



Massachusetts Department of Conservation and Recreation  
Bureau of Planning, Design & Resource Protection  
Resource Management Planning Program

## RESOURCE MANAGEMENT PLAN

# Nickerson Management Complex

*Including Shawme-Crowell State Forest, Waquoit Bay National Estuarine Research Reserve, South Cape Beach State Park, Washburn Island, Quashnet Woods State Reservation, Roland C. Nickerson State Park, Hawksnest State Park, Cape Cod Rail Trail, Manuel F. Correllus State Forest, Joseph A. Sylvia State Beach, South Beach State Park, Nantucket State Forest, and Reforestation Lots and Fire Observation Towers on Cape Cod and The Islands*



---

January 2015 DRAFT





# Nickerson Management Complex

*Including Shawme-Crowell State Forest, Waquoit Bay National Estuarine Research Reserve, South Cape Beach State Park, Washburn Island, Quashnet Woods State Reservation, Roland C. Nickerson State Park, Hawksnest State Park, Cape Cod Rail Trail, Manuel F. Correllus State Forest, Joseph A. Sylvia State Beach, South Beach State Park, Nantucket State Forest, and Reforestation Lots and Fire Observation Towers on Cape Cod and The Islands*

## RESOURCE MANAGEMENT PLAN

2015

Charles D. Baker, Governor

Karyn E. Polito, Lieutenant Governor

Matthew A. Beaton, Secretary

John P. Murray, Commissioner

Resource Management Plans provide guidance for managing properties under the stewardship of the Department of Conservation and Recreation (DCR). They are intended to be working documents for setting priorities, enabling the Department to adapt to changing fiscal, social and environmental conditions. The planning process provides a forum for communication and cooperation with park visitors and the surrounding communities to ensure transparency in the DCR's stewardship efforts.

Cape Cod, Martha's Vineyard, and Nantucket have long been tourist destinations. Each year, an estimated six million tourists visit Cape Cod, with most arriving in the summer or early fall. They come to enjoy the beach, attend cultural events, and experience the region's character. Parks in DCR's Nickerson Management Complex provide these visitors with memorable destinations and recreation experiences. Whether staying in a DCR campground, spending a day at an oceanfront beach, cycling along the Cape Cod Rail Trail, or taking a hike through the woods, the Complex's properties delight and enrich the lives of tourists and residents alike. In addition to providing outstanding recreational opportunities, these parks also protect important natural and cultural resources.

Throughout the Complex are numerous examples of how partnerships can benefit resources and the visitor experience. The historic Crosby Mansion at Nickerson state park has been painstakingly restored through a partnership among the DCR, town of Brewster, and the Friends of Crosby Mansion. Nearby, the Cape Rep offers creative and professional theater presentations in the park. The properties of Waquoit Bay National Estuarine Research Reserve exist because of a longstanding partnership between the DCR and the National Oceanic and Atmospheric Administration. On the Vineyard, Sylvia state beach and South Beach State Park are owned by the DCR and managed by the county and town of Edgartown, respectively. Friends groups at Shawme-Crowell, Nickerson, and Waquoit Bay help improve our parks and the park-going experience. The lives of Cape and Islands residents and visitors are enriched by these partnerships.

This Resource Management Plan provides recommendations that protect the parks' natural and cultural resources while providing for compatible recreation, so that they may be enjoyed by generations.

I invite you to visit these parks and enjoy some of the best of what the Cape and Islands have to offer.

Jack Murray.  
Commissioner

The Massachusetts Department of Conservation and Recreation (DCR), an agency of the Executive Office of Energy and Environmental Affairs, oversees 450,000 acres of parks and forests, beaches, bike trails, watersheds, dams, and parkways. Led by Commissioner Edward M. Lambert, Jr., the agency's mission is to protect, promote, and enhance our common wealth of natural, cultural, and recreation resources. To learn more about DCR, our facilities, and our programs please visit us at [www.mass.gov/dcr](http://www.mass.gov/dcr). Contact us at [mass.parks@state.ma.us](mailto:mass.parks@state.ma.us).



PRINTED ON RECYCLED PAPER

Contents	Page
<b>Executive Summary</b>	
Introduction.....	i
The Nickerson Management Complex .....	i
Public Participation in Developing This Resource Management Plan .....	ii
Recommendations .....	ii
<b>Section 1. The Nickerson Management Complex</b>	
1.1. Introduction.....	1-1
1.2. Resource Management Plans .....	1-1
1.3. Nickerson Management Complex.....	1-3
1.4. Natural Resources .....	1-4
1.5. Cultural Resources .....	1-9
1.6. Recreation Resources.....	1-11
1.7. Infrastructure.....	1-11
1.8 Interpretation.....	1-11
1.9. Management Resources .....	1-12
1.10. Management Practices .....	1-14
1.11. Recommendations.....	1-21
<b>Section 2. Shawme-Crowell State Forest</b>	
2.1. Introduction.....	2-1
2.2. Natural Resources .....	2-3
2.3. Cultural Resources .....	2-5
2.4. Recreation Resources.....	2-10
2.5. Infrastructure.....	2-11
2.6. Interpretation.....	2-14
2.7. Management Resources .....	2-14
2.8. Management Practices .....	2-15
2.9. Recommendations.....	2-18
<b>Section 3. Waquoit Bay National Estuarine Research Reserve</b>	
3.1. Introduction.....	3-1
3.2. Natural Resources .....	3-3
3.3. Cultural Resources .....	3-5
3.4. Recreation Resources.....	3-7
3.5. Infrastructure.....	3-7
3.6. Interpretation.....	3-10
3.7. Management Resources .....	3-11
3.8. Management Practices .....	3-12
3.9. Recommendations.....	3-14

