

HOW SUBDIVISIONS LEARN: PROMOTING POSITIVE CHANGE IN POST-
WWII SUBURBAN RESIDENTIAL NEIGHBORHOODS

by

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(Under the Direction of Scott Weinberg)

ABSTRACT

This thesis investigates the history of suburbia, the problems associated with post-WWII suburban neighborhoods, possible alternatives, and identifies possible alternatives for future change. Select alternatives are conceptually applied to an existing neighborhood in Athens, GA, with the results reviewed for positive and negative impacts to the neighborhood.

INDEX WORDS: landscape architecture, suburb, suburban, suburbia, planning, community, neighborhood, residential, infill, sustainable, design, residential, change, home.

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Chapter 1

Background

Introduction

The typical existing suburban pattern is increasingly criticized. It disenfranchises those who cannot drive. It makes us fat. It destroys community. It damages the environment.

It can, however, change. The fabric of our towns and cities constantly changes as old buildings are modified or removed, and new buildings are constructed. Residential suburban neighborhoods do the same. The only issue is how that change is managed, and if it can be done in a way to mitigate the negative effects of the existing development pattern.

With this thesis, I will review the common issues associated with these neighborhoods, identify potential solutions, and apply hypothetical solutions to a subject neighborhood.

A Brief History of Suburbia

The notion of suburb is not new. There is evidence of suburban development up to four miles away from the built up area of 'Greater Ur'. (Mumford 483) In medieval Europe the notion of suburb referred to the inhabited land outside of hilltop walled towns. Chaucer uses it in *The Canterbury Tales* "Where dwell ye, if it to telle be? In the suburbes of a toun.' quod he." (Stilgoe 1)

In the US there were several main urges behind the push to suburbia. These included sanitary and health issues, to avoid the pollution of the cities. Avoidance of the hustle and bustle of the city was also frequently cited as a reason for the desire to live outside of the city. Finally, the agrarian idea is central to the founding of the United States, and beyond the city people were hoping to be able to both partake in that ideal as well as the commerce of the city. Lewis Mumford writes “To sum up: the early romantic suburb was a middle-class effort to find a private solution for the depression and disorder of the befouled metropolis: an effusion of romantic taste but an evasion of civic responsibility and municipal foresight.” (Mumford 492)

The scope and scale of suburbs has always been related to transportation. Historic settlements were controlled by the distance someone could easily walk, ride a horse, drive a wagon, or take a boat.

The advent of the railroad expanded the suburban scale, and allowed

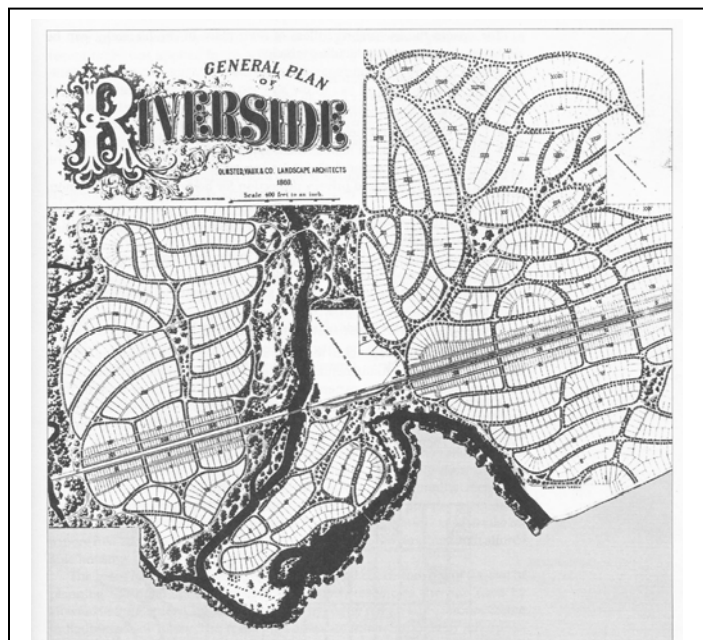


Figure 1
Plan of Riverside
From Friedman Homes within Reach

more extended commuter communities. Chicago was typical, and has numerous examples of commuter communities based on railway access to the City.

Communities such as Evanston, Winnetka, Highland Park, Lake Forest, and Waukegan stretched north along the lake shore. (Stilgoe 142) Riverside was another Chicago suburb. It was designed by Frederick Law Olmsted & Calvert Vaux in 1869, and located approximately nine miles from the central city. Even in these areas, though, the suburb was kept relatively compact by the need to walk to the train station. The further edges were reserved for those with staff and carriages to meet them at the station.

Restrictive Covenants and Zoning

Restrictions within suburbia came early. The *Articles of Agreement Regulating the Use, Holding, and Enjoyment of the Rock Park Estate in the County of Chester* date from 1837. No one could buy property without agreeing to these restrictions. The details addressed vehicles, lot size for a stable, restricted non-residential uses, limited the height of board fences, and mandated the state of repair for the private property. (Stilgoe 224)

Zoning as we know it got its start in the early 20th century. Height, bulk, lot size, and certain types of structures were addressed in model legislation by the Massachusetts Civic League in 1912. By 1915 twenty-three towns had implemented similar regulations. (Hayden 120) Most early zoning was based on health and welfare issues, and intended to protect the home. “Dirty” uses such as factories were intended to be kept separate from residences. There was also an interest in keeping the high-traffic uses away from quieter residential

neighborhoods. Fire was also a common concern, and these concerns led to the regulation of the types, sizes, and separation of structures.

Zoning allowed the city to be made consistent, manageable, and predictable. Kay states “According to the dictates of zoning, buildings must be classified; the city must be laid out with different functions in different parts of town. By forbidding bakeries to sit besides homes, or unsanitary industry to loom over backyards, zoning would upgrade neighborhoods. No more would gasworks or smokestacks, mill or glue factory send toxic fumes and noise throughout communities. The city could now tell builders where and how their property should appear – its height, its type, its uses; realtors could insure permanence and, not incidentally, protect their property. Less happily, few suspected that zoning would segregate life and mandate more travel down the road.” (Kay 158)

Post World War II

After WWII, the format of suburbia in the United States changed significantly. While the automobile was a product of the early 20th century, WWI, the Great Depression and WWII suppressed the construction of new neighborhoods. The base demand, however, was not suppressed, but only postponed. Returning servicemen and people who had been “making-do” with inadequate housing now had the funds and government support to purchase new homes in record numbers. Ten million new homes were constructed between

1946 and 1953. By the mid-fifties, annual housing starts exceeded one and a half million homes per year. (Hayden 132)

Part of this boom was due to new financing options for homes. Prior to the Great Depression, financing of a new home was uncommon. Mortgages were provided by private lenders. Most lenders would cover no more than 60% of a property's value, and mortgages typically came due in two to eleven years, requiring repayment or refinancing. During the Great Depression, the Home Owners Loan Corporation (HOLC) and Federal Housing Administration (FHA) were established. Amongst other things, the HOLC helped establish fixed-rate, long-term, self-amortizing, and low down-payment mortgages. The FHA insured mortgages issued by qualified lenders. While their implementation was limited due to the Great Depression and WWII, both helped set the stage for the post-war boom. (Schwartz 47-51)

Automobile Focus

In the same period, the automobile became the standard means of transportation to these new suburbs. In 1933, The President's Commission on Recent Social Trends stated the following: (Jackson 173)

In a considerable degree the rapid popular acceptance of the new vehicle centered on the fact that it gave to the owner a control over his movement that the older agencies denied. Close at hand and ready for his instant use, it carried its owner from door to destination by routes he himself selected, and on schedules of his own making; baggage inconveniences were minimized and perhaps most important of all, the automobile made possible the movement of an entire family at costs that

were relatively small. Convenience augmented utility and accelerated adoption of the vehicle.

This shift to the automobile changed the organization and layout of the suburb. Lewis Mumford addresses the impact of this: "What happened to the suburb is now a matter of historic record. As soon as the motor car became common, the pedestrian scale of the suburb disappeared, and with it, most of the individuality and charm. The suburb ceased to be a neighborhood unit: it became a diffused low-density mass, enveloped by the conurbation and then further enveloping it. The suburb needed its very smallness, as it needed its rural background, to achieve its own kind of semi-rural perfection. Once that limit was over-passed, the suburb ceased to be a refuge from the city and become part of the inescapable metropolis, 'la ville tentaculaire,' whose distant outlying open spaces and public parks were themselves further manifestations of the crowded city." (Mumford 505)

The change in transportation from a pedestrian focus to an automotive focus reduced the need for high density. Being able to drive reduced the perceived distance, which allowed larger lots and lower densities. At the turn of the 20th Century, 25' x 100' was a typical lot size for many larger northern cities like Chicago. This gave a density of roughly sixteen units per acre. By the 1920's that lot size had often doubled to 50' x 100', or eight units to the acre. By the 1950's, typical lots were often 100' x 100', or four units to the acre. (Brugemann 44)

The federal government aided the automobile focus, much as it had aided the expansion of home ownership. The Interstate Highway Act of 1956 created a

trust fund that paid for 90% of state and local expressway construction costs.

This construction of highways enhanced the expansion of suburbia as it speeded the traffic through the communities. (Friedman Planning the New Suburbia: Flexibility by Design 30)

Bannister and Lichfield addressed the economic mechanism behind the move to suburbia. "Accessibility determines the value for different uses at different locations, and as transport costs change, so do rent levels, and as land uses and rents are linked by market processes, land use and development also changes. Reduced transport costs have allowed cities to spread as consumers have traded off the cheaper housing costs at the periphery against the higher transport costs. This in turn has reduced residential densities, a process reinforced by real increases in income levels." (Banister and Lichfield 7)

Changes in Form

The Federal Housing Administration (FHA) helped standardize the form of suburbia through their lending standards. While these standards did not apply to all construction, it was required of all construction that was covered by their loans. As developers wanted to ensure access to that market, the FHA standards became the default standards for most construction of the age. Their standards included such things as minimum lot sizes, setbacks, separation from adjacent structures, and the width of the house itself. Jackson speaks to the effects of this: "While such requirements did provide light and air for new structures, they effectively eliminated whole categories of dwellings, such as the

traditional 16-foot-wide row houses in Baltimore, from eligibility for loan guarantees.” (Jackson 208)

Just as the scope and scale of the suburb changed with the automobile, so too the methods of construction changed the house itself. Before the war only one third of all houses were built by large contractors, with the rest constructed by owners and small builders. After the war, that ratio had reversed, with two-thirds of the houses being built by large contractors. (Hayden 132) Levitt and Sons was one of the large contractors that shaped the mass production methodology to speed construction, reduce cost, and increase profits. Levittown, on Long Island, is

the company’s most famous development. In 1960, it had 82,000 residents. Alfred Levitt said “As in your car, the parts in a Levitt house



Figure 2
Levittown (Hayden 129)

are standardized; each part will fit any house of the same model....the Levitt factory....is the land on which we assemble our houses.” By July of 1948 they were producing 30 houses per day. (Hayden 133)

The house also changed with technology, primarily with the advent of air-conditioning. With air conditioning, the porch was no longer the primary refuge

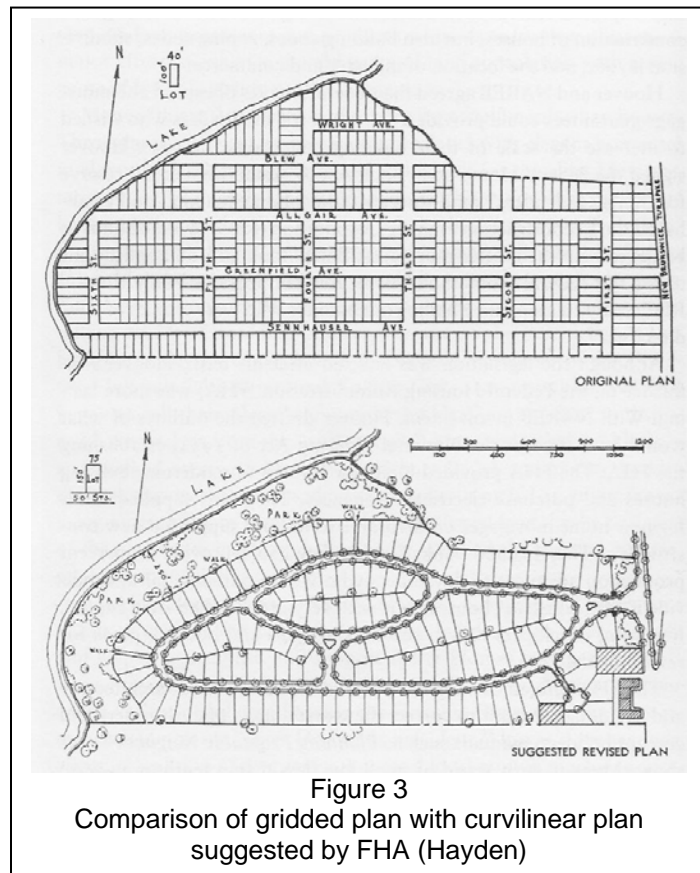
from the summer heat. Jackson expressed the change in architecture thusly: “At the turn of the century, the parlor was a buffer zone between public and private space; it was the locus of formal entertaining and was always the front room of the house. Similarly, the front porch was a popular place for relaxation. There, one could observe the passing parade of life while remaining on private property.” (Jackson 185)

While the following decades saw some changes in the design of suburbia, the basic pattern was set. Most development was geared towards automobile access, a limited selection of detached single-family house floorplans, and a single type of uses. Lot and house sizes might increase depending on the region, but the basic concept changed little from Levittown.

At the same time that the transportation was changing from a pedestrian focus to an automobile focus, so too did the layout of the roadways changed. Where a grid pattern with connection to adjacent properties was common in earlier neighborhoods, the new pattern became more organic and curvilinear.

The “Suggested Revised Plan” shown in the FHA document *Planning Profitable Neighborhoods* shows this layout along with lots that increased from a typical 40'x100' to the 75'x150' shown. The plan also recommended parkland, street trees, and community buildings.

(Hayden 124)



Segregation

This new suburbia was increasingly segregated. Jackson notes the attitudes of the financial community during the early days of the FHA. “The financial community saw blighted neighborhoods as physical evidence of the melting-pot mistake. To them, cities were risky because of their heterogeneity, because of their attempt to bring various people together harmoniously. Such

mixing, they believed, had but two consequences – the decline of both the human race and of property values.” (Jackson 217) After WWII, the racial and economic segregation became more pronounced as people sorted themselves into neighborhoods of similar house types and prices. The Levitt Company was no exception, refusing to sell to blacks for more than two decades after the war. As William Levitt stated “We can solve a housing problem, or we can try to solve a racial problem. But we cannot combine the two.” (Jackson 241)

Conclusion

While the idea of suburbs is not new, their form changed radically following WWII. Rather than having a pedestrian basis, their form was designed to maximize efficiency of the automobile and modern technology. The automobile allowed low density, which further allowed a self-segregation of different uses, races, and social classes. The form of the house changed, too, moving to an internal focus, and maximizing the privacy of the back yard. These changes caused a number of problems.

