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Manufactured Homes on Clustered Lots: A Case Study

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Richard Simonson

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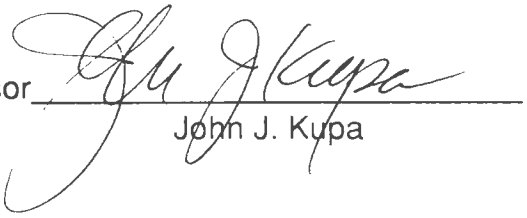
Major Professor 
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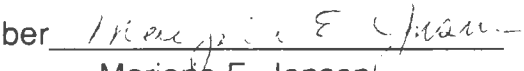
Committee Member 
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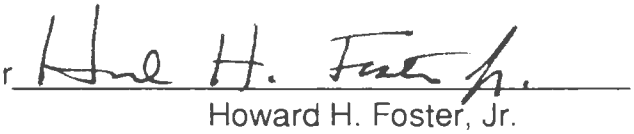
Director 
Howard H. Foster, Jr.

The MHS
218 Homes

158 Acre Site, 82 Acres of Open Space
Playgrounds, Tot-Lots, Underground Utilities

Chronology of the MHS Development

5/86-MHS partnership forms

8/86-Civil engineering firm is engaged

12/9/86, 1/13/87, 2/17/87-Planning Commission Meeting-optional sketch review of plans

3/2/87-Planning Commission site walk

5/19/87-Planning Commission Meeting-optional sketch review of plans

7/13/87-Application officially received at regular meeting of the Planning Commission

9/4/87-R-40 zoning for this area became effective

9/15/87-Planning Commission opened public hearing

10/6/87-10/20/87-Continued public hearing

10/22/87-Inland Wetland Agency opened public hearing

11/10/87-Planning Commission closed public hearing

11/17/87-Planning Commission meeting-MHS a discussion on agenda

2/10/88-Inland Wetlands Agency grants permit with conditions

2/29/88-Inland Wetlands appeal commenced

3/1/88-Planning Commission meeting-MHS on agenda

3/8/88, 3/10/88-Planning Commission special meeting-MHS only item on agenda

3/15/88-Planning Commission meeting-MHS on agenda

3/16/88-Planning Commission approves MHS with conditions

3/30/88-Planning Commission appeal commenced

11/13/89-Trial date for both appeals

3/12/90-Superior Court Judge dismisses both appeals

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Introduction

1. Problem Statement

As the prices of homes continue to rise and incomes do not keep pace with this rise, the subject of affordable housing becomes of increasing importance. More and more people, particularly first time buyers who have not accumulated a great deal of equity, find that they cannot afford to move back to the communities in which they were raised, and companies find that they cannot attract workers to move into their communities because of the lack of affordable housing. There seems to be a continuous stream of newspaper stories about communities forming housing corporations, housing partnerships, and other kinds of public/private ventures to try to find answers to this growing problem. As federal and state monies for housing are in ever decreasing supply, the public sector seeks to devise new strategies, sometimes turning to the private development sector through zoning incentives, sometimes seeking to build housing with a combination of public and private funds.

As planners approach this problem, it is of great importance to understand the many factors which contribute to the ultimate price of a single family home. This research project will delineate what many of these factors are, and how they possibly can be mitigated in the effort to bring about lower housing prices.

In this project, I will describe the actual costs involved in site development and housing construction since 1986 for a single family housing development in Southeastern Connecticut. Although specific costs do vary widely from one region to another and from one period of time to another, the categories of costs, the tasks which must be accomplished in order to develop land and housing, are fairly consistent for all developments.

Therefore, future students of affordable housing will be able to refer to this study in order to perform a feasibility analysis of a housing development.

2. Hypothesis

Increasing the density allowance on a given site is a way to bring down housing costs, for the infrastructure of the development is spread out over a larger number of units. For some communities, this can only be accomplished in a multi-family zone, for it is sometimes the only place where public sewer and water is available (which is necessary for high density housing.) In this case, the lower priced housing units would have to be apartments to rent or condominium units. Still, many households prefer a single family home owned in fee simple, that is to say, with no common areas owned by an association.

A specific plan to make single family housing more affordable is that of cluster housing. Because the houses are clustered on smaller lots, the roads and infrastructure are shorter, and hence, less costly than in a conventional subdivision of larger, spread out lots. Furthermore, there often seems to be an assumption that if homes are clustered on smaller lots, the costs of these homes will automatically be significantly less than if they weren't clustered. Yet, is this so? Large, expensive homes can be built on relatively small lots (as can be seen in Groton Long Point, Ct. and on the Hamptons on Long Island), so that the clustering does little to bring about affordable housing. To prevent this from happening, some communities have required that the homes which are built on these clustered lots must be manufactured homes, which are supposedly less expensive to construct than on site, stick built homes.

While some communities have experimented with clustered

zoning, few (if any) in Southeastern Connecticut have considered greater density zoning in single family zones as a possible solution to the affordable housing problem. Rather, there seems to be a trend in the other direction, to rezone to a less dense land use, to go from half acre zoning to full acre zoning. The hypothesis of this research project is that single family housing costs can be lowered by three specific measures:

1. allowing for greater density zoning
2. permitting clustered developments
3. encouraging the use of manufactured homes

It may seem obvious that these measures would help to bring down the cost of a home, but by how much? The question then becomes: Should communities take the time to write regulations and adopt zones which promote this type of housing development, greater density manufactured housing on clustered lots? Is it effective from a policy standpoint? Or, even with these measures, will the affordable single family home soon be a thing of the past? These questions will be explored and answered in this research project.

3. Need for the Study

We first must grasp why housing has gotten so expensive, and what makes it so expensive before solutions can be offered. We must gain a detailed understanding of the many components of housing development, both with regard to land development, and with regard to housing construction.

4. Methodology

Why is land development so expensive? What are the many costs

involved in housing construction? An actual case study of a manufactured home subdivision on clustered lots will be utiliized to help answer these questions. In many instances, actual costs which have been expended will be referred to (although costs do vary from site to site and from region to region). When actual costs are unavailable, I have consulted with engineers, attorneys, road contractors, and housing contractors within the Groton locale for cost estimates. These cost estimates will be utilized in the case study as they relate to that particular development. Furthermore, data provided by housing institutes will be drawn upon.

Throughout the study, I will refer to various pro formas, which are cost estimates that I have prepared. By following along the pro forma, it will be possible to see how a development progresses with regard to its costs. Each pro forma will convey a cost estimate for a different type of subdivision, or for the same subdivision with different assumptions. For instance, there will be different pro formas for half acre and for one acre subdivisions, and different pro formas for clustered and standard subdivisions.

5. Case Study

To begin, in April 1984, the Town of Groton, Connecticut adopted a regulation known as the Manufactured Home Subdivision (MHS) regulation. The preeamble of the regulations read:

"The purpose of the MHS is to allow for single family manufactured home dwelling units to be located on 8,000 sq. ft. lots and at a density similar to the existing zoning. It is envisioned that the MHS will afford an opportunity for the private sector to make available lower cost housing; offer a housing opportunity for lower income families; and permit a housing option for single person households and the elderly." (1)

This regulation permitted the clustering of lots within half acre zones such that the minimum lot size could be clustered down from 20,000 square feet to 8,000 square feet as mentioned above, which is one fifth of an acre. In order for this to be accomplished, the following requirements had to be met: (2)

1. The site had to be at least 10 acres in size. Clustering would have little cost savings if sites were smaller.

2. The homes in this kind of subdivision must be serviced by municipal water and sewer. The lots would be too small for individual wells and septic systems, and the density too great for a community septic system. Public water and sewer, while not directly adjoining several eligible parcels for this type of development, was nonetheless available in Groton and could be brought to the site at the developer's expense.

3. At least 25% of the homes in this subdivision must be mobile manufactured homes. The specification for a mobile manufactured home have been determined by the United States Department of Housing and Urban Development, and are built in a way to make them less expensive than modular homes and of course, on site stick built homes (this precise nature of these homes will be described in detail in Part IV). Groton adopted these provisions because there was a growing shortage of affordable single family homes. Many town officials had to live elsewhere, and many employees at Electric Boat, the U.S. Naval Base, and Pfizer had to commute from ever increasing distances.

In 1986, a development company responded to the town's need for affordable housing with a proposal which will be known as MHS. This development on 158 acres would provide 268 homes with a mix of manufactured and modular homes.