Contents	Page
<b>Section 4. South Cape Beach State Park</b>	
4.1. Introduction.....	4-1
4.2. Natural Resources .....	4-3
4.3. Cultural Resources .....	4-6
4.4. Recreation Resources.....	4-8
4.5. Infrastructure.....	4-9
4.6. Interpretation.....	4-11
4.7. Management Resources .....	4-12
4.8. Management Practices .....	4-13
4.9. Recommendations.....	4-16
<b>Section 5. Washburn Island</b>	
5.1. Introduction.....	5-1
5.2. Natural Resources .....	5-3
5.3. Cultural Resources .....	5-5
5.4. Recreation Resources.....	5-8
5.5. Infrastructure.....	5-9
5.6. Interpretation.....	5-11
5.7. Management Resources .....	5-12
5.8. Management Practices .....	5-12
5.9. Recommendations.....	5-14
<b>Section 6. Quashnet Woods State Reservation</b>	
6.1. Introduction.....	6-1
6.2. Natural Resources .....	6-3
6.3. Cultural Resources .....	6-5
6.4. Recreation Resources.....	6-8
6.5. Infrastructure.....	6-8
6.6. Interpretation.....	6-9
6.7. Management Resources .....	6-9
6.8. Management Practices .....	6-10
6.9. Recommendations.....	6-12
<b>Section 7. Roland C. Nickerson State Park</b>	
7.1. Introduction.....	7-1
7.2. Natural Resources .....	7-3
7.3. Cultural Resources .....	7-6
7.4. Recreation Resources.....	7-12
7.5. Infrastructure.....	7-14
7.6. Interpretation.....	7-19
7.7. Management Resources .....	7-19
7.8. Management Practices .....	7-20
7.9. Recommendations.....	7-23

Contents	Page
<b>Section 8. Hawksnest State Park</b>	
8.1. Introduction.....	8-1
8.2. Natural Resources .....	8-3
8.3. Cultural Resources .....	8-4
8.4. Recreation Resources.....	8-7
8.5. Infrastructure.....	8-7
8.6. Interpretation.....	8-9
8.7. Management Resources .....	8-9
8.8. Management Practices .....	8-9
8.9. Recommendations.....	8-10
<b>Section 9. Cape Cod Rail Trail</b>	
9.1. Introduction.....	9-1
9.2. Natural Resources .....	9-4
9.3. Cultural Resources .....	9-6
9.4. Recreation Resources.....	9-8
9.5. Infrastructure.....	9-9
9.6. Interpretation.....	9-12
9.7. Management Resources .....	9-13
9.8. Management Practices .....	9-13
9.9. Recommendations.....	9-15
<b>Section 10. Manuel F. Correllus State Forest</b>	
10.1. Introduction.....	10-1
10.2. Natural Resources .....	10-3
10.3. Cultural Resources .....	10-6
10.4. Recreation Resources.....	10-9
10.5. Infrastructure.....	10-10
10.6. Interpretation.....	10-12
10.7. Management Resources .....	10-12
10.8. Management Practices .....	10-13
10.9. Recommendations.....	10-18
<b>Section 11. Joseph A. Sylvia State Beach</b>	
11.1. Introduction.....	11-1
11.2. Natural Resources .....	11-3
11.3. Cultural Resources .....	11-5
11.4. Recreation Resources.....	11-7
11.5. Infrastructure.....	11-8
11.6. Interpretation.....	11-10
11.7. Management Resources .....	11-10
11.8. Management Practices .....	11-11
11.9. Recommendations.....	11-13

	Page
<b>Contents</b>	
<b>Section 12. South Beach State Park</b>	
12.1. Introduction.....	12-1
12.2. Natural Resources .....	12-3
12.3. Cultural Resources .....	12-6
12.4. Recreation Resources.....	12-8
12.5. Infrastructure.....	12-8
12.6. Interpretation.....	12-10
12.7. Management Resources .....	12-11
12.8. Management Practices .....	12-11
12.9. Recommendations.....	12-13
<b>Section 13. Nantucket State Forest</b>	
13.1. Introduction.....	13-1
13.2. Natural Resources .....	13-3
13.3. Cultural Resources .....	13-5
13.4. Recreation Resources.....	13-6
13.5. Infrastructure.....	13-7
13.6. Interpretation.....	13-8
13.7. Management Resources .....	13-8
13.8. Management Practices .....	13-8
13.9. Recommendations.....	13-11
<b>Section 14. Reforestation Lots</b>	
14.1. Introduction.....	14-1
14.2. Natural Resources .....	14-3
14.3. Cultural Resources .....	14-5
14.4. Recreation Resources.....	14-5
14.5. Infrastructure.....	14-7
14.6. Interpretation.....	14-9
14.7. Management Resources .....	14-9
14.8. Management Practices .....	14-9
14.9. Recommendations.....	14-11
<b>Section 15. Fire Observation Towers</b>	
15.1. Introduction.....	15-1
15.2. Natural Resources .....	15-2
15.3. Cultural Resources .....	15-5
15.4. Recreation Resources.....	15-7
15.5. Infrastructure.....	15-7
15.6. Interpretation.....	15-10
15.7. Management Resources .....	15-10
15.8. Management Practices .....	15-11
15.9. Recommendations.....	15-12

