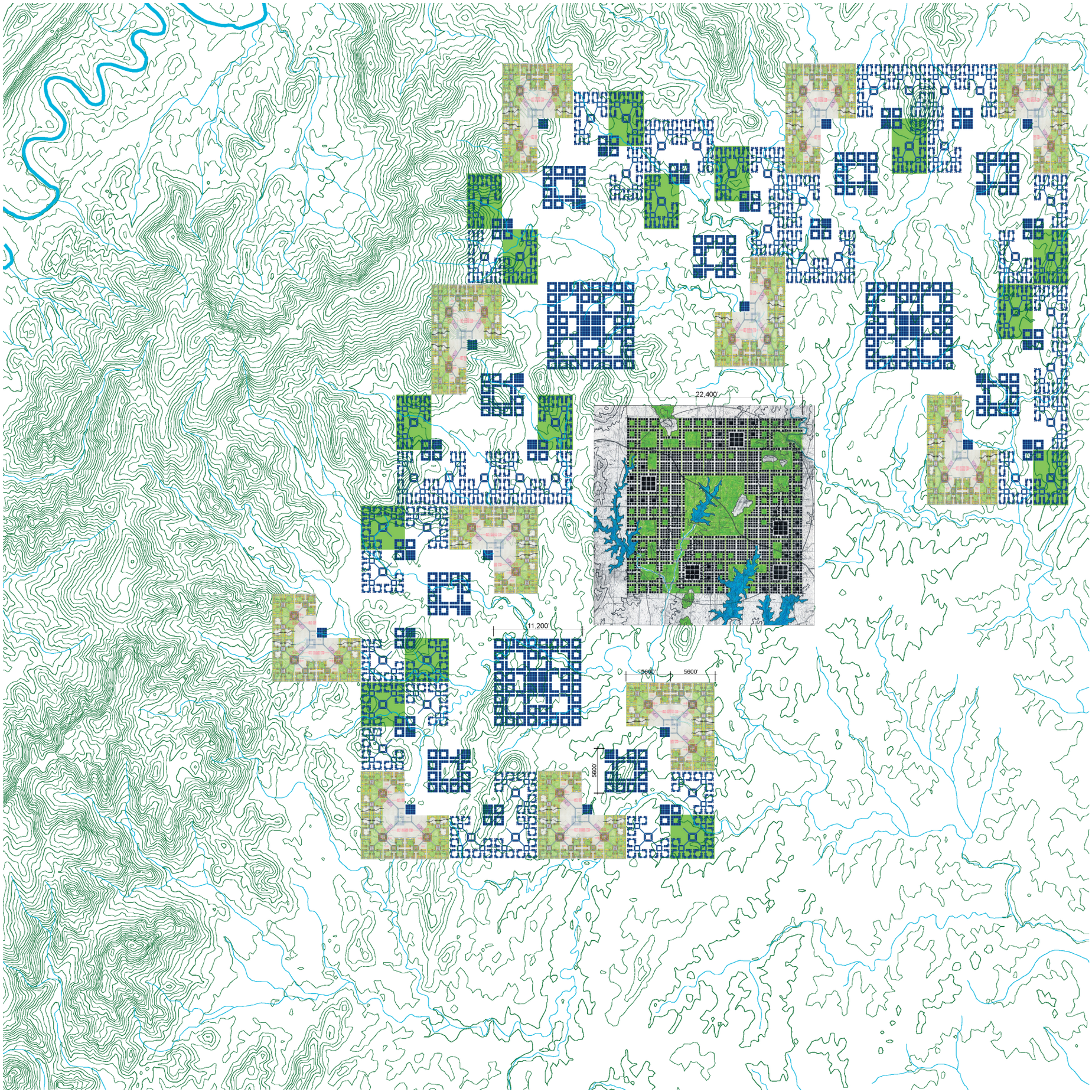



# Urban Footprint

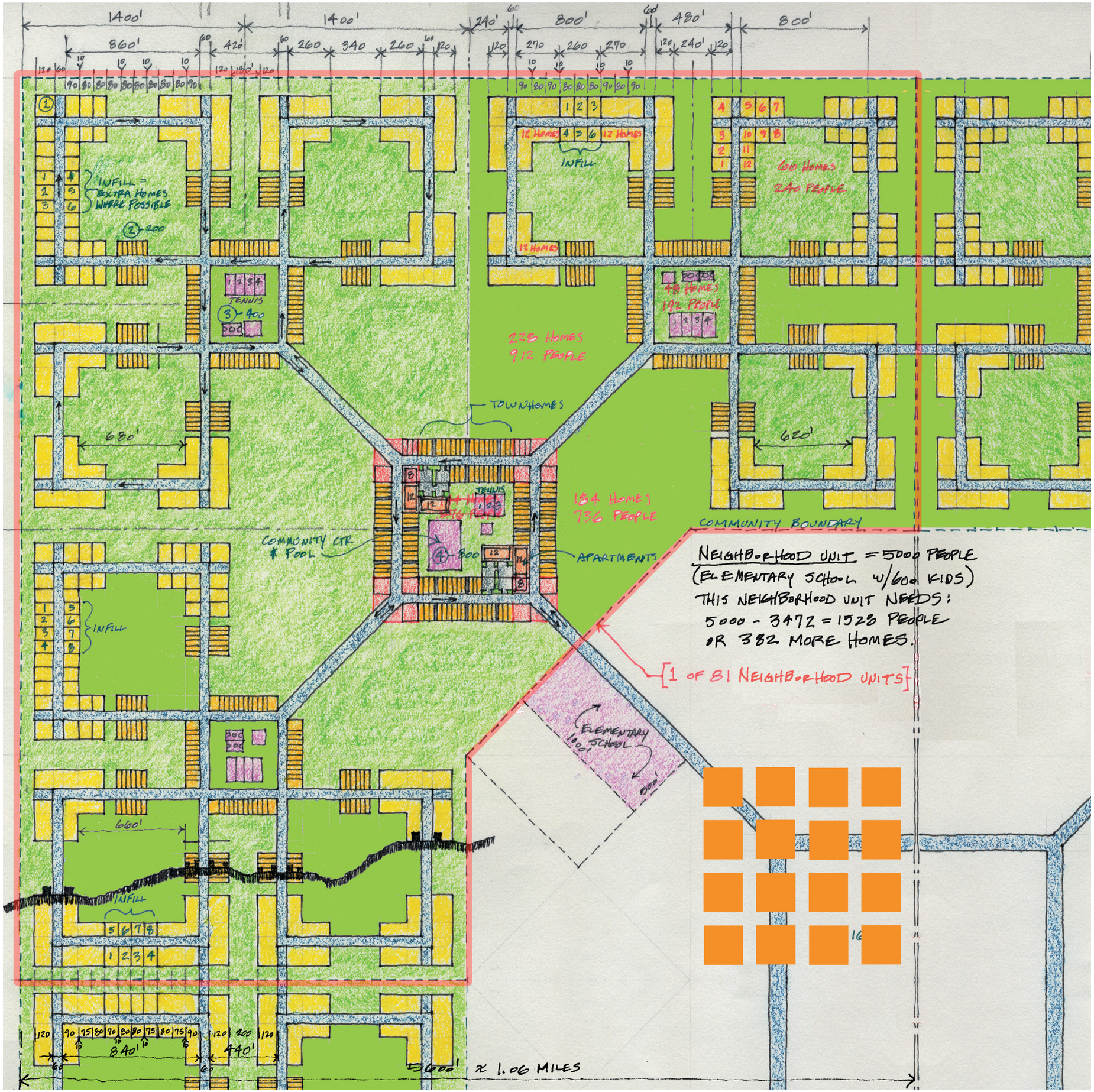
Fractal Geometry initially superimposes a flat ideal mathematical framework on a three-dimensional natural landscape. This framework consists of a multi-nested pattern of ever larger or ever smaller squares. Larger squares are each flanked on three points by three smaller squares. The shapes of elements, ratios between sizes of elements, and distances between elements of this geometry are all rigid. Development of Fractal City theory indicates that correspondences be established between framework and real landscape to provide for deformation of frame to land and of land to frame. However, before these correspondences can appear, their possibility must first have been created by making visible the overall relation of the ideal geometric system to the real physical system.

Arranging the sizes of development pods into an either increasing or a decreasing sequence reveals some aspects about the nature of the fractal. Viewed from the sequence, adjacent settlement node areas relate to one another according to the ratio four to one (4/1) from larger to smaller or one to four (1/4) from smaller to larger. Also, the each larger node is related to three smaller nodes. The largest element is the center city, also called Metro City or simply Metro.

The size of Metro is a square of 22,400 feet. The cities are each squares of 11,200 feet. The towns are each squares of 5,600 feet. The villages are each squares of 2800 feet and the hamlets are each squares of 1400 feet.

# Metro City

The largest urban node is redesigned at a smaller scale. The primary elements of fractal distribution are the parks and the secondary elements are the boulevards and streets (upper and lower left). Mathematicians will easily recognize similarities to one or more of the Sierpinski Gaskets. These patterns are deformed to accommodate the site's two primary topographical elements: rivers and