. *Id.* at 365; *see also* *Raleigh Ave. Beach Ass’n v. Atlantis Beach Club, Inc.*, 879 A.2d 112, 113 (2005) (implementing factors test laid out in *Matthews*).

26. Coastal Mgmt. Office of the N.J. Dep’t of Env’t. Prot., *supra* note 11, at 16 (summarizing key New Jersey cases that have set legal precedents for maintaining public access to tidal waterways and their shores).

27. *McCarter v. Hudson Cty. Water Co.*, 65 A. 489, 492 (N.J. 1906). (discussing longstanding advantages of state’s shoreline).

28. *Id.* (recognizing regulation of New Jersey’s waterways as one of most important purposes of state’s government).

The state's expansive public trust doctrine requires all citizens and tourists to have equal rights to the enjoyment of the beach and ocean.²⁹ This policy is written in the state's case law and firmly rooted in decades of consistent enforcement.³⁰ In the 1972 case, *Borough of Neptune City v. Borough of Avon-By-The-Sea (Borough of Neptune City)*,³¹ the Supreme Court of New Jersey struck a city's ordinance imposing higher beach badge fees on nonresidents as compared to residents.³² The court invalidated the ordinance on account of the public trust doctrine, which safeguards the public's access to the shore for recreational purposes that are considered to be "of prime importance in this day and age."³³ The court highlighted the fundamental nature of the public trust doctrine by dictating that modern courts "must take the view" that the beach and ocean waters remain open to all on an equal and non-discriminatory basis, making it clear that "any contrary state or municipal action is impermissible."³⁴

In the decades since, New Jersey courts have acted as a force against municipal regulations that disrupt public access to the shoreline by invalidating unreasonable, restrictive, and discriminatory ordinances.³⁵ Even a municipality's zoning power can lie within the path of this force. In *Lusardi v. Curtis Point Property Owners Association (Lusardi)*,³⁶ the Supreme Court of New Jersey invalidated a municipality's zoning ordinance for a developer that designated previously non-residential oceanfront land for single family residential use.³⁷ In reversing the ordinance, the court dis-

29. *Borough of Neptune City v. Borough of Avon-By-The-Sea*, 294 A.2d 47, 54 (N.J. 1972) (dictating modern court must take view that public trust doctrine requires beach and its waters be open to everyone on equal terms).

30. Coastal Mgmt. Office of the N.J. Dep't of Envtl. Prot., *supra* note 11, at 16 (outlining key case law enforcing public trust doctrine since 1821).

31. 294 A.2d 47, 52 (N.J. 1972).

32. *Id.* at 55 (discussing municipality's discriminatory fee schedule).

33. *Id.* at 53 (describing modern importance of recreational activities).

34. *Id.* at 309 (emphasizing serious nature of equal access rights to shore).

35. See *Hyland v. Allenhurst*, 393 A.2d 579, 581 (1978) (relying in part on *Borough of Neptune City* to invalidate municipality's ordinance restricting access to toilets adjacent to public beach area); *Van Ness v. Borough of Deal*, 393 A.2d 571, 574 (1978) (holding municipality's attempt to portion out part of public beach for residents' exclusive use invalid because it violates public trust doctrine); *Capano v. Borough of Stone Harbor*, 530 F. Supp. 1254, 1270 (D.N.J. 1982) (reasoning municipality's restriction of beach to exclusive use by resident nuns violates public trust doctrine).

36. 430 A.2d 881 (1981).

37. *Id.* at 883 (agreeing with trial court that municipality's ordinance restricting vacant land on beach to single family residential use is unreasonable given statewide policy of promoting public use of dry sand beach).

210 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

cussed the importance of the public trust doctrine, its intentionally broad scope, and its underlying purpose of encouraging greater public access to the “state’s precious ocean beaches for recreational purposes.”³⁸ The court discussed the municipality’s zoning power in light of the public trust doctrine because in zoning the beach-front land for single family residential use, the municipality “made no effort to accommodate the state policy of affording recreational opportunities along the Atlantic seacoast for as many citizens as possible.”³⁹

This tendency for the courts to invalidate a municipality’s potential interference with the public trust holds even where a private party makes significant investments in a municipally-owned beach to privatize access for profit.⁴⁰ For example, in *Van Ness v. Borough of Deal* (*Van Ness*),⁴¹ the Supreme Court of New Jersey ruled in favor of the Public Advocate seeking access to a portion of a municipally-owned beach directly in front of a casino that had been restricted to casino members.⁴² The court required public access under the public trust doctrine despite the casino’s extensive investment in making the upland dry sand area suitable for normal beach use and despite the land having never been explicitly designated for public beach purposes.⁴³ The court reversed the lower court’s approval of a municipal restriction of the dry sand area in front of the casino because the public trust doctrine dictates that the dry sand area is a necessary adjunct to ocean swimming and bathing.⁴⁴

Furthering this trend, *Raleigh Avenue Beach Association v. Atlantis Beach Club, Inc.* (*Raleigh Ave. Beach Ass’n*)⁴⁵ demonstrated that the Supreme Court of New Jersey’s disallowance of private interference with public access to the beach is not confined to municipally-

38. *Id.* at 887 (explaining purpose of public trust doctrine and public access to ocean beaches).

39. *Id.* (explaining why municipality’s zoning ordinance conflicts with ideals underlying public trust doctrine).

40. *See generally infra* notes 41-44 and accompanying text.

41. 393 A.2d 571, 573 (1978).

42. *Id.* at 572 (indicating parts of beach restricted to casino members only); Department of the Public Advocate, *2008 Annual Report*, N.J. LEGISLATURE 2 (2008), http://www.njleg.state.nj.us/OPI/Reports_to_the_Legislature/public_advocate_ar_november2009.pdf (setting forth Public Advocate’s mission to act as representative of people in wide range of important issues); *see also* N.J. Rev. Stat. § 52:27EE-86 (2013) (abolishing Department of Public Advocate).

43. *Id.* at 573-74 (reasoning that whether beach is natural or man-made, it is subject to public trust doctrine and explaining city’s failure to designate casino beach for public purposes is immaterial).

44. *Id.* at 574 (summarizing reversal of lower court’s judgment approving municipal restriction on use of casino beach).

