

Prepared By

U.S. Army Corps Of Engineers Norfolk, Virginia

And

Commonwealth Of Virginia
Department Of Conservation And Recreation
Division Of Soil And Water Conservation

1993

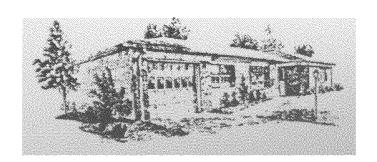


Table of Contents

| Preface | iv |
|------------------------------------------------------|-----|
| Acknowledgments | v |
| Chapter 1 - Introduction | 1-1 |
| Chapter 2 - Self Assessment for Flood Proofing Needs | 2-1 |
| Chapter 3 - Raising or Relocating Your Home | 3-1 |
| Raising Your Home | 3-1 |
| Why Raise? | 3-1 |
| Advantages of Raising a Structure | 3-3 |
| Disadvantages of Raising a Structure | 3-3 |
| Costs | 3-3 |
| Conclusions | 3-4 |
| Relocating Your Home | 3-4 |
| Why Relocate? | 3-4 |
| Advantages of Relocating | 3-4 |
| Disadvantages of Relocating | 3-5 |
| Costs | 3-5 |
| Conclusions | 3-5 |
| Chapter 4 - Construction of Barriers | 4-1 |
| Free-Standing Barriers | 4-1 |
| Why Barriers? | 4-1 |
| Advantages of the Construction of Barriers | 4-2 |
| Disadvantages of the Construction of Barriers | 4-2 |
| Costs | 4-2 |
| Conclusions | 4-3 |
| Dry Flood Proofing | 4-3 |
| Why Dry Flood Proof? | 4-3 |

Table of Contents (Cont'd)

| Advantages of Dry Flood Proofing | 4-4 |
|----------------------------------------------------|-----|
| Disadvantages of Dry Flood Proofing | 4-4 |
| Costs | 4-5 |
| Conclusions | 4-5 |
| Chapter 5 - Wet Flood Proofing Techniques | 5-1 |
| Why Wet Flood Proofing? | 5-1 |
| Advantages of Wet Flood Proofing | 5-2 |
| Disadvantages of Wet Flood Proofing | 5-2 |
| Costs | 5-2 |
| Conclusions | 5-3 |
| Chapter 6 - Flood Insurance Program | 6-1 |
| Appendix A - Technical Appendix | A-1 |
| Self Assessment | A-1 |
| Selecting Architects/Engineers and Contractors | A-6 |
| Sources of Assistance | A-8 |
| Appendix B - Flood Protection Fact Sheet | B-1 |
| Preparing for a Flood | B-1 |
| When Flooding is Imminent | B-1 |
| During Flood Conditions | B-2 |
| What To Do After a Flood | B-3 |
| Appendix C - Roof Reinforcement for Storm Proofing | C-1 |
| Appendix D - Bibliography | |

List of Figures

| 3-1 | Piers and Columns | 3-1 |
|-----|------------------------------------------------------------------------------------|-----|
| 3-2 | Foundation Extension | 3-2 |
| 3-3 | Sloped Fill | 3-3 |
| 4-1 | Berms, Levees, and Floodwalls | 4-1 |
| 4-2 | Dry Flood Proofing | 4-4 |
| 5-1 | Wet Flood Proofing - Relocating | 5-1 |
| 5-2 | Wet Flood Proofing - Covering or Coating | 5-2 |
| A-1 | Percent Damage to Structure and Contents Value, One Story, No Basement | A-2 |
| A-2 | Percent Damage to Structure and Contents Value, One Story With Basement | A-2 |
| A-3 | Percent Damage to Structure and Contents Value, Split Level, No Basement | A-2 |
| A-4 | Percent Damage to Structure and Contents Value, Split Level, With Basement | A-2 |
| A-5 | Percent Damage to Structure and Contents Value, Two or More Stories, No Basement | A-3 |
| A-6 | Percent Damage to Structure and Contents Value, Two or More Stories, With Basement | A-3 |
| A-7 | Percent Damage to Structure and Contents Value, Manufactured Home | A-3 |
| A-8 | Estimating Residential Flood Damages | A-4 |

PREFACE

If you own a home in an area subject to flooding, you owe it to yourself and your family to be as knowledgeable as possible with respect to the dangers from flooding. This manual presents some flood proofing options which are available to help you minimize the impacts from flooding. Advantages, disadvantages, costs, and benefits of various flood proofing options are provided to help you make a decision. After reading through the following pages, you may find that some of the options will fit your specific situation better than others. You may choose to investigate these options in more detail. Sources of additional information, including telephone numbers and addresses, are provided to help you do this.

Acknowledgments

The authors would like to express their thanks to the following people for their review/comments:

Federal Emergency Management Agency
John Gamble
Frank Thomas
I.A. Lemersal
Cliff Oliver
Dave Thomas
Bill Curtis

Tennessee Valley Authority James Wright

Soil Conservation Service Phillip A. Renn

U.S. Army Corps of Engineers
Richard E. Stuart
Robert W. Plott
Conrad Battreal
W. Hunter Rountree, Jr.

French and Associates, LTD French Wetmore

Virginia Department of Housing and Community Development Curtis L. McIver

> Michigan Department of Natural Resources Wallace A. Wilson

> > Stafford County Adam L. Crist

Wise County Robert Mullins

City of Norfolk Fred R. Brusso, Jr.

Mount Rogers Planning District Commission Thomas Taylor

Virginia Society of Professional Engineers Leigh Dicks

Virginia Chapter of American Society of Landscape Architects Ellen Vogle

ADVISORY COMMITTEE:

William A. Kalberer, Department of Conservation & Recreation William H. Lesser, Department of Conservation & Recreation Douglas J. Plasencia, Department of Conservation & Recreation

AUTHORS:

Edward F. Dozier, Jr., U. S. Army Corps of Engineers, Norfolk District Thomas N. Yancey, Jr., U. S. Army Corps of Engineers, Norfolk District

COVER AND GRAPHICS:

Padam Jain, U. S. Army Corps of Engineers, Norfolk District

EDITING, LAYOUT, AND DESIGN:

Marsha D. Weatherly, assisted by Diana L. Bailey, U. S. Army Corps of Engineers, Norfolk District