Contents

Acknowledgments v
Foreword vii
How to use this book ix

Module 1 GIS basics 1
EXERCISE Explore and label community features data for a city visitors map 3

Module 2 Reducing crime 17
CASE STUDY Deciding where to increase neighborhood police patrols 19
EXERCISE Geocode crime data to map and analyze robbery hot spots 27
On your own 45

Module 3 A war on weeds 53
CASE STUDY Mapping noxious weeds 55
EXERCISE Use GIS to map a leafy spurge infestation and compute its area 67
On your own 83

Module 4 Tracking water quality 93
CASE STUDY Monitoring seasonal changes on the Turtle River 95
EXERCISE Analyze Turtle River data to identify locations for fish habitat restoration 103
On your own 115

Module 5 Investigating point-source pollution 125
CASE STUDY Identifying potentially harmful landfills 127
EXERCISE Map, query, and analyze neighborhood data to identify high-risk landfills 135
On your own 143

Module 6 Getting kids to school 149
CASE STUDY Who walks and who takes the bus? 151
EXERCISE Use buffers to identify eligible school-bus riders 157
On your own 171
Contents

Module 7 Protecting the community forest 177
CASE STUDY One, two, tree—Taking a tree inventory 179
EXERCISE Map and query a tree inventory to locate hazardous trees 187
On your own 201

Module 8 Selecting the right location 209
CASE STUDY Using site analysis to develop a wildlife area management plan 211
EXERCISE Perform site selection for a state wildlife area 221
On your own 233

On your own: Project planning 241
Defining a project framework 241
Ask a geographic question 242
Acquire geographic resources 244
Explore geographic data 251
Analyze geographic information 254
Act on geographic knowledge 258
Evaluation and next steps 263

References and resources 265
Windows data installation guide 271
Macintosh data installation guide 273
Macintosh technical guide 275
Data license agreement 279