Contents	Page
<b>List of Tables</b>	
E.S.1. Summary of management recommendations for the Nickerson Management Complex .....	iii
1.3.1. DCR-held conservation restrictions for properties associated with the Nickerson Management Complex .....	1-4
1.4.1. Predicted responses of habitat types to climate change .....	1-6
1.4.2. Number of state-listed species, by type and state rank, known to occur on DCR-owned properties in the Nickerson Management Complex .....	1-7
1.5.1. Summary of cultural resources in the Nickerson Management Complex .....	1-11
1.9.1. Mass Parks personnel assigned to the Nickerson Management Complex .....	1-12
1.9.2. Additional year-round personnel identified as needed for improved operation of the Nickerson Management Complex .....	1-13
1.11.1. Priority management recommendations for the Nickerson Management Complex .....	1-21
2.1.1. Physical, political, and regulatory settings of Shawme-Crowell State Forest.....	2-1
2.2.1. Water resources of Shawme-Crowell State Forest.....	2-3
2.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Shawme-Crowell State Forest.....	2-3
2.2.3. State-listed species of Shawme-Crowell State Forest, as identified by the NHESP .....	2-3
2.2.4. Known invasive and likely invasive plants of Shawme-Crowell State Forest.....	2-4
2.2.5. Known natural communities of Shawme-Crowell State Forest .....	2-4
2.3.1. Significant events in the history of Shawme-Crowell State Forest.....	2-5
2.3.2. Cultural resources of Shawme-Crowell State Forest .....	2-6
2.4.1. Summary of camping resources at Shawme-Crowell State Forest .....	2-10
2.4.2. Campsite occupancy rates, by type and season, for Shawme-Crowell State Forest .....	2-10
2.4.3. Common geographic origins of campers staying at Shawme-Crowell State Forest .....	2-10
2.5.1. Non-historic buildings and structures of Shawme-Crowell State Forest .....	2-12
2.5.2. Condition and length of roads at Shawme-Crowell State Forest .....	2-13
2.5.3. Number of public parking spaces, by location and type, at Shawme-Crowell State Forest .....	2-13
2.5.4. Condition and length of official trails at Shawme-Crowell State Forest .....	2-13
2.7.1 Mass Parks personnel assigned to Shawme-Crowell State Forest .....	2-14
2.8.1. Key legal agreements for the use of Shawme-Crowell State Forest .....	2-15
2.8.2. Key management and guidance documents for Shawme-Crowell State Forest.....	2-16
2.8.3. Annual cycle of management activities at Shawme-Crowell State Forest.....	2-16
2.9.1. Priority recommendations for Shawme-Crowell State Forest .....	2-20
3.1.1. Physical, political, and regulatory settings of WBNERR and Caleb Pond.....	3-3
3.2.1. Water resources of WBNERR and Caleb Pond .....	3-3
3.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to WBNERR and Caleb Pond .....	3-3
3.2.3. State-listed species of WBNERR and Caleb Pond, as identified by the NHESP .....	3-4
3.2.4. Known invasive and likely invasive plants of WBNERR and Caleb Pond .....	3-4
3.2.5. Known natural communities of WBNERR and Caleb Pond.....	3-5
3.3.1. Significant events in the history of WBNERR .....	3-6
3.3.2. Cultural resources of WBNERR and Caleb Pond.....	3-6
3.5.1. Non-historic buildings of WBNERR and Caleb Pond.....	3-8
3.5.2. Condition and length of driveways at WBNERR .....	3-8
3.5.3. Number of public parking spaces, by location and type, at WBNERR .....	3-9

Contents	Page
<b>List of Tables (continued)</b>	
3.5.4. Condition and length of official trails at WBNERR .....	3-9
3.7.1 Mass Parks personnel assigned to WBNERR; current and past .....	3-11
3.8.1. Key legal agreements for WBNERR .....	3-12
3.8.2. Key management and guidance documents for WBNERR .....	3-12
3.8.3. Annual cycle of management activities at WBNERR .....	3-13
3.9.1. Priority recommendations for WBNERR and Caleb Pond .....	3-15
4.1.1. Physical, political, and regulatory settings of South Cape Beach and Abigail's Brook.....	4-3
4.2.1. Water resources of South Cape Beach and Abigail's Brook .....	4-3
4.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to South Cape Beach and Abigail's Brook .....	4-4
4.2.3. State-listed species of South Cape Beach and Abigail's Brook, as identified by the NHESP.....	4-5
4.2.4. Known invasive and likely invasive plants of South Cape Beach and Abigail's Brook.....	4-5
4.2.5. Known natural communities of South Cape Beach and Abigail's Brook.....	4-5
4.3.1. Significant events in the history of South Cape Beach and Abigail's Brook .....	4-7
4.3.2. Cultural resources of South Cape Beach and Abigail's Brook .....	4-7
4.5.1. Non-historic buildings and structures of South Cape Beach and Abigail's Brook .....	4-9
4.5.2. Condition and length of roads at South Cape Beach.....	4-10
4.5.3. Number of public parking spaces, by location and type, at South Cape Beach.....	4-10
4.5.4. Condition and length of official trails at South Cape Beach.....	4-11
4.7.1 Mass Parks personnel assigned to South Cape Beach; current and past.....	4-12
4.8.1. Key legal agreements for South Cape Beach and Abigail's Brook .....	4-13
4.8.2. Key management and guidance documents for South Cape Beach and Abigail's Brook .....	4-13
4.8.3. Annual cycle of management activities at South Cape Beach .....	4-14
4.9.1. Priority recommendations for South Cape Beach and Abigail's Brook .....	4-19
5.1.1. Physical, political, and regulatory settings of Washburn Island .....	5-1
5.2.1. Water resources of Washburn Island .....	5-3
5.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Washburn Island .....	5-3
5.2.3. State-listed species of Washburn Island, as identified by the NHESP.....	5-4
5.2.4. Known invasive and likely invasive plants of Washburn Island .....	5-5
5.2.5. Known natural communities of Washburn Island.....	5-5
5.3.1. Significant events in the history of Washburn Island; based on Keay (2005) .....	5-6
5.3.2. Cultural resources of Washburn Island.....	5-7
5.4.1. Summary of camping resources at Washburn Island.....	5-8
5.4.2. Campsite occupancy rates, by type, at Washburn Island .....	5-9
5.4.3. Common geographic origins of campers staying at Washburn Island.....	5-9
5.5.1. Non-historic buildings of Washburn Island .....	5-10
5.5.2. Condition and length of official trails at Washburn Island .....	5-11
5.7.1 Mass Parks personnel assigned to Washburn Island.....	5-12
5.8.1. Key legal agreements for Washburn Island .....	5-12
5.8.2. Key management and guidance documents for Washburn Island .....	5-12
5.8.3. Annual cycle of management activities at Washburn Island .....	5-13
5.9.1. Priority recommendations for Washburn Island .....	5-16

