

List of Tables

Table II-1. Miles and Percentage of County Shoreline for Developed and Undeveloped Portions of the Oceanfront	II-4
Table II-2. Tidal Datums With Respect to MLLW	II-9
Table II-3. N.C. Tropical Cyclone Statistics (1851-2009).....	II-15
Table II-4. Direct Landfalling Hurricanes in North Carolina (State Climate Office).....	II-16
Table II-5. Storms That Have Affected North Carolina (State Climate Office).....	II-17
Table II-6. NCDCM and USGS Delineated Oceanfront Shorelines.....	II-20
Table II-7. Summary of DCM Smoothed Erosion Rates – 1940 to 1998.....	II-23
Table II-8. Summary of DCM Smoothed Erosion Rates (mi) - 1940 to 1998 by County	II-24
Table II-9. Summary of DCM Smoothed Erosion Rates (%) - 1940 to 1998 by County	II-24
Table II-10. Erosion Rate Summary (≥ 6 ft/yr) by Location	II-25
Table II-11. Summary of USGS Shoreline Change Rates.....	II-26
Table II-12. Authorized Inlet and Waterway Dimensions.....	II-32
Table II-13. Summary of Beach Nourishment Data	II-36
Table II-14. Summary of Dredge Data	II-38
Table II-15. Summary of Proposed IHA Delineations	II-51
Table IV-1. Summary of Sea Level Rise Scenarios	IV-4
Table IV-2. Property at Risk Estimates	IV-7
Table IV-3. Southern Beaches as Identified by Bin <i>et al.</i>	IV-9
Table IV-4. Beach Expenditures.....	IV-13
Table IV-5. Beach Recreation Consumer Surplus Value	IV-15
Table IV-6. Shore and Pier Fishing Values	IV-18
Table IV-7. Marine Recreational Services Values	IV-19
Table IV-8. Commercial Fishery Landings	IV-21
Table IV-9. Commercial Fishery Jobs.....	IV-22
Table IV-10. Direct Seafood Sales and Jobs	IV-23
Table IV-11. Total Economic Impact of Seafood Industry	IV-24
Table IV-12. For-Hire Fisheries	IV-27
Table IV-13. For-Hire Fisheries Total Impacts	IV-29
Table IV-14. For-Hire Fisheries Consumer Surplus.....	IV-31
Table IV-15. Direct Expenditures by Private Boaters	IV-34
Table IV-16. Private Boaters Business Sales.....	IV-35
Table IV-17. Private Boating Consumer Surplus	IV-36
Table IV-18. Boat Building Sales and Employment	IV-37
Table IV-19. Boat Building Total Economic Impact.....	IV-38
Table IV-20. Coastal Marinas.....	IV-39
Table IV-21. Baseline 2004 Beach Widths and Width Losses in the Bin <i>et al.</i> (2007) Analysis.....	IV-42
Table IV-22. Beach Width Values.....	IV-43
Table IV-23. Beach Recreational Loss and Shore Fishing Loss Estimates	IV-44
Table IV-24. Inlet Shoaling Scenario Depths	IV-45

Table IV-25. Shoaling Impacts on Commercial Fishing	IV-46
Table IV-26. Shoaling Impacts on For-Hire Fishing	IV-47
Table IV-27. Qualitative Impacts of Shoaling on Boat Builders	IV-47
Table IV-28. Other Qualitative Impacts of Shoaling	IV-48
Table IV-29. North Carolina Statewide Totals	IV-49
Table VI-1. Potential Beach and Inlet Management Strategies	VI-11
Table VI-2. Comparison of Various Dredge Types	VI-18
Table VI-3. Regional Shoreline Development Lengths (mi)	VI-25
Table VI-4. Shoreline Jurisdiction by Length (mi)	VI-25
Table VI-5. Regional Managed and Not Managed Shoreline Lengths (mi)	VI-26
Table VII-1. First Set of Public Meetings	VII-6
Table VII-2. Second Set of Public Meetings	VII-8
Table VIII-1. Region 1 Shoreline Development Lengths	VIII-1
Table VIII-2. Region 1 Shoreline Management	VIII-2
Table VIII-3. Region 1 Managed Shoreline Lengths	VIII-2