Chapter 2

The Problems of Suburbia

The physical form of American communities has changed from a historic pedestrian-focused pattern found in the early cities to an automobile-focused pattern now found throughout the United States. This change started in the early 1900s, and accelerated following World War II. These areas generally are called suburban, or in technical terms as 'conventional subdivision design' (CSD). They are also called by the more denigrating term of 'sprawl.' They are typified by low-density (2-4 units per acre) areas of single-family homes, non-gridded streets, and stand-alone commercial and institutional uses.

These suburban areas have always been subjects of criticisms, but these criticisms are becoming more common. The primary criticisms include such things as transportation problems; loss of a sense of community; health problems; environmental impacts; separation of uses; increased costs; and social inequity.

Auto-Centric Transportation

The automobile focus of our transportation system is a logical outgrowth of America's wealth, with each family being able to own one or several cars. Automobile ownership has been growing steadily since the end of WWII. The car has become the staple of modern life, and both a necessity and a status symbol. The car itself is not bad, but Boarnet & Crane discuss the side effects of it's

usage in the United States. “The problem with cars is not that they are bad as such, but that car travel brings with it undesirable side effects *for which the market does not provide compensation*. These externalities include air quality problems, traffic congestion, and undesirable impacts on neighborhood quality of life.” (Boarnet and Crane 175)

The primacy of the car does, however, disenfranchise those who cannot drive. Those people who are too old to drive, too young to drive, those with disabilities that precludes driving, and those who cannot afford a car cannot participate in this aspect of the American lifestyle. As suburbia has become the dominant built form, the people without access to a car have become trapped. Where children were once able to walk to the corner store or neighborhood park, they must now depend on someone to drive them. The elderly struggle to retain their driver’s license, for losing it means they have no choice but to move to a nursing home if they cannot afford the expense of in-home care and delivery of the essentials. “Those who cannot drive have limited access to community facilities, services, and even employment.” (Ewing 13)

The elderly population will be growing as the “Baby Boom” generation reaches retirement age. The U.S. Census estimates that by 2025 18 percent of the population will be aged 65 or older. Bailey looked at this population, and reported the following: (Bailey)

- 21% of Americans aged 65 and older do not drive because of such things as health limitations, concern over safety, no car, and personal preference.
- More than 50% of these non-drivers stay home every day partially because they lack transportation alternatives.

- Older drivers have decreased ability to participate in community and the economy. They make 15% fewer trips to the doctor, 59% fewer shopping trips, and 65% fewer trips for activities than the general population.
- For non-drivers the only transportation options are asking friends and family for a ride, and public transportation.
- A safe and inviting walking and bicycling environment provides mobility and health benefits to many older Americans.
- More livable communities have lower rates of staying home, and higher rates of public transportation use and walking among non-drivers aged 65 and over.

This growing population of the elderly will have increasing problems with the existing transportation network, which may forecast rising costs associated with the provision of care.

Kay addresses the inequity concerns by stating, “The car culture has thus become an engine of inequity, raising high the barriers of race and class. Transportation that is difficult at best, nonexistent at worst, darkens their lives in myriad ways and adds to the financial and social inequity they suffer.” (Kay 36)

This automobile dependence of suburbia is revealed in a number of ways. The Daily Vehicle Miles Traveled per person (DVMT) is significantly higher in the more sprawling communities than compared with the more dense communities. Average DVMT for Atlanta, one of the more sprawling communities, is 34 miles. In Portland, OR, one of the least sprawling communities, the average DVMT is less than 24 miles.

Sprawl also impacts the rate of automobile ownership. The top ten most sprawling communities average 180 cars per 100 households, while the ten least sprawling communities average only 162 cars per 100 households. (Ewing, Pendall and Chen 18-19) While this difference of 18 cars per 100 households

may not seem significant, it is relative to the cities and automotive-focus of American society in general. Portland, OR, one of the most pedestrian-friendly cities in the US, has significant areas of sprawl and many areas require an automobile.

Even those people who can currently afford cars may face difficulties in the future. The theory of 'Peak Oil' postulates that the world production of oil has peaked, or will peak in the near future, and there will be less and less oil available. This scarcity, coupled with a rising demand as much of the Third World continues to industrialize, may forecast significant increase in the cost of gas. This increase in the cost of gas threatens the American reliance on the automobile. Depending on how quickly the price rises, it may be possible for some people to adjust by moving to vehicles that are more fuel efficient. For many people, however, this may make use of individual vehicles that much more problematic.

Limited Public Transportation

Sprawl reduces the efficiency of public transportation. With reduced density there are fewer people within walking distance of transit stops. This increases the size and cost of the transit network for a given population, but also increases the time required for the travelers. These issues both increase the cost of providing service, and reduce the likelihood that individuals will use public transportation. In the top ten most sprawling communities only two percent of

commute trips utilize transit. In the top ten least sprawling communities seven percent of the commuting trips utilize transit. (Ewing, Pendall and Chen 19)

There is a correlation between density and the ability of an area to support transit. Greater density correlates to better (cheaper and/or more frequent) bus service. It takes approximately 15 dwelling units per acre (du/acre) to support a 10-minute bus frequency. At 7 du/acre 30-minute service can be supported. At about 4.5 du/acre hourly service can be supported. (Zupan and Pushkarev 140) Rail operates on a similar sliding scale of greater density supporting better and/or cheaper service, but requires an even greater base density to support the higher costs and greater capacity.

Destruction of Community

The sense of community has been weakened based on America's drive-in culture as people's social life has become increasingly privatized. (Jackson 272) A sense of community is often divided into two categories. One category is the community of interest, and relates to things like a church, work, professional group, or lifestyle. The second relates to a physical location or geographic territory, called a community of place. Critics have identified a decline in the sense of community of place in suburban areas. Ewing states "Communities of place are a casualty of sprawl. Whether they can be fully or partly replaced by communities of interest is, frankly, an unresolved issue." (Ewing 13)

The focus on automobile transportation reduces the opportunity for informal social interaction. Clair Cooper Marcus addressed this idea, and

advocated developments that included paths, shared parking lots, and common yards as a way of improving public life. Jane Jacobs discussed how a sense of continuity and responsibility was developed as people had regular contact when they walked through their neighborhood as a normal part of their daily business. Typical suburban areas lack both the pedestrian focus and common spaces, and thereby further limit opportunity for informal interaction.

The design and use of an area influences community. Single-use areas may have less of a sense of community. In apartments, residents of buildings with shared courtyards were more likely to know other residents by name.

(Nasar and Julian)

Lack of Diversity

Contributing to the decline in community in suburbia is increasing levels of segregation. Diversity is important. As Orfield states “In most of our European immigrant pasts lies the story of a poor forebear in the same classroom or neighborhood as someone higher on the social or economic ladder, who inspired the poorer newcomer to succeed. Observing success within the boundaries of our own experience clarifies the possibilities and processes of social advancement stimulates healthy competition and ambition. It shows the way up.”

(Orfield 53)

Many low-density suburban developments have historically been similar in both types of units as well as cost, leading to similar types of occupants. The typical lower-density suburbs are not particularly supportive of social diversity.

Diversity of unit types, housing values, and housing tenure are all correlated to diversity of community. This is particularly the case with economic diversity, with a smaller relationship to racial diversity. Talen states “the greater the diversity of housing types, age of housing stock, housing tenure (owner- or renter-occupied dwelling units), and housing values, the greater the diversity of family incomes.” Density is also related to social diversity. At levels up to about 57,000 people per square mile (89 people per acre), income diversity increases with density.

(Talen)

The population using suburbia is changing as well. Where it was once the home of the “nuclear” family of husband, wife, and children this is no longer so. Per the Brookings Institute “Suburbs now contain more nonfamily households – largely young singles and elderly people living alone – than married couples with children. In 2000, 29 percent of all suburban households were nonfamilies, while 27 percent were married with children.” The report also covers what this means for the types of housing desired. “The type of housing that these smaller households seek, however, may be somewhat different than that demanded by the larger household types that have typically predominated in the suburbs.

(Frey and Berube)

Limited Public Space

Modern suburbs have little useable public space. Historically, public space has served as meeting places, market places, and transportation. In modern times the market places have been privatized with controlled access, the

meeting places limited, and the transportation network dominated by the car.
(Gehl and Gemzoe)

The lack of public useable space reduces the potential for community. Kay addresses this by saying “The spatial transformation changed not only the look of the land but also its domestic architecture. As the front seat (of a car) gained parity with the front porch, neighborhoods altered. The place where folks congregated in the waning hours of a summer day now faced a noisy intruder.”
(Kay 180)

The lack of public space is also both a cause and result of the stark dichotomy between the very public, automobile-oriented street and the very private individual house. When people’s needs are not met in the public realm, they strive to create it in their private places. As their needs are met in private places, they see little need for the public realm. Jackson talks about this by stating “Residential neighborhoods have become a mass of small, private islands; with the back yard functioning as a wholesome, family-oriented, and reclusive place. There are few places as desolate and lonely as a suburban street on a hot afternoon.” (Jackson 280) The design of many houses (lack of porches, distance from sidewalk, etc.) also contributes to this effect. The front yard is little used, and is mostly an aesthetic setting for the residence.

Health Issues

Numerous health issues have been associated with suburbia, especially a growing problem with obesity as fewer people are walking as a part of their normal daily routine.

Many communities take advantage of the automobile, and encouraged low density development. Low density development is popular and ties into people's desire for privacy, a yard to play in, and the suburban ideal. Low density, however, reduces the opportunities for walking as there is less within walking distance. People are less able to walk to work, the store, school, and have fewer neighbors within walking distance.

Many communities have also taken the separation of uses to extremes. Where the original goal was to separate unhealthy industrial activities from the houses, many communities have now segregated all uses into increasingly small categories. Apartment buildings are separated from townhouses, townhouses are separated from detached houses, and houses on large lots are separated from houses on small lots. Office buildings are separated from convenience stores, and both are separated from department stores. This separation, while having a logical, sympathetic basis, means that the corner grocery store is now a historical artifact, remaining only as a non-conforming use in older neighborhoods. This zoning uses distance as a barrier, reduces the opportunity to walk, and further mandates reliance on the automobile. Frank et al states "Mixed land use has been found to be a good predictor of pedestrian travel." (Frank, Andresen and Schmid 90)

The roads in most suburban neighborhoods are designed for cars, not people. In many places the ideal of a sidewalk on each side has been reduced to a single sidewalk, or eliminated altogether.

The concept of local streets for local travel and arterial streets for through travel further discourages the pedestrian from using the system. The Functional Classification System of the transportation engineering profession focuses on just two aspects of streets – through movement and access to property. Both of these are assumed to be by means of motor vehicles. (Macdonald) Kunstler addresses the collector road network by stating “Of course, one could scarcely conceive of an environment more hostile to pedestrians. It is a terrible place to be, offering no sensual or spiritual rewards. In fact, the overall ambience is one of assault on the senses. No one who can avoid it would *want* to be on foot on a typical collector road. Any adult between eighteen and sixty-five walking along one would instantly fall under suspicion of being less than a good citizen.” (Kunstler 117)

Frank et al states that “Obesity has been found to be significantly associated with diabetes, high blood pressure, high cholesterol, asthma, arthritis, and poor health status.” (Frank, Andresen and Schmid 87) These problems are generally related to the physical design of our communities, which limits the opportunity for walking. Frank et al found that there is a correlation between walking and obesity, with each kilometer walked daily resulting in a 4.8% reduction in the chance of being obese. Each hour spent in the car each day increases the odds of being obese by 6%. They further found that residents

living in areas having greater mixed-use areas had reduced odds of obesity. (Frank, Andresen and Schmid 90-91) Saelens et al found similar results, “residents in high-walkability neighborhoods engaged in approximately 52 more minutes of moderate-intensity physical activity during the past seven days than did residents of the low-walkability neighborhoods.” Saelens et al goes on to state that they found “60% of the low-walkability neighborhood residents being overweight, but only 35% of high-walkability neighborhood residents being overweight.” (Saelens et al. 1555-57)

People are more likely to die in automobile accidents in sprawling regions. The top ten most sprawling communities average fifteen fatalities per 100,000 people per year. The ten least sprawling communities average nine fatalities. (Ewing, Pendall and Chen 19)

Pedestrians are also more likely to be killed in sprawling communities. In Atlanta, one of the most sprawling areas, pedestrians were killed at a rate of 2 per 100,000 people in 2004. This is 25% higher than the national average of 1.6 deaths per 100,000 people. The Hispanic population, which is more likely to be poor, has an even higher rate of 2.5 deaths per 100,000 people. This is 64% higher than the national average. (Beck, Paulozzi and Donaldson)

Similar issues were reported in a survey by the firm of Belden Russonello & Stewart. They found that more than half (55%) of the people surveyed would like to walk more rather than drive during the day. Those that wanted to walk more would like to be able to walk for exercise (80%), for fun (76%), or errands (63%). The respondents reported reasons for not walking more as distance

(61%), lack of time (57%), laziness (33%), traffic (30%), and lack of facilities (26%). There is broad support for using more of the transportation budget for pedestrian facilities and public transportation. Almost half (47%) favor designing communities so that more places are within walking distance, even if that means building homes closer together. (Beldon Russonello & Stewart)

Beldon Russonello & Stewart also examined the issues relating to walking to school. They found that while most (71%) respondents walked or rode a bike to school as a child, only 22% of the children do so today. The most common reason cited was being too far away (66%), with less common concerns including traffic / lack of a safe route (17%), fear of abduction (15%), not being convenient (15%), crime (6%), and children not wanting to walk (6%). (Beldon Russonello & Stewart)

Environmental Impacts

The environmental issues with suburbia include the excessive consumption of land, air pollution, and impacts to water quality. The consumption of land reduces and fragments natural habitat, and often eliminates prime farmland. Air pollution is increased by the reliance on the automobile and the pollution created by the exhaust.

Sprawl has been shown to increase ozone levels. High levels of ozone have been shown to be dangerous to vulnerable populations such as children, the elderly, and asthma sufferers. The top ten most sprawling communities had an average maximum 8-hour ozone level of 97.6 parts per billion (ppb),

compared to 69.9 ppb in the ten least sprawling communities. (Ewing, Pendall and Chen)

Much of suburbia was built prior to the Clean Water Act (established in 1972 and amended in 1977) was applied to land development. These earlier subdivisions do not include provisions for storm-water management (SWM) including water quality and quantity control. While it is possible to mandate project-specific measures for individual projects, SWM works best at larger scales. Ideally, SWM measures should be addressed for the entire community, and implemented at the neighborhood level. These measures may include such things as 'green streets' with vegetated swales or bulb-outs, rain gardens, detention basins, or stream restorations.