Contents	Page
<b>List of Tables (continued)</b>	
6.1.1. Physical, political, and regulatory settings of Quashnet Woods and associated properties .....	6-3
6.2.1. Water resources of Quashnet Woods and associated properties.....	6-4
6.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Quashnet Woods and associated properties .....	6-4
6.2.3. State-listed species of Quashnet Woods and associated properties, as identified by the NHESP ....	6-4
6.2.4. Known invasive and likely invasive plants of Quashnet Woods and associated properties .....	6-5
6.2.5. Known natural communities of Quashnet Woods and associated properties .....	6-5
6.3.1. Significant events in the history of Quashnet Woods and associated properties .....	6-6
6.3.2. Cultural resources of Quashnet Woods and associated properties.....	6-7
6.5.1. Condition and length of roads at Quashnet Woods and associated properties.....	6-8
6.5.2. Number of public parking spaces, by location and type, at Quashnet Woods and associated properties.....	6-9
6.5.3. Condition and length of official trails at Quashnet Woods and associated properties.....	6-9
6.8.1. Key legal agreements for Quashnet Woods and associated properties.....	6-10
6.8.2. Key management and guidance documents for Quashnet Woods and associated properties .....	6-11
6.8.3. Annual cycle of management activities at Quashnet Woods and associated properties .....	6-11
6.9.1. Priority recommendations for Quashnet Woods and associated properties.....	6-13
7.1.1. Physical, political, and regulatory settings of Nickerson state park and associated properties.....	7-3
7.2.1. Water resources of Nickerson state park and associated properties.....	7-3
7.2.2. Relationships between water quality parameters and environmental thresholds for monitored ponds in Nickerson state park .....	7-4
7.2.3. Potential impacts of flooding, hurricane inundation, and sea-level rise to Nickerson state park and associated properties .....	7-4
7.2.4. State-listed species of Nickerson state park and associated properties, as identified by the NHESP 7-5	7-5
7.2.5. Known invasive and likely invasive plants of Nickerson state park and associated properties.....	7-5
7.2.6. Known natural communities of Nickerson state park and associated properties .....	7-6
7.3.1. Significant events in the history of Nickerson state park and associated properties .....	7-7
7.3.2. Cultural resources of Nickerson state park and associated properties .....	7-8
7.4.1. Summary of camping resources at Nickerson state park .....	7-12
7.4.2. Campsite occupancy rates, by type, at Nickerson state park .....	7-13
7.4.3. Common geographic origins of campers staying at Nickerson state park .....	7-13
7.5.1. Non-historic buildings and structures of Nickerson state park and associated species.....	7-15
7.5.2. Condition and length of roads at Nickerson state park .....	7-17
7.5.3. Number of public parking spaces, by location and type, at Nickerson state park.....	7-17
7.5.4. Condition and length of official trails at Nickerson state park .....	7-18
7.7.1 Mass Parks personnel assigned to Nickerson state park; current and past.....	7-19
7.8.1. Key legal agreements for Nickerson state park.....	7-20
7.8.2. Key management and guidance documents for Nickerson state park and associated properties.....	7-21
7.8.3. Annual cycle of management activities at Nickerson state park.....	7-21
7.9.1. Priority recommendations for Nickerson state park and associated species.....	7-26

Contents	Page
<b>List of Tables (continued)</b>	
8.1.1. Physical, political, and regulatory settings of Hawksnest State Park.....	8-1
8.2.1. Water resources of Hawksnest State Park.....	8-3
8.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Hawksnest State Park ...	8-3
8.2.3. State-listed species of Hawksnest State Park, as identified by the NHESP.....	8-3
8.2.4. Known invasive and likely invasive plants of Hawksnest State Park.....	8-4
8.2.5. Known natural communities of Hawksnest State Park .....	8-4
8.3.1. Significant events in the history of Hawksnest State Park.....	8-5
8.3.2. Cultural resources of Hawksnest State Park .....	8-6
8.5.1. Condition and length of roads at Hawksnest State Park .....	8-8
8.5.2. Number of public parking spaces, by location and type, at Hawksnest State Park.....	8-8
8.5.3. Condition and length of official trails at Hawksnest State Park .....	8-8
8.8.1. Key management and guidance documents for Hawksnest State Park.....	8-9
8.9.1. Priority recommendations for Hawksnest State Park.....	8-12
9.1.1. Physical, political, and regulatory settings of the Cape Cod Rail Trail .....	9-4
9.2.1. Water resources of the Cape Cod Rail Trail .....	9-4
9.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise on the Cape Cod Rail Trail 9-5	9-5
9.2.3. State-listed species of the Cape Cod Rail Trail, as identified by the NHESP.....	9-5
9.2.4. Known invasive and likely invasive plants of the Cape Cod Rail Trail .....	9-6
9.2.5. Known natural communities of the Cape Cod Rail Trail.....	9-6
9.3.1. Significant events in the history of the Cape Cod Rail Trail .....	9-7
9.3.2. Cultural resources of the Cape Cod Rail Trail.....	9-7
9.5.1. Non-historic buildings and structures of the Cape Cod Rail Trail.....	9-9
9.5.2. Number of public parking spaces, by location and type, at DCR-owned portions of the Cape Cod Rail Trail .....	9-10
9.5.3. Condition and length of official trails at the Cape Cod Rail Trail .....	9-11
9.8.1. Key legal agreements for the Cape Cod Rail Trail .....	9-13
9.8.2. Key management and guidance documents for the Cape Cod Rail Trail .....	9-13
9.8.3. Annual cycle of management activities for the Cape Cod Rail Trail.....	9-14
9.9.1. Priority recommendations for the Cape Cod Rail Trail .....	9-16
10.1.1. Physical, political, and regulatory settings of Manuel F. Correllus State Forest .....	10-3
10.2.1. Water resources of Manuel F. Correllus State Forest .....	10-3
10.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Manuel F. Correllus State Forest.....	10-3
10.2.3. State-listed species of Manuel F. Correllus State Forest, as identified by the NHESP.....	10-4
10.2.4. Known invasive and likely invasive plants of Manuel F. Correllus State Forest .....	10-5
10.2.5. Known natural communities of Manuel F. Correllus State Forest.....	10-5
10.3.1. Significant events in the history of Manuel F. Correllus State Forest .....	10-7
10.3.2. Cultural resources of Manuel F. Correllus State Forest.....	10-8
10.5.1. Non-historic buildings and structures of Manuel F. Correllus State Forest.....	10-10
10.5.2 Condition and length of roads at Manuel F. Correllus State Forest.....	10-11
10.5.3. Number of public parking spaces, by location and type, at Manuel F. Correllus State Forest.....	10-11
10.5.4. Condition and length of official trails at Manuel F. Correllus State Forest .....	10-12