Table VIII-4. Tidal Datums (ft) for Region 1 Stations (past and present)	VIII-4
Table VIII-5. Digital Orthophotography for Region 1	VIII-10
Table VIII-6. Digitized Shorelines for Region 1	VIII-11
Table VIII-9. Shore and Pier Fishing – Region 1	VIII-41
Table VIII-10. Marine Recreation Services – Region 1	VIII-41
Table VIII-12. For Hire Fisheries – Region 1	VIII-42
Table VIII-13. Private Boating – Region 1	VIII-42
Table VIII-14. Boat Building – Region 1	VIII-42
Table VIII-15. Marina Sales and Employment – Region 1	VIII-43
Table VIII-16. Summary of Beach Nourishment Data – Region 1	VIII-44
Table VIII-17. Historical Borrow Sources – Region 1 Beaches	VIII-44
Table VIII-18. Summary of Dredge Volume Data – Region 1 (1975-2007)	VIII-46
Table VIII-19. Summary of Dredge Volume Data – Region 1 (1997-2007)	VIII-46
Table VIII-21. Nearest Sediment Sources – Region 1 Beaches	VIII-50
Table VIII-22. Most Likely Sediment Sources – Region 1 Beaches	VIII-50
Table VIII-23. Beach Nourishment Costs – Region 1 (Whole Dataset)	VIII-52
Table VIII-24. Beach Nourishment Costs – Region 1 (1997-2007)	VIII-52
Table VIII-25. Beach Nourishment Costs – Region 1 (2002-2007)	VIII-53
Table VIII-26. Dredging Costs – Region 1 (Whole Dataset)	VIII-53
Table VIII-27. Dredging Costs – Region 1 (1997-2007)	VIII-53
Table VIII-28. Dredging Costs – Region 1 (2002-2007)	VIII-54
Table VIII-29. Predicted Annual Costs – Region 1 Beaches	VIII-54
Table IX-1. Region 2a Shoreline Type Lengths	IX-2
Table IX-2. Region 2a Shore Ownership Lengths	IX-2
Table IX-3. Region 2a Shoreline Management	IX-2
Table IX-4. Region 2b Shoreline Development Type	IX-3
Table IX-5. Region 2b Shoreline Ownership Lengths	IX-4
Table IX-6. Region 2b Shoreline Management Lengths	IX-4

Table IX-7. Region 2c Shoreline Development Lengths.....	IX-5
Table IX-8. Region 2c Shoreline Ownership Lengths.....	IX-6
Table IX-9. Region 2c Shoreline Management Lengths.....	IX-6
Table IX-10. Tidal Datums (ft) for Region 2 Stations.....	IX-10
Table IX-11. Digital Orthophotography for Region 2a.....	IX-20
Table IX-12. Digital Orthophotography for Region 2b.....	IX-21
Table IX-13. Digital Orthophotography for Region 2c.....	IX-22
Table IX-14. Digitized NC Oceanfront Shorelines for Region 2.....	IX-23
Table IX-15. Digitized Inlet Shorelines for Region 2a.....	IX-23
Table IX-16. Digitized Inlet Shorelines for Region 2b.....	IX-23
Table IX-17. Digitized Inlet Shorelines for Region 2c.....	IX-24
Table IX-18. Property Value At Risk From Sea Level Rise – Region 2a.....	IX-96
Table IX-19. Property Value At Risk From Sea Level Rise – Region 2b.....	IX-96
Table IX-20. Property Value At Risk From Sea Level Rise – Region 2c.....	IX-96
Table IX-21. Beach Recreation Values – Region 2a.....	IX-97
Table IX-22. Beach Recreation Values – Region 2b.....	IX-97
Table IX-23. Beach Recreation Values – Region 2c.....	IX-97
Table IX-24. Shore and Pier Fishing – Region 2a.....	IX-98
Table IX-25. Shore and Pier Fishing – Region 2b.....	IX-98
Table IX-26. Shore and Pier Fishing – Region 2c.....	IX-98
Table IX-27. Marine Recreation Services – Region 2a (New Hanover County).....	IX-99
Table IX-28. Marine Recreation Services – Region 2b (Pender and Onslow Counties).....	IX-99
Table IX-29. Marine Recreation Services – Region 2c (Carteret County).....	IX-99