45. 879 A.2d 112 (2005).

owned beaches.⁴⁶ In *Raleigh Ave. Beach Ass'n*, a newly established private beach club began limiting public access to its beach by charging significant access, membership, and easement fees.⁴⁷ The beach had previously been open to the public and was the sole public beach in this township facing the Atlantic Ocean.⁴⁸ In addition, the beach was being used as a business enterprise and was adjacent to a condominium project conditioned on a permit requiring public access to its beach.⁴⁹ An application of the *Matthews* factors test⁵⁰ required the private beach club owners to afford reasonable access to the foreshore in addition to a suitable area for recreation on the dry sand beach area.⁵¹ The court permitted the beach club to charge a reasonable fee for public access to cover any basic services it provided (i.e., lifeguards and trash removal), but not to generate profit at the expense of public beachgoers.⁵²

Public rights to use and access the beach equally are not the state's only duty under the public trust case law. New Jersey also has an "affirmative fiduciary obligation" to ensure the public's right to a viable and healthy marine environment.⁵³ In *State of New Jersey, Department of Environmental Protection v. Jersey Central Power and Light Company (State of N.J., Dep't of Env'tl. Prot.)*,⁵⁴ the court relied on *Arnold v. Mundy*⁵⁵ in holding that a power company violated the public trust doctrine when, in the course of operating its nuclear plant at Oyster Creek, upwards of 500,000 commercially important fish were killed.⁵⁶ The appellate division supported the trial judge's

46. *Id.* at 113 (holding private beach club required to be open to general public at reasonable fee approved by DEP).

47. *Id.* at 115 (summarizing history of Atlantis beach club and its introduction of fees for public access).

48. *Id.* (explaining Atlantis beach club's location contains only beach in its township facing Atlantic Ocean).

49. *Id.* at 114-15 (labeling Atlantis beach club as enterprise and describing factual history of permit issued to neighboring condominium building).

50. *Matthews v. Bay Head Improvement Assoc.*, 471 A.2d 355, 365 (1984) (outlining factors test).

51. *Raleigh Ave. Beach Ass'n*, 879 A.2d at 120 (explaining use of beach's dry sand area has long been linked to enjoyment of ocean, so it is protected by public trust doctrine).

52. *Id.* at 125 (expecting DEP compliance in approving reasonable beach club fees and not approving fees that burden public or limit public access).

53. *State of N.J., Dep't of Env'tl. Prot. v. Jersey Cent. Power & Light Co.*, 308 A.2d 671, 674 (N.J. Super. Ct. Law Div. 1973), *rev'd*, 351 A.2d 337 (1976) (pointing out state's affirmative fiduciary obligation to ensure public's right to viable marine environment).

54. 336 A.2d 750 (N.J. Super. Ct. App. Div. 1975).

55. 6 N.J.L. 1, 71 (N.J. 1821).

56. *State of N.J., Dep't of Env'tl. Prot.*, 336 A.2d at 753 (outlining facts of case at hand).

212 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

reasoning that the state has the right, along with the fiduciary duty, to seek damages for the destruction of wildlife that are considered part of the public trust.⁵⁷ This fiduciary duty extends to a broad assurance that the rights of the public to a viable marine environment are protected.⁵⁸ Though the Supreme Court of New Jersey eventually reversed the appellate division's judgment on different grounds, New Jersey's fiduciary duty remains.⁵⁹

Case law also dictates what the state cannot do in light of the public trust. First, "[t]he state can no more abdicate its trust over property in which the whole people are interested . . . than it can abdicate its police powers."⁶⁰ The state is forbidden from transferring property held in trust for the public unless disposal of a parcel is done in promotion of the public interest and without any substantial impairments of the public interest in the waters.⁶¹

Second, it is settled that the state cannot restrict a municipality's reasonable regulations involving access to and use of municipally-owned beaches.⁶² Municipalities play a vital role in managing the coastline as an extension of the state in its duty to protect the public trust doctrine.⁶³ In *Van Ness*, the court set forth a municipality's right, in exercising its police power, to adopt "reasonable regulations as to the use and enjoyment of the beach area."⁶⁴ This right is echoed in *State v. Vogt*,⁶⁵ where a municipality's regulation prohibiting topless conduct on its beaches was upheld under the public trust doctrine because the regulation was considered to be within the discretionary interest of the public's health and safety.⁶⁶

As extensions of the state, New Jersey's beachfront municipalities have a duty to protect the public trust in their local coastal man-

57. *Id.* at 759 (agreeing with trial judge's conclusion that state has duty to collect damages for environmental harm).

58. *Id.* (explaining public's right to healthy marine environment as it relates to public trust doctrine).

59. *See generally supra* note 53 and accompanying text.

60. *Ill. Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 453 (discussing history of state's police powers).

61. *Id.* at 435 (discussing purpose of public trust doctrine).

62. *Van Ness v. Borough of Deal*, 393 A.2d 571, 573 (noting municipality's obvious right to adopt reasonable regulations relating to use and enjoyment of its beach area).

63. *See generally infra* notes 64-66 and accompanying text.

64. *Van Ness*, 393 A.2d at 573 (asserting municipality's right to charge reasonable maintenance fees to public beachgoers).

65. *New Jersey v. Vogt*, 775 A.2d 551 (N.J. Super. Ct. App. Div. 2001).

66. *Id.* at 561 (reasoning public trust doctrine does not prevent, but rather supports, municipality's legitimate attempt to limit public nudity in interest of public welfare).

