APPENDICES

APPENDIX A

MEASUREMENT OF FLOODPLAIN PROGRAM COMPONENTS AND DIMENSIONS

1. CONSTRUCTION MEASURES INDEX

An index of regulations affecting construction in floodplains. Variables 1A, 1B & 1C are re-scaled from 0 to 10 and summed to obtain the index score.

Range = 0 to 30

1A. Regulatory Floodplain, 1980

What regulatory floodplain is adopted in the local ordinance?

0 = 100 year flood under current development conditions
5 = 100 year flood under ultimate development conditions
10 = Greater than 100 year flood

1B. Floodway Elevation

What is the minimum flood protection elevation required for residences in the floodway?

0 = At base flood elevation
5 = One foot above base flood elevation (BFE)
10 = No buildings allowed in the floodway

1C. Floodplain Elevation

What is the minimum flood protection elevation required for residences in the regulatory floodplain?

0 = At base flood elevation
3 = One foot above BFE
5 = Two feet above BFE
8 = Two and one-half feet above BFE
10 = No buildings allowed in the floodplain

2. LOCATIONAL MEASURES INDEX

An index of regulations affecting location of development in floodplains. Variables 2A, 2B, 2C are re-scaled from 0 to 10 and summed to obtain the index score.

Range = 0 to 30

2A. Floodway Dedication Requirement

Must floodway portions of subdivisions be dedicated as open space on subdivision plat proposals?

0 = No
10 = Yes

2B. Density Transfer Program

Is there a provision for density transfers from floodplain to nonhazard areas stated in the floodplain management ordinance?

0 = No
5 = Transfer from floodway to flood fringe, or nonhazard area provided for by action of City Council
10 = Transfer from floodplain to nonhazard area in ordinance

2C. Public Facility Location

Is there a policy to prevent location of public buildings and infrastructure in the floodplain?

0 = No
5 = In floodway only
10 = In floodplain

3. IMPLEMENTATION MEASURES INDEX

An index of the city's commitment to a floodplain regulatory program. Variables 3A, 3B, 3C are re-scaled from 0 to 10 and summed to obtain the index score.

Range = 0 to 30

3A. Program Maturity

How many years has the community been in the regular phase of the NFIP.

Actual number of years.

3B. Program Responsibility & Oversight

Is there a lead department for administering the program, does a particular individual oversee the program?

0 = No
5 = Yes, either a lead dept. or an oversight individual
10 = Yes, both a lead dept. and an oversight individual

3C. Staff Time

What is the staff time spent on implementing and enforcing the floodplain management regulatory program?

Actual number of person-weeks per year (i.e. 50 would indicate one full time staff person)

4. ENFORCEMENT MEASURES INDEX

An index of legislative and operational practices to enforce floodplain regulations. Variables 4A, 4B, and 4C are re-scaled from 0 to 10 and summed to obtain the index score.

Range = 0 to 30

4A. <u>Variances Allowed</u>

Does the ordinance allow a variance procedure?

0 = Yes, anywhere in the floodplain
5 = Yes, in the floodway fringe, but not in the floodway
10 = No

4B. <u>Violations, Provision for Penalties</u>

Composite variable, each community scored zero to three based on whether they:

1) Have provisions for injunctive remedies
2) Prescribe a fine for violations
3) Allow criminal penalties for violations

0 = No provisions
3.5 = One of the three above
6.5 = Two of the three above
10 = All three of the above

4C. <u>Surveillance</u>

Is there an ongoing surveillance program to detect violations?

0 = No
10 = Yes

5. <u>INTERGOVERNMENTAL FACTORS- STATE MANDATE</u>

Is there a state mandate for implementing floodplain regulations?