Table IX-30. Commercial Fishing – Region 2a.....	IX-99
Table IX-31. Commercial Fishing – Region 2b.....	IX-99
Table IX-32. Commercial Fishing – Region 2c.....	IX-99
Table IX-33. For Hire Fisheries – Region 2a.....	IX-100
Table IX-34. For Hire Fisheries – Region 2b.....	IX-100
Table IX-35. For Hire Fisheries – Region 2c.....	IX-100
Table IX-36. Private Boating – Region 2a.....	IX-101
Table IX-37. Private Boating – Region 2b.....	IX-101
Table IX-38. Private Boating – Region 2c.....	IX-101
Table IX-39. Boat Building – Region 2a.....	IX-102
Table IX-40. Boat Building – Region 2b.....	IX-102
Table IX-41. Boat Building – Region 2c.....	IX-102
Table IX-42. Marina Sales and Employment – Region 2a.....	IX-103
Table IX-43. Marina Sales and Employment – Region 2b.....	IX-103
Table IX-44. Marina Sales and Employment – Region 2c.....	IX-103
Table IX-45. Summary of Beach Nourishment Data – Region 2a.....	IX-105
Table IX-46. Summary of Beach Nourishment Data – Region 2b.....	IX-106
Table IX-47. Summary of Beach Nourishment Data – Region 2c.....	IX-107
Table IX-48. Historical Borrow Sources – Region 2 Beaches.....	IX-108
Table IX-49. Summary of Dredge Volume Data – Region 2a (1975-2007).....	IX-109

Table IX-50. Summary of Dredge Volume Data – Region 2a (1997-2007).....	IX-109
Table IX-51. Summary of Dredge Volume Data – Region 2a (2002-2007).....	IX-110
Table IX-52. Summary of Dredge Volume Data – Region 2b (1975-2007)	IX-110
Table IX-53. Summary of Dredge Volume Data – Region 2b (1997-2007)	IX-111
Table IX-54. Summary of Dredge Volume Data – Region 2b (2002-2007)	IX-111
Table IX-55. Summary of Dredge Volume Data – Region 2c (1975-2007).....	IX-112
Table IX-56. Summary of Dredge Volume Data – Region 2c (1997-2007).....	IX-112
Table IX-57. Summary of Dredge Volume Data – Region 2c (2002-2007).....	IX-112
Table IX-58. Nearest Sediment Sources – Region 2a Beaches	IX-118
Table IX-59. Most Likely Sediment Sources – Region 2a Beaches	IX-118
Table IX-60. Nearest Sediment Sources – Region 2b Beaches	IX-119
Table IX-61. Most Likely Sediment Sources – Region 2b Beaches	IX-119
Table IX-62. Nearest Sediment Sources – Region 2c Beaches	IX-119
Table IX-63. Most Likely Sediment Sources – Region 2c Beaches	IX-119
Table IX-64. Beach Nourishment Costs – Region 2a (Whole Dataset).....	IX-123
Table IX-65. Beach Nourishment Costs – Region 2a (1997-2007).....	IX-123
Table IX-66. Beach Nourishment Costs – Region 2a (2002-2007).....	IX-124
Table IX-67. Beach Nourishment Costs – Region 2b (Whole Dataset)	IX-124
Table IX-68. Beach Nourishment Costs – Region 2b (1997-2007).....	IX-124
Table IX-69. Beach Nourishment Costs – Region 2b (2002-2007).....	IX-124
Table IX-70. Beach Nourishment Costs – Region 2c (Whole Dataset).....	IX-125
Table IX-71. Beach Nourishment Costs – Region 2c (1997-2007).....	IX-125
Table IX-72. Beach Nourishment Costs – Region 2c (2002-2007).....	IX-125
Table IX-73. Dredging Costs – Region 2a (Whole Dataset)	IX-125
Table IX-74. Dredging Costs – Region 2a (1997-2007).....	IX-126
Table IX-75. Dredging Costs – Region 2a (2002-2007).....	IX-126
Table IX-76. Dredging Costs – Region 2b (Whole Dataset)	IX-126
Table IX-77. Dredging Costs – Region 2b (1997-2007)	IX-126
Table IX-78. Dredging Costs – Region 2b (2002-2007)	IX-126
Table IX-79. Dredging Costs – Region 2c (Whole Dataset)	IX-127