2018] NEW JERSEY'S LEGAL DUTY TO MANAGE ITS COASTLINE 213

agement regulations. In *Slocum v. Borough of Belmar (Slocum)*,⁶⁷ a New Jersey trial court considered a borough's beach admission fees unreasonable because they were not used for expenditures that benefit public beach users.⁶⁸ The borough had a trustee obligation over its public beaches, and the unreasonable fees constituted a breach of the borough's duty of loyalty to its public beachgoer beneficiaries.⁶⁹ The trial court reasoned that as trustees, beachfront municipalities have a duty to remain loyal to the public interest by disclosing coastal management plans and regulations, while keeping clear and detailed accounts of all beach-related expenditures.⁷⁰ The court opined that the borough's use of surplus fee revenues for the sole benefit of its own local residents, rather than for future beach-related costs, was a violation of the public trust.⁷¹

Most importantly, case law demonstrates the state's ongoing duty to construe the public trust doctrine as malleable and context-driven. The doctrine "should not be considered fixed or static, but should be *molded and extended* to meet changing conditions and needs of the public it was created to benefit."⁷² This notion is of particular importance with respect to future applications of the public trust doctrine in the face of climate change, which is further explored in Part VI below.⁷³

III. THE STATE'S LEGAL REQUIREMENTS IN MANAGING ITS COASTLINE UNDER THE PUBLIC TRUST DOCTRINE: THE DEPARTMENT OF ENVIRONMENTAL PROTECTION & THE COASTAL ZONE MANAGEMENT PROGRAM

Section 7 of the New Jersey Administrative Code (N.J.A.C.) sets forth rules to guide the New Jersey Department of Environmental Protection (DEP) in its effort to manage the coastline.⁷⁴ The DEP's "core mission" is to protect the state's natural resources in order to

67. 569 A.2d 312 (Law. Div. 1989).

68. *Id.* at 327 (holding admission fees unreasonable and ordering Belmar to revise fees in accordance with opinion).

69. *Id.* at 317 (explaining how borough violated public trust).

70. *Id.* (describing duties borough owes to public).

71. *Id.* (explaining borough failed to sufficiently consider beach-going public's best interest).

72. *Borough of Neptune City v. Borough of Avon-By-The-Sea*, 294 A.2d 47, 54 (N.J. 1972) (emphasis added) (emphasizing public trust doctrine is intended to morph as necessary over time); *see also* *Raleigh Ave. Beach Ass'n v. Atlantis Beach Club, Inc.*, 879 A.2d 112, 121 (2005) (providing public trust doctrine is flexible depending on societal needs).

73. *See infra* notes 157-176 and accompanying text.

74. *See generally* N.J. ADMIN. CODE § 7:1-7:70 (2017) (setting forth rules for DEP to rely on as guidance in managing New Jersey's coastline).

214 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

“ensure continued public benefit” while “positively impacting the economic growth of the state.”⁷⁵ To carry out its mission, the DEP is organized into various organizational units.⁷⁶ The Land Use Management unit plays a key role in coastal management as part of the state’s Coastal Zone Management Program (NJCMP) established in 1980.⁷⁷ The NJCMP is part of the National Coastal Zone Management Program, which is set up to address national coastal issues such as climate change, sustainability, resilient coastal community planning, ocean planning, and energy development.⁷⁸

Section 7:7 of the N.J.A.C. encompasses the Coastal Zone Management Rules, which establish the DEP’s regulations regarding the use and development of coastal resources.⁷⁹ In July of 2015, the DEP consolidated the Coastal Permit Program rules and Coastal Zone Management rules into one chapter.⁸⁰ The DEP consolidated all of the coastal rules to better align New Jersey’s coastal, freshwater, and flood hazard permitting programs and to narrow permitting efforts to activities that pose the greatest risk to the coastal environment.⁸¹ The DEP’s overarching goal is to continue encouraging appropriate redevelopment of more resilient coastal communities.⁸²

More specifically, the Coastal Zone Management Rules guide the Department in its ongoing duty to review three types of permit applications: (1) coastal permits under the Coastal Area Facility Review Act (CAFRA),⁸³ (2) coastal wetlands permits under the Wetlands Act of 1970,⁸⁴ and (3) waterfront development permits under the Waterfront Development Act.⁸⁵ Additionally, the rules are used

75. See generally *id.* at § 7:1-1.1 (discussing DEP’s core mission).

76. See *id.* at § 7:1-1.3 (outlining organizational units of department).

77. *New Jersey Coastal Management Program*, STATE OF N.J. DEP’T OF ENVTL. PROT., <http://www.state.nj.us/dep/cmp/> (last visited Feb. 5, 2018) (discussing New Jersey’s Coastal Zone Management Program in greater depth).

78. *Id.* (outlining some specific issues program is designed to address).

79. See N.J. ADMIN. CODE § 7:7 (2017) (setting forth New Jersey’s Coastal Zone Management Rules).

80. *Coastal Areas*, STATE OF N.J. DEP’T OF ENVTL. PROT., http://www.nj.gov/dep/landuse/coastal/cp_main.html (last updated Jan. 16, 2018) (discussing consolidation of all coastal rules into one chapter).

81. *Id.* (justifying consolidation of coastal rules).

82. *Id.* (discussing DEP’s goals in consolidating coastal rules).

83. N.J. STAT. ANN. § 13:19-1 et seq. (West 1973) (setting forth CAFRA, which guides New Jersey’s coastal wetlands permitting process).

84. *Id.* § 13:9A-1 et seq. (West 1970) (setting forth Wetlands Act of 1970, enacted to preserve ecological balance of area between land and sea).

85. *Id.* § 12:5-3 (West 2016) (setting forth Waterfront Development Act, which grants DEP power to prevent detrimental trespass upon New Jersey’s navigable waters or riparian lands). The law also declares that all proposals for develop-

2018] NEW JERSEY'S LEGAL DUTY TO MANAGE ITS COASTLINE 215

to review water quality certificates subject to Section 401 of the Federal Clean Water Act⁸⁶ and federal consistency determinations under Section 307 of the Federal Coastal Zone Management Act.⁸⁷ Finally, the rules are bases for recommendations to the Tidelands Resource Council on its applications for riparian grants, leases, and licenses.⁸⁸

The NJCMP sets forth eight broad coastal goals with supplemental policies designed to provide concrete ways to meet each goal. The Coastal Zone Management Rules essentially codify these broad goals and policies so that they are enforceable under the legal authority of the Federal Coastal Zone Management Act.⁸⁹

As part of its second broad goal to effectively manage the ocean and estuarine resources, the state is responsible for administering safe, environmentally friendly uses of coastal waters and beaches “to protect natural, cultural, and aesthetic resources, promote safe navigation, and provide recreational opportunities.”⁹⁰

The third goal is concerned with providing meaningful public access to and use of tidal waterways and their shores through supplemental state policies involving the preservation of: (1) public trust rights to tidal waterways and their shores; (2) “the coastal land-

ment on any waterfront upon any navigable water or stream in New Jersey be submitted to DEP for approval. *Id.*

86. 33 U.S.C. § 1251 et seq. (1992) (setting forth Federal Clean Water Act of 1972, which regulates quality standards for surface waters and discharges of pollutants into waters throughout United States); 33 U.S.C. § 1342 (setting forth Section 401 of Clean Water Act, which requires any applicant for federal license or permit provide certification ensuring compliance with Act and with applicable state water quality standards).