0 = No
10 = Yes

APPENDIX B

CODING OF INDEPENDENT VARIABLES
USED TO STUDY LAND VALUES AND
LIKELIHOOD OF DEVELOPMENT

I4 Size of Parcel

Square feet in 1000's (round to the nearest thousand; e.g., 12,501 = 13; round 500's to the odd number; e.g., 12,500 = 13; 13,500 = 13; 14,500 = 15)

9999 = 9,999,000 Square feet or more (232 acres). Total Parcel

. = Missing data

I6 Land Value, 1985

Appraised value (by tax assessor) of property in hundreds (round to nearest hundred) for total parcel, not just floodplain portion)

99999 = $9,999,900 or more

. = Missing data

I13 Land Use,1985

0 Vacant
1 Agriculture
2 Urban open space (park, golf course, etc.)
3 Residential
4 Commercial (retail, office, etc.)
5 Industrial (including wholesale, transportation, communications)
6 Public and institutional (except open space uses)

Recode of I(13) for Logisitic Regression

1 if I13 = 4 or 5
2 if I13 = 3
3 if I13 = 0, 1, or 2

I14 Size of Structure, 1985

Size of structure('s) in hundreds of square feet. This is the total square footage built on the parcel, both floodplain and non-floodplain portions. Round to nearest hundred; e.g., 1475 = 15, round 50's to the odd number; e.g., 1450 = 15; 1550 = 15; 1650 = 17)

0 = No significant structure (value < #5,000)
999 = 99,000 square feet or more

. = Missing data

I16 Appraised Land Value per Thousand Square Feet

Calculated from: I(6)*100 / I(4)

I22 Distance to Nearest Thoroughfare, 1985

Road distance to nearest thoroughfare in thousands of feet (round to nearest hundred; e.g., 33,551 = 34; round 500's to the nearest odd number; e.g., 33,500 = 33; 33,550 = 34)

0 = Distance less than 500 feet
99 = 99,000 feet or more

. = Missing data

I23 Distance to Nearest Limited Access Highway, 1985

Road distance to nearest limited access highway interchage in thousands of feet (round to the nearest thousand; e.g., 33,501 = 34; round 500's to the odd number; e.g., 33,500 = 33; 34,500 = 35)

99 = 99,000 feet or more

. = Missing data

I24 Distance to Central Business District, 1985

Road distance to community/subregional central business district in thousands of feet (round to the nearest thousand; e.g., 33,501 = 34; round 500's to the odd number; e.g., 33,500 = 33; 34,500 = 35)

99 = 99,000 feet or more

. = Missing data

125 Distance to Nearest Regional Shopping Center, 1985

Road distance to nearest regional shopping center in thousands of feet; (round to the nearest thousand; e.g., 33,501 = 34; round 500's to the odd number; e.g., 33,500 = 33, 34,500 = 35)

This would be a mall-type regional serving center of 300,000 square feet or more, anchored by a major department store(s)) or a center described by local planning staff as region serving

127 Access to Permanent Open Space

Public open space, parks, golf courses, cemetaries, lakes. Not to include open areas of university, business, or government campuses.

0 Parcel is not located adjacent to public (permanent) open space
1 Parcel is located adjacent to public (permanent) open space

. Missing data

128 Access to Thoroughfare

0 No thoroughfare frontage
1 Parcel has thoroughfare frontage

. missing data

Availability of Utilities

137 Sewer Service Availability

0 Public sewerage not available within 1,000 feet of parcel or public policy
   to not sewer the parcel
1 Public sewerage available within 1,000 feet of parcel

. Missing data

Zoning Controls Measured at the Parcel Level

I39 Zoning Development Residential Intensity Index, 1985

For majority portion of parcel where there is more than one zoning category on parcel.