Suburban areas are more expensive to construct, maintain, and service than higher density development. The Congressional Office of Technology and Assessment stated "Though there is a good deal of disagreement on the assumptions and calculations for such estimations, there is general agreement that decreased density leads to increasing public and private development costs." (Office of Technology and Assessment) Lower density means that there are more roads, sidewalk, water lines, sewer, and other utilities per capita. This greater amount of facilities means that they are more expensive to both construct and maintain. These areas are also more expensive to provide services to. The lower density means that such things as the school buses, mail delivery, and trash collection must travel longer routes. It also requires greater numbers of emergency personnel, facilities, and equipment, as distance is the greatest

predictor of response time. Lower density areas require more fire stations to provide equivalent levels of service when compared to higher density areas.

(Muro and Puentes)

The design of the street itself is a problem. Streets and right of way (ROW) take a large share of the space in a city, up to 25 or 35% of developed land in many US cities. (Jacobs 6) Their width is often excessive. In many places they are designed to allow the largest fire truck to pass a stalled car in the road. While noble, perhaps this puts the cart before the horse. This width not only increases runoff and consumes land, but also encourages automobiles to travel faster. Dunham-Jones states "The fifty- and sixty-foot ROW width recommended by the Institute of Transportation Engineers for the past half-century is now widely viewed as promoting excessive impervious surface, unnecessary land consumption, and the exaltation of fire access above all other goals." (Dunham-Jones "Seventy-Five Percent: The Next Big Architectural Project" 39)

Krieger makes a central point about why sprawl development continues despite all of the known problems. He states "What must be brought to the fore in the debate over sprawl is this: the benefits of sprawl – for example, more housing for less cost with higher eventual appreciation – still tend to accrue to Americans individually, while sprawl's cost in infrastructure building, energy generation, and pollution mitigation tends to be borne by society overall."

(Krieger 53)

Chapter 3

Alternatives to Suburbia

There have been numerous alternatives to the typical suburbia over the years. Two of these, New Urbanism and Smart Growth, seem to have broad support.

New Urbanism

New Urbanism, also called Traditional Neighborhood Design, advocates a return to the historic, pedestrian settlement patterns. The most dominant group of advocates is the Congress for New Urbanism. At their fourth annual Congress in 1996 the attendees ratified the following Charter that outlines their principles: (CNU)

The Congress for the New Urbanism views disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society's built heritage as one interrelated community-building challenge.

We stand for the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments, and the preservation of our built legacy.

We recognize that physical solutions by themselves will not solve social and economic problems, but neither can economic vitality, community stability, and environmental health be sustained without a coherent and supportive physical framework.

We advocate the restructuring of public policy and development practices to support the following principles: neighborhoods should be diverse in use and population; communities should be designed for the pedestrian and transit as well as the car; cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions; urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice.

We represent a broad-based citizenry, composed of public and private sector leaders, community activists, and multidisciplinary professionals. We are committed to reestablishing the relationship between the art of building and the making of community, through citizen-based participatory planning and design.

We dedicate ourselves to reclaiming our homes, blocks, streets, parks, neighborhoods, districts, towns, cities, regions, and environment.

We assert the following principles to guide public policy, development practice, urban planning, and design:

(A) The region: Metropolis, city, and town

1. Metropolitan regions are finite places with geographic boundaries derived from topography, watersheds, coastlines, farmlands, regional parks, and river basins. The metropolis is made of multiple centers that are cities, towns, and villages, each with its own identifiable center and edges.
2. The metropolitan region is a fundamental economic unit of the contemporary world. Governmental cooperation, public policy, physical planning, and economic strategies must reflect this new reality.
3. The metropolis has a necessary and fragile relationship to its agrarian hinterland and natural landscapes. The relationship is environmental, economic, and cultural. Farmland and nature are as important to the metropolis as the garden is to the house.
4. Development patterns should not blur or eradicate the edges of the metropolis. Infill development within existing urban areas conserves environmental resources, economic investment, and social fabric, while reclaiming marginal and abandoned areas. Metropolitan regions should develop strategies to encourage such infill development over peripheral expansion.
5. Where appropriate, new development contiguous to urban boundaries should be organized as neighborhoods and districts, and be integrated with the existing urban pattern. Noncontiguous development should be organized as towns and villages with their own urban edges, and planned for a jobs/housing balance, not as bedroom suburbs.
6. The development and redevelopment of towns and cities should respect historical patterns, precedents, and boundaries.
7. Cities and towns should bring into proximity a broad spectrum of public and private uses to support a regional economy that benefits people of all incomes. Affordable housing should be distributed throughout the region to match job opportunities and to avoid concentrations of poverty.
8. The physical organization of the region should be supported by a framework of transportation alternatives. Transit, pedestrian, and bicycle systems should maximize access and mobility throughout the region while reducing dependence upon the automobile.
9. Revenues and resources can be shared more cooperatively among the municipalities and centers within regions to avoid destructive competition for tax base and to promote rational coordination of transportation, recreation, public services, housing, and community institutions.

(B) The neighborhood, the district, and the corridor

1. The neighborhood, the district, and the corridor are the essential elements of development and redevelopment in the metropolis. They form identifiable areas that encourage citizens to take responsibility for their maintenance and evolution.
2. Neighborhoods should be compact, pedestrian-friendly, and mixed-use. Districts generally emphasize a special single use, and should follow the principles of neighborhood design when possible. Corridors are regional connectors of neighborhoods and districts; they range from boulevards and rail lines to rivers and parkways.
3. Many activities of daily living should occur within walking distance, allowing independence to those who do not drive, especially the elderly and the young. Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy.
4. Within neighborhoods, a broad range of housing types and price levels can bring people of diverse ages, races, and incomes into daily interaction, strengthening the personal and civic bonds essential to an authentic community.
5. Transit corridors, when properly planned and coordinated, can help organize metropolitan structure and revitalize urban centers. In contrast, highway corridors should not displace investment from existing centers.
6. Appropriate building densities and land uses should be within walking distance of transit stops, permitting public transit to become a viable alternative to the automobile.
7. Concentrations of civic, institutional, and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes. Schools should be sized and located to enable children to walk or bicycle to them.
8. The economic health and harmonious evolution of neighborhoods, districts, and corridors can be improved through graphic urban design codes that serve as predictable guides for change.
9. A range of parks, from tot-lots and village greens to ballfields and community gardens, should be distributed within neighborhoods. Conservation areas and open lands should be used to define and connect different neighborhoods and districts.

(C) The block, the street, and the building

1. A primary task of all urban architecture and landscape design is the physical definition of streets and public spaces as places of shared use.
2. Individual architectural projects should be seamlessly linked to their surroundings. This issue transcends style.
3. The revitalization of urban places depends on safety and security. The design of streets and buildings should reinforce safe environments, but not at the expense of accessibility and openness.

4. In the contemporary metropolis, development must adequately accommodate automobiles. It should do so in ways that respect the pedestrian and the form of public space.
5. Streets and squares should be safe, comfortable, and interesting to the pedestrian. Properly configured, they encourage walking and enable neighbors to know each other and protect their communities.
6. Architecture and landscape design should grow from local climate, topography, history, and building practice.
7. Civic buildings and public gathering places require important sites to reinforce community identity and the culture of democracy. They deserve distinctive form, because their role is different from that of other buildings and places that constitute the fabric of the city.
8. All buildings should provide their inhabitants with a clear sense of location, weather and time. Natural methods of heating and cooling can be more resource-efficient than mechanical systems.
9. Preservation and renewal of historic buildings, districts, and landscapes affirm the continuity and evolution of urban society.

New Urbanism has been widely criticized. These criticisms are often related to the Greenfield location of many of their projects (like most new development), the perception of the architectural style they use to develop a sense of place, and the exclusive nature of some of their more popular and successful projects. Hall states “But real *New Urbanism* – as distinct from its cosmetic version – demands expensive upfront investment in transit schemes; otherwise residents will take to their cars, and the battle to change suburbia will be lost from the start. This suggests that successful new urbanism must be conceived on a large scale, accompanied by a major public commitment.” (Hall 128-29)

Smart Growth

“Smart Growth” is the name for a group of concepts that promote an alternate to the conventional development patterns. Dunham-Jones states

“Smart Growth policies are intended to spur development patterns that allow citizens to make more environmentally, socially, and economically sustainable lifestyle decisions.” (Dunham-Jones "Seventy-Five Percent: The Next Big Architectural Project" 9) The SmartGrowth.org website states “Smart growth recognizes connections between development and quality of life. It leverages new growth to improve the community. The features that distinguish smart growth in a community vary from place to place. In general, smart growth invests time, attention, and resources in restoring community and vitality to center cities and older suburbs. New smart growth is more town-centered, is transit and pedestrian oriented, and has a greater mix of housing, commercial and retail uses. It also preserves open space and many other environmental amenities.” (SmartGrowth.org)

The website further lists ten principles of Smart Growth. These principles are identified as follows:

- 1) *Create Range of Housing Opportunities and Choices* - Providing quality housing for people of all income levels is an integral component in any smart growth strategy.
- 2) *Create Walkable Neighborhoods* - Walkable communities are desirable places to live, work, learn, worship and play, and therefore a key component of smart growth.
- 3) *Encourage Community and Stakeholder Collaboration* - Growth can create great places to live, work and play -- if it responds to a community's own sense of how and where it wants to grow.
- 4) *Foster Distinctive, Attractive Communities with a Strong Sense of Place* - Smart growth encourages communities to craft a vision and set standards for development and construction which respond to community values of architectural beauty and distinctiveness, as well as expanded choices in housing and transportation.
- 5) *Make Development Decisions Predictable, Fair and Cost Effective* - For a community to be successful in implementing smart growth, it must be embraced by the private sector.

- 6) *Mix Land Uses* - Smart growth supports the integration of mixed land uses into communities as a critical component of achieving better places to live.
- 7) *Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas* - Open space preservation supports smart growth goals by bolstering local economies, preserving critical environmental areas, improving our communities quality of life, and guiding new growth into existing communities.
- 8) *Provide a Variety of Transportation Choices* - Providing people with more choices in housing, shopping, communities, and transportation is a key aim of smart growth.
- 9) *Strengthen and Direct Development Towards Existing Communities* - Smart growth directs development towards existing communities already served by infrastructure, seeking to utilize the resources that existing neighborhoods offer, and conserve open space and irreplaceable natural resources on the urban fringe.
- 10) *Take Advantage of Compact Building Design* - Smart growth provides a means for communities to incorporate more compact building design as an alternative to conventional, land consumptive development.

Smart Growth is has been criticized for being ineffective. Maryland, one of the leading adopters of Smart Growth measures in 1995, has seen little improvement. Dunham-Jones states “(Smart Growth measures) reduce the pace of sprawl only marginally, without materially changing the land use and development patterns.” (Dunham-Jones "Seventy-Five Percent: The Next Big Architectural Project" 41)

Problems with New Urbanism and Smart Growth

Smart Growth and New Urbanism have significant areas of overlap. If anything, New Urbanism takes many of the Smart Growth principles a step or two farther, and addresses the physical form of the buildings.

One failing of New Urbanism and Smart growth is that the implementation of both has been primarily focused on development that occurs either on

Greenfield sites or on larger infill sites within existing areas. Neither addresses how to fix the problems of the existing suburban residential neighborhoods.

This is not a requirement of either, however. Many aspects of both can be easily applied to existing neighborhoods. From the CNU, items such as the transportation framework (item A8), most of section B “The neighborhood, the district, and the corridor,” and the street guidelines (item C5) are all directly relevant. Similarly, most of the principles of Smart Growth can be directly applied to neighborhoods.

Chapter 4

Possible Solutions / Retrofitting Existing Neighborhoods

Existing suburban residential neighborhoods make up a large part of our communities, and represent a huge amount of investment in the buildings and infrastructure. As such, we cannot afford to simply erase them and start over. These areas, especially the older ones, have numerous advantages. Their existing infrastructure (roads and utilities) typically has excess capacity. The older subdivisions are often located closer to the urban core, and thereby to more services and employment opportunities. Their age means that the property may be worth more than the structure, especially with smaller homes that have not been enlarged or updated over time.

Older houses were also typically smaller on larger lots. In Levittown, 750 sf houses were placed on 6,000 sf lots. Even with a driveway, there was only 12.5% lot coverage. New houses are likely to be much larger, and lots smaller, causing greater difficulties for modifications. (Chow)

In some areas the disparity in value between the structure and property is leading to the property being sold as a 'tear-down' where the existing house is eliminated and a new house constructed. These new houses are often significantly larger than the other houses in the neighborhoods, and are sometimes referred to as 'McMansions.' These larger structures are often unwelcome, but allowed under most existing ordinances.

In other areas this disparity may result in wholesale redevelopment of a neighborhood. In some cases whole neighborhoods have been purchased, the houses and infrastructure demolished, and a new, usually higher-density, development is constructed. This process typically eliminates most or all of the existing vegetation, erases any local character, and often is extremely upsetting to other residents within adjacent neighborhoods.

There have been numerous alternatives proposed that may address some of the problems with suburbia. These alternatives include increasing the density within the neighborhood, increasing diversity of uses, and improving the transportation system through such things as providing additional connections to the street network and providing additional transportation opportunities.

Increased Density

Increasing density solves many problems. According to Ewing “As densities rise, trips get shorter, transit and walk mode shares increase, and vehicle trip rates drop. All of this translates into lower VMT. By various estimates, doubling urban density results in a 25-30 percent reduction in VMT, or a slightly smaller reduction when the effects of other variables are controlled.” (Ewing 8)

Both the CNU and Smart Growth material supports appropriate densities. The CNU material calls for compact neighborhoods (item B2) and appropriate densities (item B6). Smart Growth principle ten calls for compact building design.

The opportunities for increasing density are numerous. These opportunities include provision of accessory dwelling units, infill development, subdivision of existing residences, and others. Portland uses many of these strategies. Per Howe “The Metropolitan Housing Rule mandates a minimum 10 units per acre housing density potential for vacant and redevelopable, buildable land.” The zoning ordinance was later strengthened to require that all development reach a minimum of 80% of the maximum allowable density. They mandate accessory dwelling units as a permitted use, allow them as detached from the main structure, and no longer require owner occupancy. (Howe 196) Furthermore, duplexes may be added to corner lots and transition lots in almost all residential zones. (Chapman and Lund 213)

“Accessory dwelling unit” is a catch-all phrase for secondary dwelling units in single-family neighborhoods. These units are typically smaller than the primary unit, and may be either attached or detached. They commonly called ‘mother-in-law’ apartments or garage apartments. They can be separate, located above the garage, in a basement, or an attic. They are flexible, allowing a range of uses including quarters for domestic help, rented for income, home offices, or starter apartments for adult children. In some cases aging parents have sold the property to their grown children with families of their own, and moved into the apartment. This specific scenario allows for both the continuation of neighborhood tenancy, as well as multi-generational families where all parties can be supported.