87. 16 U.S.C. § 1456 (1992) (setting forth Section 307 of Coastal Zone Management Act, which guides management of nation's coastal resources). Section 307, known as the “federal consistency” provision, requires that federal actions that will have reasonably foreseeable effects on a state's coastal uses or resources be consistent with that state's federally-approved coastal zone management program. *Id.*

88. Division of Land Use Regulation, *Tidelands*, STATE OF N.J. DEP'T OF ENVTL. PROT. (Mar. 5, 2018), http://www.nj.gov/dep/landuse/tl_main.html (defining tidelands, or riparian lands). These lands include any lands either currently or formerly flowed by a natural waterway. *Id.* The State of New Jersey owns all riparian lands as part of the public trust. *Id.* Anyone who seeks to use riparian lands must file an application with the state for approval and pay a corresponding fee. *Id.*

89. 16 U.S.C. §1455a (West) (delineating how state policies set forth in New Jersey's federally-approved Coastal Zone Management Rules are legally binding). These rules are binding under the Coastal Zone Management Act within a state's jurisdiction. *Id.* Enforceable policies are not applicable to federal lands, waters, agencies, or areas outside of a state's jurisdiction. *Id.*

90. N.J. ADMIN. CODE § 7:7-1.1(c)(2)(iii) (2017) (outlining state's goal to promote safe, environmentally friendly uses of oceans and waterways).

216 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

scape for aesthetic and cultural enrichment;” (3) the safe and sound public access to the coast; (4) “affordable public facilities and services;” and (5) the balance of competing coastal uses.⁹¹

The sixth goal, titled “safe, healthy and well-planned coastal communities and regions[,]” is realized through policies requiring the state to, among other things, “manage coastal activities and foster communities and regions[.]” These policies ultimately help to “sustain coastal economies[,]” “protect the natural environment[,]” “minimize the threat of natural hazards to life and property[,]” and “provide meaningful public access to tidal waterways and their shores.”⁹² Goal six also encompasses a policy mandating the preservation and enhancement of beach and dune systems, as well as wetlands.⁹³ Furthermore, it prioritizes the management of natural features with the goals of: (1) protecting the public from natural hazards; (2) promoting the public health, safety, and welfare; and (3) promoting and implementing strategies for both the development of hazard mitigation plans and for the elimination or reduction of risks to human health and the ecosystem from coastal activities.⁹⁴

Ultimately, the goals and policies outlined above serve as “the guiding principle of the state’s coastal laws and as the basis for all state coastal permit decisions[.]”⁹⁵ In addition to ensuring the enforceability of crucial laws regulating the coastline in New Jersey,⁹⁶ the Coastal Zone Management Rules help to elucidate nearly all coastal decisions made throughout the state.⁹⁷

The public trust is inextricably linked to these goals and policies because each of them involve the enhancement of public use and the protection of public access to the state’s shoreline and wa-

91. *Id.* § 7:7-1.1(c)(3)(i-v) (2017) (outlining state’s goal to ensure public access to shores through supplemental state policies).

92. *Id.* § 7:7-1.1(c)(6)(i-vi) (2017) (promoting safe, well-planned coastal communities through state policy).

93. *Id.* § 7:7-1.1(c)(6)(iii) (focusing on protecting beaches, dune systems, and wetlands).

94. *Id.* § 7:7-1.1(c)(6)(iii-vi) (focusing on hazard mitigation plan development and protecting human health).

95. History and Legal Precedents, *supra* note 3, at Section II(B)(5) (explaining applicability of Coastal Zone Management Regulations in New Jersey).

96. *See* N.J. STAT. ANN. § 13:19-1 et seq. (representing Coastal Facility Review Act, which protects coastal lands); § 13:9A-1 et seq. (representing Wetlands Act of 1970, which requires DEP to regulate to protect coastal wetlands); § 12:5-3 (representing Waterfront Development Law, which focuses on impacts caused by development along waterways); § 12:3 (representing Tidelands Act, which governs management of tidelands).

97. History and Legal Precedents, *supra* note 3, at Appendix A(5) (describing Coastal Zone Management Rules as basis for all state coastal permit decisions).

2018] NEW JERSEY'S LEGAL DUTY TO MANAGE ITS COASTLINE 217

terways. The state holds in trust beaches along the shore for precisely these reasons.⁹⁸ Without codified goals that elucidate the principles embodied in the public trust (equal and safe public access to the ocean, shore, and tidal waterways), the doctrine could eventually falter.⁹⁹ A healthy coastal environment and adequate, safe public access to the shore are crucial to the state's economy and to its residents' quality of life.¹⁰⁰ Climate change represents a real and direct threat to both the environment and to public access along the shore.¹⁰¹ Thus, the failure to plan for climate change by seeking to minimize its impending damage along the state's coastline will necessarily result in the state's failure to fulfill its public trust obligations.

IV. HOW NEW JERSEY BALANCES ITS PUBLIC TRUST OBLIGATIONS WITH PRIVATE PROPERTY RIGHTS

Promotion of the public trust doctrine necessarily involves the ongoing infringement of private property rights.¹⁰² Thus, to properly manage the coastline for the public good, the courts must balance policies furthering land ownership and productivity with public trust doctrine policies furthering environmental protection and equal coastal access.

First, the state is far from unlimited in its power to prioritize the public trust ahead of an individual's private property rights. An agency's actions are subject to an "arbitrary" and "capricious" standard of review.¹⁰³ If an agency action is found to be "arbitrary, capricious, or unreasonable," the reviewing court will deem it unlawful.¹⁰⁴ The challenger (in this case, the affected private prop-

98. History and Legal Precedents, *supra* note 3, at Section II(A)(3) (explaining public rights to waterways and shores in New Jersey are held by state in trust for benefit of public).