In 1986, the developers initially sought to provide these homes for

$75,000. It was determined that this would be affordable to a 3rd Class Petty Officer stationed at the U.S. Naval Base in Groton. However, after nearly 4 years, construction of roads and infrastructure has yet to begin. Furthermore, in addition to these delays, which will be described in Part I, the subdivision which was approved contained 218 lots, rather than 268 as originally submitted. These delays and the reduction of lots ultimately has led to an adjusted of costs such that the estimated sales price will be from $85,000 to $110,000, depending upon the model.

By the end of 1989, the median price of a home in New London County had reached $156,836 (3) (which represents the selling price), with median income at $31,000. The National Association of Realtors recently determined that those with an income of $32,205 could afford a home with a price of $95,400. (4) Therefore, the developers of the MHS will be still be providing homes well below the median price in New London County, and for those in the median income range.

6. Limitations of the Case Study

Although the developer of the subject property has gone through the planning process and has received the necessary permits and approvals to begin construction, actual construction as mentioned above has not yet begun. Whereas there are actual costs for land acquisition, engineering, and other expenses, the expenses related to road construction and housing development are only estimates at this time. Nonetheless, these costs have been estimated from other recent construction projects within the same locale and can therefore be used with reasonable confidence. Still, it must be kept in mind that the final cost of a home as described in this study will be based upon both actual costs (preconstruction) and estimated costs (construction).

7. Parts of the Study

Part I will describe many of the costs incurred during the planning phase of land development. Actual costs during the planning process are described. Part II is a description of the costs incurred during road and infrastructure development. Cost comparisons are drawn between:

1. clustered and standard/non clustered subdivisions within the same zoning density, i.e., what the difference in costs would be if, within a half acre zone, the subdivision were built in different ways.

2. greater and lesser density subdivisions, i.e., what the difference in costs would be if the subdivision consisted of half acre lots, or whether it consisted of one acre lots.

Part III will discuss the environmental considerations of greater density housing. Part IV will desribe the physical and cost differences between manufactured homes (HUD specification), and modular and stick built homes (BOCA specification). Part V will analyze the price of a finished home, and how the hypothesis was proven. Part VI will describe some of the problems which must be overcome if there is to be progress in providing affordable single family homes. Finally, Part VII will conclude this study with a discussion of:

1. what the developer actually did
2. what alternatives were available, and why this one was chosen
3. the developer's analysis of future affordable housing developments

Part I

Why Is Land Development So Expensive? What are the Issues Involved?

I. The Price Of Land

The price of land is perhaps the single largest impediment to providing affordable housing. Although there are areas of the country where large tracts of undeveloped land are still relatively inexpensive, the price of land near most urbanized areas has skyrocketed during the past decade. (In rural areas, public water and sewer is generally not available, precluding high density housing, while in urbanized areas, the mere presence of public sewers and water drives up the price of many parcels.)

Real estate has traditionally been known as a good hedge against inflation, often rising in value by an amount at least equal to the consumer price index. However, during the past decade, there were numerous examples of land doubling in value during a 3 to 5 year period. (5) This was particularly true in the northeast, where the subject property is located. Such rapid increases far exceeded the inflation rate, which ironically was low during the 1980's. (As stated above, even with a softening in the real estate market, land prices have remained high.)

The Economic Recovery Tax Act of the early 1980's, while helping to increase the nation's gross national product, may have played a significant role in the rise in real estate values. As a way to promote economic growth, Congress offered much shorter depreciation schedules on everything from apartment houses to office equipment. Specifically with regard to real estate, these shorter depreciation schedules helped to increase the demand for commercial land, as the developer could recover the costs of construction over a much shorter period of time (15 years as

opposed to 25 and 30 years previously). Furthermore, the 1980's saw lower interest rates, which further increased the already great demand for land and housing, both by investors and consumers.

Land prices vary from one region to another, and even from one neighborhood to another within the same region. In Groton, there are several parcels of comparable size to the subject property and within close proximity so that a cost/acre which is indicative of land prices in this area can be arrived at. A local appraisor recently analyzed these sites, and adjusted the prices to reflect the trends in the market since the sales occured, as many of these sales had occured a number of years ago: (6)

Site #	Acreage	Price per acre
1	122.10	$7,988
2	179	$6,248
3	98.8	$9,400
4	145	$6,321
5	151.12	$7,434
6	150	$8,650
7	76	$11,964
8	240	$19,104

The appraisor described the evaluation process:

"Generally speaking, it is axiomatic in a real estate appraisal that land with larger areas tend to sell at a lower price per acre than parcels with smaller or less acreage, subject to comparable utility. All of the preceding sales require varying degrees of upward adjustment for the numerous other factors or comparison are more complex and require substantial individual and collective consideration and analysis. Among the many items considered for adjustment include location, size and shape

of parcel, topography, accessibility, zoning, use, wetlands and numerous other physical and economic characteristics or disimilarities...In the above comparables, sale # 7 was given the greatest consideration in choosing the final estimate of value" for the MHS property...After adjustments, a price of $11,500 per acre was developed for this property (as is)." (7) A value 'as is' refers to a value for the land in its open state. Once permits and approvals are received, its value increases, and it increases further once the infrastructure is developed. Still, in its state as open land, the following current value is realized:

158 acres x $11,500 per acre = $1,817,000.

In some rural communities, $11,500 per acre of open land would be incredibly high. Yet, in many suburban communities where there is a tremendous need for affordable housing, open land would sell for many multiples of $11,500 per acre. Nonetheless, $11,500 per acre is a price of land still available in Southeastern Connecticut. (8)

Case Study: An important distinction must be made at this point. Although the current market value of the subject property is $11,500 per acre according to the findings of the appraisor, the developers did not pay that amount. Rather, in 1986, they paid $850,000, which was $5,379/acre. (9) In the four years since they bought the land, its market value more than doubled.

In a later section of this study, I will describe some of the ways in which the large upfront costs related to land acquisition can be ameliorated. Financing arrangements such as joint ventures with banks and nonprofit organizations will be explored.

2. Lenders Will Require An Appraisal

Even in a good real estate market, a land appraisal is required if a lender is going to lend large sums for land purchase. This is often required by the lender's charter or bylaws. Often, the only party that the lender will approve to do the appraisal is someone who is a member of the Appraisal Institute, or MAI. This designation assures that the appraisal is done according to generally accepted, professional practices, but it also tends to cost more than a non-MAI appraisal. There are several different kinds of appraisal studies, with different levels of detail. If a lender only requires a determination of the market value of the site, it will cost $500-$750. (10) However, a lender sometimes requires a much more extensive analysis of the marketability of the ultimate product, the home which will be provided. A marketability study analyses the demand for the ultimate product, often on both a local and regional level. Other factors are considered, such as employment trends within the region, demographic considerations, median income, migration, and household formation rate. A study of this kind will cost $3,000-$5,000. (11)

Case Study: The lending institution did not require a full scale marketability study, but only the shorter market value appraisal for the open land which cost $600. (12) There are several reasons why the lender did not require the more detailed marketability analysis:

1. The need for affordable housing was so clearly documented that the lender did not require further assurance that the ultimate product, the home within the MHS, would be marketable.

2. The developer had been a customer of the bank for many years and had a good track record, so the lender had a great deal of confidence in the deverloper's abilities and credibility.

3. Bank regulations require that a lender put a certain amount of money

into projects which are socially useful and are 'good for the community'. (13) The MHS here was one of those projects. The lender tried to keep costs down by accepting the shorter appraisal, and also realized a great deal of positive public relations by being associated with the MHS.

It must be noted that the appraisal helps to establish the fair market value of the parcel, and could be different than the purchase price. Indeed, the appraised value could be higher or lower than the purchase price (sometimes, a developer takes a long term option, and by the time the closing occurs, the appraised value has gone up considerably.) Furthermore, a lender can often only lend up to 80% of the appraised value according to its charter or by laws. Still, if the appraised value is considerably higher than the purchase price, then the developer might be able to borrow all of the money for the purchase of the site. This is precisely what occured in this case study.

