

LAND-USE PLANNING: THE ULTIMATE BMP

Erosion Control. April 2000. Except from article by Martha Mitchell

"Working Green Infrastructure" and Quality of Life

Most people look to decreased density as a way to lessen the impacts of imperviousness on stream quality. But the assumption is giving way to new thinking. This summer, ground will be broken on a [250 ha] site in Surrey, BC, that will accomplish high density [11 units per acre] while achieving low effective impermeable surface. Dubbed Headwaters Sustainable Development Demonstration Project, the 15,000-member community endeavor is championed by Patrick Condon, [James Taylor Chair of Landscape and Livable Environments at the University of British Columbia].

On a recent lecture tour of the Portland metropolitan region, where the regional government is working with stakeholders to develop a regional stream-protection program, Condon noted that lower densities encourage urban sprawl, create inordinate costs and burdens of providing infrastructure, price lower-income citizens out of the market, create segregation by income, and result in flight from the urban center, longer commutes, higher gas consumption, and more air pollution. Older developed areas have about a quarter the amount of infrastructure per person as suburban areas.

"The health of individual sites has everything to do with the ecological health of a region", remarked Condon, adding that standards for community design should consider air quality as well as water quality. He proposed six development policies to achieve community environmental health:

1. Provide different dwelling types in the same neighborhood.

Achieve this through small residential lots and multi-storey, mixed-use commercial and residential development. Older commercial developments are approaching redevelopment and will be future valuable land resources in urban areas.

2. Ensure that everyone should have access to transit and shops within a five-minute walking distance.

Achieve this with 10 dwelling units per acre (25 people) and mixed-use development. 3. Require dwellings to present a friendly face to the street.

4. Plan interconnected street systems that give way to natural systems.

Circulation systems should allow pedestrians to cross stream but keep the road crossings to a minimum. Providing a system of interconnected roads should encourage dispersed surface traffic.

5. Develop lighter, greener, cheaper, smarter infrastructure.

Minimize road widths and structure footprints and maximize infiltration opportunities.

Aim for 300-ft. blocks and 50-60% canopy in the developed area. Outslope streets to drain to an infiltration BMP that performs at 0.04 in./hr. during winter conditions.

Provide 130-ft greenways to buffer artificial surface drainages in linear riparian parks that serve as bike and pedestrian pathways. Use open-graded street pavements, soft shoulders, and common driveway lanes. Use "wet roofs" to hold rainfall and evaporate it back into the atmosphere. Avoid curbs and piped drainage systems.

6. Develop natural drainage systems where surface runoff infiltrates back into the soil. A 200-year-old Douglas fir tree can hold a thousand gallons of stormwater on its needles.

Dennis King and Lisa Wainger of the University of Maryland's Center for Environmental Science have devised a method to identify and determine the economic values of "services," such as stormwater detention, provided by natural resources (www.ecosystemvaluation.org/). In addition to the production and recreation services that natural resources provide, King and Wainger count municipal uses such as ground water recharge, purification of drinking water, and pollution prevention. To this mix of active services, they add aesthetics and opportunities for research and education. But the list gets more interesting when passive services are considered; for example, the avoided costs of flooding, the avoided cost of health care, and the regional effects of natural resources on regulating climate and air quality.

As the decades of the new century rush by and increasing numbers of people need places to live and work, the very quality of life in our cities will depend on how we have valued the natural resources that sustain these urban environments. The urgently beating hearts will be the hearts of our own children, and the new lights sparking up on the vast landscape are the communities of a future that is beginning today.