99. History and Legal Precedents, *supra* note 3, at Section II(A)(4) (explaining how litigation surrounding enforcement of public trust doctrine arises when lands which should be publically accessible for recreational purposes are appropriated to benefit select few).

100. Tourism Economics, *supra* note 2 (illustrating New Jersey's partial economic dependence on its shore-attracted tourism).

101. See *generally infra* notes 121-155 (discussing threats of climate change).

102. History and Legal Precedents, *supra* note 3 (pointing out public access issues are contentious battles between private landowners and public, often giving rise to litigation).

103. *Seigel v. N.J. Dep't of Env'tl. Prot.*, 930 A.2d 461, 466 (N.J. Super. Ct. App. Div. 2007) (discussing court's duty in reviewing administrative agency actions to determine whether action is arbitrary, capricious, or unreasonable).

104. *Id.*; 5 U.S.C. § 706 (2018) (outlining scope of review under Administrative Procedure Act, which compels reviewing court to hold unlawful and set aside any agency action found to be arbitrary and capricious).

218 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

erty owner) carries the burden of proof.¹⁰⁵ In determining whether a challenger has met its burden, the Appellate Division considers:

(1) whether the agency's decision offends the state or Federal Constitution; (2) whether the agency's action violates express or implied legislative policies; (3) whether the record contains substantial evidence to support the findings on which the agency based its action; and (4) whether in applying the legislative policies to the facts, the agency clearly erred in reaching a conclusion that could not reasonably have been made on a showing of the relevant factors.¹⁰⁶

Though agency actions are entitled to deference, the Appellate Division is "not bound by the agency's legal conclusions," nor do they "act as a rubber stamp of approval for the agency's decisions."¹⁰⁷

In fact, courts do not hesitate to roll back a DEP decision that was unfair or unjustified. For example, in *Seigel v. New Jersey Department of Environmental Protection (Seigel)*,¹⁰⁸ the DEP denied a beachfront landowner's permit application to build a second house on her property facing the ocean.¹⁰⁹ The court reasoned that the property was a designated "primary frontal dune."¹¹⁰ The court ruled in favor of the landowner, who successfully argued that the development would not take place on a dune and that the agency erred in its determination that her entire property was a primary frontal dune.¹¹¹ In its analysis, the court considered the "fundamental unfairness that would result" from ruling in favor of the DEP's determination that the entire parcel was a "primary frontal dune."¹¹² In addition, the court determined that the DEP had failed to demonstrate that permitting the second structure would "cause significant adverse long-term impacts on the natural func-

105. *Seigel*, 930 A.2d at 466 (explaining challenger of agency rule carries burden of proving action arbitrary and capricious).

106. *Id.* at 466 (outlining elements of reviewing court's inquiry).

107. *Id.* at 466 (noting court's careful balance between agency deference and independent judgment in reviewing agency actions).

108. 930 A.2d 461 (N.J. Super. Ct. App. Div. 2007).

109. *Id.* at 467 (providing facts of case).

110. *Id.* (summarizing DEP's argument against private landowner).

111. *Id.* at 471 (explaining why court is convinced agency erred here).

112. *Id.* (finding additional support that fundamental unfairness would result to petitioner if agency action were upheld).

2018] NEW JERSEY'S LEGAL DUTY TO MANAGE ITS COASTLINE 219

tioning of the beach and dune system[.]”¹¹³ By ensuring that DEP actions are fair and justified, courts are able to resolve competing land use disputes while enforcing the state’s public trust duties.

Even where agency actions that infringe upon a private property owner’s rights are lawful, property owners may still obtain compensation through takings claims.¹¹⁴ In New Jersey, a taking occurs when an agency, government, individual, or corporation takes private property for public use without just compensation.¹¹⁵ For example, in *Klumpp v. Borough of Avalon (Klumpp)*,¹¹⁶ the Supreme Court of New Jersey ruled a physical taking occurred after a borough constructed a dune on a portion of plaintiffs’ beachfront property in response to a storm.¹¹⁷ Additionally, the borough initially fenced in a portion of the plaintiffs’ property to prevent public access and eventually constructed a pathway over the plaintiffs’ property to restore public access to the beach.¹¹⁸

This infringement on private property rights in support of the public trust doctrine may seem unfair and unnecessary to the affected private landowner, but it is imperative to the ongoing maintenance and preservation of the precious coastline. The above cases demonstrate that private property owners are not powerless in this equation because they are legally equipped to challenge arbitrary agency actions or obtain compensation in the event of a taking.¹¹⁹

Climate change will affect the New Jersey coastline and thus present new challenges in the kinds of disputes described above, beyond the competing interests that courts must weigh already. These effects are explored in Part V below.¹²⁰

V. HOW CLIMATE CHANGE IS MOST LIKELY TO AFFECT NEW JERSEY’S COASTLINE

Climate change presents two pressing problems for the New Jersey coastline: accelerated sea level rise and an increase in the

113. *Seigel*, 930 A.2d at 467 (explaining why DEP failed to adequately consider whether granting petitioner’s permit would cause long-term negative impacts).

114. U.S. CONST. amend. V (prohibiting government’s taking of private property without just compensation).

115. N.J. STAT. ANN. CONST. art. 1, ¶ 20 (forbidding government, individuals and private corporations from taking private property for public use without first compensating property owner).

116. *Klumpp v. Borough of Avalon*, 997 A.2d 967 (N.J. 2010).

117. *Id.* at 969 (reasoning physical taking had occurred).

118. *Id.* at 980 (describing parties’ factual history).

119. *See supra* notes 102-118 and accompanying text.

120. *See infra* notes 121-155 and accompanying text.

220 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

severity and frequency of extreme storm events.¹²¹ Each issue presents its own set of challenges for the state, some of which overlap, and thus can be difficult to distinguish.

