

Table of Contents

Executive Summary	vii
Section 1: Introduction	1
1.1 Background	1
1.2 Implementation of the Planning Process	5
Section 2: Plan Adoption	2-1
2.1 Plan Adoption by Local Governing Bodies	2-1
Section 3: Planning Process	3-1
3.1 Introduction	3-1
3.2 The Planning Process	3-1
3.3 Coordination with Existing Planning Efforts and Programs	3-10
3.4 Data Sources	3-11
Section 4: Saratoga County Profile	4-1
4.1 Location and Historical Context	4-1
4.2 Current Conditions	4-1
4.3 Future Conditions	4-16
4.4 General Building Stock	4-25
4.5 Critical Facilities	4-28
Section 5: Risk Assessment	5-1
5.1 Methodology, Data, and Tools	5-1
5.2 Hazard Identification	5-6
5.3 Hazard Ranking	5-17
5.4 Summary of Changes	5-21
5.5 Drought	5-21
5.6 Earthquake	5-33
5.7 Extreme Temperatures	5-54
5.8 Flood	5-63
5.9 Ground Failure	5-84
5.10 Invasive Species	5-97

Multi-Jurisdictional Hazard Mitigation Plan

Saratoga County, New York

January 2, 2019

5.11	Severe Storm	5-105
5.12	Severe Winter Storm	5-126
5.13	Wildfire	5-141
Section 6: Mitigation Strategies		6-1
6.1	Background and Past Accomplishments	6-1
6.2	General Mitigation Planning Approach	6-1
6.3	Capability Assessment	6-5
6.4	Identification, Prioritization, Analysis, and Implementation of Mitigation Actions	6-6
Section 7: Plan Maintenance		7-1
7.1	Monitoring, Evaluating, and Updating the Plan	7-1
7.2	Implementation of Mitigation Plan Through Existing Programs	7-6
Section 8: Planning Partnership		8-1
8.1	Background	8-1
8.2	The Planning Partnership	8-1
Appendix A – Sample Resolution		
Appendix B – Planning Process		
Appendix C – Risk Assessment		
Appendix D – Mitigation Strategies		
Appendix E – Mitigation Programs		
Appendix F – Mass Care and Sheltering Annex		
Appendix G – Linkage Procedures		
Appendix I – Critical Facilities and Infrastructure (Redacted)		

Table of Tables

Table 1-1 Participating Jurisdictions in Saratoga County	1-4
Table 3-1 Mitigation Planning Committee Members	3-3
Table 3-2 Additional Stakeholder Participation	3-5
Table 3-3 2019 HMP Update Participation Matrix	3-8
Table 3-4 Saratoga County Floodplain Administrators	3-11
Table 4-1 Saratoga County Population Estimates (2016)	4-2
Table 4-2 Vulnerable Populations in Saratoga County Townships and Cities (2016 Estimates).	4-5
Table 4-3 Number of Farms and Land Use in Saratoga County	4-16
Table 4-4 Population Trends for Saratoga County and Municipalities	4-17
Table 4-5 Building Stock Market Value	4-25
Table 5-1 Disaster Declarations in Saratoga County	5-3
Table 5-2 Hazard Identification for Saratoga County, New York	5-8
Table 5-3 Probability of Occurrence Ranking Factors	5-18
Table 5-4 Definitions of Impacts to Population, Property and Economy	5-18
Table 5-5 Saratoga County Hazard Ranking	5-20
Table 5-6 CEPA Natural Hazard Rankings	5-21
Table 5-7 SDI Index	5-24
Table 5-8 PDSI Index	5-24
Table 5-9 New York State Drought Stages	5-24
Table 5-10 KBDI Index	5-25
Table 5-11 US Drought Monitor Drought Severity	5-26
Table 5-12 Saratoga County, NY Historical Droughts	5-27
Table 5-13 Richter Scale	5-35
Table 5-14 Modified Mercalli Intensity Scale	5-35
Table 5-15 Modified Mercalli Intensity (MMI) and PGA Equivalent	5-36
Table 5-16 Vulnerable Population Exposed to the Earthquake Hazard in Saratoga County	5-46
Table 5-17 Estimated Number of Injuries and Casualties from the 2,500-Year MRP Earthquake Event	5-47
Table 5-18 Estimated Hospital Bed Capacity for 500 and 2500-Year MRP Events	5-47
Table 5-19 Example of Structural Damage State Definitions for a Light Wood-Framed Building	5-49
Table 5-20 Estimated Number of Buildings Damaged by General Occupancy for 100-year, 500-year and 2,500-year MRP Earthquake Events	5-50
Table 5-21 Estimated Building Value (Building and Contents) Damaged by Jurisdiction for the 500- and 2,500-Year MRP Earthquake Events	5-50
Table 5-22 Average High and Low Temperature Range for Winter Months in Saratoga County	5-58
Table 5-23 Saratoga County Previous Flood Events	5-73
Table 5-24 Saratoga County Previous Ice Jams	5-73
Table 5-25 Building Exposure to Flooding	5-76