Contents	Page
<b>List of Tables (continued)</b>	
10.7.1 Mass Parks personnel assigned to Manuel F. Correllus State Forest.....	10-12
10.8.1. Key legal agreements for Manuel F. Correllus State Forest .....	10-13
10.8.2. Key management and guidance documents for Manuel F. Correllus State Forest .....	10-14
10.8.3. Annual cycle of management activities at Manuel F. Correllus State Forest .....	10-15
10.9.1. Priority recommendations for Manuel F. Correllus State Forest .....	10-20
11.1.1. Physical, political, and regulatory settings of Joseph A. Sylvia State Beach.....	11-3
11.2.1. Water resources of Joseph A. Sylvia State Beach.....	11-3
11.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Joseph A. Sylvia State Beach.....	11-4
11.2.3. State-listed species of Joseph A. Sylvia State Beach, as identified by the NHESP.....	11-4
11.2.4. Known invasive and likely invasive plants of Joseph A. Sylvia State Beach.....	11-5
11.2.5. Known natural communities of Joseph A. Sylvia State Beach.....	11-5
11.3.1. Significant events in the history of Joseph A. Sylvia State Beach.....	11-6
11.3.2. Cultural resources of Joseph A. Sylvia State Beach .....	11-6
11.5.1. Non-historic buildings and structures of Joseph A. Sylvia State Beach .....	11-9
11.5.2 Condition and length of roads at Joseph A. Sylvia State Beach .....	11-8
11.5.3. Number of public parking spaces, by location and type, at Joseph A. Sylvia State Beach .....	11-9
11.5.4. Condition and length of official trails at Joseph A. Sylvia State Beach .....	11-10
11.8.1. Key legal agreements for Joseph A. Sylvia State Beach .....	11-11
11.8.2. Key management and guidance documents for Joseph A. Sylvia State Beach.....	11-11
11.9.1. Priority recommendations for Joseph A. Sylvia State Beach.....	11-15
12.1.1. Physical, political, and regulatory settings of South Beach State Park.....	12-3
12.2.1. Water resources of South Beach State Beach .....	12-3
12.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to South Beach State Park .....	12-4
12.2.3. State-listed species of South Beach State Park, as identified by the NHESP .....	12-4
12.2.4. Known invasive and likely invasive plants of South Beach State Park .....	12-5
12.2.5. Known natural communities of South Beach State Park .....	12-5
12.3.1. Significant events in the history of South Beach State Park .....	12-6
12.3.2. Cultural resources of South Beach State Park.....	12-7
12.5.1. Non-historic buildings and structures of South Beach State Park .....	12-9
12.5.2 Condition and length of roads at South Beach State Park.....	12-9
12.5.3. Number of public parking spaces, by location and type, at South Beach State Park in 2014 and 1996.....	12-10
12.5.4. Condition and length of official trails at South Beach State Park.....	12-10
12.8.1. Key legal agreements for South Beach State Park.....	12-12
12.8.2. Key management and guidance documents for South Beach State Park.....	12-12
12.9.1. Priority recommendations for South Beach State Park.....	12-15