Table IX-80. Dredging Costs – Region 2c (1997-2007).....	IX-127
Table IX-81. Dredging Costs – Region 2c (2002-2007).....	IX-127
Table IX-82. Predicted Annual Costs – Region 2a Beaches.....	IX-128
Table IX-83. Predicted Annual Costs – Region 2b Beaches	IX-128
Table IX-84. Predicted Annual Costs – Region 2c Beaches.....	IX-128
Table X-1. Region 3a Shoreline Development Lengths	X-2
Table X-2. Region 3a Shoreline Ownership Lengths	X-2
Table X-3. Region 3a Shoreline Management Lengths.....	X-2
Table X-4. Region 3b Shoreline Development Lengths.....	X-3
Table X-5. Region 3b Shoreline Ownership Lengths.....	X-4
Table X-6. Region 3b Shoreline Management	X-4
Table X-7. Tidal Datums (ft) for Region 3 Stations.....	X-7
Table X-8. Digital Orthophotography for Region 3a.....	X-15

Table X-9. Digital Orthophotography for Region 3b	X-16
Table X-10. Digitized NC Oceanfront Shorelines for Region 3	X-17
Table X-11. Digitized Inlet Shorelines for Region 3b	X-17
Table X-13. Property Value At Risk From Sea Level Rise – Region 3a	X-44
Table X-14. Property Value At Risk From Sea Level Rise – Region 3b	X-44
Table X-15. Beach Recreation Values – Region 3a	X-45
Table X-16. Beach Recreation Values – Region 3b	X-45
Table X-17. Shore and Pier Fishing – Region 3a	X-45
Table X-18. Shore and Pier Fishing – Region 3b	X-45
Table X-19. Marine Recreation Services – Region 3a	X-46
Table X-20. Marine Recreation Services – Region 3b	X-46
Table X-21. Commercial Fishing – Region 3a	X-46
Table X-22. Commercial Fishing – Region 3b	X-46
Table X-23. For Hire Fisheries – Region 3a	X-47
Table X-24. For Hire Fisheries – Region 3b	X-47
Table X-25. Private Boating – Region 3a	X-48
Table X-26. Private Boating – Region 3b	X-48
Table X-27. Boat Building – Region 3a	X-48
Table X-28. Boat Building – Region 3b	X-48
Table X-29. Marina Sales and Employment – Region 3a	X-49
Table X-30. Marina Sales and Employment – Region 3b	X-49
Table X-31. Summary of Beach Nourishment Data – Region 3b	X-50
Table X-32. Historical Borrow Sources – Region 3b Beaches	X-51
Table X-33. Summary of Dredge Volume Data – Region 3a (1975-2007)	X-52
Table X-34. Summary of Dredge Volume Data – Region 3a (1997-2007)	X-52
Table X-35. Summary of Dredge Volume Data – Region 3a (2002-2007)	X-53
Table X-36. Summary of Dredge Volume Data – Region 3b (1975-2007)	X-53
Table X-37. Summary of Dredge Volume Data – Region 3b (1997-2007)	X-54
Table X-38. Summary of Dredge Volume Data – Region 3b (2002-2007)	X-54
Table X-39. Nearest Sediment Sources – Region 3a Beaches	X-57
Table X-40. Most Likely Sediment Sources – Region 3a Beaches	X-57
Table X-41. Nearest Sediment Sources – Region 3b Beaches	X-57
Table X-42. Most Likely Sediment Sources – Region 3b Beaches	X-58
Table X-43. Beach Nourishment Costs – Region 3b (Whole Dataset)	X-61
Table X-44. Beach Nourishment Costs – Region 3b (1997-2007)	X-61
Table X-45. Beach Nourishment Costs – Region 3b (2002-2007)	X-61
Table X-46. Dredging Costs – Region 3a (Whole Dataset)	X-62
Table X-47. Dredging Costs – Region 3a (1997-2007)	X-62
Table X-48. Dredging Costs – Region 3a (2002-2007)	X-62
Table X-49. Dredging Costs – Region 3b (Whole Dataset)	X-62
Table X-50. Dredging Costs – Region 3b (1997-2007)	X-62
Table X-51. Dredging Costs – Region 3b (2002-2007)	X-63