With accessory dwelling units, it is important that the character of the existing neighborhood is not compromised. Friedman identifies several possible restrictions that may serve to ensure that this does not happen. These restrictions may include the following: A maximum allowable size for the unit; minimum setbacks from the side and rear property lines; limitations on the doors, windows, or porches that face the rear property line; and requiring architectural treatments to match the primary dwelling. (Friedman Planning the New Suburbia: Flexibility by Design 71-76)

Infill development, while used generally to refer to all development within an existing neighborhood or community, also refers to the utilization of undeveloped or under-developed properties. It is this second definition that I address.

Properties suitable for infill development may be vacant, or under-utilized with a single house on a large lot. This new construction could be for any housing type, but offers great potential for development of units that are different or at a higher density than the norm for the existing neighborhood. This alternate may include such things as attached housing, from duplexes to townhouses, but also small apartments, live-work units, or commercial uses.

Duplexes are one of the basic attached housing types. They can either be built side-by-side or stacked. When stacked, they are also called two-family houses or two-flats. Two-flats were commonly built in the Great Lakes regions and Northeast around the turn of the 20th century. Typically one family might own the building, live in the ground floor, and rent the upper apartment. The

owner usually got the use of the front porch and back yard. The upstairs usually had a front second-floor porch with a view of the street. (Langdon 168)

Duany Plater-Zyberk discusses how apartments can be included in a neighborhood. “Apartments can be compatible with detached houses if the shape and scale of the apartment resembles those of individual houses.” A 2- or 2.5-story apartment in a U-shaped plan can do this successfully. The two legs of the “U” and the center face the street, and the massing of the legs resembles that of a 2-story house. This shape can also create a semi-public gathering space for the residents, and relates to and enhances the public space along the street. (Langdon 167)

Attached housing has additional advantages beyond the greater unit types and increased density. It can be more economical to construct and maintain as well, due to their reduced exterior surfaces. A 4-plex built as row houses can reduce the exposed wall area by up to 46% compared four detached units. Interior units can see up to a 26% heat-loss reduction compared to a detached unit. These savings can help make the community more affordable. (Friedman Homes within Reach 51-52)

Large existing houses may also be subdivided, with two or more smaller apartments created. This is a model that has extensive precedent, particularly the older ‘Victorian’ houses that were often subdivided into duplexes or apartments. It may also offer a solution to ‘McMansions’ if their maintenance becomes too expensive with rising energy costs.

Utilizing the infrastructure in existing neighborhoods can significantly reduce the cost of development by limiting the need to construct roads, sidewalk, and utilities. This may positively impact the provision of affordable housing within a community.

Increased Diversity

All of these infill models would expand the variety of dwellings and uses within existing neighborhoods. Logically, this expanded variety of structures will support an expanded diversity of residents.

Increased diversity may also be gained through allowing non-residential uses such as home business, or the provision of neighborhood commercial uses such as coffee shops, convenience stores, and restaurants. Non-residential uses may further reduce travel requirements, and allow for greater non-vehicular access.

Both CNU and Smart Growth support increased diversity. The CNU points on mixed-use neighborhoods (item B2), a broad range of housing types (item B4), and embedded non-residential uses (item B9) all address this. The Smart Growth principles of a “range of housing opportunities and choices” and “mix land uses” are both directly applicable.

Increased Connectivity

The historic settlement pattern was often a street grid, with many connection opportunities. This allowed many travel options in most directions. In

many suburban neighborhoods, this grid has been broken. Many neighborhoods have long blocks with few connections to their surroundings, an increased use of cul-de-sacs, and often few internal connections. While viable for automobiles, it lengthens trips and focuses traffic onto a few main roads, which are often overloaded. This model also poses significant issues for pedestrians and cyclists. Creating new connections would have several advantages. It would increase the 'legibility' of the neighborhood, but more importantly, it would shorten local trips. (Boarnet and Crane 67) This seems especially important to modes of transportation that are more sensitive to distance, primarily walking and to a lesser extent bicycling. Greenberg mentions reconnecting the grid in his work on suburban subcenters. "Pressure is mounting for new streets to be introduced to create smaller blocks, more public edges, more alternatives for traffic flow, and walkable sidewalks". (Greenberg and Maguire 195)

The CNU directly addresses increased connectivity. Item B3 discusses how an "interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy." The Smart Growth material addresses this more tangentially, calling for walkable communities.

In many neighborhoods there may be opportunity to create new transportation connections. In some cases, streets were built to the property line, but never connected to later adjacent neighborhoods. In other cases, it may be possible to remove a small number of houses and create the roadway connection. This method could also create opportunity for new lots along the

new roadway, which may offset the cost of the acquisition of the lots and construction of the roadway. Finally, it may be possible to create smaller pedestrian connections between existing houses.

The insertion of an alley might serve both as an additional transportation connection as well as a means of providing access to the rear of lots. Alleys serve numerous purposes, including parking, access to rear garages, space for utilities, and a place for 'messy chores' like vehicle maintenance and trash storage. Langdon states "People need places where they can conduct unpolished activities. In a well-designed community, the street and the alley complement each other like feminine and masculine, yin and yang." (Langdon 157)

Traffic Issues

Paaswell addresses solutions to the traffic issues in suburban areas: "There is a growing agreement among transportation planners, urban and town planners, and development related public agencies, that new, transportation sensitive approaches to development must be encouraged in order to address the severity of current, primarily auto based, transportation problems. These solutions, under a variety of guises and names, essentially call for greater mixed use development, higher densities of development – both residential and non-residential, and an integration of footways, bicycle paths and transit into the land use structure. Such development approaches are assumed to allow individuals to sustain their mobility, but do so with fewer vehicle trips. If development takes

place as infill in older urban areas, the existing transportation and activity infrastructure should prove adequate, and a part of normal urban redevelopment.” (Paaswell 51)

Incremental Growth

Incremental growth has numerous advantages within existing neighborhoods. First, it is gradual, motivated by the needs of individual households, and not a wholesale change. Second, the piecemeal growth is economical, allowing change as personal finances of the residents allows. Third, it allows the neighborhood to change over a number of years, which also acknowledges the cyclical change of families and their needs. (Friedman Planning the New Suburbia: Flexibility by Design 69)

Beyond the modification and construction of structures, other improvements can and should be made to the suburban neighborhoods. These improvements can be made to mitigate environmental impacts, enhance the roadways, and provide public space.

Mitigating Environmental Impacts

There are multiple options for decreasing environmental impacts. Dunham-Jones discusses many alternatives. “Retrofitting may also be used to improve the environmental performance of an area.” This may occur through such things as the elimination of pavement, provision of SWM facilities, and daylighting water courses. (Dunham-Jones "Suburban Retrofits, Demographics,

and Sustainability" 14) Macdonald further elaborates, identifying four primary purposes that retrofitting streets could serve: "protecting and maintaining groundwater supplies, counteracting the urban heat-island effect, combating global warming, and providing wildlife habitat and corridors." (Macdonald)

Public Improvements

Improvements to the public sphere are important to mitigate the negative effects of density. Dunham-Jones addresses this by stating "The inclusion of public space is an important means of community-building." (Dunham-Jones "Suburban Retrofits, Demographics, and Sustainability" 13) Per Friedman "Particular attention should be paid to the issue of public versus private space, since the distinction between public and private becomes less explicit when unit's spatial envelopes begin to shrink." (Friedman Planning the New Suburbia: Flexibility by Design 67) Chapman and Lund discuss how improvement to the public sphere can mitigate the effects of increased density by stating "the transitions between public and private spaces, walkable neighborhoods with pedestrian amenities, and retail or public space destinations nearby might be expected to make dense neighborhoods more livable. Public spaces including park lands become even more important and density increases and residents have less access to private outdoor space." (Chapman and Lund 215)

Enhancing the roadways is key to improving the experience for pedestrians. Kay addresses how removing the automobile in urban areas can positively influence the sense of place by saying "The two things are mutually

exclusive: sense of place and space for cars. The more parking space, the less sense of place. Reverse it and you have a graceful, easier life.” (Kay 299)

CNU supports the enhancement of public spaces. Item C5 addresses how “streets and squares should be safe, comfortable, and interesting to the pedestrian.” Item C9 calls for “a range of parks, from tot-lots and village greens to ballfields and community gardens, should be distributed throughout the neighborhoods.”

Europe has been a pioneer in limiting the effects of cars, and enhancing the conditions for pedestrians. Barcelona, starting around 1980, included public spaces for pedestrians as a part of a coordinated public space policy. Portland, OR, has been one of the pioneers in the United States. The common themes of these policies include traffic safety, public health, a reduction of resource consumption, reduction in noise and pollution, and efforts to strengthen the role of the city as a democratic forum. (Gehl and Gemzoe)

There are numerous concepts for improvements to the street and right-of-way. Jacobs identifies some physical qualities that contribute to the characteristics of ‘Great Streets’ in his book by the same name. These qualities include trees, beginnings and endings, design details, places along them, accessibility, density, and diversity.

Street trees are one of the most important aspects of having a great street. They should generally be located between the sidewalk and roadway, deciduous, spaced from 15’ to 25’ apart, continuous along the street, and extending to the intersection. This will provide shade, a cohesive feeling to the

street, and a barrier between pedestrians and cars. In some instances they have been located within the roadway, in the areas for parked cars. This extends the pedestrian realm into the street, and creates a more intimate area.

A beginning and ending helps define the street. Per Jackson, "They say, in effect, that one has arrived, or left, or they give boundaries." These can be something simple as iron markers, to monuments, or a building that serves as a focal point. In many suburban areas the enhanced entrance areas or medians serve this purpose. Small traffic roundabouts may do double duties in this capacity.

The details of streets are an important part of the feel. Gates, fountains, benches, kiosks, paving, lights, and signs all contribute to the environment. Streetlights serve to provide light, but also can define the different spaces. It is best if they are not too high (less than 20'), have sufficient visual mass, and design details. Jackson further notes that white globes are best, as transparent globes disappear visually during the day. Benches help make the street inviting, and welcome people to stay, and create community. They are less expected on residential streets than commercial streets, but welcome either way.

Small spaces along the street can be used to create a sense of place. These can be small plazas or parks, widenings, or open spaces. These places can provide stopping points, pauses, or references for those traveling along the street. They can also provide places for the people to get to know each other, and help create a sense of community.

Accessibility has many meanings, and all of them are important for creating great streets. Streets provide means for people to go elsewhere, and access to the buildings along them. They also have regular access from outside areas – Jacobs identifies some great streets as having frequent intersections, as little as every 250 feet. Where the distance between intersections increases significantly from 300 feet, it is harder for the street to be a part of the community. See Figure 4 showing where Portland, OR has streets on a 250' grid and Los Angeles an irregular network, with much longer block lengths. Finally, it is important for the streets to embrace all users, especially those with disabilities.

Density and diversity is also important to having a great street. More buildings means more places to go, and people on the street itself. One of the attractions of great streets is the people themselves, and the opportunity to watch and meet people as we go about our activities. Having people living in the vicinity helps the street have activity throughout the day, which also increases safety. Diversity of owners, uses, and users all increase the vitality of streets.

All of these factors help the creation of great streets, and by extension great places. None of these items are sufficient by itself, or critical in its absence, but having more factors increases the experience for the user. (Jacobs 292-308)

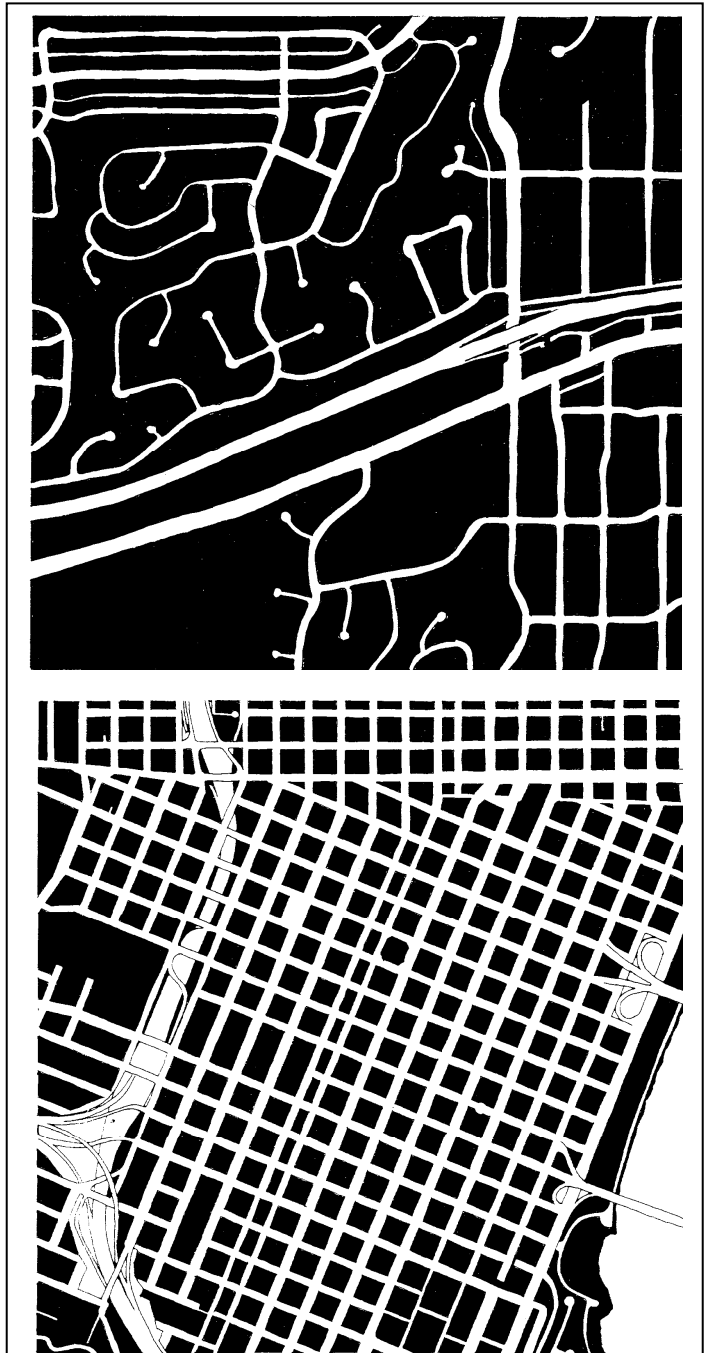


Figure 4
Comparison of Block Lengths - One Square Mile of Los Angeles (Top) and Portland, OR (Bottom)
(Jacobs 226 & 238)