Contents	Page
<b>List of Tables (continued)</b>	
13.1.1. Physical, political, and regulatory settings of Nantucket State Forest .....	13-3
13.2.1. Water resources of Nantucket State Forest.....	13-3
13.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to Nantucket State Forest	13-3
13.2.3. State-listed species of Nantucket State Forest, as identified by the NHESP .....	13-4
13.2.4. Known invasive and likely invasive plants of Nantucket State Forest .....	13-4
13.2.5. Known natural communities of Nantucket State Forest .....	13-4
13.3.1. Significant events in the history of Nantucket State Forest .....	13-5
13.3.2. Cultural resources of Nantucket State Forest.....	13-6
13.5.1. Condition and length of roads at Nantucket State Forest.....	13-7
13.5.2. Number of public parking spaces, by location and type, adjacent to Nantucket State Forest .....	13-7
13.5.3. Condition and length of official trails at Nantucket State Forest.....	13-8
13.8.1. Key legal agreements for Nantucket State Forest .....	13-9
13.8.2. Key management and guidance documents for Nantucket State Forest .....	13-9
13.9.1. Priority recommendations for Nantucket State Forest .....	13-11
14.1.1. Physical, political, and regulatory settings of reforestation lots in the Nickerson Management Complex .....	14-2
14.2.1. Water resources of reforestation lots in the Nickerson Management Complex.....	14-3
14.2.2. Potential impacts of flooding, hurricane inundation, and sea-level rise to reforestation lots in the Nickerson Management Complex .....	14-3
14.2.3. State-listed species of reforestation lots in the Nickerson Management Complex, as identified by the NHESP .....	14-4
14.2.4. Known invasive and likely invasive plants of reforestation lots in the Nickerson Management Complex .....	14-4
14.3.1. Significant events in the history of reforestation lots in the Nickerson Management Complex....	14-6
14.3.2. Cultural resources of reforestation lots in the Nickerson Management Complex .....	14-6
14.5.1. Non-historic buildings and structures of reforestation lots in the Nickerson Management Complex .....	14-7
14.5.2. Condition and length of official trails at reforestation lots in the Nickerson Management Complex .....	14-8
14.8.1. Key legal agreements for reforestation lots in the Nickerson Management Complex .....	14-9
14.8.2. Key management and guidance documents for reforestation lots in the Nickerson Management Complex .....	14-10
14.9.1. Priority recommendations for reforestation lots in the Nickerson Management Complex.....	14-11

Contents	Page
<b>List of Tables (continued)</b>	
15.1.1. Physical, political, and regulatory settings of fire observation towers on the Cape and Islands.....	15-3
15.2.1. Water resources of fire observation tower lots on the Cape and Islands .....	15-3
15.2.2. State-listed species of fire observation towers on the Cape and Islands.....	15-4
15.2.3. Known invasive and likely invasive plants on fire observation tower lots on the Cape and Islands .....	15-4
15.2.4. Known natural communities of fire observation tower lots on the Cape and Islands .....	15-4
15.3.1. Significant events in the history of fire observation towers on the Cape and Islands.....	15-5
15.3.2. Cultural resources of fire observation towers on the Cape and Islands .....	15-6
15.5.1. Non-historic buildings and structures associated with fire observation towers on the Cape and Islands.....	15-9
15.5.2 Condition and length of roads associated with fire observation towers on the Cape and Islands....	15-10
15.7.1. Personnel with direct responsibility for the operation and management of fire observation towers on the Cape and Islands; current and past. ....	15-11
15.8.1. Key legal agreements for fire observation towers on the Cape and Islands.....	15-11
15.9.1. Priority recommendations for fire observation towers on the Cape and Islands.....	15-13
F.1. ....	A-25
<b>List of Figures</b>	
1.1. Nickerson Complex .....	1-2
2.1. Shawme-Crowell State Forest.....	2-2
2.2. Shawme-Crowell State Forest: Recommended Land Stewardship Zoning .....	2-19
3.1. WBNERR .....	3-2
3.2. WBNERR: Recommended Land Stewardship Zoning .....	3-16
4.1. South Cape Beach State Park.....	4-2
4.2. South Cape Beach State Park: Recommended Land Stewardship Zoning .....	4-18
5.1. Washburn Island .....	5-2
5.2. Washburn Island: Recommended Land Stewardship Zoning .....	5-15
6.1. Quashnet Woods State Reservation .....	6-2
6.2. Quashnet Woods State Reservation: Recommended Land Stewardship Zoning.....	6-14
7.1. Roland C. Nickerson State Park.....	7-2
7.2. Roland C. Nickerson State Park: Recommended Land Stewardship Zoning .....	7-24
8.1. Hawksnest State Park.....	8-2
8.2. Hawksnest State Park: Recommended Land Stewardship Zoning .....	8-11
9.1. Cape Cod Rail Trail (South) .....	9-2
9.2. Cape Cod Rail Trail (North) .....	9-3
10.1. Manuel F. Correllus State Forest .....	10-2
10.2. Manuel F. Correllus State Forest: Recommended Land Stewardship Zoning .....	10-19
11.1. Joseph A. Sylvia State Beach.....	11-2
11.2. Joseph A. Sylvia State Beach: Recommended Land Stewardship Zoning .....	11-14
12.1. South Beach State Park.....	12-2
12.2. South Beach State Park: Recommended Land Stewardship Zoning.....	12-14
13.1. Nantucket State Forest .....	13-2

Contents	Page
<b>List of Appendices</b>	
A. Plan Contributors .....	A-1
B. Public Participation .....	A-3
C. Overview of Coordination Process with the Massachusetts Natural Heritage and Endangered Species Program (NHESP).....	A-4
D. Select Massachusetts Regulations Applicable to the Nickerson Management Complex.....	A-11
E. DCR Cultural Resources Policy .....	A-15
F. GIS Supplemental Information.....	A-23
G. Photo Credits.....	A-26
H. References.....	A-27

DRAFT

# EXECUTIVE SUMMARY

---

## INTRODUCTION

Resource Management Plans (RMPs) are working documents that provide a guide to the short- and long-term management of properties under the stewardship of the Department of Conservation and Recreation (DCR). They include an inventory and assessment of natural, cultural, and recreational resources; identify unique characteristics and values of a property; analyze complex resource protection and recreation issues; and develop clear management recommendations. They guide the management of DCR's properties by setting priorities, targeting capital and operational resources, protecting sensitive resources, and improving communication and cooperation with park visitors and the surrounding communities.