Since 1912, records of sea level rise have indicated an average rate of one and one-half inches per decade as measured in Atlantic City (bordering the Atlantic Ocean).¹²² As sea levels rise, the shoreline gradually recedes due to inundation and erosion.¹²³ Climate change scientists project an accelerated sea level rate rise in the future, with best estimates indicating a rise of eighteen inches in New Jersey by 2050 and forty-two inches by 2100.¹²⁴ These numbers could understate the problem, as nationally focused studies project up to seventy-two inches in sea level rise by 2100.¹²⁵ Both the national and local projections are bad news for coastal residents who will become increasingly vulnerable to property damage from inundation, altogether loss of land, and greater exposure to flooding and storm surge.¹²⁶ The base sea level will become higher each year and flooding will become more frequent.¹²⁷ Since the majority of New Jersey residents are clustered along the coastline, beach-front landowners are not the only victims that need to worry.¹²⁸ Accelerated sea level rise equates to trouble for all sorts of low-lying infrastructure in addition to private homes and businesses throughout coastal communities.¹²⁹

One of the most disturbing aspects about climate change is our inability to stop it. Dr. Benjamin Strauss, an expert on sea-level rise

121. *A Summary of Climate Change Impacts and Preparedness Opportunities for the Coastal Communities in New Jersey*, N.J. CLIMATE CHANGE ADAPTION ALL. (Rutgers University, Working Brief, April 2014), <https://njadapt.rutgers.edu/docman-listener/working-briefs/108-njcaa-coastal-communities/file> [hereinafter *A Summary of Climate Change Impacts on Coastal Communities*] (describing challenges climate change presents to New Jersey's coastal communities).

122. *Id.* at 4 (presenting data on sea level rise in Atlantic City, where records have been kept since 1912).

123. *Id.* at 2, Table 1 (summarizing New Jersey's risks due to sea level rise).

124. *Id.* at 4 (providing best sea-level rise estimates in New Jersey based on other studies).

125. Matthew E. Hauer et. al., *Millions Projected to Be at Risk From Sea-Level Rise In The Continental United States*, NATURE CLIMATE CHANGE, 1, 2 (2016) [hereinafter *Millions Projected To Be At Risk*] (projecting national sea level rise this century).

126. *A Summary of Climate Change Impacts on Coastal Communities*, *supra* note 121, at 2, Table 1 (discussing consequences of sea level rise in New Jersey).

127. *Id.* at 4 (noting extreme flooding will result from accelerated sea level rise).

128. *See* Coastal Mgmt. Office of the N.J. Dep't of Env'tl. Prot., *supra* note 11, at 1. (stating majority of population in New Jersey resides near coastline).

129. *A Summary of Climate Change Impacts on Coastal Communities*, *supra* note 121, at 4 (discussing effect of sea level rise on infrastructure and low-lying development along shore).

and vice president of the research group Climate Central's sea level and climate impacts division, predicts a one- to two-foot rise by 2100 even if carbon emissions are immediately scaled back.¹³⁰ A study published in *Nature Climate Change* examined affected populations across coastal states using data from the NOAA under both three- and six-foot rise scenarios.¹³¹ Under the worst case scenario (the six-foot rise), over 800,000 New Jersey residents may have to relocate by 2100.¹³² Under the more optimistic scenario (a three-foot rise), over 300,000 New Jersey residents may have to relocate by 2100.¹³³ The chilling reality is that even under the three-foot rise scenario, "Atlantic City will no longer be viable."¹³⁴ Dr. Strauss estimates the "same is probably true for Cape May."¹³⁵ Though the precise impact of the loss of at least two major coastal cities is unknown, one thing is for sure: mitigation efforts must commence as soon as possible to narrow the possibilities and minimize the potential harm.

Extreme storm events represent the second major problem facing coastal communities as a result of climate change.¹³⁶ More frequent and severe heat waves, hurricanes, and rainfalls are likely to occur.¹³⁷ Due to a higher base sea level, areas currently prone to flooding will become even more vulnerable to flooding in the future.¹³⁸ Intensive flooding, precipitation events, and storm surges are sure to have a negative impact on tourism throughout shoreline

130. *Rising Seas Could Drive 837K N.J. Residents from Their Homes, Study Says*, CRAIG MCCARTHY (Mar. 16, 2016), http://www.nj.com/news/index.ssf/2016/03/rising_seas_could_force_837k_nj_resident_from_thei.html [hereinafter *Rising Seas*] (discussing effects of climate change on Jersey shore).

131. *Millions Projected to Be at Risk*, *supra* note 125, at 2 (discussing three and six-foot sea level rise scenarios).

132. *Id.* at 2, Table 1 (showing projected populations at risk under six-foot rise by 2100 scenario in New Jersey).

133. *Id.* (showing projected populations at risk under three-foot rise by 2100 scenario in New Jersey).

134. *Rising Seas*, *supra* note 130 (citing *Millions Projected to Be at Risk*, *supra* note 125) (pointing out Atlantic City will no longer be viable under three-foot rise scenario).

135. *Id.* (pointing out Cape May will probably not be viable under three-foot rise scenario).

136. *A Summary of Climate Change Impacts on Coastal Communities*, *supra* note 121, at 3 (noting two primary challenges climate change presents for New Jersey as sea levels rise and extreme storm events).

137. *Id.* (summarizing effects of extreme storm events on New Jersey).

138. *Id.* (discussing sea level rise and its implications for storm surges that will operate from elevated base).

222 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

communities, as weather is an established “key wildcard” that can significantly dampen visitation rates.¹³⁹

Apparently, New Jersey’s coastal communities are already losing residents despite a steady growth in tourism. According to a census data review carried out by *NJ Advance Media* in 2016, the average town along the New Jersey coast has experienced a nine percent decline in population since 2005.¹⁴⁰ Some towns, such as Beach Haven and Sea Isle City, have lost close to forty percent of their populations since 2005.¹⁴¹ This is thought to reflect major recovery issues stemming from 2012’s Hurricane Sandy, in addition to changing economic landscapes across coastal communities.¹⁴²

The loss of state GDP due to tourism will be tough on New Jersey’s economy. Increased storm recovery costs and mitigation efforts will further exacerbate this problem. Assessments of Hurricane Sandy’s economic impact indicate an almost twelve billion dollar loss in New Jersey’s GDP (\$950 million of which is tourism-related), on top of an estimated recovery cost of over twenty-nine billion dollars.¹⁴³ Private insurance companies like Allstate and State Farm have since refused to cover homes along New Jersey’s coast, and where the companies do provide coverage, it is at a much higher price.¹⁴⁴ Federally subsidized programs do not always have the budget to foot the bill when disaster strikes, especially in a country where more disasters seem to be striking each year.¹⁴⁵