The purchase price of the land was $850,000, but an adjusted market value of the site was set at $1,817,000 as shown earlier. Therefore, the developer was allowed to borrow the entire purchase price from the lender. (The lender, however, did require that the developer place a $200,000 interest bearing compensating balance into an account at the bank.) (14)

As mentioned above, appraisals are required for loans to be made. Banking regulators and stockholders will look to appraisals to determine if the lender properly analyzed the loan should it become a problem. In today's softer market, many loans have become problems, and it is therefore clear that the mere presence of an appraisal which substantiates the value of the property is not a guarantee that the loan will be made. Borrowers should anticipate that the lender will require a detailed marketability study, large compensating balances, or the possibility that even a development with a clearly substantiated market might not get

funded. One loan officer recently commented that his organization is now in the collection business, rather than in the lending business.

3. The Developer Must Establish How Suitable The Site Is For High Density Development

Even if the developer has a strong financial statement, and the lender is willing to lend a lot of money to buy the parcel, the lending officers still have to feel confident that the parcel has the physical properties necessary for high density development. For instance, they will need to know how much of the parcel consists of wetlands, and where the wetlands are located. Can the wetlands be avoided, or do they have to be disturbed by road crossings? Is the site, or any part of it in a flood zone? What kinds of slopes exist on the site which would render it unuseable?

In order to answer these questions, the developer will have to spend more money out of pocket, to hire a soils scientist to flag the wetlands, and probably to hire a surveyor to prepare a topographical map. In order to save money, U.S.G.S. maps could be used, although with less accuracy than a topography map prepared in the field. Soils scientists typically charge $50/hour for their delineation services. (15) Naturally, the amount of wetlands will determine how much time is necessary in the field. Costs for wetlands delineation have not changed significantly during the past 3-4 years.

Case Study: The soils scientist spent 40 hours in the field delineating wetlands, with a fee of $2,000. (16) It was determined that the wetlands comprised approximately 20% of the entire site, and could be utilized for on site detention and drainage. Indeed, there seems to be a common misunderstanding that the mere presence of sizeable wetlands renders a site unsuitable. Quite to the contrary: without such wetlands, the

property could not contain the water runoff from a large storm event, and the water would flow out onto public roads and neighboring properties. Wetlands can help to prevent this from occuring. Hence, in the MHS here, most of the wetlands, over 30 acres, was set aside as open space, with less than one acre to be disturbed by road crossings.

4. A Survey Will be Required

Assuming that the wetlands do not pose great impediments, and building on steep slopes can be avoided, the lender may agree to underwrite the loan, provided that the developer meets the financial standards required. However, before a loan closing can occur, the lender will require an accurate legal description and a survey of the site. Sometimes, the property is described on the land records of the town. Othertimes, the description is out of date or otherwise not accurate and the developer must submit a new, accurate survey. The cost for a survey is now approximately $2/linear foot. (17) On the site here, the cost would therefore be $24,000 if the survey were conducted today.

Case Study: At the time that the survey was made in 1986, the cost was $1/linear foot. (18) The perimetry survey of the 158 acre parcel therefore cost $12,000.

Assuming that the site is suitable for development, that there are no significant wetlands that must be disturbed, and that the soils types are suitable for road construction, the developer and the lender will come to an agreement about the purchase of the land, and how much the lender will lend.

Although the lender may provide financing for the purchase of the land, the developer will be need quite a lot more money for other purposes. What are these other costs, and why are they so high?

5. Civil Engineers Must Be Employed

The cost for a professionally licensed civil engineering firm to prepare the subdivision plan will vary with the size of the parcel and the number of lots to be developed. In order to determine how many lots can be developed, the engineers must produce:

1. an accurate topographical/grading map, which shows 2' contours at a scale of 1" = 100' (as opposed to the less accurate 10' contours on the U.S.G.S. map).

2. a plan and profile which details the road system and the utilities/water/sewer to be built within that road.

3. a system for storm water runoff, such as catch basins, storm outlets, detention and retention basins.

4. accurate calculations of the boundaries of each lot on the site, and how many lots will be able to be derived on the site, along with an accurate grading plan for each lot should the town require it.

It currently costs approximately $1,000 per building lot for the above mentioned items to be accomplished. (19) At that price, with 268 lots, the current costs would therefore be $268,000, not including the extra charge for modifications.

Case Study: From an analysis of the MHS, we know that the engineers determined that 268 clustered building lots could be accomodated. Because of the magnitude of the engineering work which was required, three separate engineering contracts were drawn, each covering a specific aspect of the work which had to be done. In 1986, these three contracts totalled $177,875. (20) On a per lot basis, this equals $663. However, as mentioned earlier, the subdivision as approved contained 218 building lots, with a price of $815/lot. (According to current prices, it would have been $268,000/218 = $1,229/lot.)

It should always be clearly understood that a subdivision proposal will usually be modified during the public hearing process, with the number of lots decreased, sometimes substantially. Here, for the MHS, the number of lots went from 268 to 218, with a decrease of 50 lots. The cost per lot of every item, such as land, engineering, legal, and interest therefore rose by over 20% for the number of lots was decreased by this amount.

A number of additional costs still must be incurred, and the developer will need to allocate additional funds for these consultants.

6. Traffic Engineers

1. study the volume of traffic as it exists, and projects future traffic after the development has been constructed

2. determine whether the proposed layout is adequate to meet the projected volume of traffic, and if not, to modify that layout

3. design turning lanes and other access points to the site

Case Study: The cost for the above was $3,000 in 1987. (21) Most of the price was negotiated up front, with only the modifications charged on an hourly rate.

7. Hydrological Engineers

1. study the current water runoff before development, and project future runoff after the development has been constructed

2. establish the floodplain elevation as it may exist on the site

3. help the civil engineer in the design of detention basins and other mechanisms to help control the runoff

Case Study: The cost for the above was $4,500. (22) It was charged on an hourly rate.

8. Environmental Scientists

1. analyze the vegetation on the site to determine if there are any rare species.

2. study the wildlife which may live on the site to determine if there are any endangered species, or any natural habitat.

3. make recommendations to protect the above as they might exist.

Case Study: The cost for the above was $4,300. (23) It was charged on an hourly rate.

Often, the civil engineer subcontracts out this work, and bills the developer. At other times, the developer must hire any and all of the above upon the request of the town planner or members of the planning commission, and pays them directly.

9. Soils Scientist

Although soils scientists must be hired early in the process to delineate the wetlands for the wetlands commission, the soils scientists must be hired again to flag the wetlands for the U.S. Army Corp. of Engineers. The Corp. classifies wetlands differently than Connecticut, and therefore, the work must be done again in the field by the soils scientist according to different criteria.

Case Study: The cost for the above was $2,000. (24) Although the credentials for all of these consultants must be verified, it is all the more true for the soils scientist. Crucial decisions will be made according to the size, location, and type of wetlands, and these must be categorized with utmost accuracy. Although the developers of the MHS had worked with the soils scientist before the MHS, he was not known by many town

officials, and they did not know of his credibility. During the public hearing process, opponents to the subdivision questioned his credibility and claimed that areas of land which were designated as uplands were actually wetlands. This created much concern to wetlands agency members, and they decided to check the soils scientists findings. Members of the U.S. Soils Conservation Service, the State Department of Environmental Protection, and the local environmental planner walked the site to double check his findings. It was determined that the soils scientists not only was accurate, but even conservative in his findings, i.e., areas categorized as wetlands might actually have been uplands. Whereas the developers of the MHS felt certain that the soils scientist's findings would be verified, it indicates the need for a credible consultant in this regard. Indeed, there are a few soils scientists in Southeastern Connecticut whose reputations proceed them, who have reputations for great accuracy and credibility. Needless to say, developers seek them out for this reason.

10. Changes In The Subdivision Plan

On such a large development as the one described in this study, it is likely that the planning commission will require changes in the plan. These changes relate to lot and road layout, density, access, and road width. These changes will entail additional engineering costs, which can at times be quite substantial. For instance, if the planning commission decreases the density of the development and requires an even slightly modified road layout, then most if not all of the lots must be recalculated with regard to their size and boundaries. Therefore, a total engineering fee of $268,000, which is $1,000 per building lot, is a fairly conservative estimate of the cost to design a 268 lot clustered subdivision on 158 acres. It could cost much more.

Case Study: The transcripts of the wetlands and planning commission hearings ran a total of 276 pages, covering a period of 5 months. Finally, the wetlands commission issued a permit for the subdivision with 16 modifications, and the planning commission approved the subdivision with 38 modifications. Among these modifications were the following:

1. Lots had to be further from wetlands and floodplain areas than depicted on the original plan.
2. A stream crossing was eliminated.
3. The main road was to be widened from 30 to 36 feet.

