

APPENDIX D

Calculating Per Capita Land Consumption

The per person land consumption in each Urbanized Area can be expressed as:

$$a = A / P \quad (1)$$

where:

- a = area of urbanized land for the average resident
- A = Area of total urbanized land in a city and its suburbs
- P = Population of that city and its suburbs

For example, the West Palm Beach Urbanized Area in 1990 had 794,848 residents living on about 196,000 acres. Thus, the per capita land use was around 0.25 acre (one-quarter of an acre) per resident.

Put simply: The land used per person is the total land area divided by the total number of people. This is the inverse of population density, which is the number of people per unit area of land. When per capita land consumption goes up, density goes down; when per capita land consumption goes down, density goes up.

The total land area occupied by the built-up Urbanized Area can be expressed as:

$$A = P \times a \quad (2)$$

This can be stated as: the total square miles (or acres) of an Urbanized Area can be simply expressed or “factored” into the product of the Population of the Urbanized Area (*viz.*, *P*) multiplied by the per capita urban land consumption (*viz.*, *a*). Equation (2) is the basis for attributing or apportioning the shares of sprawl (*viz.* growth in *A*) back onto two contributing factors, the growth in *P* and the growth in *a*.