Unfortunately, the story of the wrath of climate change in coastal communities throughout New Jersey does not end with an economic beating. Extreme storm events could give rise to numerous public health problems including, but not limited to, heat-related illnesses, a decrease in air quality conditions, an increase in storm-related injuries and stressors, and greater exposure to an ex-

139. Tourism Economics, *supra* note 2, at 45 (discussing weather as key wildcard for visitation rates in New Jersey).

140. Erin Petenko, *The Jersey Shore is Losing Year-Round Residents by The Thousands*, Nj.COM (June 19, 2016), http://www.nj.com/news/index.ssf/2016/06/the_jersey_shore_is_losing_year-round_residents_by_the_thousands.html [hereinafter *The Jersey Shore is Losing Year-Round Residents*] (highlighting significant resident population loss due to extreme weather events along Jersey shore).

141. *Id.* (pointing out areas where population loss has been especially high).

142. *Id.* (hypothesizing why these shore populations are decreasing).

143. *A Summary of Climate Change Impacts on Coastal Communities*, *supra* note 121, at 5 (discussing impact of Hurricane Sandy on New Jersey’s Gross Domestic Product).

144. *Id.* (noting private insurers’ refusal to cover homes along much of New Jersey shoreline since Hurricane Sandy in 2012).

145. *Id.* (pointing out limited funding of government-subsidized insurance programs since Hurricane Katrina in 2005).

panded range of infectious diseases.¹⁴⁶ As the average temperatures rise, summer heat waves will likely increase in frequency and intensity.¹⁴⁷ Vulnerable populations like children, the elderly, diabetics, or people on medications with dehydrating effects will be at a greater risk for heat-related morbidity and mortality.¹⁴⁸ Air quality will also likely decrease, resulting in increased rates of asthma and allergies.¹⁴⁹

Storms present issues beyond the immediate threat of falling trees and the potential for drowning. Flooding and power outages can displace populations and lead to an increase in the risk of contaminated food and water consumption.¹⁵⁰ Additionally, mold, mildew, and toxic contamination from flooding of hazardous sites can worsen existing health problems.¹⁵¹ Evacuation and transportation will always be an issue for vulnerable populations or those with insufficient financial support.¹⁵² Floods can cause an increase in waterborne parasites, and warming temperatures can expand the range of vector-borne diseases like Lyme's and West Nile virus.¹⁵³ Finally, affected populations are at risk for mental health issues caused by repetitive environmental stressors.¹⁵⁴

This is not merely a problem for our children and grandchildren. Though new public health issues are not expected to arise in the near future, existing health issues are expected to get worse.¹⁵⁵ Part VI below explores New Jersey's duty under the public trust doctrine in relation to climate change mitigation efforts.¹⁵⁶

146. *Id.* (describing challenges climate change presents to New Jersey's public health sector).

147. *Id.* at 3 (discussing impact of increased heat waves and heat-related illnesses).

148. *A Summary of Climate Change Impacts on Coastal Communities*, *supra* note 121, at 3 (highlighting especially vulnerable populations affected by heat-related illnesses).

149. *Id.* at 5 (explaining impact of decreased air quality conditions on New Jersey's population).

150. *Id.* at 7, Table 1 (outlining consequences of storm-related injuries and stresses to New Jersey's coastal population).

151. *Id.* (summarizing specific effects of climate change on public health).

152. *Id.* at 9 (expanding on acute storm-related problems for transportation and availability of medicines or medical equipment).

153. *A Summary of Climate Change Impacts on Coastal Communities*, *supra* note 121, at 9-10 (discussing how infectious diseases could become more common because of climate change).

154. *Id.* at 6 (explaining repetitive environmental stressors will likely lead to increased mental health disorders throughout New Jersey's coastal population).

155. *Id.* at 7, Table 1 (pointing out how existing chronic health conditions will be exacerbated by climate change).

156. *See infra* notes 157-176 and accompanying text.

VI. HOW NEW JERSEY'S DUTY TO PROTECT THE PUBLIC TRUST
ALIGNS DIRECTLY WITH CLIMATE CHANGE ALLEVIATION EFFORTS

Climate change implicates much more than merely a person's basic right to access or enjoy the dry sand area along New Jersey's precious coastline. At best, climate change presents a grim threat to New Jersey's coastline and coastal populations.¹⁵⁷ At worst, climate change will wipe out existing coastal communities altogether and drive populations inland.¹⁵⁸ Either way, existing case law emphasizing the public trust doctrine in New Jersey indicates that the state must maintain public access to the coast, preserving its utility for the public welfare.¹⁵⁹ Since climate change presents a direct threat to public access and public health along the coastline, the state must address the existing and projected effects of climate change comprehensively.¹⁶⁰

It is established that the public trust doctrine broadly requires New Jersey to manage the coastline for "the benefit of the public[.]"¹⁶¹ New Jersey's Coastal Zone Management Rules (discussed in Part III) provide some guidance as to how this goal translates into a state duty to protect the public from natural hazards and implement strategies designed to reduce coastal-related risks to human health and the ecosystem.¹⁶² Climate change, as outlined previously, represents a severe coastal-related risk to human health and the ecosystem.¹⁶³ Therefore, New Jersey's DEP must act to minimize the harm.

The most recent case law illustrates the DEP's broad power. In a post-Hurricane-Sandy private takings claim, a New Jersey appellate court highlighted the DEP's duty to protect "every shore front along the Atlantic Ocean . . . and to undertake *any and all* actions

157. See generally *Millions Projected to Be at Risk*, *supra* note 125 (outlining population risks state-by-state as result of projected climate changes through 2100).

158. See generally *Rising Seas*, *supra* note 130 (discussing how two major shore towns will no longer be viable under conservatively estimated three foot sea level rise); *The Jersey Shore is Losing Year-Round Residents*, *supra* note 140 (capturing population loss throughout New Jersey's coastal communities since 2005).

159. For a discussion of case law that supports the state's duty to preserve the coastline under the public trust doctrine, see *supra* notes 26-72 and accompanying text.