The modifications to the subdivision plans as outlined above cost $75,000. (25) With an original price of $177,500, the total engineering therefore was:

$177,500 = $75,000 = $252,500/218 = $1,158/lot.

In Pro Forma I, all of the costs expended can be seen as a percentage of the total.

There are other costs still to be incurred.

11. Soft Costs

Some of the soft costs involved during the planning of a subdivision are legal and accounting fees. While accounting fees are seasonal and relatively small, i.e., $1,000 per year, (26) legal fees can be at least $10,000 per year, (27) and perhaps higher, depending upon the lawyers involvement during the public hearing. Legal work at this stage can be defined as real estate related activities:

1. preparation of deeds and mortgage documents.
2. title search to make sure that there are no liens or encumberances on the property.

3. title insurance, if any liens or encumbrances appear later which were not evident during the title search.

4. preparation of a closing statement.

Case Study: The real estate legal work cost approximately $7,500/year. (28) The extent of the legal work is difficult to gauge, for it varies widely from one development to another. If an approved subdivision is not challenged by court appeals, then the legal work will obviously be less than if a court challenge should occur. In the case study here, there were court appeals such that the court related legal work included the following:

1. answering plaintiffs complaint
2. writing briefs on the case
3. submitting supplemental briefs
4. responding to plaintiffs supplemental briefs
5. preparing for and appearing in court

The court related legal work cost an additional $20,000. (29) The nature of these appeals will be described shortly.

Other soft costs which must be paid are:

1. real estate taxes (which will vary from one community to another), cost approximately $3,500 per year in this case. It must be noted that the real estate taxes are much lower before the land is developed, for it is assessed as open land. Once it is developed, when the roads have been constructed, the assessed value increases. This will be described later on.

2. general liability insurance, in case someone is injured while on the site, which cost approximately $1,000 per year. (30)

12. Representation At Public Hearings

After the subdivision application and the accompanying engineering plans are submitted to the town, a public hearing is scheduled before the

appropriate commissions. A developer frequently retains the services of a team of experts to make presentations at the public hearing. This can get quite costly, particularly if the public hearing is held open over several sessions. Not only is the developer charged for the specialist's preparation for the hearing, but the developer is charged for all of the time spent at the meeting, even if the specialist speaks for only a few minutes. Furthermore, the consultant might even charge for travel time to and from the meeting, particularly if they are coming from out of town.

Case Study: Although the developer in this case study had in the past represented himself before town commissions to make subdivision proposals, he found it necessary to rely upon the assistance of those consultants described earlier: his attorney, civil engineer, soils scientist, traffic engineer, hydrological engineer, and environmental scientist. At the public hearing, they each made presentations and answered questions.

While the civil engineer's fee as described earlier included attendance at the public hearings, all of the other consultants charged on an hourly basis. The fees varied from $50/hour to $100/hour. and the total cost for attendance at public hearings by consultants was approximately $2,500. (31)

It should be noted that a developer can sometimes negotiate with the consultants to include attendance at public meetings in their fee. For instance, the contract with the civil engineer called for attendance at 22 meetings of any kind with town officials. (32) Yet, it is somewhat difficult to negotiate an arrangement like this with some of the other consultants, for they charge on an hourly basis rather than by a negotiated contract price. Furthermore, the contract with the civil engineer was for $177,875, whereas the entire payment to some of the consultants was less

than $5,000. Because of the size of this contract, the civil engineer was willing to include this item in order to get the contract. Obviously, the larger the contract, the greater the bargaining position of the developer and the more willing the consultant is to 'throw it in' in order to 'land the contract'.

13. Interest Reserve

A precise sum must be set aside to pay the interest on the loan. Lenders generally don't want to set the loan period for much more than a year, as this allows them to call the loan if it seems that the project is not going to be successful. Therefore, the interest reserve will be enough to pay for 12 months of interest. Since the developer will borrow the funds for the purchase of the land, for engineering, and for soft costs , the interest reserve required for one year is based on the following (from Pro Forma I, which also expresses these as a percentage of the total):

	Actual Costs
Land	850,000.00
Civil Engineering	177,875.00
Traffic	3,000.00
Hydrological	4,500.00
Soils Scientist	2,000.00
Modifications	75,000.00
Public Hearings	2,500.00
Legal-real estate	30,000.00
Legal-court	20,000.00
Accounting	4,000.00
Real estate taxes	14,000.00
Liability insurance	4,000.00
Total	$1,186,875.00

The costs for the appraisal, the initital wetlands delineation, and the survey were up front out of pocket expenses, rather than borrowed funds, and are therefore not included in the interest calculations.

Interest rates during the past four years have fluctuated, but have hovered around 11%:

$1,186,875.00 x 11% = $130,556/year.

It is important to note that the annual interest will be less at first than the figure above, for it is calculated only on the amount borrowed.

Case Study: In the first year, the developer borrowed only enough funds for land acquisition and for some very preliminary engineering studies, rather than for all of the items described. He estimates that the interest expense for the four years prior to construction will be $365,000. (33)

When added to the above, the total preconstruction expense is:

Preconstruction	$1,186,875.00
Interest	365,000.00
	$1,551,375.00

The interest expense can be much larger than that which was originally expected if there are significant time delays. The following are some of the many reasons why delays can occur:

1. Wetlands permits can be withheld if the wetlands agency finds that there are better alternatives which have less impact on the wetlands than the one proposed in the development. The developer may have to submit an application to the agency several times until the permit is issued.
2. Assuming that the permits and approvals are obtained, construction can be delayed for several years if these permits and approvals are appealed by neighboring property owners.

Case Study: The following chronology indicates the length of time involved in this process: (34)

5/86-MHS partnership forms

6/86-subject property is taken under option, and subsequently purchased

8/86-Civil engineering firm is engaged

12/9/86-Planning Commission Meeting-optional sketch review of plans

1/13/87-Planning Commission Meeting-optional sketch review of plans

2/17/87-Planning Commission Meeting-optional sketch review of plans

3/2/87-Planning Commission site walk

5/19/87-Planning Commission Meeting-optional sketch review of plans

7/13/87-Application officially received at regular meeting of the Planning Commission

9/4/87-R-40 zoning for this area became effective

9/15/87-Planning Commission opened public hearing

10/6/87-Continued public hearing

10/20/87-Continued public hearing

10/22/87-Inland Wetland Agency opened public hearing

11/10/87-Planning Commission closed public hearing

11/17/87-Planning Commission meeting-MHS a discussion on agenda

2/10/88-Inland Wetlands Agency grants permit with conditions

2/29/88-Inland Wetlands appeal commenced

3/1/88-Planning Commission meeting-MHS on agenda

3/8/88-Planning Commission special meeting-MHS only item on agenda

3/10/88-Planning Commission special meeting-MHS only item on agenda

3/15/88-Planning Commission meeting-MHS on agenda

3/16/88-Planning Commission approves MHS with conditions

3/30/88-Planning Commission appeal commenced

11/13/89-Trial date for both appeals

3/12/90-Superior Court Judge dismisses both appeals

Although the planning phase, the period from the time the partnership formed until the subdivision was approved, took nearly two years, the appeals took an additional two years as well. However, at least one of those two years would have been spent in engineering redesign. The additional interest and legal expense which results from these delays are generally passed on to the homebuyer in the form of higher prices, assuming that the market can bear it.

In the effort to devise strategies which can help to lower the cost of land development and housing, it is essential to realize that little if any of the actual costs described above could be eliminated, or even reduced. Land purchase, engineering, soft costs, and interest will have to be paid whether the development is for inexpensive units, or for large expensive homes. Perhaps the public hearing and review process may be sped up somewhat, given a fast track, to try to keep the interest carrying costs down. Still, one cannot move too fast, for there are so many technical items which must be addressed if there is to be this healthy balance between environmental protection and affordable housing.

All of the items related above deal with land costs. As mentioned above, there was a two year delay due to appeals of both the wetlands permit and planning approval. At this stage in the case study, the road has not yet begun. Before moving on the road construction costs, it is important to understand the issues involved in this two year delay.

The MHS received a permit from the Groton Inland Wetland Agency, and subdivision approval from the Groton Planning Commission. Both the permit and the approval were appealed. These were the reasons why the appeals were brought, followed by the Superior Court Judge's findings: (35)

<u>Wetlands Appeal:</u>

1.