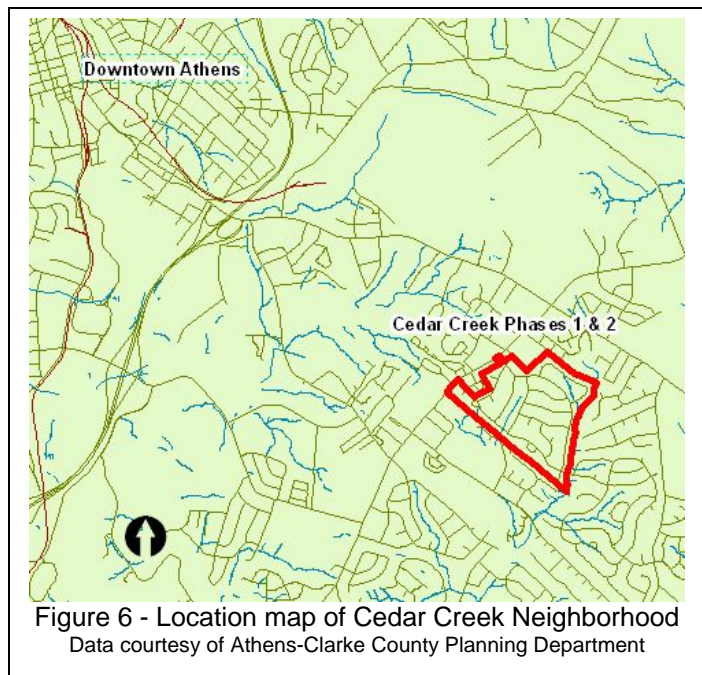
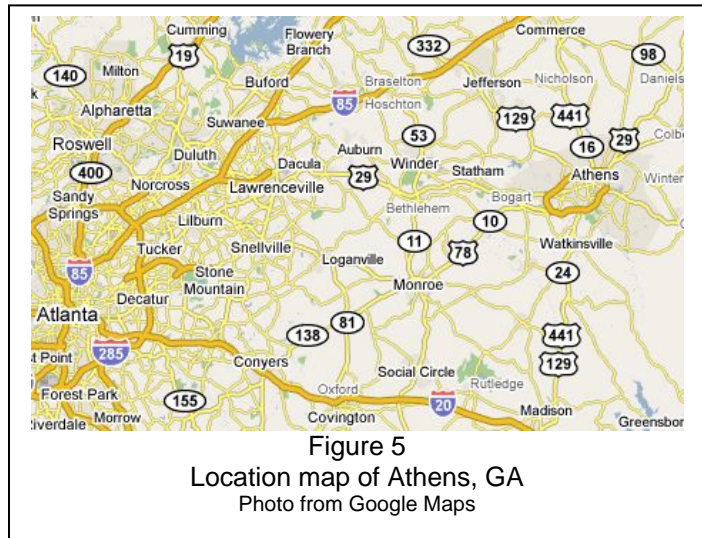
Other organizations support the enhancement of streets for non-vehicular users. The Complete Streets Coalition is one of them. In the Coalition material they state “Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street.”
(CompleteStreets.org)

Creating public spaces is also an important way to create community. These spaces don't have to be fancy – they can be as simple as a bench on a street, or an enhanced street intersection. They can also include such spaces as dog parks, playgrounds, community gardens, and transit stops. (Walljasper 7, 22)
In some co-housing projects in existing neighborhoods, adjacent houses are purchased and the rear fences removed, creating a large common space. It might be possible to do this as a neighborhood amenity.

Chapter 5

Application

Phases I and II of the Cedar Creek neighborhood in Athens, GA were selected as the subject area for my investigations into the application of different alternatives for change in suburban areas. The subject area is intended to represent suburbia in general based on Jackson's findings that "similarities among American residential patterns are much more numerous than are differences, especially when age, distance from the city, and socioeconomic class are held constant." (Jackson 6)



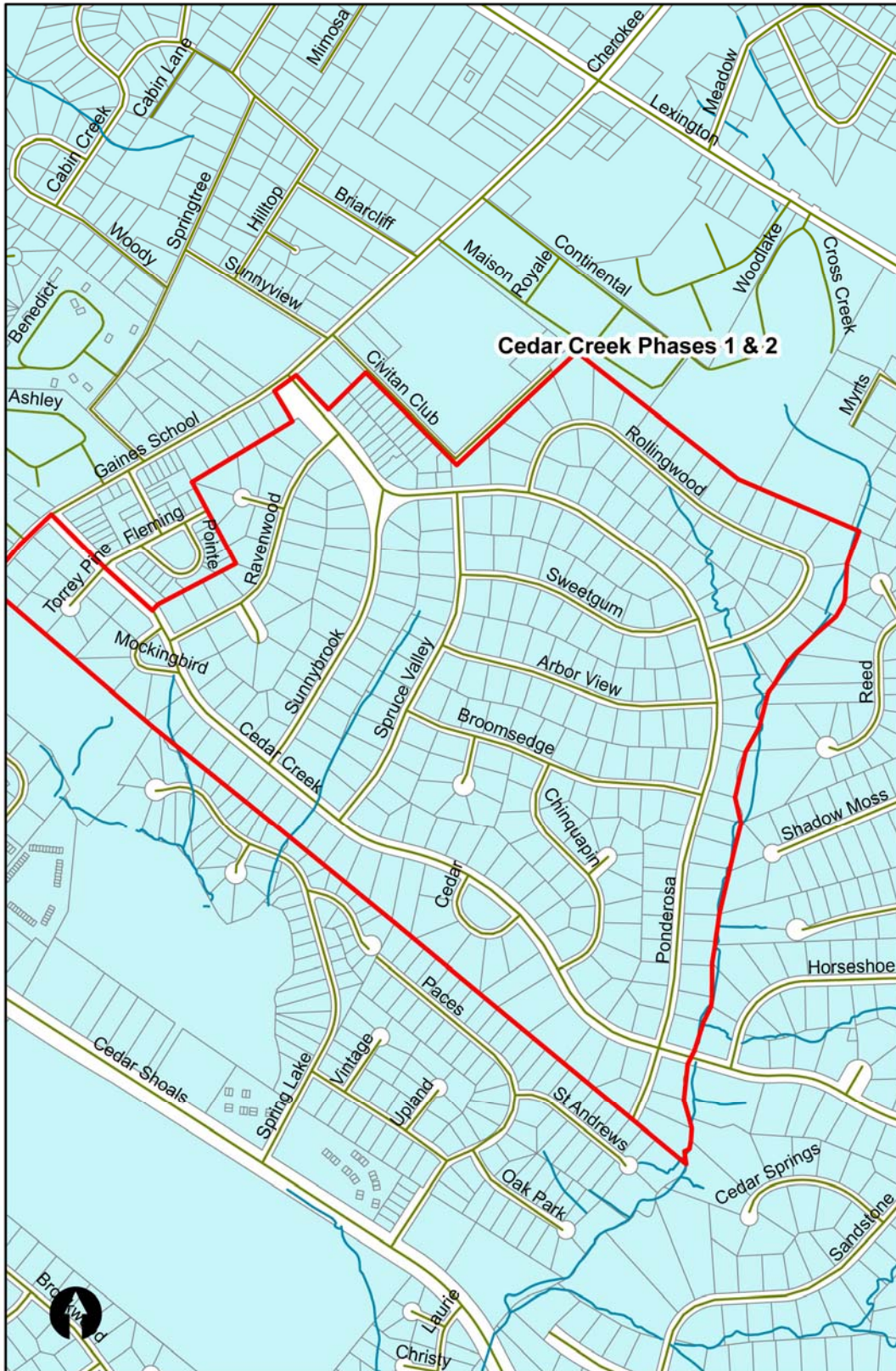


Figure 7: Detailed Map of Cedar Creek Neighborhood

Existing Conditions

The Cedar Creek neighborhood is located approximately 3 miles southeast of downtown Athens. It is bounded by Gaines School Road to the West, Lexington Road to the North, Whit Davis Road to the East, and Cedar Shoals Drive to the South. The primary access to the subdivision is on Cedar Drive, which connects to Gaines School Road. Gaines School Road is a 4-lane roadway. There are significant nearby commercial areas both on Gaines School Road and Lexington Road. While the Cedar Creek Neighborhood is predominantly single-family detached residential, it includes a small number of duplexes and the adjacent properties are varied and include attached residential, commercial, and institutional uses.

The initial two phases of the Cedar Creek neighborhood has three roadway connections; Ponderosa Drive connecting to Gaines School Road,

Cedar Creek Drive connecting to Gaines School Road, and Cedar Creek connecting to the later phase of the Cedar Creek subdivision.

The initial two phases of



Figure 8
Image of Cedar Creek Neighborhood
Photo by Author

Cedar Creek were developed in 1965 and 1966. They include 289 single-family lots, on which 285 houses have been constructed. There are also 24 duplex lots with 24 residences. Single-family lots range from 0.45 to 1.41 acres. The overall area is 223.8 acres, for a net density of approximately 1.4 units / acre.

The area is characterized by mature vegetation, large lots, and houses set towards the center of the property. The existing front yard setbacks are typically generous, ranging from 40 to 70 feet. Per the original plat, front setbacks were identified as 50' for most lots, and 40' for corner lots. Streets are typically 30 feet wide, with concrete rolled curb and gutter edges. Road right-of-ways (ROW) range from 60 feet for secondary streets to 80 feet for the primary streets. No sidewalks are present.

There are several intermittent streams in the neighborhood, typically located at the rear property line of blocks. The streams are generally within 20' easements, 10' from



Figure 9
Image of Creek Area
Photo by Author

the centerline of the stream. Common property or open space is limited. There are two common areas enclosed by a short loop street, and the Ponderosa Drive entrance area has entry and exit lanes separated by a wide median. There is a

community pool owned by the Cedar Creek Swimming Pool Association located on Cedar Creek Drive near the boundary between Phase I / II and later phases of the development.

The area is served by public water and sanitary sewer systems. The water supply system is looped, and is comprised of mostly six- and eight-inch water mains, with a few three-inch lines for service of cul-de-sacs. (Athens-Clarke "Water System Maps") Per conversation with Mickey Price of the Public Utilities Department, the water supply could support significant additional development within the area without exceeding capacity. The sanitary sewer system in the area is a gravity system using eight-inch mains. It exits the area near the swimming pool. (Athens-Clarke "Sanitary Sewer System Map") Per conversation with Edward Focht of the Public Utilities Department, the sanitary sewer system within the neighborhood could likely support an additional 50% to 100% of the

existing bedrooms without taxing the infrastructure. More than that may be possible, but determination would require a more detailed study.



Per the Athens Clarke County Zoning Map, most of the area is zoned R-25. This is a zoning for single-family residential dwellings. Per the Code of Athens Clarke County (The Code) only Single-Family residences, Home Occupations (by family members), Basic Utilities, Parks and Open Areas, and Cemeteries are permitted uses. Personal Care Homes, Commercial Outdoor Recreation, Temporary Uses, Churches, Day Care, Kindergarten, Elementary, Middle, and High Schools, Nursing Homes are allowed subject to approval with a special permit. All other uses are not allowed. (Athens-Clarke "Code of Ordinances, Athens-Clarke County, Ga")

Currently the Code requires the following for subdivisions of less than 2 acres and/or fewer than five lots: a minimum lot size of 25,000 square feet, 85 feet of minimum lot width and contiguous lot frontage, 100 feet minimum lot depth, 20 foot minimum front yard, 6 foot minimum side yard (10 feet when adjacent to a street), and a rear yard of 10 feet, plus one foot for each foot of building height above 20 feet. For subdivisions of greater than 2 acres and greater than five lots the Code of Athens Clarke County requires the following; 40 feet minimum lot width and contiguous street frontage, a maximum density of 1.4 dwelling units per acre, a minimum building separation of 20 feet, a 20 foot minimum front yard, and a rear yard of 10 feet, plus one foot for each foot of building height above 20 feet. For all buildings there is a maximum lot coverage of 25%, and maximum building height of 40 feet. (Athens-Clarke "Code of Ordinances, Athens-Clarke County, Ga")

Cedar Creek generally conforms to these requirements. Under this zoning, there is little opportunity for additional density, accessory dwelling units, or non-residential uses.

Chapter 6

Proposed Improvements

Based on the possible solutions discussed in chapter four, I have identified a number of alternatives for allowing change in the initial Phases of the Cedar Creek neighborhood. These alternatives seem sympathetic to the neighborhood, and are intended to illustrate the options that similar neighborhoods may consider.

Public Improvements

Improvements within the public realm are intended to address existing shortcomings and mitigate the impacts of additional development. Some of these improvements may include connectivity, stormwater management, and public space.

Connectivity

The connectivity improvements particularly are intended to enhance pedestrian and bicycle access, in addition to the vehicular access, by providing more direct routes and connecting adjacent neighborhoods. Pedestrians are most sensitive to distance, and will likely see the greatest benefit with the creation of additional connections. One example of this is the high school students in the Cedar Creek neighborhood. Most of the Cedar Creek neighborhood is within 1 mile (as the crow flies) of the Cedar Shoals High

School. However, since there are no direct connections, the walking distance for most students becomes significantly greater. With improved access, more students living in this neighborhood should be able to walk to school.

Street connections may include constructing the final segments of stubbed-out streets, extensions of dead-end segments or cul-de-sacs, or new streets. They should include sidewalks, and would provide a greater range of access for all transportation options. This category might also include alleys which would not have sidewalks, but due to the low-speed nature of the design is also appropriate for a range of transportation options.

In some areas, it may be possible to construct street connections through vacant properties, or where there is sufficient space between existing structures. In other areas, new roadway connections may require the acquisition and demolition of existing homes.

It is also possible that the new Right of Way (ROW) for the roadway could support additional housing units. These units may be of a different type and be used as means of enhancing structural diversity within the neighborhood. The lots for these additional units might be sold at market rate as means of offsetting the development costs of the connection, or used for subsidized, workforce, or other affordable housing units.

Where the acquisition of ROW for a full roadway connection is not possible, it may be possible to create a pedestrian connection. These connections may be as narrow as fifteen or twenty feet, allowing for a sidewalk of four or more feet, plus room for emergency vehicular access and landscape

buffers. It is likely that these connections would be fenced to limit access to the adjacent private property. Privacy fences should be carefully considered; while useful for preserving the privacy of adjacent residential uses, they may be claustrophobic for some users, and limit visual access which is an important part of real and perceived security.

Sidewalks should be constructed on both sides of all streets as a way of enhancing pedestrian safety and increasing walking. It is probably not feasible or affordable to do this on all streets at one time, so a phased approach should be considered. The initial streets identified for improvement should include one side of the major roadways and connections to adjacent schools. As funds become available the secondary streets should be included in the sidewalk network, and finally provision of the opposite sidewalk on primary and secondary streets.

Sidewalks should be a minimum of four feet wide to allow for two-abreast walking or for allowing pedestrians traveling opposite directions to comfortably pass without one party having to give way. On major streets sidewalks should be a minimum of five to eight feet wide to allow for greater use.