160. For a discussion of the direct threat climate change poses to New Jersey's coastal communities, see *supra* notes 121-155 and accompanying text.

161. *History and Legal Precedents*, *supra* note 3, at Section II(B) (discussing state's duty to preserve its shores for benefit of public).

162. For a discussion of the Coastal Zone Management Rules and substantive state goals, see *supra* notes 79-100 and accompanying text.

163. For a discussion of the direct threat climate change poses to New Jersey's coastal communities, see *supra* notes 121-155 and accompanying text.

and work essential to the execution of that authority[.]”¹⁶⁴ This purposefully broad power, coupled with the idea that the public trust doctrine must be molded to fit the current needs of its beneficiaries,¹⁶⁵ supports a state duty to use the public trust doctrine to anticipate and minimize the effects of climate change.

Recent case law also supports a municipality's reliance on the public trust doctrine to respond to rising sea levels through actions like beach replenishment. In *City of Long Branch v. Jui Yung Liu (Jui Yung Liu)*,¹⁶⁶ the Supreme Court of New Jersey ruled in favor of a municipality that implemented a government-funded beach replenishment program that resulted in an addition of dry land to a private owner's beachfront lot.¹⁶⁷ The expanded dry beach remained the state's property as formerly tidally-flowed land under the public trust doctrine.¹⁶⁸ The court reasoned the state did not lose title to any dry land it added to the beach by manmade (or natural) avulsion because it remained a part of the public trust.¹⁶⁹ Due to climate change, the rate of natural avulsions will likely increase in response to rising sea levels and intensive flooding.¹⁷⁰ Further, the state can expect the courts to respond favorably to its efforts to ensure the preservation and existence of dry sand areas.¹⁷¹ There is no reason to believe courts will respond any less favorably to the public trust justification for local government actions intended to combat extreme storm events, effects on public health and safety, or effects on the marine environment—all of which New Jersey will face this century.¹⁷²

164. *State v. N. Beach 1003, LLC*, 166 A.3d 239, 253 (N.J. Super. Ct. App. Div. 2017) (emphasis added) (discussing legislative intent to grant broad powers to DEP with respect to protecting shore).

165. See generally *Borough of Neptune City v. Borough of Avon-By-The-Sea*, 294 A.2d 47, 55-56 (N.J. 1972) (explaining malleable nature of public trust doctrine); *Raleigh Ave. Beach Ass'n v. Atlantis Beach Club*, 879 A.2d 112, 129 (2005) (emphasizing malleable nature of public trust doctrine).

166. 4 A.3d 542 (2010).

167. *Id.* at 560 (detailing facts surrounding case).

168. *Id.* at 546 (discussing public trust doctrine's applicability to defendants' new dry beachfront property).

169. *Id.* at 547 (pointing out that “state does not lose title to the dry land added to beach” after avulsion occurs).

170. *Id.* at 550 (explaining projected increase in avulsions).

171. *Jui Yung Liu*, 4 A.3d at 550 (discussing how avulsions occur through storms and floods). For a discussion of case law that supports the state's duty to preserve the coastline under the public trust doctrine, see *supra* notes 26-72 and accompanying text.

172. For a discussion of the direct threat climate change poses to New Jersey's coastal communities, see *supra* notes 121-155 and accompanying text.

226 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXIX: p. 205

The DEP already plays a large role in ensuring that these requirements are met through the enforcement of CAFRA, the Wetlands Act of 1970, the Waterfront Development Law, and the Tideland Statutes, which are considered “essential to maintaining the balance between coastal development and protecting coastal resources managed through the DEP’s Coastal Management Program.”¹⁷³ Additionally, the DEP receives legislative guidance through its capital spending program, which includes the Shore Protection and Green Acres Programs.¹⁷⁴ Precisely how these DEP-enforced laws will continue to shape the state’s requirements in future climate change-related litigation is obviously unknown. It is clear, however, that the state’s courts consistently prioritize the public trust doctrine in line with the legislative intent underlying existing coastal-related legislation.¹⁷⁵

This trend is unlikely to waiver, and more likely to strengthen, as New Jersey’s vital coastline and coastal population become increasingly vulnerable to climate change. The Appellate Division recently said that CAFRA is designed to “preserve[] the most ecologically sensitive and fragile area from inappropriate development and provide[] adequate environmental safeguards for the construction of any developments in the coastal area.”¹⁷⁶ Thus, the DEP can and should rely on CAFRA to justify restrictions on development and the implementation of climate change-resistant structural requirements in new building projects. If current case law allows the state to impose easements on private property to promote public access, then it should also allow the state to impose enhanced beach replenishment plans and conservation restrictions to preserve future public access altogether. At a minimum, the state should designate a committee to spread awareness about the predicted effects of climate change in coastal communities throughout New Jersey and provide incentives for local governments to implement climate change projects. This sort of pre-disaster educational outreach could help to narrow the socioeconomic

173. *History and Legal Precedents*, *supra* note 3, at Section II(B) (discussing essential nature of various DEP-administered laws designed to protect coast).

174. *Id.* (discussing sources of DEP’s funding).

175. For a discussion of case law that acts to preserve the public trust doctrine, see *supra* notes 26-72 and accompanying text. For a discussion of legislative principles which relate to the public trust doctrine, see *supra* notes 79-100 and accompanying text.

176. *Hackensack Riverkeeper, Inc. v. N.J. Dep’t of Env’tl. Prot.*, 128 A.3d 749, 759 (N.J. Super. Ct. App. Div. 2015) (quoting N.J. STAT. ANN. § 13:19-2) (emphasis omitted) (discussing legislative intent underlying CAFRA).

2018] NEW JERSEY'S LEGAL DUTY TO MANAGE ITS COASTLINE 227

gap between coastal communities that will only widen as sea levels and temperatures rise.

VII. CONCLUSION

New Jersey must take concrete steps to mitigate the effects of climate change. These steps should be developed through a careful and thorough analysis of consequences well beyond the scope of this paper. The history, case law, and legislative intent surrounding the public trust doctrine, however, demonstrate that the state has not only a legal obligation, but also a moral duty, to manage the coastline in preparation for the impending wrath of climate change.