Plaintiffs claim: Individual property owners who lived within 150' of the

MHS did not receive their notice of the public hearing in a timely fashion, i.e., with at least 15 days prior to the hearing.

Judge's response: While it was true that a neighboring property owner did not receive notice of the public hearing until less than 15 days before the hearing, this party was not a plaintiff in the suit. Issues like this cannot be raised on behalf of third parties vicariously.

2.

Plaintiffs claim: So many modifications were made to the development by the wetlands agency that the public notice in the newspaper about the public hearing was not accurate.

Judge's response: The notice of the public hearing is to inform the public that such an event will occur. Furthermore, it is implicit in the process that changes will occur in the subdivision plan. Regardless, the wetlands permit as issued was for activities accurately described in the public notice.

3.

Plaintiffs claim: Evidence was submitted the last night of the public hearing which the public did not have a chance to respond to.

Judge's response: The information submitted on the last night of the public hearing was the same as information submitted during one of the earlier hearings, and on that last night, plaintiffs did not seek to examine that information.

4.

Plaintiffs claim: The environmental planner submitted a report to the wetlands agency after the close of the public hearing, depriving the public an opportunity to respond to that report.

Judge's response: The commission is allowed to consider technical information submitted by their staff after the close of the public hearing.

5.

Plaintiff's claim: The developer did not submit alternative subdivision plans to the wetlands agency which would show other ways the subdivision could have been designed such that wetlands impacts would be minimized.
Judge's response: Notwithstanding that the developers did submit alternative plans throughout the public hearing process, in the absence of such a requirement in the State Statutes, there was no requirement that they do so.

6.

Plaintiffs claim: The wetlands agency did not consider alternatives when deliberating about the development.
Judge's response: Notwithstanding that the agency did consider numerous alternatives as indicated in the record, the agency found that the development as approved would not have a detrimental environmental impact. Having made that conclusion, there was no requirement to seek alternatives.

The Superior Court Judge dismissed each of these six items. The planning appeal raised many of the same issues, and they were all dismissed by the Judge as well. It is important to note that in Connecticut, there is an automatic right to appeal a subdivision if the parties live within 150' of the subject property. This makes them 'statutorily aggrieved'. However, even if they live beyond this distance, appeals can still be brought if the party files papers to become an 'intervenor'. There is no requirement that the party even live within the

same town as the development. They are still legally entitled to intervenor status. In other words, just about anyone can appeal any development if they don't want it for some reason. However, as intervenors, they can only raise environmental issues. In the appeals of the MHS, there were both plaintiffs who lived within the 150' requirement to grant them automatic appeals, and intervening parties as well.

As mentioned above, road construction has not begun. Therefore, actual dollar figures for road costs are not yet available. It will therefore be necessary to estimate these costs based on the costs of other roads in the region, as well as on the estimations made by contractors within this locale who were contacted. This is the subject of Part II.

Part II

Why Is Road Construction So Expensive?

1. Bonding

Before road construction can begin, the municipality requires that a road bond must first be posted. A bond is a specific amount of money which is pledged to the town as a guarantee that the road will be completed once the work on it has begun. The amount of the bond is an estimate of the cost to build the road. The bond may be in the form of cash (which is unlikely), a bond which is issued by a bonding company (like an insurance policy), or may be a letter of credit which is signed by the developer and issued in favor of the town. A letter of credit is really a loan that has been set aside by a lender but not drawn upon. However, if the developer does not complete the road in the required manner, the town has the authority to draw upon the letter of credit to finish it, and the developer will be financially responsible to pay the amount back to the lender.

The planning department will set the bond estimate. A recent bond estimate for a road with public water and sewer was approximately $250 per linear foot of road. (36) The road within this 158 acre development was approximately 10,000 linear feet. Therefore, the bonding estimate would be:

$250/l.f. x 10,000 l.f. = $2,500,000.

The cost to obtain a letter of credit is approximately one percent of the face amount of the bond. (37) Therefore, the cost to obtain the letter of credit necessary to post the bond with the town would be:

$2,500,000 x .01 = $25,000

2. Surveying and Legal Costs

The town needs an exact description of the road, the sidewalks, and the public right of ways. The developer must submit this to the town at the time that the bond is presented to the town. A surveyor will work together with the developer's legal counsel to draw up this exact legal description. Furthermore, the developer's lawyer must prepare a warranty deed for the purpose of deeding the road to the town. Although the town will accept the road only once it is complete, the legal description of the road and the warranty deed must accompany the bond which is posted up front before road construction can begin, and therefore represents additional costs to the developer. The cost of providing the legal description of the road, preparing the warranty deed, and preparing the road bond will be approximately $5,000. (38)

Once the bond is presented to the town along with the legal description of the road and the warranty deed, road construction can begin.

3. Costs Related to Getting Bids For Road Construction

A developer generally selects a road builder through a bidding process. Often, the developer knows of several road contractors and invites them to make bids. At other times, the developer places a notice in trade newspapers, offering an open invitation for any road contractor to bid. Regardless of how bids are received, it is important that those who are bidding have a precise understanding of the quantity of materials in the job. It costs approximately $1,000 to prepare a bid package with specifications and quantitities, and once the road contractor is selected, it will cost another $1,000 in legal fees to prepare a road contract. (39)

4. Road Costs

For the 218 lot subdivision on 158 acres, the road to be built is 10,000 linear feet, with public water and sewer, and sidewalks on both sides of the roads. In addition, there are a number of off site and on site improvements. Specifically, the developer must:

1. bring in sewer and water from other developments
2. construct a ball field, basketball courts, and tot lots throughout the development
3. widen the main road which this parcel fronts for improved access
4. construct a pump station large enough to service not just the 218 homes in this subdivision, but also an additional 270 future connections for future growth within this area

Although the bonding figure described above is $250/linear foot, recent experience has shows that the actual cost of construction is higher. In this subdivision, it is closer to $300/linear foot: (40)
$300/l.f. x 10,000 linear feet = $3,000,000.
The cost for the off site and on site improvements is approximately $500,000.

4. Surveying

A. Before road construction can begin, a surveying crew must be employed to stake out the center line of the road and the right of way. This involves not only field calculations, but clearing a pathway where necessary.

B. Once the roadway is complete, the surveyors must locate each lot boundary accurately with monuments or mirstones.

C. Because the development in this case study involves the construction of homes, the surveyors must locate each house in the field. The house boundaries are staked out accurately according to setback

requirements and topographical features of each lot.

D. After road construction, the entire road must be resurveyed. This new survey, showing the road as it was built, must be submitted to the town in order to have the road bond removed and to have the town accept the road.

Because of the magnitude of this development, such surveying work will be quite extensive, and should cost $200,000 (this is approximately $1,000 per lot, which is on the low side, considering that the price for all the above is often closer to $1,500 per lot. (41) However, there are economies of scale because of the magnitude of the subdivision).

5. Inspection Fees

The town officials must have an inspector on site throughout the entire process to supervise construction so that it is in conformity with town specifications. The developer is charged for this service; indeed, on a development of this size, the town will have to hire someone specifically to oversee the work, and the inspection fee will be $17,000, which is for a a part-time inspector. (42)

To summarize, site development costs are as follows (from Pro Forma I):

Road, with water, sewer, sidewalks	$ 3,000,000.00
Off-site improvements	500,000.00
Bond	25,000.00
Road description	5,000.00
Road contract	2,000.00
Surveying	200,000.00
Inspection	17,000.00
Total	$3,774,000.00

On a per lot basis, this is:

$3,774,000 / 216 = $17,472.

When this is added to the preconstruction cost of $7,118/lot for land, engineering, soft costs, and interest, the cost for each finished lot appears to be:

17,472 + 7,118 = $24,590

Taking into account interest and other miscellaneous costs, the cost per finished lot would be closer to $30,000; with a sales price of $90,000, this represents 33% of the total price, with the home accounting for 67%, or $60,000. In today's real estate market, there are numerous instances where the land accounts for 50% of the total price of the home, so land accounting for 33% of the total sales price is not considerably high. Indeed, a cost basis of $30,000 per finished lot is actually very low. This does not include land profit, which will be described further on.