The Department of Conservation and Recreation is directed by legislative mandate (M.G.L. Chapter 21: Section 2F) to prepare management plans for “all reservations, parks, and forests under the management of the department.” Although the mandate does not specify the format or content of these management plans, it does require that:

*“Said management plans shall include guidelines for the operation and land stewardship of the aforementioned reservations, parks and forests, shall provide for the protection and stewardship of natural and cultural resources and shall ensure consistency between recreation, resource protection, and sustainable forest management.”*

The legislative mandate also establishes two other requirements. First, that the DCR “shall seek and consider public input in the development of management plans, and shall make draft plans available for a public review and comment period through notice in the Environmental Monitor.” Second, management plans must be reviewed and adopted by the DCR Stewardship Council, a thirteen-member citizen oversight entity. Within 30 days of adoption, the Commissioner “...shall file a copy of such management plans as adopted by the council” with the Secretary of State and the Joint Committee on the Environment, Natural Resources and Agriculture.

This plan covers the Nickerson Management Complex.

## THE NICKERSON MANAGEMENT COMPLEX

The Nickerson Management Complex includes DCR properties on Cape Cod, Martha’s Vineyard, and Nantucket. It includes parks, reforestation lots, and properties on which the DCR holds a legal interest.

The following 12 parks are included in the Nickerson Management Complex:

- Shawme-Crowell State Forest
- Waquoit Bay National Estuarine Research Reserve
- South Cape Beach State Park
- Washburn Island
- Quashnet Woods State Reservation
- Roland C. Nickerson State Park
- Hawksnest State Park
- Cape Cod Rail Trail
- Manuel F. Correllus State Forest
- Joseph A. Sylvia State Beach
- South Beach State Park
- Nantucket State Forest

Also included in the Complex are the following five reforestation lots:

- Sandwich Reforestation Lot
- Falmouth Reforestation Lot
- Barnstable State Forest, Route 132 Lot
- Barnstable State Forest, Old Stage Road Lot
- Brewster State Forest

In addition to these parks and reforestation lots, the DCR holds conservation restrictions on multiple properties on Cape Cod (566.7 acres, total) and two properties on Martha’s Vineyard (83.0 acres, total). Typically, the fee owners of these properties are municipalities or non-profit organizations.

This RMP also contains information on seven fire observation towers located in, or near, DCR properties in the Complex.

## PUBLIC PARTICIPATION IN DEVELOPING THIS RESOURCE MANAGEMENT PLAN

Notice of a public meeting and of the DCR's intent to prepare an RMP for the Nickerson Management Complex was published in the November 20, 2013 Environmental Monitor (Volume 81, Issue 2). Notices were also posted at the Complex's parks and mailed to approximately 120 stakeholders. An initial public meeting was convened at Cape Cod Community College, Barnstable on December 5, 2013. Approximately 12 people attended this meeting, which ran from 6:30 to 8:00 P.M.

A second public meeting, in the form of an open house, was held in the garage at Manuel F. Correllus State Forest on December 7, 2013, from 1:00 to 3:00 P.M. Announcement of this open house was also published in the November 20, 2013 issue of the Environmental Monitor and included in mailings. Approximately 10 people attended.

Public input on this plan was received at the meeting, the open house, and through U.S. and e-mail received after the meeting.

Notice of a public meeting on the draft RMP for the Nickerson Management Complex, and of the availability of the plan, was published in the January 7, 2015 Environmental Monitor (Volume 83, Issue 5). Notices were also posted at the Nickerson Management Complex's parks and sent to approximately 200 stakeholders. The meeting was held on January 29, 2015 at the West Barnstable Fire Station; approximately ## people attended.

The public comment period on the draft RMP ran from January 30 through March 2, 2015; # sets of written comments were received. Information on the public process for this RMP is provided in Appendix B (Public Participation).

This Resource Management Plan was submitted to the DCR's Stewardship Council on *Month Date*, 2015, and was adopted by the council on *Month Date*, 2015.

## RECOMMENDATIONS

One hundred and seventeen priority management recommendations were developed for the Complex in its entirety, individual parks within the Complex, and associated fire observation towers. Fifteen of these recommendations apply to more than one property in the Complex.

For a recommendation to be considered priority it must address one or more of the following criteria:

- Regulatory compliance or compliance with legal agreements.
- Health and safety of park visitors and employees.
- Imminent pending loss of a natural, cultural, or recreation resource.

Priority recommendations are summarized in Table ES-1.

**Table ES.1. Summary of management recommendations for the Nickerson Management Complex.**

Recommendation <sup>a</sup>	Complex	Shawme-Cowell	WBNERR	South Cape Beach	Washburn Island	Quashnet Woods	Nickerson	Hawksnest	Cape Cod Rail Trail	Correllus	Sylvia State Beach	South Beach	Nantucket	Reforestation Lots	Fire Towers
Monitor for consistency with agreements those properties in which the DCR has a legal interest.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prepare Barrier Beach Management Plan in accordance with EO 181.	X	-	X	X	X	-	X	-	-	-	X	-	-	-	-
Contact the Office of Cultural Resources before starting any project beyond those described in the BMPs.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Install an external sink on the comfort station near the Friends' pavilion; remove current temporary sink from near the pavilion.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Seal floor drain in the basement stairwell of the park headquarters and install an alternative drainage system.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Perform a structural analysis of former superintendent's residence and outbuildings.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Rehabilitate comfort stations.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Evaluate, reroof, and mothball CCC building.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Clear vegetation from CCC dynamite bunker and evaluate for masonry repairs.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Continue existing maintenance practices for the Administration Building.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Secure and mothball former FAA building, demolish if appropriate.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Address safety issues with playground equipment, increase frequency of inspections.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Ensure appropriate number of accessible grills and tables at campsites.	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-
Repair ADA accessible showers.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Develop and distribute a trails map.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Locate, establish, or re-establish agreements for the presence of equipment, facilities, or management activities.	-	X	-	-	-	-	X	X	-	-	X	-	-	X	X
Add accessible parking spaces and/or pavement markings.	-	X	X	X	-	-	X	-	X	X	-	X	-	-	-
Continue ongoing rare species monitoring and management.	-	-	X	X	X	-	X	-	-	-	X	-	-	-	-
Minimize further impacts to historic landscape.	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
Fill vacant staff positions.	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-

