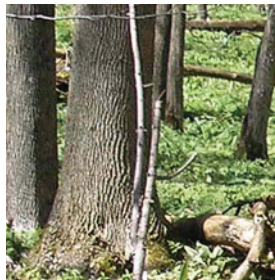
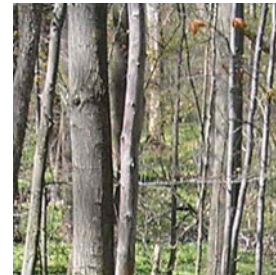


Leelanau Scenic Heritage Route Trailway Plan and Environmental Assessment

Sleeping Bear National Lakeshore, Leelanau County, MI



TRAILWAY PLAN AND ENVIRONMENTAL ASSESSMENT PREPARED BY:

GOSLING CZUBAK ENGINEERING SCIENCES, INC
1280 Business Park Drive
Traverse City, Michigan 49686
KLAUS HEINERT, RLA, ASLA
NATHAN ELKINS, ASLA

NATIONAL PARK SERVICE
Sleeping Bear Dunes National Lakeshore
Rivers, Trails and Conservation Assistance Program
9922 Front Street
Empire, Michigan 49630

NORTHWEST MICHIGAN COUNCIL OF GOVERNMENTS
2194 Dendrinis Drive
PO Box 506
Traverse City, Michigan 49685

ACKNOWLEDGEMENTS

SPECIAL THANKS TO:

LEELANAU SCENIC HERITAGE ROUTE TRAILWAY WORK GROUP

LEELANAU SCENIC HERITAGE ROUTE COMMITTEE

NATIONAL PARK SERVICE - SLEEPING BEAR DUNES NATIONAL LAKESHORE

NATIONAL PARK SERVICE – RIVERS, TRAILS AND CONSERVATION ASSISTANCE PROGRAM

NORTHWEST MICHIGAN COUNCIL OF GOVERNMENTS

MICHIGAN DEPARTMENT OF TRANSPORTATION

FRIENDS OF SLEEPING BEAR DUNES

TRAVERSE AREA RECREATION AND TRANSPORTATION TRAILS, INC.

LEELANAU COUNTY ROAD COMMISSION

VILLAGE OF EMPIRE

EMPIRE TOWNSHIP

GLEN ARBOR TOWNSHIP

CLEVELAND TOWNSHIP

CENTERVILLE TOWNSHIP

CHERRY REPUBLIC, INC.

THE AMERICANA FOUNDATION

CITIZENS

TABLE OF CONTENTS

CHAPTER 1 – Overview of the Planning Process	1-1
1.1 Introduction.....	1-2
1.2 Defining the Vision and Guiding Principles.....	1-3
1.3 Background and Scope.....	1-3
1.4 Relationship to Other Planning Projects.....	1-4
CHAPTER 2 – Environmental Assessment	2-9
2.1 Purpose and Need	2-10
2.2 Applying Preliminary Impacts to Optional Routes.....	2-10
2.3 Alternatives	2-13
2.3.1 No-Action Alternative.....	2-13
2.3.2 Alternative A.....	2-14
2.3.3 Alternative B: The Preferred Alternative	2-32
2.3.4 Environmentally Preferred Alternative	2-48
2.3.5 Alternatives and/or Options that were Eliminated.....	2-49
2.3.6 Best Management Practices for the Action Alternatives	2-49
2.3.7 Comparison of Alternatives.....	2-51
2.3.8 Impacts of the Trailway Alternatives	2-57
2.4 Affected Environment	2-60
2.4.1 Impact Topics Selected for Analysis	2-60
2.4.2 Topography	2-61
2.4.3 Wetlands and Water Quality	2-62
2.4.4 Vegetation and Wildlife	2-63
2.4.5 Michigan State Listed Species	2-66
2.4.6 Soils	2-67
2.4.7 Socioeconomics	2-68
2.4.8 Cultural Resources.....	2-70
2.4.9 Visitor Opportunities and Use	2-71
2.4.10 Operations and Maintenance.....	2-72
2.4.11 Impact Topics Eliminated From Further Analysis	2-74

2.5	Environmental Consequences	2-76
2.5.1	Terms and Assumptions.....	2-76
2.5.2	Cumulative Impacts.....	2-76
2.5.3	Impairment of National Park Resources.....	2-77
2.5.4	Impact Topics and Environmental Analysis	2-78
	Topography	2-78
	Wetlands and Water Quality	2-80
	Vegetation and Wildlife	2-83
	Michigan State-Listed Species	2-86
	Soils	2-89
	Socioeconomics	2-94
	Cultural Resources	2-97
	Visitor Use	2-100
	Operations and Maintenance	2-102
C H A P T E R 3	– Public Involvement.....	3-104
3.1	Leelanau Scenic Heritage Route Committee	3-105
3.2	Engaging the Public and Stakeholders	3-105
C H A P T E R 4	– Trail Cross-Section Development.....	4-110
4.1	Typical Cross-Section Design.....	4-110
4.2	Typical Trailway Construction Sections	4-117
C H A P T E R 5	– Cost Projections.....	5-122
5.1	Cost Analysis Overview.....	5-123
5.2	Assumptions.....	5-124
5.3	Cost Projection Summary.....	5-124
A P P E N D I X		
A.	Map Exhibit A: Michigan Department of Transportation Corridor Improvement Plan	
B.	Map Exhibit B: Port Oneida Rural Historic District – Sleeping Bear Dunes National Lakeshore	
C.	Map Exhibit C: Cultural History - Sleeping Bear Dunes National Lakeshore	
D.	Map Exhibit D. Glen Haven Village - Sleeping Bear Dunes National Lakeshor	

- E. Trail Planning and Design Guideline**
- F. Preliminary Impact Topics**
- G. Measuring the Impact to the Environment and Feasibility (Matrices)**
- H. Trailway Options Maps**
 - Map 1.1 Proposed Trailway Routing – Segment 1: Options 1-6**
 - Map 1.2 Proposed Trailway Routing – Segment 2: Options 1-7**
 - Map 1.3 Proposed Trailway Routing – Segment 3: Options 1**
 - Map 1.4 Proposed Trailway Routing – Segment 4: Options 1-5**
 - Map 1.5 Proposed Trailway Routing – Segment 5: Options 1-15**
 - Map 1.5.1 Proposed Trailway Routing – Segment 5: Options 8-11**
 - Map 1.6 Proposed Trailway Routing – Segment 6: Options 1-7**
 - Map 1.7 Proposed Trailway Routing – Segment 7: Options 1-3**
 - Map 1.8 Proposed Trailway Routing – Segment 8: Options 1-4**
 - Map 1.9a Proposed Trailway Routing – Segment 9: Options 1-3**
 - Map 1.9a.1 Proposed Trailway Routing – Segment 9: Options 3-7**
 - Map 1.9b Proposed Trailway Routing – Segment 9: Options 7-9**