The example given here would seem to imply that it is not that difficult to provide finished lots at affordable prices. Yet, this implication rests on certain assumptions. In the subdivision which is the subject of this case study, the lots within the half acre zone are clustered. How different would the costs be if the town did not permit lots to be clustered? To begin, the frontage requirements are different between a standard subdivision and a clustered subdivision: (43)

Frontage Requirements For Each House In A One-Half Acre Zone

Standard Subdivision	Clustered Subdivision
100'	60'

It must be understood that every house does not require the full amount of footage, because there are many corner lots.

Rather, on average, each house requires approximately 75% of the footage requirements: (44)

Actual Footage For Each House In A One-Half Acre Zone	
Standard Subdivision	Clustered Subdivision
.75 x 100' = 75 '	.75 x 60' = 45'

In a standard subdivision of 218 one half acre lots, the road length would therefore be approximately: 75 ' x 218 lots = 16,350'.
In a clustered subdivision of 218 lots clustered down to 8,000 square feet, the road length would be: 45 ' x 218 lots = 9,810'. (As mentioned above, the actual length of the road in this subdivision is 10,000'). The difference is: 16,350' - 9,810' = 6,540'.
If, as described above, the road cost is $300 per linear foot, then the savings in road frontage by going from a standard subdivision to a clustered subdivision is:
$300/l.f. x 6,540 ' = $1,962,000.
On a per lot basis, this amounts to: $1,962,000 / 218 = $9,000.

Therefore, within a one half acre zone, it can clearly be shown that clustering will save each home buyer at least $9,000, if not more when taking interest costs into account. A town can help to bring down housing costs by permitting clustering within the subdivision regulations. This should apply whether the land was in a half acre zone, or in a one acre zone.

If the site in this study were zoned one acre, there could be132 lots in the subdivision rather than 218. (45) It can be seen in the following example that even in a one acre zone, there are significant cost savings if the lots are clustered, as was the case in a half acre zone.

The frontage requirements for lots in a one acre zone, standard and clustered are as follows:

Frontage Requirements For Each House In A One Acre Zone	
Standard Subdivision	Clustered Subdivision
150'	90'

Once again, only 75% of this is actually required:

Actual Footage For Each House In A One Acre Zone	
Standard Subdivision	Clustered Subdivision
.75 x 150' = 112.5'	.75 x 90' = 67.5'

With 132 lots in a one acre zone, there would be the following amount of road length in a standard subdivision:

112.5' x 132 lots = 14,850 feet of road length.

However, in a clustered subdivision of one acre lots, there would be less road length required:

67.5' x 132 lots = 8,910 feet of road length.

The savings in road length would be:

14,850 - 8,910 = 5,940 linear feet of road.

At a cost of $300/l.f., this savings in road costs by going from a standard subdivision to a clustered subdivision within a one acre zone would be:

$300/l.f. x 5,950 l.f. = $1,782,000.

The savings per lot would be: $1,782,000/132 = $13,500.

Therefore, it is quite clear that clustering, whether in a half acre zone, or in a one acre zone, will help to produce a finished lot at a much lower cost. Still, one of the hypotheses of this study was that not only

clustering, but greater density zoning would bring down the costs of development. But by how much? How much less will the cost be on a per lot basis by going from one acre zoning to one half acre zoning? If the lots were clustered in either case, the result is as follows:

One Half Acre Zone Clustered (From Pro Forma I):

Preconstruction	1,551,875
Site Construction	3,774,000
Interest, misc.	1,000,000
Total	6,325,875

The cost per lot would be: 7,109,000 / 218 = $29,017.

One Acre Zone Clustered (From Pro Forma II):

Preconstruction	1,551,875
Site Construction	3,447,000
Interest, misc.	1,000,000
Total	5,998,875

The cost per lot would be: 5,998,875 / 132 = $45,446

Therefore, when the lots are clustered, the ultimate cost savings per lot when going from one acre zoning to half acre zoning is: $45,446 - $29,017 = $16,429 / lot, which is more than 56%. Clearly, when there are less lots over which to spread out the costs, the cost per lot is much higher. Correspondingly, when there are more lots over which to spread out the costs, the cost per lot is much lower.

The example above showed the costs savings between clustered lots in a half acre zone, and clustered lots in a one acre zone. But what if the lots were not clustered? Would there still be a cost savings between standard/nonclustered lots in these two zones? It is essential to compare

these cost differences in order to determine how great the cost savings is by going to greater density zoning:

Standard/Nonclustered One Half Acre Subdivision (From Pro Forma III):

Preconstruction	1,551,875
Road Construction	5,634,000
Interest, misc.	1,000,000
Total	8,185,875

The cost per lot would be 8,185,875 / 218 = $37,549.

Standard/Nonclustered One Acre Subdivision (From Pro Forma IV):

Preconstruction	1,551,875
Road Construction	5,229,000
Interest, misc.	1,000,000
Total	7,780,875

The cost per lot would be 7,780,875 / 132 = $58,946.

Therefore, when the lots are not clustered, the cost savings is: $58,946 - $37,549 = $21,397/ lot, which is more than 56% higher. Once again, it is clear that there are large savings on a per lot basis by going to a greater density zoning, by going, in these examples, from one acre zoning to one half acre zoning, whether the lots are clustered or nonclustered. Furthermore, it is equally clear that there are large savings on a per lot basis by clustering within the same zone.

To summarize, these are the costs per finished lot within four different types of subdivisions:

1.	Clustered one half acre subdivision	$29,017
2.	Standard one half acre subdivision	$37,549
3.	Clustered one acre subdivision	$45,446
4.	Standard one acre subdivision	$58,946

In Part IV of this study, I will show how much it costs to build a house on each of these four finished lots. Only then can we know whether it is possible to provide affordable single family homes.

Other Issues

Phasing of the Development

Although I have shown that the road and infrastructure here should cost about $3,500,000, it is extremely unlikely that the developer will have borrowed all of this money at any one given time. First of all, it is doubtful that the lender would lend out more that 20-25% of the total cost of the road at any given time. Before lending more than this, 20-25% of the homes would have to be built and sold, for the lender needs to limit its exposure which would exist if all of the road was built before any houses were sold. Furthermore, it is in the developer's interest to build in phases, for it provides an opportunity to limit the financial exposure and 'test' the market. Therefore, if the developer is seeking a total of $3,500,000 for insfrastructure costs, only a portion of this will borrowed at any given time.

In terms of implications for cost savings, the interest on the construction loan would be much less if the road were built in phases than if it were built all at once. Even in the unlikely scenario that the lender did not require construction in phases, the town planning staff should encourage this as it seeks to help bring about more affordable housing for the community.

There are other costs which must be considered in order to have a more complete understanding of this process. They are:

1. Insurance

When a developer owns open land, all that is required is general

liability insurance, in case someone gets injured while on the site. However, once construction begins, the developer must also carry builder's risk insurance, in case anyone is injured while working on the site. This is considerably more expensive than general liability insurance, and will vary with the size of the job and the number of people employed on it. (46) If a contractor carries his own insurance, it might be possible to accept it in lieu of purchasing a new policy. However, the contractors insurance might have a limited ceiling of coverage, and the developer should be sure that he has adequate coverage and should buy insurance if necessary. This is a cost which can't be avoided, for a claim against the developer could be much more costly than the mere price of an insurance premium. In fact, even in the effort to keep costs down, it is better to pay more and be overinsured, than pay less and be underinsured.

2. Utility Company Easements and Installation

The utility company which installs the electrical service underneath the road right of way must have the legal right to enter onto the property in order to install and repair the electrical service. In order to have this legal right, the developer must grant an easement to the power company, which is a legal document that describes the specific section of the site which the power company has the right to use.

Although road construction must be fairly advanced before the utility company installs the electrical service, payment to the utility company must be made long before the actual installation of the service occurs. The utility company will require that the installation fee for each phase is paid up front before its engineers will begin to design the network of underground electrical conduits and generators. In this case study, the

entire fee for electrical design and installation could be close to $50,000, such that over $12,000 per phase must be paid up front. (47) None of these costs can be avoided, or even reduced.

3. Real Estate Taxes

Before construction, real estate taxes are lower than during and after construction, because once the road is built, or under construction, the site has a higher assessed value. Indeed, once finished lots are produced, the property is assessed according to the sum of the assessed values of all of the lots. The developer estimates that real estate taxes during construction will be approximately $20,000 per year. (48) If construction takes three years, this will equal $60,000 over the course of the development.