Multi-Jurisdictional Hazard Mitigation Plan

Saratoga County, New York

January 2, 2019

Table 5-26 NFIP Participation in Saratoga County	5-78
Table 5-27 Repetitive Loss NFIP Payments and Losses	5-80
Table 5-28 Repetitive Loss Property Types	5-80
Table 5-29 Exposure of Critical Facilities to Flooding, by Sector	5-81
Table 5-30 Exposure of Critical Facilities to Flooding, by Municipality	5-82
Table 5-31 General Building Value Exposed and Vulnerable to Landslides in Saratoga County	5-93
Table 5-32 Critical Facilities Susceptible to Landslides in Saratoga County, by Sector	5-95
Table 5-33 Critical Facilities Susceptible to Landslides in Saratoga County, by Municipality	5-95
Table 5-34 Invasive Species in Saratoga County	5-97
Table 5-35 Commonly Reported Invasive Species in Saratoga, NY	5-102
Table 5-36 Beauford Wind Scale	5-107
Table 5-37 Comparison between Fujita Scale and Enhanced Fujita Scale Wind Speeds	5-108
Table 5-38 Enhanced Fujita Scale Damage Indicators	5-109
Table 5-39 Saffir-Simpson Hurricane Wind Scale	5-110
Table 5-40 Saratoga Severe Storm Events	5-118
Table 5-41 Building Stock Replacement Value (Structure Only), by Occupancy Class	5-120
Table 5-42 Estimated Saratoga County Building Replacement Value (Structure Only) Damaged by the 100-Year and 500-Year MRP Winds	5-121
Table 5-43 Estimated Building Value (Structure Only) Damaged by the 100-Year and 500-Year MRP Winds	5-121
Table 5-44 NESIS Ranking Categories 1 – 5	5-130
Table 5-45 The Dolan-Davis Nor'easter Intensity Scale	5-131
Table 5-46 Saratoga County Past Occurrences: Severe Winter Storms, 1996 - 2018	5-132
Table 5-47 Vulnerable Population Exposed to Severe Winter Storm Events in Saratoga County, 2017 (U.S. Census Bureau, 2017)	5-137
Table 5-48 Building Stock Estimated Losses from Severe Winter Storm Events in Saratoga County	5-138
Table 5-49 Wildfire Color-Coded Flag System	5-144
Table 5-50 Historic Occurrences of Wildfire in New York State	5-145
Table 5-51 Building Value at Risk in Wildland-Urban Interface	5-148
Table 5-52 Critical Facilities at Risk, by Sector	5-149
Table 5-53 Critical Facilities at Risk, by Municipality	5-149
Table 6-1 Cost and Benefit Definitions	6-9
Table 7-1 Mitigation Planning Committee	7-1
Table 7-2 Existing Processes and Programs for Mitigation Plan Implementation	7-7

Table of Figures

Figure 1-1 Saratoga County Mitigation Plan Area	1-3
Figure 4-1 Saratoga County Population Density	4-3
Figure 4-2 Hudson River Watersheds	4-8
Figure 4-3 Land Use in Saratoga County	4-12
Figure 4-4 Agricultural Land in Saratoga County	4-15
Figure 4-5 Potential Growth and Grey Infrastructure in Saratoga County	4-20
Figure 4-6 Single Family Homes Built between 1995 and 2015	4-22
Figure 4-7 New Roads Constructed 2005-2015	4-23
Figure 4-8 Green Infrastructure Networks in Saratoga County	4-24
Figure 4-9 Building Stock Value by Census Tract	4-27
Figure 5-1 Drought Conditions in New York, August 28, 2018	5-23
Figure 5-2 New York PDSI Levels	5-27
Figure 5-3 Saratoga County Annual Precipitation, 1895 to 2018	5-29
Figure 5-4 Saratoga County, NY Average Annual Temperature, 1895-2018	5-30
Figure 5-5 Drought Impacts Recorded from 2008 to September 2018	5-31
Figure 5-6 Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years	5-37
Figure 5-7 Peak Ground Acceleration in Saratoga County for a 100-Year MRP Earthquake Event by Census Tract	5-39
Figure 5-8 Peak Ground Acceleration in Saratoga County for 500-Year MRP Earthquake Event by Census Tract	5-40
Figure 5-9 Peak Ground Acceleration in Saratoga County for 2500-Year MRP Earthquake Event by Census Tract	5-41
Figure 5-10 Earthquake Events (1700 – October 1, 2018)	5-43
Figure 5-11 Annualized Earthquake Losses by County	5-48
Figure 5-12 NWS Wind Chill Chart	5-56
Figure 5-13 Climate Divisions of New York State	5-57
Figure 5-14 NWS Heat Index Chart	5-59
Figure 5-15 FEMA Flood Hazard Areas	5-70
Figure 5-16 Landslide Potential of the Conterminous U.S. United States	5-87
Figure 5-17 Approximate Landslide Hazard Area in Saratoga County	5-88
Figure 5-18 Landslide Incidence and Susceptibility in New York State	5-90
Figure 5-19 Landslide Events by County 1960-2012	5-91
Figure 5-20 New York State Partnerships for Regional Invasive Species Management	5-98
Figure 5-21 Water Chestnut Density of Observations (1994 – 2014)	5-100
Figure 5-22 Honeysuckle Density of Observations (1994-2014)	5-101
Figure 5-23 New York State range of wild parsnip	5-102
Figure 5-24 Peak Wind Speeds for the 100-Year MRP Wind Event in Saratoga County	5-112
Figure 5-25 Peak Wind Speeds for the 500-Year MRP Wind Event in Saratoga County	5-113
Figure 5-26 Hail Climatology (1986-2015)	5-114
Figure 5-27 Wind Zones in the United States	5-115
Figure 5-28 EF3, EF4, and EF5 Tornadoes (1950-2013)	5-116

Multi-Jurisdictional Hazard Mitigation Plan

Saratoga County, New York

January 2, 2019

Figure 5-29 Tropical Cyclone Tracks (1851-2017)	5-117
Figure 5-30 Estimated Residential Building Loss for a 100-Year MRP Wind Event by Census Block	5-123
Figure 5-31 Estimated Residential Building Loss for a 500-Year MRP Wind Event by Census Block	5-124
Figure 5-32 Annual Mean Snowfall within the Eastern U.S.	5-129
Figure 5-33 “Valentine’s Day Storm” 2007 Snowfall Accumulations	5-135
Figure 5-34 The Wildland-Urban Interface in Saratoga County	5-143