Table X-52. Predicted Annual Costs – Region 3a Beaches	X-63

Table X-53. Predicted Annual Costs – Region 3b Beaches.....	X-64
Table XI-1. Region 4a Shoreline Development Lengths.....	XI-2
Table XI-2. Region 4a Shoreline Ownership Lengths.....	XI-2
Table XI-3. Region 4a Shoreline Management Lengths.....	XI-2
Table XI-4. Region 4b Shoreline Development Lengths.....	XI-3
Table XI-5. Region 4b Shoreline Ownership Lengths.....	XI-4
Table XI-6. Region 4b Shoreline Management Lengths.....	XI-4
Table XI-7. Region 4c Shoreline Development Lengths.....	XI-5
Table XI-8. Region 4c Shoreline Ownership Lengths.....	XI-6
Table XI-9. Region 4c Shoreline Management Lengths.....	XI-6
Table XI-10. Tidal Datums (ft) for Region 4 Stations.....	XI-10
Table XI-11. Digital Orthophotography for Region 4a.....	XI-20
Table XI-12. Digital Orthophotography for Region 4b.....	XI-20
Table XI-13. Digital Orthophotography for Region 4c.....	XI-21
Table XI-14. Digitized NC Oceanfront Shorelines for Region 4.....	XI-21
Table XI-15. Property Value At Risk From Sea Level Rise – Region 4a and 4b.....	XI-56
Table XI-16. Property Value At Risk From Sea Level Rise – Region 4c.....	XI-56
Table XI-17. Beach Recreation Values – Region 4a.....	XI-57
Table XI-18. Beach Recreation Values – Region 4b.....	XI-57
Table XI-19. Beach Recreation Values – Region 4c.....	XI-57
Table XI-20. Shore and Pier Fishing – Region 4a.....	XI-57
Table XI-21. Shore and Pier Fishing – Region 4b.....	XI-58
Table XI-22. Shore and Pier Fishing – Region 4c.....	XI-58
Table XI-24. Commercial Fishing – Region 4a, 4b, and 4c.....	XI-59
Table XI-25. For Hire Fisheries – Region 4a, 4b, and 4c.....	XI-59
Table XI-26. Private Boating – Region 4a, 4b, and 4c.....	XI-59
Table XI-27. Boat Building – Region 4.....	XI-60
Table XI-28. Marina Sales and Employment – Region 4.....	XI-60
Table XI-31. Historical Borrow Sources – Region 4 Beaches.....	XI-63
Table XI-32. Summary of Dredge Volume Data – Region 4b (1975-2007).....	XI-65
Table XI-33. Summary of Dredge Volume Data – Region 4b (1997-2007).....	XI-65
Table XI-34. Summary of Dredge Volume Data – Region 4b (2002-2007).....	XI-65
Table XI-35. Nearest Sediment Sources – Region 4a Beaches.....	XI-70
Table XI-36. Most Likely Sediment Sources – Region 4a Beaches.....	XI-70
Table XI-37. Nearest Sediment Sources – Region 4b Beaches.....	XI-70
Table XI-38. Most Likely Sediment Sources – Region 4b Beaches.....	XI-71
Table XI-40. Most Likely Sediment Sources – Region 4c Beaches.....	XI-71
Table XI-41. Beach Nourishment Costs – Region 4a (Whole Dataset).....	XI-75
Table XI-42. Beach Nourishment Costs – Region 4a (1997-2007).....	XI-75
Table XI-43. Beach Nourishment Costs – Region 4a (2002-2007).....	XI-75
Table XI-44. Beach Nourishment Costs – Region 4b (Whole Dataset).....	XI-76
Table XI-45. Beach Nourishment Costs – Region 4b (1997-2007).....	XI-76
Table XI-46. Beach Nourishment Costs – Region 4b (2002-2007).....	XI-76



Table XI-47. Dredging Costs – Region 4b (Whole Dataset)	XI-76
Table XI-48. Dredging Costs – Region 4b (1997-2007)	XI-77
Table XI-49. Dredging Costs – Region 4b (2002-2007)	XI-77
Table XI-50. Predicted Annual Costs – Region 4a Beaches.....	XI-78
Table XI-51. Predicted Annual Costs – Region 4b Beaches	XI-78
Table XI-52. Predicted Annual Costs – Region 4c Beaches.....	XI-78