This concludes Part II of this study. To summarize, most of the major line item costs regarding land acquisition, engineering, and road construction have been discussed and analyzed. In most cases, little can be done to reduce any of the costs as they are essential to the development process. Rather, the ways that costs can be reduced are to allow greater density single family housing where sewer and water is available, and to promote clustering. Still, other questions arise: What are the environmental impacts of greater density, clustered housing? Are they worth the lower prices of the homes which will result? Can a balance be reached between affordable housing policies and environmental protection? These questions will be explored in the next section of this study.

Part III

Environmental Considerations

Whenever land is developed to a higher density use, environmental considerations becomes more apparant. In Groton, a development proposal often must be reviewed by the local planning staff, as well as by state and federal agencies. The following are among the parties which reviewed the development proposal: (49)

1. Southeastern Connecticut Regional Planning Agency
2. Town of Ledyard (the site abuts the town line)
3. U.S. Department of Agriculture/Soil Conservation Service
4. State of Ct. Dept. of Environmental Protection/Flood Management Section
5. State of Ct. D.E.P./Ct. Natural Diversity Base
6. State of Ct. D.E.P./Principal Sanitary Engineer
7. State of Ct. D.E.P./Fisheries Dept.
8. Groton Conservation Commission
9. U.S. Army Corps. of Engineers

These agencies found either that the development proposal had no impact on their specific area of concern, or they made recommendations as to mitigating factors which would reduce the impact. None of these agencies found that the development, if modified, would have a detrimental environmental impact. Nonetheless, certain major topics must be addressed in a site of this size and this density:

1. Open Space

The manufactured home subdivision regulation required that 20% of

the site be set aside as open space. In the development described here, the original application provided that 75.3 acres of the 158 acre site be set aside as open space, which was 47.6% of the entire land area. This was far in excess of the 20% which was required by the regulation. Was it merely wetlands which were set aside, which couldn't be used anyway as building sites? Rather, of the 75.3 acres of open space set aside, only 37 acres were classified as wetlands. Therefore, in addition to the wetlands which were set aside, 38.3 acres of uplands, representing 24.2% of the entire parcel was set aside as open space (such that the open space consisted more of uplands than wetlands).

It should be noted that the existence of sizeable wetlands on a site does not render the site undevelopable. Quite to the contrary, the wetlands provided a natural detention area for storm water discharge, and without them, it would be very difficult to attain a zero net increase in runoff after the development.

Much uplands were included here in open space to buffer the development from the main roads. Hence, no one would even know that this development was there if they were driving along either of the main roads which fronted the site (although a recent study showed that manufactured home subdivisions did not lower nearby property). (50)

2. Disturbance Of Wetlands

The development was proposed on a 158 acre parcel with 37 acres of wetlands. Yet, less that 1 acre of wetlands would be filled or disturbed by the proposed development. From the wetlands permit, the following conditions were imposed: (51)

1. A stream crossing was eliminated.

2. proposed lots containing and affecting wetlands shall be combined, rearranged, or eliminated to meet the following buffers and lot area conditions: lots must contain no less than 8,000 sq. ft. of non-wetland or watercourse, nor land within 100' of the edge of channel or bank of Haley and Red Brooks, nor within 50' of adjoining contiguous wetlands and 30' from non-contiguous wetlands. This buffer area shall remain a development-free conservation area or Town open space.
3. The proposed recreation fields shall maintain a minimum 50' natural buffer from wetlands.
4. All direct stormwater discharges shall terminate at least 100' from Haley and Red Brooks and 50' from all wetlands, except for small road crossing areas of specified roads.
5. Large road and developed area discharge points shall be treated through an approved gross particle/oil separator or detention basin. Design of either shall conform to standards of the D.E.P. Water Compliance Unit.
6. A stormwater detention basin shall be constructed to control increases in stormwater in the Red Brook watershed at a 0% increase at the site outlet for a 100-year storm criteria.
7. All end line catch basins shall be hooded or baffled for oil separation.
8. The developer shall engage an independent inspector approved by the Agency for sediment and erosion control measures who shall submit written, monthly reports to the

> Planning Dept. The full Erosion and Sediment Control narrative and construction sequence shall be put on the site plan and include the name of the person responsible and provisions for addressing unforeseen problems. The Erosion and Sediment Control Plan shall show areas to be used for stockpiling and protection measures.

Clearly, a considerable amount of time went into review, recommendations, and modifications of this development so that there both could be affordable housing and environmental protection. In the effort to provide affordable housing, it is important to recognize that both can be provided, and to be able to show how they can be provided.

From a cost standpoint, it is possible that some of the measures required by the wetlands commission added to the cost of the development, particularly with regard to the elimination of 50 lots so that greater buffers could be achieved. Yet, this is the part of the compromise which must be attained from all parties. There must be such careful environmental protection measures if planners and communities are to become more enthusiastic about greater density, clustered subdivisions.

This concludes Part III. The next section moves away from the issue of land development and moves onto a discussion of the different types of homes which can be built. A cost analysis of each will be provided.

Part IV

Stick Built, Modular, and Manufactured Homes

To what extent does the method of construction determine the price of the home? It is of great importance for a planner to understand these different methods of construction and their respective costs if effective and realistic policies are to be promulgated with regard to affordable housing.

1. Stick Built Homes

A stick built home is really an expression for a home built on site, one board, or stick, at a time. It is built to a B.O.C.A. code, which is a state and local code. To be sure, the price to build these homes varies widely from one region to another, because of the vast differences in the price of labor. Stick built homes are generally considered to be the most expensive of any type of home.

Obviously, there is no limit to the amount of custom work which can be done on a house. One could have very fancy porches or walkways, or a very custom kitchen. However, in this study, the assumption is that the homebuyer is in the moderate income range, with limits as to these very custom features. Yet in this study, the kind of home to be compared from one method of construction to another will be a 1,200 square foot ranch, 24' x 50', without an excessive amount of luxury upgrades. This type of home is fairly common, and stock plans are widely available, so there is no need to incur the cost of hiring an architect. The assumption here is that this kind of home will be provided for a family with a moderate income that would gladly forego such upgrades for the sake of owning their own home.

The following describes the necessary components of home construction, regardless of which method of construction is utilized: (52)

1. Survey, clearing the lot if it is wooded
2. Excavation of the lot, and backfilling after the foundation is poured
3. Foundation (either a 3-4' crawl space or a full 7-8' basement) construction, with a cellar floor
4. House construction, carpentry, labor and materials
5. Electrical service
6. Plumbing service
7. Heating and air conditioning (although AC is an option)
8. Connection of home to public water and sewer lines (it is the assumption of this study that such services are available)
9. Driveway installation, either paved or gravel
10. Loam and seed
11. Landscaping

Soft costs relate to:

12. Obtaining a building permit
13. Construction interest
14. Real estate taxes
15. Appraisal
16. Closing Costs, including legal fees
17. Title Insurance

Of all of the items on the list above, only a few of them will vary with regard to cost according to the method of construction. Items such as clearing and excavating, loam and seed, driveway and landscaping will

be virtually unchanged. However, the cost to build the house, and the electrical, plumbing, and foundation costs will vary, as well as the soft costs.

When a home is built on site, there usually is a relatively small crew of 3 to 4 workers on the job. Although there are some framing crews which are very efficient and therefore very fast, their work is still subject to the weather, and to their availability. Furthermore, once the house is framed, the mechanical work, i.e., plumbing, electric, heating, air conditioning, must be installed, and the general contractor must coordinate many different parties. A delay in the arrival of the heating contractor or electrician can set the carpentry crew back for days, if not weeks. Each successive item of work becomes more and more dependent on other parties as the work progresses. Delays are endemic to the process, resulting in higher interest carrying costs.

Materials are also higher when the home is built on site. As will be described in much greater detail further on, there are tremendous economies of scale when homes are built in large volume in a factory. Yet, when a home is built on site, by a local contractor, there will probably be at most a 5% builder's discount at the local lumber yard. The contractor still is paying fairly close to retail prices for all of the materials required.

To be sure, the main advantage to stick built homes is the ability to make changes in the plan during construction. Rooms can be made larger or smaller, ceilings can be made higher, depending upon the wishes of the homebuyer. Naturally, it is always costly to make changes during construction, and once again, it is the assumption here that the moderate income homebuyer will be making less changes than a homebuyer in a higher income bracket who builds a custom home.