0 = No residential use allowed
1 = Single Family, 40,000 sq. ft. + per dwelling unit
2 = Single Family, 20,000 to 39,999 sq. ft/du
3 = Single Family, 10,000 to 19,999 sq. ft/du
4 = Single Family, under 10,000 sq. ft/du
5 = Duplex
6 = Multi-Family, 3,000 sq. ft. + per du
7 = Multi-Family, under 3,000 sq. ft/du

. = missing data

Flood Hazard Characteristics

I44 Distance to Floodway

Aerial distance to floodway boundary in feet or to edge of water where no floodway is designated

0 = Parcel is in floodway
1 = Parcel is adjacent to FW or stream

99 = 9,900 feet or more

. = Missing data

I45 Portion of Parcel Located Within Floodway

Quarters of parcel located within floodway boundary

0 = Parcel not within floodway boundary, or floodway not designated
1 = .00 - .24 within floodway boundary
2 = .25 - .49 within floodway boundary
3 = .50 - .74 within floodway boundary
4 = .75 - .99 within floodway boundary
5 = All of Parcel within floodway boundary

. Missing data

I46 <u>Portion of Parcel Located Within Community's Regulatory Floodplain</u>

Quarters of parcel located within floodplain boundary

0   Parcel not within regulatory floodplain
1   .00 - .24 within floodplain boundary
2   .25 - .49 within floodplain boundary
3   .50 - .74 within floodplain boundary
4   .75 - .99 within floodplain boundary
5   All of Parcel within floodplain boundary

. Missing data

C44 <u>Hazard Composite Variable</u>

A varible constructed by combining I44, I45 & I46 as below.

1 --> if i(46) = .
1 --> if i(46) = 0
1 --> if i(46) = 1
2 --> if i(46) = 2
3 --> if i(46) = 3
3 --> if i(46) = 2 and i(45) = 2
4 --> if i(46) = 4
4 --> if i(46) = 3 and i(45) = 2
5 --> if i(46) = 5 and i(44) >= 1000
5 --> if i(46) = 3 and i(45) = 3
5 --> if i(46) = 4 and i(45) = 2
6 --> if i(46) = 5 and i(44) > 200 and i(44) < 1000
6 --> if i(46) = 4 and i(45) = 3
6 --> if i(46) = 4 and i(45) = 4
7 --> if i(46) = 5 and i(44) > 1 and i(44) <= 200
8 --> if i(46) = 5 and i(44) = 1
9 --> if i(46) = 5 and i(44) = 0
10 --> if i(46) = 5 and i(45) = 1 or i(45) = 2
11 --> if i(46) = 5 and i(45) = 3 or i(45) = 4
12 --> if i(46) = 5 and i(45) = 5

<u>Neighborhood Characteristics</u>: Census Tract

I51 <u>Median Family Income, 1980</u>

Median family income in thousands of dollars. (Round 500 to the odd number e.g., 33,500 = 33; 32,500 = 33)

. = Missing data

I52 <u>High School Education, 1980</u>

Actual Percentage of population over age 25 who have completed high xchool

. = Missing data

M58   <u>Population Growth in City 1975 to 1985</u>

Coded as actual percent growth (e.g., 50 = 50% growth)

<u>Program Characteristics Measured at Community Level</u>

P2 <u>Floodway Elevation</u>

What is the minimum flood protection elevation required for residences in the floodway?

0 = At base flood elevation
1 = One foot above BFE
2 = No buildings allowed in the floodway

PM2 Recode of P2 since a 0 does not represent "no program"
PM2 = P2 + 1

P3 <u>Floodway Fringe Elevation</u>

What is the minimum flood protection elevation required for residences in the floodway finge (100 year floodplain outside of the floodway)?

0 = At base flood elevation
1 = One foot above BFE
2 = Two feet above BFE

3 = Two and one-half feet above BFE
4 = No buildings allowed in the floodplain

PM3 Recode of P3 since a 0 does not represent "no program"

PM3 = P3 + 1

P15 Program Responsibility & Oversight

Is there a lead department for administering the program, doesa particular individual oversee the program?

0 = No
1 = Yes, either a lead dept. or an oversight individual
2 = Yes, both a lead dept. and an oversight individual

P18 Intergovernmental Factors - State Mandate

Is there a state mandate for implementing floodplain regulations?

0 = No
1 = Yes

P26 Past Flooding, 1976 - 1985

Occurance of serious flooding during the study period

0 = No flooding
1 = One flood, during 1976 to 1980 period
2 = One flood, during 1981 to 1985 period
3 = Two floods, at least one during 1981 to 1985 period