A landscape strip should be located between the sidewalk and roadway to provide some buffer between the vehicular and pedestrian zones. Where the ROW or topography is a limiting factor, this buffer can be as little as two feet. In most areas the buffer should be a minimum of four to five feet, and street trees should be planted with twenty- to twenty-five foot spacing. Street trees are important because they provide shade and protect pedestrians, as well as cause drivers to slow down. (Sucher) Parallel on-street parking should be promoted as

further creating a sense of safety and security for the pedestrians, as well as limiting the need for on-lot paved parking spaces.

It is possible that this landscape strip be further developed as a depressed swale and rain garden. This would provide additional public benefit in the form of reduced runoff and enhanced water quality.

Alleys could be constructed along the shared rear lot line of some blocks. This would be a means of providing additional access to the lots to support increased density. The units might include additional lots at existing street frontages, accessory dwelling units, freestanding garages, or even infill development such as townhouses. The alley form is common in many older cities such as Savannah GA and Charleston SC.

Assuming an 18' pavement width for one-way traffic, the alley might require as little as 24' or 30' of ROW. If taken equally from both sides, this would mean acquiring as little as 12' or 15' of ROW from each property owner.

Narrower pavement width, if allowed by the jurisdiction, will further reduce the required ROW. It is possible that the alley could be constructed incrementally starting with a couple lots at one end, but an extended dead-end alley could be problematic for access and safety.

Public Spaces

Existing public spaces should be enhanced and new public spaces should be created to help create a sense of community and support the additional

residents. These spaces might include such things as seating areas, playgrounds, dog parks, neighborhood gardens, or natural areas.

Stream corridors may also be used for the creation of public spaces. Walking trails could be added adjacent to the streams which could provide some connectivity, but more importantly they would be a means of connecting with a natural environment. These places would provide critical natural areas for children to explore, play, and learn in non-structured environments. This would require the acquisition of an easement or ROW for the trail, and low-impact construction methods within or adjacent to the potentially sensitive environment. As these corridors are typically located along the rear property line of residential property, care should be taken to address both privacy and viewability both into and away from the stream corridor.

Stormwater Management

The Cedar Creek neighborhood was constructed prior to the requirements for stormwater management, and does not include any SWM facilities. It may be possible, however, to construct some facilities to mitigate the overall impacts of uncontrolled stormwater flows. These facilities may include such things as detention basins or raingardens.

Due to the size of detention structures, there are limited opportunities for their construction in previously developed areas. Some opportunities exist, however, in the existing stream corridors. Most development in the neighborhood has left significant buffers around the streams by building the

houses out of the floodplain. It may be possible to develop a series of small detention basins within the existing stream bed by installing low weirs in locations that maximize the existing topography. These should be designed in such a manner to limit the depth of the pool to two feet or less, and ensure that no standing water is left beyond 24 hours after the storm.

There are greater opportunities for raingardens or other water quality structures within the neighborhood, since the minimum size of these facilities is smaller. The primary opportunity is within the wide (60' to 80') street ROW. This area is also adjacent to the street, which is also the largest area of pavement and runoff within the neighborhood. A series of linked swales with low weirs could be easily constructed behind the existing curb, with small curb-cuts to divert the first flush of a given rain event.

Increased Density

Increasing density within existing neighborhoods can help address many significant issues within the specific neighborhoods and larger community. It more efficiently utilizes existing resources by reducing sprawl in the greater community, and using the existing infrastructure. Additional density can help support public transportation, by having more potential riders within walking distance of possible transit stops. Additional density can support neighborhood businesses by having more patrons within walking distance. Additional units can also increase economic and social diversity if different sizes and types of units are constructed.

There are many common concerns regarding increasing density within an existing neighborhood. Those concerns include the proximity to adjacent properties, lot coverage, massing, parking, and appearance. To meet these concerns, restrictions could be placed on additional development. These restrictions might include the following:

Proximity to Adjacent Properties – The location of infill development may be controlled by yard setbacks, or additional requirements where immediately adjacent to existing neighboring properties.

Lot Coverage – The lot coverage can be controlled by identifying maximum lot coverage for structures, pavement, or both for infill development.

Massing – The massing of the infill development can be regulated to ensure that it does not “tower” over neighboring properties, or is otherwise generally similar to the existing adjacent properties.

Appearance – The appearance of infill development can be regulated to ensure that the new structures are compatible with the aesthetic of the neighborhood.

Parking – Minimum parking requirements can be established for infill development, to ensure that the new users do not overwhelm the existing parking facilities. Extreme care should be taken with these requirements, however. Parking requirements can greatly increase the area requirements, reduce density, and increase impervious area and pollution. It is also important to utilize the existing street for parking to enhance the pedestrian zone and slow traffic as discussed previously.

I have identified several alternatives that appear appropriate for increasing density within the Cedar Creek neighborhood. These alternatives include accessory dwelling units, lot splits, and infill development.

Accessory Dwelling Units

The addition of Accessory Dwelling Units (ADUs) to the Cedar Creek neighborhood may be a good way to easily increase the diversity of the housing stock. These units could provide the opportunity for home offices, housing for extended family, or as rental property to support the property owner. By their nature, they would be incremental, and constructed by people who have an existing strong relationship to the neighborhood. Accordingly, ADUs should be allowed as a by-right use for all existing single-family properties within the neighborhood.

One possible restriction on ADUs is the requirement that one of the units be owner occupied. This unit could be either the primary or accessory unit at the property owner's choice. This restriction ensures that the property owner is aware of the conditions of the property, and in theory should ensure maintenance and limit any impacts on neighboring properties. This may also allow aging owners a way to stay within the neighborhood while meeting their needs for reduced space or other physical limitations.

Lot Splits

Depending on the size, shape, configuration of the existing house and lot, it may be possible to subdivide the existing lot into two or more smaller lots. This could be facilitated by reducing the minimum lot size requirements within the neighborhood, or rezoning the neighborhood to a classification that allows

smaller lots. It is also possible that a new lot be created from a portion of two parent lots, using the space between two houses.

Infill Development

One or more underutilized lots may be suitable for infill development. These lots may have a single residence, or may have been previously undeveloped. If they have an existing structure in good condition it may be possible to utilize that structure with a new development. If the existing structure is not in good condition, or situated in a manner that limits development, it may be necessary to remove the structure.

With the redevelopment of existing lots it may be possible to develop at significantly higher densities while respecting the adjacent properties. This may be especially true as the size of the infill parcels increase, due to the efficiency of scale. With larger parcels it would be possible to reduce the separation of internal units, while respecting the setbacks and massing adjacent to existing properties.

It may also be possible to utilize infill development to provide substantially different structural types while minimizing impacts on the existing neighborhood. These different unit types might include such things as duplexes, townhouses, small apartment complexes, live-work units, or small commercial structures.

Chapter 7

Conceptual Projects

Entrance Park

The primary entrance to the Cedar Creek neighborhood is Cedar Creek Drive, which is a divided roadway with a wide median. Currently this median is used only for aesthetic purposes, with landscaping near the entrance. This divided roadway ends in a three-way uncontrolled intersection with excessive pavement area.

It may be possible to utilize this area for community purposes. Figure 10 illustrates a concept that includes a community garden, a dog park, and a roundabout that would replace the three-way intersection and include an open lawn area.

Modification of this area could serve to both create public space as well as reduce environmental impacts.

The additional useable public spaces would serve to enhance the community of place by the creation of the community garden, the dog park, and the open space within the roundabout. This area may also enhance property values of the entire community as it would serve as a marketing tool, being the most visible entrance to the subdivision.

The modifications would also have slight benefits to the environment. The creation of the roundabout would reduce the pavement area and thereby reduce runoff. Replacement of lawn area with garden would also slightly reduce runoff.



Figure 11: Entrance Park Concept

Typical road section

In general, the roadways within the Cedar Creek neighborhood have sixty to eighty foot wide right-of-ways, twenty-eight foot wide roadways, rolled curb and gutter, and no sidewalks.

These road ROWs should be improved with the addition of sidewalks, swales, and street trees on both sides of the roads. Sidewalks should be a minimum of four feet on minor streets, and five to eight feet on major streets. The sidewalks should be located near the edge of the ROW to maximize the greenspace between the roadway and the pedestrian. On-street parking should be further encouraged, to both create a comfortable pedestrian zone as well as slow the vehicular traffic.

Vegetated swales should be placed between the sidewalk and road to serve as water quality areas to mitigate road runoff. The existing continuous curbs should be modified with inlets to direct water into the swales, and low weirs should be installed to provide for 24-hour retention and maximize water infiltration.

Given the scale of the improvements, they should be phased in over time. Improvements should start with one side of the major streets, then one side of the minor streets, eventually completing both sides of all streets within the neighborhood.

These improvements would enhance the pedestrian network, create more positive community spaces, and reduce environmental impacts. The creation of sidewalks would promote pedestrian access throughout the community. The

enhanced public spaces may encourage recreational use, and thereby increase the potential for chance meetings, which would enhance the community of place. The environment would be enhanced through the vegetated swales which would improve water quality as well as provide some reduction in overall runoff.

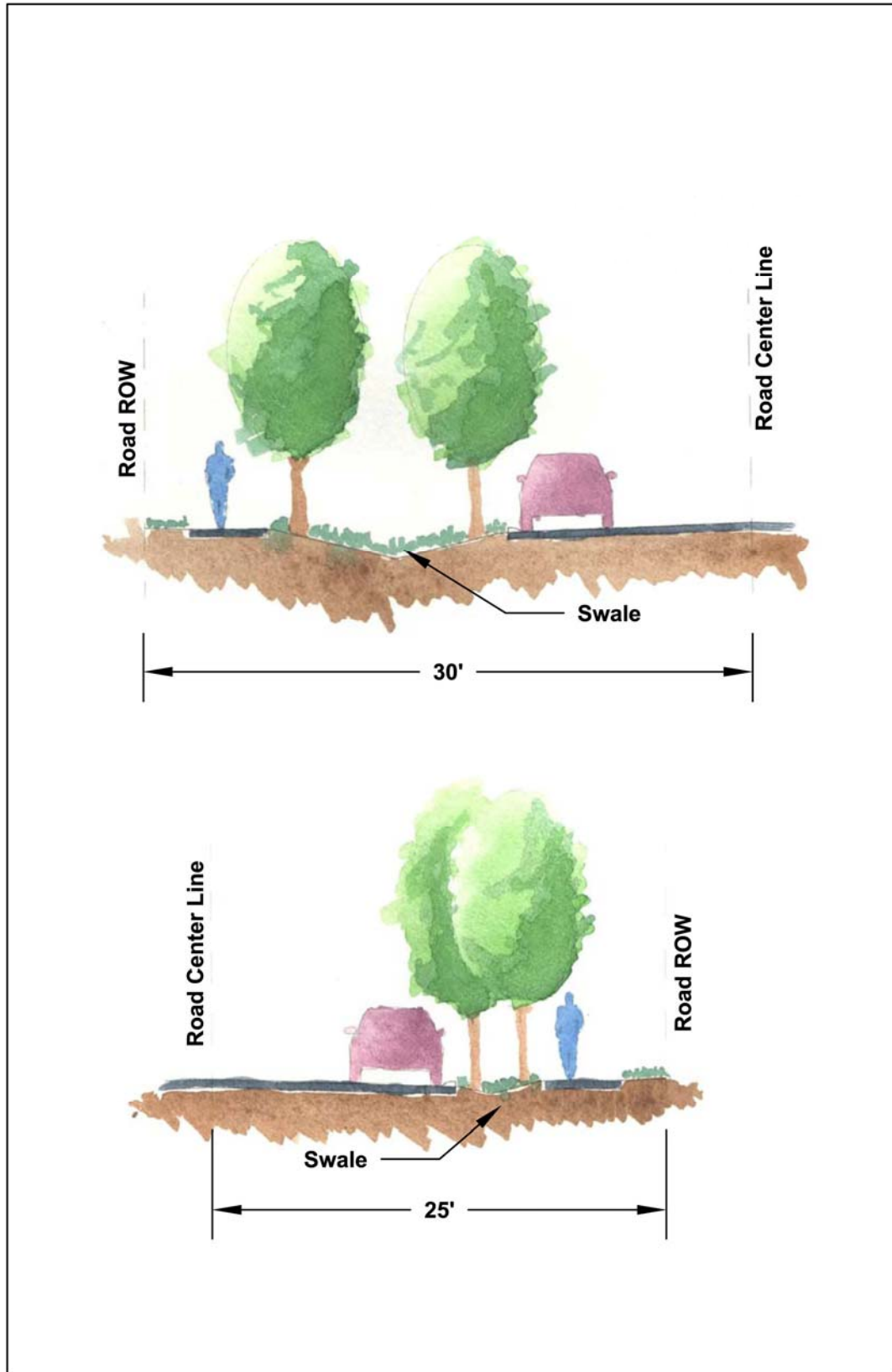


Figure 12: Typical Road Sections

Alley

The creation of an alley at the rear property line of some blocks may be another method of reducing the overall block size as well as providing for additional access to the rear of larger lots. This additional access could serve to minimize additional driveways from the existing streets as well as provide access to garages or additional units located along the alley. This building form of dwelling units along the alley is common in many older towns such as Charleston, SC or Savannah, GA.

Figure 12 shows a conceptual alley connecting Spring Valley Road and Ponderosa Drive, for the residents on Sweetgum Drive and Arbor View Drive. The alley would be created from the rear 15' of each lot for a total of 30' of ROW. Pavement width is shown as 18'. A variety of infill concepts are shown.

Site "A" shows a lot split with a new 7,658 sf lot, a house with a 1,424 sf footprint facing Spruce Valley Road, a detached 24x24 garage, and garage access from the alley. A 20' front yard setback, 5' alley setback, and 10' side and rear setbacks were used. It is possible that the garage includes an upstairs apartment.

Site "B" shows a detached 3-car 24'x36' garage with access from the alley. The garage is set back from the alley to provide for 3 parking spaces, with a 10' side yard and 5' alley setback shown.

Site "C" shows a group of four townhouses located along the alley. The units shown are 22'x40' for an 880 sf footprint, and include a 1-car garage. Two parking spaces are shown in addition to the garage space.

Site “D” shows a 24’x48’ combined pool house, 2-car garage, and a second-story accessory dwelling unit. Access to the garage is from the alley, and an additional parking space is shown for the apartment. 10’ side yard and 5’ alley setbacks are shown.

Site “E” shows the creation of two lots and the provision of a duplex. Each duplex unit has a footprint of 888 sf. Four parallel parking spaces are shown adjacent to the alley. 5’ alley and 10’ side and rear yard setbacks are shown.

The creation of the alley would increase access within the community, enhance community, and allow for increased density and diversity of unit types. The enhanced access would improve potential utilization of the large lots typical of the neighborhood, and potentially shorten travel distances through additional routing options. The community of place may be enhanced through greater potential to meet rear-yard neighbors, and allow a safer place for children to play. Density and diversity would be enhanced through the additional units and additional unit types and sizes.