mountains. Rivers are dammed to provide reservoirs for drinking water and to add to the recreational amenity of the parks. The potential of the parks to be interconnected is also explored (lower left). Distribution from high to low of floor-area densities is another fractal mapping onto the distribution of blocks (upper right). Another overlay is the mapping of industry onto the excessive number of parks resulting from the earlier fractal layout
(lower right).




# Urban Suburbs

Kentlands, a community in suburban Maryland that was designed according to the principles of New Urbanism TOD Transit Oriented Development, provided much of the proportional material for the design of the fringes of Fractal City. Lot widths and depths, street widths and mix of single-family and townhouse lots were all obtained from direct measurement of this community. These elements are here rearranged to accommodate three design concerns. Lastly, the layout of streets and dead-ends allow for connectivity of the communities to increase over time. Second, these suburbs are viewed as subcomponents of an urban structure and as such have a temporary presence as the overall city grows and matures. This leads to the first concern that each suburban cluster must easily transform from single-family homes and townhouses into an urban fabric of blocks and streets.

The Fractal City has seven levels of scale beginning with Metro Center. The last four levels are shown here. Level four is in the lower right, level five in the center, three level six pods, each with purple civic buildings, are shown around the level five node, and finally nine complete level seven pods are shown as three community rings around each level six pod. Each of the first four scales of urban node has block-street grid. The fifth scale has a mega-block street structure. The scales at the sixth and seventh levels deviate even more from the pure fractal structure to accommodate their scale relation to the construction of buildings.