CONTENTS

ACKNOWLEDGEMENTS . . . . . . . . . . . iv

LIST OF ILLUSTRATION . . . . . . . . . . . vii

LIST OF TABLES . . . . . . . . . . . . . . . ix

Chapter

I. INTRODUCTION . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1

A. Cultural Resource Management
B. Purpose
C. The Siege on Petersburg, Virginia
D. Earthen Civil War Fortifications
   1. Form and Function
   2. Development of American Entrenchment Theory
   3. Major Nathaniel Michler

II. PREDICTIVE PROBABILITY MODELS . . . . . . . . . . . . . . . . . . . . . 11

A. Conceptual Framework
B. Logistic Regression
C. Stepwise Logistic Regression
   1. Forward Stepwise Logistic Regression (an example)
D. Geographic Information Systems and Predictive Probability Models

III. METHODOLOGY . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 19

A. Model Variables
   1. Environmental Independent Variables
   2. Social Independent Variables
B. Creation of GIS Map Layers
   1. Source Maps
   2. Preliminary coverages
   3. Secondary coverages
C. Site and Nonsite Sampling
D. Wald Backward Elimination Stepwise Logistic Regression
E. Fortification Predictive Surface
F. Fortification Predictive Surface for Independent Data
IV. RESULTS AND ANALYSIS . . . . . . . . . . . . . . 34

A. Evaluation of the Logistic Regression Model
B. Interpreting the Logistic Regression Coefficients
   1. Unstandardized Coefficients
   2. Standardized Coefficients
C. Predictive Efficiency
D. Accuracy of Fortification Predictive Surface for Independent Data

V. CONCLUSION . . . . . . . . . . . . . . . . . . . . . . . . . . 52

A. Suitability of Predictive Probability Model to Fortification Site Location
B. Relevance of Model in Determining Factors Significant to Locations where Fortification are Present
C. Significance of Model

APPENDIX . . . . . . . . . . . . . . . . . . . . . . . . . . . . 55

REFERENCE LIST . . . . . . . . . . . . . . . . . . . . . . . . . . 67