Figure 13: Alley Concept Plan

Stream Corridor

The stream corridors within the neighborhood are presently undeveloped and unimproved. If the property adjacent to some of the stream channels were acquired, it may be possible to utilize them for water quality and recreational purposes.

As the area was developed prior to storm-water management (SWM) requirements in Athens-Clarke County, no SWM facilities exist within the neighborhood. Neither the water quantity nor water quality issues have been addressed, so the additional water runoff for the development has impacted the area's streams. As partial mitigation, it may be possible to develop small detention pools within the existing stream channel. I anticipate that these pools may be in the form of low dams or weirs that make use of the existing topography. The pools should be designed in a way such that the water would be shallow (less than 24" to 30") and held for less than 24 hours.

It is also possible that these stream corridors be used for recreational purposes by the provision of access trails adjacent to the stream. These trails could serve to address both maintenance access issues as well as an opportunity for people to interact with nature. Children in particular are attracted to these types of areas, and a trail may be a suitable means to provide for their access.

Ideally the acquisition of the stream corridor, access, and SWM improvements would also include stream restoration efforts to stabilize and improve the existing stream bed.

Figure 13 shows one concept for a stream corridor in the Cedar Creek Neighborhood. This concept includes a series of ponds, a four foot path on the adjacent bank, and a short bridge to transition to the opposite bank. As this corridor is located at the rear property line of existing houses, managing the transition from the public area of the corridor to the private area of the backyard is important. I would anticipate that this would be mostly in the form of a fence for access control. Ideally the fence would be low enough and semi-transparent to allow observation of the stream corridor by the adjacent property owner as a way of addressing any security concerns.

The creation of the stream corridor improvements would enhance access, create public and recreational spaces, and enhance water quality. Access would be enhanced by the additional pedestrian route, and potential rear-yard access. Public and recreational spaces would be created giving enhanced access to the stream, and increasing opportunity for rear-yard neighbors to interact. Water quality would be improved through the creation of small detention basins and improved access for maintenance.



Figure 14 Stream Corridor Concept

Pedestrian Connection

Where obtaining a full street connection is not possible, a pedestrian connection may be a suitable alternative. Figure 14 shows a pedestrian connection between Ponderosa Drive and Civitan Club Drive. This ROW would be located along the property line of two single-family lots, be twenty feet wide, and require ten feet from each property. A six foot wide pathway is shown.

This walkway would allow a direct connection between the neighborhood and the adjacent school and park. The creation of this connection would enhance pedestrian and bicycle access.



Figure 15: Pedestrian Connection Concept

Street Connection, New Lots Adjacent

Figure 15 shows the creation of a new roadway connection between Chinquapin Way and Cedar Creek Drive, and the addition of both detached and townhouse dwelling units. Five lots were impacted, with two houses eliminated, the rear yard of two lots utilized, and minor adjustment to the lot of the fifth property. The overall project encompasses 82,031 sf (1.88 acres), for a total of 7.45 DU/ac. The seven detached lots range from 3,967 sf to 6,721 sf. The seven townhouse units have a 25'x40' footprint, and include a single-car garage plus one driveway parking space. They are a minimum of 20' from the rear property line. The roadway is 28', and assumes on-street parking for the residents. A SWM facility is shown behind one townhouse block.

It may be possible to sell the buildable lots at market-rate to offset the acquisition and development of the roadway connection. Alternately, the lots could be used to support low-income housing and further enhance the diversity of the neighborhood.

The primary benefit of this project would be to increase connectivity within the neighborhood, with a secondary benefit of increasing the density and diversity of the community.



Figure 16: Street Connection Concept

Infill w/ Connection

Figure 16 shows an infill development and street connection between the Cedar Creek neighborhood and the Spring Lake neighborhood. The road connection would align with Spruce Valley Road and run between Cedar Creek Drive and Spring Lake Drive. The infill development utilizes three large lots (160,792 sf / 3.69 ac total) of the Cedar Creek Neighborhood, and two smaller lots (30,152 sf total) for a total of 190,944 sf / 4.38 ac. The plan shows 11 single-family detached dwellings, and 25 townhouses, for a total of 8.22 DU/ac. The single-family lots range from 4,660 to 8,570 sf. All houses are shown as having a single-car garage and one space for parking in the driveway, with additional on-street parking. The Townhouse units have a 25'x40' footprint, with a single-car garage and one driveway parking space. 45 additional parking spaces are provided for the overall development. A 22,696 sf / 0.52 ac open space is provided for the use of both the residents as well as the larger neighborhood, and includes an area for a small SWM facility. The townhouses adjacent to the open space would be designed so their front faces the open space. A small common area is included at the intersection of the two primary roadways within the development. It is anticipated that this area would include ganged mailboxes, benches, and could become a meeting area of the residents. The design includes a roadway stub-out to the property to the west, which would allow for a future connection to the adjacent properties if they were redeveloped.

This project would increase density and diversity, provide additional public spaces, and increase connectivity within the community. The increased

connectivity would be important due to the additional external connection between the Cedar Creek subdivision and the adjacent neighborhood. This would provide additional access to a primary roadway, as well as provide a more direct pedestrian route to the adjacent high school.



Figure 17: Infill Development Concept

Lot Split 1>2

Figure 18 shows one 7,790 sf lot split from a single 26,277 sf parent lot at the corner of Ravenwood Run and Cedar Creek Drive. The new lot is approximately 15' from the residence on the parent property at the closest point.

The new lot is shown with a 30' front yard setback, 10' side yard setbacks, and a 25' rear yard setback. The house is shown with a 1,794 sf footprint, a single-car garage, and room for two cars to park in the driveway.



Figure 18 - Existing Conditions
Photo by Author

This project would increase the density and diversity of the neighborhood with the additional unit on a smaller lot. It may also enhance the finances of the owner, and increase the affordability of the existing residence.



Figure 19: Lot Split Concept, One to Two

Lot Split 2>3

Figure 20 shows where a new lot is created between two parent lots, from a portion of each of those lots. The existing Lot A was 21,803 sf, and contributed approximately 30'. The house on Lot A would be 15' from the new lot line. The existing Lot B was

22,420 sf, and

contributed

approximately 25'.

The house on Lot B would be 10' from the new lot line.

The created lot has a width of approximately 55',



and would have an area of 9,484 sf. A 30' front yard setback, 20' rear yard setback, and 5' side yard setbacks are shown. The design shows a 1,360 sf house footprint and a detached 24'x24' garage. It is possible that the garage has an upper accessory dwelling unit or other useable space.

The house on Lot A included a side-loaded garage. Because of this, the plan includes a shared driveway and a new circular driveway in the front yard for enhanced access and overflow parking.

This project would increase the density and could help increase the household, racial, and economic diversity of the residents within neighborhood

with the additional unit on a smaller lot. It may also enhance the finances of the existing owners, and increase the affordability of the existing residences.

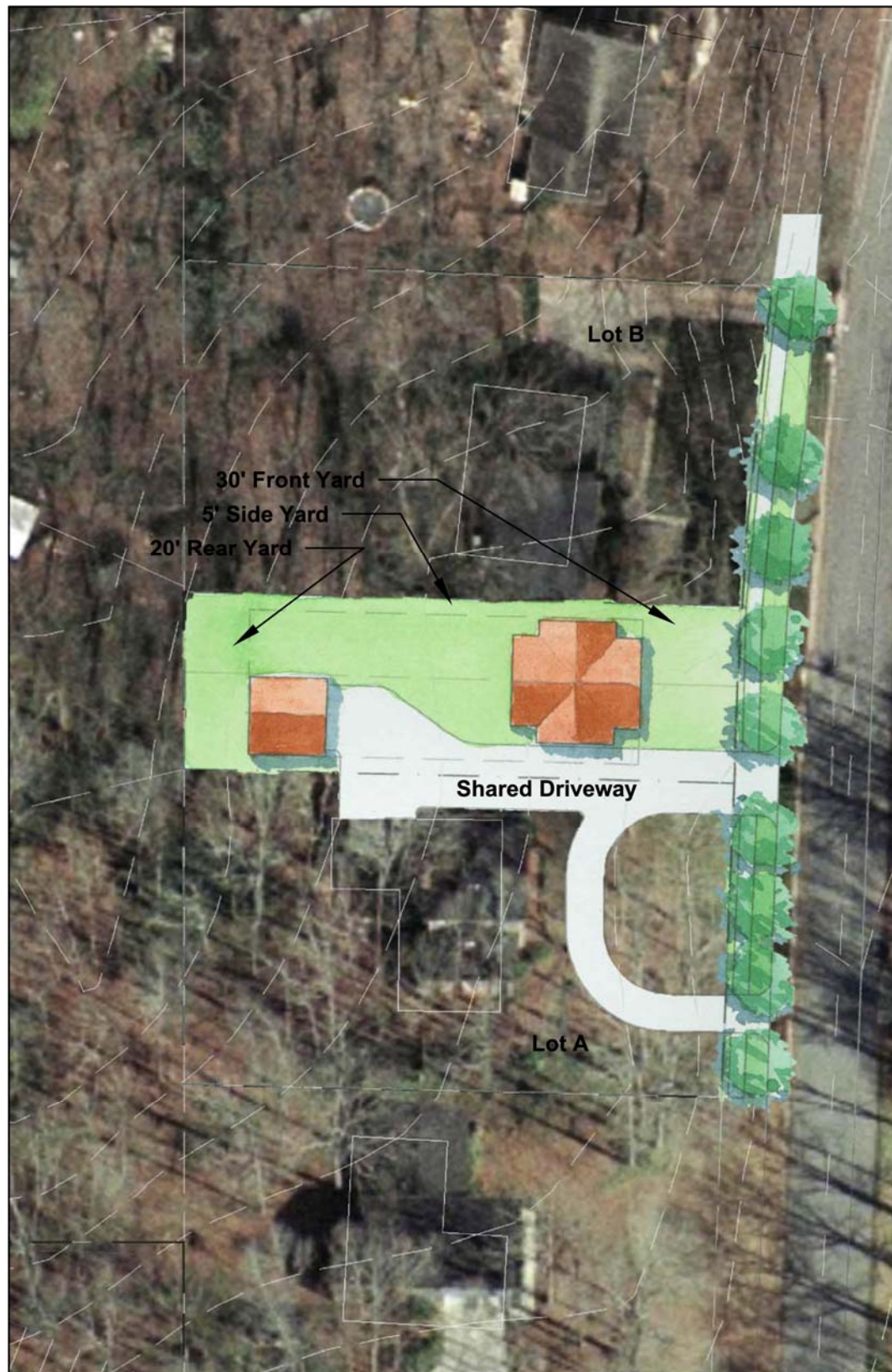


Figure 21: Lot Split Concept, 2>3

Infill One>Five

Figure 21 shows where a single vacant 32,076 sf / 0.74 ac lot has been redeveloped for 5 zero-lot-line dwelling units. Overall density would be 6.76 du/acre. Each new lot is approximately 3,123 sf, and shows a dwelling footprint of 1,120 sf. The units are spaced 10' apart. Each unit is provided with 2 dedicated parking spaces, with 7 additional parking spaces provided for the overall development. There is a 10' common space buffer between the individual lots and the adjacent lot line. A small SWM facility is included adjacent to the parking area. A small gathering space is included adjacent to the sidewalk at the front of the property. This space may included benches or a bulletin board, and would be shared by both the subject property and the larger neighborhood.

This project would increase the density and diversity of the neighborhood with the additional units on the existing unused lot. It may also enhance the community of place with the small plaza area adjacent to the sidewalk.



Figure 22: Infill Development, Five New Parcels

Accessory Dwelling Unit

Figure 23 shows an accessory dwelling unit located at the rear of an existing single-family lot. This accessory dwelling unit would be 24' x 40', with a two-car garage and storage on the ground floor, and an apartment on the upper level. The structure would utilize the existing driveway. It would have a ten foot side yard setback, and a twenty-five foot rear yard setback.



Figure 23 - Existing Conditions
Photo by Author

This project would increase the density and diversity of the neighborhood with the additional unit. It may also enhance the finances of the owner, and increase the affordability of the existing residence.

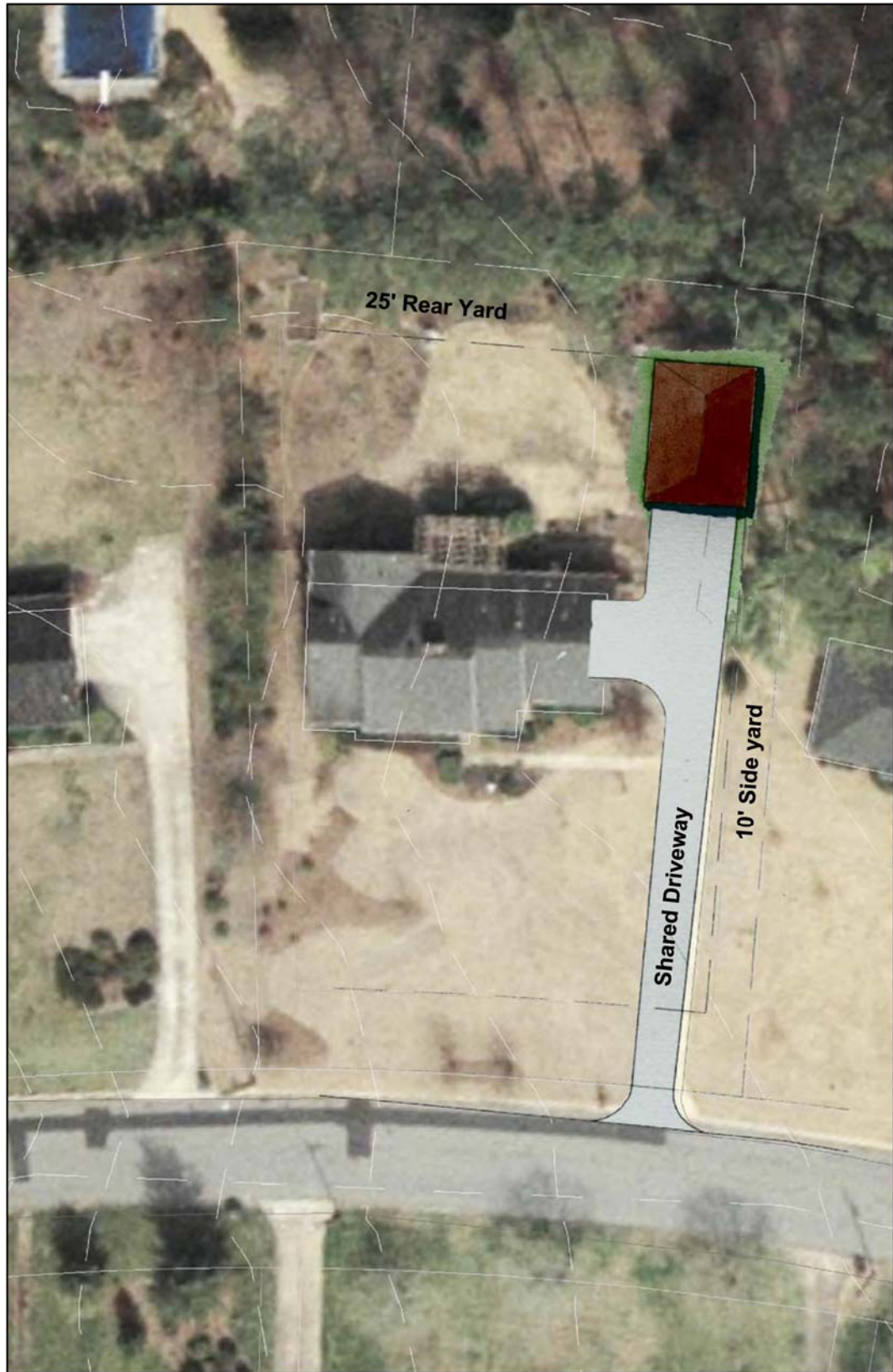


Figure 24: Accessory Dwelling Unit Concept

Chapter 8

Discussion

Even with appropriate setbacks, careful dwelling massing, and other considerations, the neighborhood will likely be suspicious of and resistant to change. It is critical that the change process is carefully addressed.