**Table ES.1. Summary of management recommendations for the Nickerson Management Complex. (Continued)**

Recommendation <sup>a</sup>	Complex	Shawme-Crowell	WBNERR	South Cape Beach	Washburn Island	Quashnet Woods	Nickerson	Hawksnest	Cape Cod Rail Trail	Correllus	Sylvia State Beach	South Beach	Nantucket	Reforestation Lots	Fire Towers
Reconfigure the entrance to Wills Works Road.	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-
Install standard Land and Water Conservation Fund signs.	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Request that the town of Mashpee permanently dedicate at least one seat on the South Cape Beach Advisory Committee to a representative of the Mashpee Wampanoag Tribe.	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Create pedestrian corridor(s) to regulate dune crossings.	-	-	-	X	X	-	X	-	-	-	-	-	-	-	-
Improve interagency coordination in the placing of dredge spoils on park.	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Continue discussions with the town of Mashpee regarding creation of boat ramp.	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Submit maintenance and management activities to NHESP for MESA review.	-	-	-	-	X	X	-	-	X	X	-	X	-	-	X
Replace damaged steps to campground.	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Develop and implement a strategy for the long-term maintenance of composting toilets.	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Continue efforts to restore New England Cottontail habitat.	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Coordinate river restoration activities with DCR archaeologist.	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Implement Cliff Pond management plan.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Assess and manage trails to protect Coastal Plain Pondshore communities.	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-
Reduce trails from camping areas to ponds.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Survey Coastal Shore and Dune Management Unit for occurrence of state-listed plants.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Erect a kiosk with park information and rules.	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-
Remove temporary stump piles.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Apply Cape Cod style design standards to new construction.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Conduct a cultural resources survey to assess the historical significance of Camp Monomoy.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Assess and document pump house structure, remove if necessary.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Perform condition assessment of CCC-built structures and prioritize repair.	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-

**Table ES.1. Summary of management recommendations for the Nickerson Management Complex. (Continued)**

Recommendation <sup>a</sup>	Complex	Shawme-Crowell	WBNERR	South Cape Beach	Washburn Island	Quashnet Woods	Nickerson	Hawksnest	Cape Cod Rail Trail	Correllus	Sylvia State Beach	South Beach	Nantucket	Reforestation Lots	Fire Towers
Rehabilitate comfort station at park entrance to make it accessible.	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-
Post park regulations at specific locations.	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-
Establish suitable marker for the Robert B. Hooper Memorial Bicycle Path.	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-
Post park boundaries.	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-
Gate Round Cove Road to decrease depreciative behavior.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Create gravel parking lot.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Install lead-in signs from main road to park.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Install trail signs in accordance with DCR Trail Guidelines and Best Practices Manual.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Investigate potential encroachment and resolve with abutters, if warranted.	-	X	X	-	-	X	-	X	X	-	-	-	-	X	-
Increase DCR's presence in the park.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Implement improvements to boat ramp.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Obtain data to regulate flow of water through Namskaket Creek culverts.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Assess work proposed adjacent to or near the multi-use trail for potential impacts to archaeological resources.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Re-establish bridle trail.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Paint pavement markings and post No Parking signs opposite accessible spaces at Wellfleet trail head.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Identify options for expanding authorized parking.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Install or update road crossing signs and markings to meet current safety standards.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Implement recommended safety measures at Eastham underpass and elsewhere along trail, as warranted.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Actively promote trail user etiquette and safety.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-

**Table ES.1. Summary of management recommendations for the Nickerson Management Complex. (Continued)**

Recommendation <sup>a</sup>	Complex	Shawme-Crowell	WBNERR	South Cape Beach	Washburn Island	Quashnet Woods	Nickerson	Hawksnest	Cape Cod Rail Trail	Correllus	Sylvia State Beach	South Beach	Nantucket	Reforestation Lots	Fire Towers
Following completion of Dennis to Yarmouth extension, prepare a master plan for the entire park.	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Prepare an updated fire break management plan to close out Conservation Permit #01.012.DFW.	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Prepare and implement a comprehensive fire management plan to promote populations of rare species, their habitats, and native natural communities; and to decrease the risk of fire to the forest and abutting properties.	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Working with The Nature Conservancy, update the existing management and maintenance plan for the combined Pohogonot Tract and Smith Preserve.	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Conduct additional file reviews to locate and review additional agreements.	-	X	-	-	-	-	-	-	-	X	-	-	-	X	X
Survey park boundary and establish permanent bounds.	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
Work with the County of Dukes County to clarify issues regarding concessions in the park.	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
Work with the town of Edgartown to establish a new MOU for park operations and management.	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
Remove remnant non-native conifer plantations to promote native vegetation and to decrease fire risk to the forest and abutting properties.	-	-	-	-	-	-	-	-	-	X	-	-	X	X	-
Ensure that existing Habitat Management Plan is implemented.	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-
Provide the NHESP with annual written notification of “activities planned to meet management goals” for the savannah-open woodland project area in the North Pasture.	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Conduct a state-wide survey of condition and cultural significance of all fire towers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
Determine ownership of the State Police building, stabilize, and mothball.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
Conduct an inventory of all antennas and communication equipment, compare against existing legal agreements, and establish new agreements as warranted.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X

a. When possible, similar recommendations have been grouped under common, associated themes.