Potential Barriers to Change

All of these alternatives assume that the existing suburban areas will change. This change is often not welcome by the existing residents. The “Not In My Back Yard” (NIMBY) crowd seems to get more vocal the closer change happens, and change in suburbia may in fact be next to their backyard.

Dunham-Jones states “The biggest obstacle to such new forms of development may not be consumer demand so much as political and regulatory opposition based on an outdated view of suburbs as domestic retreats from Dickensian cities.” (Dunham-Jones “Suburban Retrofits, Demographics, and Sustainability” 16) Chow addresses a similar idea, stating “Zoning guidelines and homeowner regulations further reinforce the status quo, as any random, unplanned change is perceived as a threat to everyone’s property values.” (Chow 56)

One of the major issues related to how suburbia can grow and change is the response of the existing residents to the infill and modification process.

While individuals may be supportive of the general concepts as applied to the

larger community, they are often opposed when change comes to their own neighborhood.

Chapman and Lund address similar issues in Portland by stating “consumer demand shows Portland residents looking inward rather than outward for housing, with concomitant increases in inner-city housing prices, yet citizens have frequently protested increased density either as infill or on the suburban edge. Looking more closely at these protests, however, it appears that citizens are concerned not just about density but also with the quality and character of the development. Controversy has been particularly strong in the case of redevelopment and quality of infill.” (Chapman and Lund 212)

Christchurch, New Zealand has established a policy of infilling their suburban areas as a means of combating sprawl. Vallance et al surveyed neighbors of infill projects, and found wide concern. These concerns included the following:

- Substandard construction practices (materials and design) of the infill development would reduce the value of their property. This has been a common concern throughout the ages, as construction practices change. When post and beam construction was common, the new-fangled balloon framing methods were looked down on as shoddy. Yet, in today’s terms, we often value those older buildings framed for their solidity. *“Seen in the context of imaginary spaces it is almost wholly irrelevant as to whether or not infill housing will, in fact, become the slums of the future. What is important is that many people living on a residential quarter-acre section believe it is so, and their beliefs govern their interpretations and responses.”*
- Rental housing will bring undesirable neighbors to the community, as renters are often seen as creating problems.
- Changes to the ‘way of life’ in the community. The new inhabitants would be different, and less likely to be a family with children. This fact was sustained by the research, as residents of the infill development were less

likely to have children than those residents who lived in single-family homes.

- The increased activity within the community was unwelcome. Despite research showing that 'eyes on the street' enhanced security and safety, many residents responded negatively to the additional traffic and activity brought by the new neighbors.
- Increased diversity of people & lifestyles associated with infill housing also changes the 'sense of place' associated with those neighborhoods.

Vallance et al noted that consideration of the sociocultural dimension would be important with the reception that infill housing would get from the existing residents. *"If the compact city is a desirable planning goal, infill housing must be carefully designed and built in such a way to accommodate people's geographic imagination and the symbolism that is an integral part of the built environment."*

Inclusion of the community into the planning process may be one way of addressing these concerns. A neighborhood-level charrette or workshop may be an appropriate mechanism. If the critical issues of concern are identified prior to the infill development, it may be possible to address the concerns of the neighborhood in a manner that meets the needs of all.

This assumes, however, numerous factors such as financial support, community participation, and an openness to change in general. Many communities may not be willing to undergo an expensive, detailed planning process. Participation of all cannot be mandated, but those who do not participate may still complain about the end result, or be unhappy when it happens next door. Finally, many existing residents may be resistant to any change whatsoever, no matter the needs of the greater community.

It is also important to weight the additional costs and timing requirements associated with a more inclusive process with the need to encourage appropriate development. If the process is too onerous, it will discourage infill development, or at least limit it to only the upper end of the scale. Small-scale development by nature has less opportunity for efficiency of scale, and affordable housing has less of a profit margin to begin with. Only if the process is streamlined will it be possible to allow significant change in our neighborhoods, and the opportunity to reduce sprawl.

Managing Change

Change will happen only under certain circumstances. These may include a dramatic increase in the cost of gas, increased congestion of the roadways, and an increase in the value of land. It may be a result of a single reason, but more likely a combination of all three factors.

A dramatic increase in the cost of gas would limit the potential for everyone to have and use their own private car for all their needs. This will likely cause people to support alternate transportation methods, including walking, bicycles, and public transportation. These other transportation methods all have different physical requirements, but generally require higher densities. These higher densities will cause a shift in the built environment.

Traffic congestion is a reality in most urban areas. Its primary cause seems to be suburban sprawl, and only increases as areas grow. It is likely to increase as the increased cost of gas ripples through all financial sectors, and

money becomes less available to support the construction of new roads and the maintenance of the existing ones.

Land costs may increase, especially as inner areas become more desirable due to their locations and proximity to jobs and services. In general, closer locations will mean lower requirements for driving which reduces the energy requirement. The increased land costs will make it more prohibitive to develop large-lot properties, and make smaller, denser developments more acceptable.

There may be positive benefits from changing the pattern of development, even if the cost of individual properties increases. Per Dunham-Jones, "Living in a transit-served location allows a household to concentrate it's wealth in real estate, which is likely to appreciate, rather than automobiles, which depreciate." (Dunham-Jones "Suburban Retrofits, Demographics, and Sustainability" 12) This is part of the logic behind the Location Efficient Mortgage backed by FannieMae, which allows increased lending limits in select locations.

Without a combination of these factors, there will be limited demand for change, and residents will likely be highly resistant to it. The idea that these changes would make the community a better place is a nice theory, but an abstraction. They are probably not attractive enough to overcome the ingrained fear of change.

It is important that the rate of change be managed for the residents, which allows them to be comfortable with incremental change. The process could be set up to allow the existing residents of the neighborhood to promote change, but

limit the amount of change that is forced onto them by outside actors. If the proponents of projects are sympathetic entities, fear of the unknown may be reduced.

As the problems of suburbia were slow to emerge, so too will the solutions be slow to happen. Awareness of the problems and possible solutions will be slow to take place in the community. These solutions are long-term, and like many efforts, a slower time-frame will allow the community to adapt to the process. A slower time-frame will also allow incremental change and review of the impacts, with an associated modification of the process to ensure that all of the needs are met as well as possible.

Some items such as infill or unit construction should be bottom-up, and driven by the residents. Changes to the ordinances to enable these concepts would allow them to change their own neighborhood, and not force them to change. Other items such as sidewalks, SWM, and street connections have to be top-down. They can be implemented slowly, over time, to allow residents to become comfortable with the idea of change. They may also be done on a priority basis, with the most important parts done first. These critical parts may include sidewalks on the main areas, or pedestrian and bike connections within the network.

Russell states "For suburbia to evolve to a more stable and satisfying urban form, the United States must be prepared to consider the true field of suburban concern as larger than the subdivision or village. It must also recognize that suburban towns and cities are parts of larger regional

conurbations that must be participated in, planned for, and governed as such. Americans would do well to put aside their knee-jerk anti-urbanism and consider what kind of urban place they would really like to inhabit, and, like city dwellers throughout the ages, consider what they are willing to give up for what they will get.” (Russell 106)

Financial Considerations

Methods of paying for neighborhood-wide improvements must be considered, especially in eras where communities are having difficulties providing the basic services. Financial alternatives might include impact fees from the infill development, enhancements as a part of normal infrastructure rehabilitation, or tax increment financing (TIF) based on the increased value of the neighborhood with the improvements.

Impact fees may be an option. New construction within existing neighborhoods utilizes the existing streets and utilities, and thereby saves on construction costs. It may be possible for the community to capture some of this savings in the form of impact fees to pay for the community improvements. In this manner, the neighborhoods may be less opposed to new construction, as they see some benefit. These neighborhood amenities may include such things as sidewalks, roadway improvements, or neighborhood parks. These impact fees may be spent on direct improvements, or placed in a fund for larger projects. It may be possible to waive part or all of these fees as a means of promoting desired projects such as affordable housing or the inclusion of community space.

Chapter 9

Conclusion

In the twelve-step programs for addiction recovery, the first step is to acknowledge that there is a problem. For communities to change the process is the same: the community must recognize that problems exist. Until that occurs, neighborhoods will resist all efforts towards promoting change from external forces with all of their might. NIMBY forces are greatest the closer the threat is to their home. When changes are proposed within their own neighborhoods, and adjacent to their backyards, they can get no closer.

The very idea that change is necessary implies that they are flawed to begin with, which insults the existing residents. The suburban ideal of a house on a quarter acre has been enshrined as the American ideal. In buying their homes they have bought into the ideal. Without incentives, communities resistant to change are threatened by possibilities they don't understand.

There are numerous problems to the dominant suburban model. The auto-centric transportation system disenfranchises those who cannot drive: the elderly, the young, the sick, and the poor. The low density limits the opportunities for alternate transportation modes, including walking, biking, and public transportation. The current design focus limits the creation of a community of place. Our neighborhoods are monocultures of similar homes and residents. There is little public space. Our physical layout creates health issues, especially obesity due to a lack of exercise. Suburbia is destroying the environment.

Only once communities recognize that the automobile focus of the transportation network is limiting, that density isn't an evil word, and that change isn't always for the worse then it may be possible to allow for positive change within their neighborhoods.

The design solutions are easy; increase density, increase variety of size, ownership structure, and uses; create additional vehicular and non-vehicular connections; and enhance the public realm. It is possible that all of these can be incorporated into the existing residential neighborhoods without damaging the things that are valued. It might not look exactly the same, but there are ways to manage the process. It is also possible to use these changes to improve the neighborhood, create amenities, and start to fix the problems.

Increased density can be accomplished through things such as accessory dwelling units, lot splits with new, smaller lots, and other infill development. Diversity of residents can be accomplished through the inclusion of different unit types such as townhouses, duplexes, and small apartment buildings. Diversity of uses can be accomplished through allowing appropriate non-residential uses such as home offices, personal services, and select retail. The transportation network can be enhanced through new roadway and sidewalk connections, shortening the effective distance for all users. Public spaces can be created through the enhancement of the streetscape, development of community gardens, provision of dog parks, and other amenities.

The political solution and implementation is much harder. All alternatives will have to be carefully discussed, reviewed, and evaluated over time to

determine what projects are suitable for each neighborhood. The effects of each change will have to be compared to the goals as the neighborhood evolves, and each alternative modified to fit the new conditions.

While difficult, these changes are important. One definition of insanity is doing the same thing over and over, but expecting different outcomes. If we are not willing to change our neighborhoods, we should expect no positive changes from them. Worse yet, in the face of changing economic and social forces, without change the neighborhoods may be vulnerable to decline.

Implementation

If Athens-Clarke County or other communities wanted to implement these concepts, I would recommend approaching the issues from two directions. First, I would begin discussions with community groups to raise the issues. Second, I would have staff research and develop model ordinances, and a framework for neighborhoods to accept some or all of the alternatives as they see appropriate. Ideally, the community should identify or hire a single staff member to be the lead person on these issues.

The discussions with the community groups should seek to raise awareness of the issues, and see if there is support for promoting change. One way to approach this would be to develop a presentation and present it to anyone who will listen. Neighborhood associations, professional groups, the media, the chamber of commerce, business groups, and fraternal associations would all be

possible audiences. The community support is essential to the process, and must come from a broad base of the residents.

At the same time as the community discussions the professional staff and regulatory bodies should start exploring the structure to support potential changes. Ordinances would need to be researched and drafted to detail the potential and limits on the changes. The zoning ordinance would likely need to be revised, or areas rezoned.

Neighborhood workshops or charrettes should be held to identify ideas and concerns from each neighborhood. As each neighborhood is different, they will likely have different desires for public improvements, and support different concepts. Some neighborhoods may support accessory dwelling units but not lot splits, while others may like lot splits but not home offices. Ideally, it may be possible to develop a menu of alternatives that the neighborhood could choose to allow.

Finally, it is important that the rate of change should be managed. Neighborhoods should not change so quickly that they are overstressed, but sufficient change must be allowed to show progress. It might be that a cap would be used, so that a given neighborhood could receive no more than a certain percentage of new residential units within a year.

The process should be re-evaluated over time. Perhaps more frequently at the start, and less frequently over time, but the goals should be compared to the implementation. If a neighborhood is getting too much development, or the quality is not sufficient, perhaps the rules should be modified or tightened. If

there is no change, perhaps the barriers are too high, and the rules should be relaxed.

All of this would be difficult, time-consuming, and likely expensive. The alternative, however, may be worse. If no change is allowed, no improvements will be made and more significantly, the neighborhoods may deteriorate, leading to larger issues and financial losses.

Future Research

There are numerous avenues that deserve additional research. These include detailed financial analysis, an investigation into the stormwater issues, and a review of ordinances within the US that have similar goals.

The financial analysis should include both cost estimation of the various alternatives in addition to an in-depth review of the many methods of financing the public improvements. With impact fees, how do you balance the desire to fund neighborhood improvements with the need to keep the fees low enough to encourage new development? Is it possible for the sale of lots adjacent to new roadway connections to pay for the roadway itself, or will those projects need a subsidy for the increased neighborhood access?

The stormwater investigation should include an estimate of pre-development runoff, the existing conditions, and quantity of runoff that should be detained to revert to pre-development flows. Is it possible to provide sufficient detention within the existing neighborhood? What would that take? How much benefit could be gained from the swales in the ROW, between the sidewalk and

roadway? How much benefit could be gained from the basins within the existing streams? What would be the cost of the improvements, and which would provide the greatest cost/benefit ratio?

A review of existing ordinances would identify possible model ordinances, and analysis of those ordinances and their implementation may reveal ways to improve them. How are other communities increasing density, providing roadway connections, and paying for public improvements? How has the community responded? Are there ways to mitigate the impact, and involve the community? What has been successful, and what has not?

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