Stick Built Home

During Construction

Home Near Completion

As mentioned above, a home can be customized to an unlimited extent, with costs rising considerably (up to $100/sq. ft. or higher). Yet, for the home described here, a 1,200 sq. ft. ranch on a slab or 3' crawl space, it would cost approximately $60-65 per square foot to construct on site, stick built. This range was obtained from homebuilders in Southeastern Connecticut. (53) Therefore, the builder's cost would be:
1,200 sq. ft. x $60/sq. ft. = $72,000.
Builder's typically markup the home by at least 20%. Therefore, with a 20% markup, the cost of the home, excluding the land, for the homebuyer, would be:
$72,000 x 1.20% = $86,400.

2. Modular Homes

There has been a great misconception that homes built on site are somehow structurally better than homes built off site, in factories. However, as housing prices have continued to rise, there has been a much greater acceptance of factory built housing. As will be seen, these homes are built as least as sound, if not more sound, than those on site.

A modular home is built according to the same code, the B.O.C.A. code, as on site stick built home, which might contribute to the growing acceptance of modular homes. However, it is still less expensive to construct the same 1,200 sq. ft. ranch style home if it is a modular than if it were to be stick built on site.

Built in a modern, quality controlled plant, modular houses are constructed in sections. For example, the 24' x 50' ranch house used here will be built in two sections, with each section to be 12' x 50'. To insure safety during transit, it is not permitted for a section to be more than 14' wide.

Modular Home

Crane Lifting a Module

Near Completion

These are some of the advantages to modular housing:

1. Because the work takes place indoors, the weather is not an impediment, and crews can work all year round. Furthermore, homes can be delivered all year round as well, which helps to work around the moving schedule of the homebuyer.

2. Unlike the on site crew of 3 to 4 workers, there are often several hundred workers within the factory working in assembly line fashion. The house here, a 1,200 sq. ft. ranch, can be built in one day. Some factories are turning out 35 houses per week.

3. Because of the volume of production, modular plants buy huge volumes of materials and derive economies of scale not available to most local contractors. Such huge volume purchases of lumber, insulation, siding, windows, doors, carpeting, cabinets, bathroom fixtures, and lighting fixtures result in significantly lower prices both to the factory and to the homebuyer.

4. Electricians and plumbers are employed by the factory, and install all of the internal mechanical work. Clearly, many of the delays of scheduling can be overcome by this method of construction.

5. When the house is delivered to the site, there is not a great deal of on site labor work required, and very little materials required. All that remains for local electricians and plumbers is to make connections from one section of the house to another, and make connections from the house to the public utilities which exist. The carpenter must join each section of the house to the other, put siding up (only on the short, or gable ends of the house; on the front and back, the siding is already installed), and sheetrock the archways in the 'marriage wall' inside, where each section meets. Because of this drastically reduced labor time, there are

significant savings in construction interest, insurance, and real estate taxes (for the holding time of the lot is much less). Once delivered, a modular home should be ready for occupancy in 60 days, at most. (54)

6. Although a modular house is approximately 75% complete when it is delivered, it is still possible to make many changes before it goes into production in the factory. There are computer aided design departments within the factories, and changes to stock plans can be drafted very quickly and efficiently. Among other things, the homebuyer can enlarge rooms, change ceiling heights, choose different kitchen and bathroom layouts, and modify window placement; however, once production begins, no more changes like this can be made, unlike on site stick built construction. Still, the homebuyer has a wide selection of options to choose from, including siding type (cedar or vinyl), siding color, carpet color, cabinet selction, bathroom selection, and lighting selection.

There are certain costs related to modular construction which are not necessary for on site built homes, and therefore are greater:

1. There are freight costs to have the sections of the home delivered. Most of the manufacturing plants are in Pennsylvania and New Hampshire, and the cost is generally around $1,500 per section, or $3,000 per home. (55)

2. Delivered on flat bed trucks, each section must be lifted onto the foundation with a crane. The cost for the crane and the crane operator is approximately $1,000 for a house of this size. (56) Furthermore, a set crew must be on site to set each section of the house squarely on the foundation and stake it to the foundation. The cost for a set crew is approximately $1,000. (57)

3. A stick built home can be built on a concrete slab (with frost

walls below grade). However, a modular house cannot be built on a slab and must have at least a crawl space, for the plumbing and electrical connections are built underneath the house and need a certain amount of clearance.

Yet, even with these costs that pertain to modular homes, the cost of a finished modular home is significantly less than that of a stick built home. The costs to finish a 1,200 sq. ft. modular home would be as follows: (58)

Clearing, excavation, backfill, foundation	15,000
House delivered, with freight and tax	32,000
Crane	1,000
Set Crew	1,000
Finish carpentry	3,000
Electrical contractor	1,200
Plumbing contractor	1,000
Landscaping	1,000
Driveway	1,500
Loam and seed	1,500
Soft Costs:	
Construction Interest	1,500
Real estate taxes	500
Appraisal	150
Closing Costs	300
Title Insurance	500
Total	61,150

On a per square foot basis, this would be:

$61,150 / 1,200 sq. ft. = $50-51 per square foot.

As mentioned above, the markup is generally 20%. Therefore, the price to the homebuyer for this home, excluding the land, would be:
$61,150 x 1.20% = $73,380.
The price to the homebuyer utilizing the stick built method was $86,400. Therefore, the savings by utilizing the modular method for the same home would be:
$86,400 - $73,380 = $13,020, which is an 17% reduction. The savings is primarily a result of:

1. economies of scale in the purchase of materials.
2. shorter period of time to finish the home, such that construction interest is lower.

Today, there are more and more choices of large, custom modulars homes. Although they can be expensive as they become larger, they are still less expensive than the same home custom built on site. Even at the higher end of the market, there is a savings to go modular. While the higher end of the market has traditionally had a preference for architectually designed, custom built homes, there is a growing acceptance of modulars among higher income families.

3. Manufactured Homes

In the two sections above on stick built homes and modular homes, I have shown that these two types of homes, while constructed differently, are essentially the same. One is built on site by a few workers, while the other is built in a factory by hundreds of workers. Nonetheless, the final product is virtually indistinguishable, except in the price, for they are both built to the same code, the B.O.C.A. code. Manufactured homes, however,

are a departure from either of these methods of construction.

Built according to a code promulgated by the U.S. Dept. Of Housing and Urban Development, the manufactured home (sometimes known as a H.U.D. spec. home) complies with federal standards. While H.U.D. spec. homes and modular homes are both built in factories, and both benefit from all of the aspects of off-site construction described above (economies of scale, lack of weather delays), they differ in the following respects:

1. After each section of a modular house is built in the factory, it is hoisted onto a flatbed, upon which it is transported to the site. At the site, a crane lifts the modular section off of the flatbed to be set on the foundation.

A manufactured home, however, is built directly "on metal transportation frames, or chassis, to which removable wheels and axles are attached. Manufactured homes used to be called mobile homes. But since they are permanent residences-most are never moved-and since their wheels and axles are not for continuous use but simply are a built-in means of transportation to the homesite, they are not called mobile homes any more. The U.S. Congress recognized this in 1980 when it changed the name to manufactured homes in all federal laws and publications." (59)

Built directly on the chassis, it is hitched to a truck and transported to the site.

2. A modular home, as mentioned above, must be set on a crawl space. It cannot be set on a slab.

A manufactured home, built on the chassis, rolls directly onto a slab, where it is unhitched from the truck. There, the wheels and axles are removed, and the home is bolted to the slab in a similar manner that an airplane is bolted to the tarmac during refueling. Each section of the home

is securely fastened to the other, in the same manner that each half of a modular is joined to the other.

Because the manufactured home rolls directly onto the slab, there is no need to hire a crane and crane operator.

3. Finishing work.

Modular homes, built to the same code as stick built homes, are finished on the interior with sheetrock, or dry wall. Where the two modular sections meet, at the marriage wall, the sheet rock must be taped and sanded, then painted with several coats so that the seam does not show.

The interior walls of a manufactured homes more closely resemble wallpapered sheetrock panels, rather than sheetrock. Where the two sections of the home meet, the two panels meet each other directly, and no taping, sanding, or painting is required. Therefore, not only is the labor much less in finishing a manufactured home, but the time it takes to assemble the home is much less than for a modular home. While a modular home takes 60 days to finish once it is on site, a manufactured home takes 7-14 days (60); clearly, the interest carrying costs will be significantly less in large volume housing developments of this kind.

The costs to finish a 1,200 sq. ft. manufactured home would be: (61)

Clearing lot, excavation, slab	12,000
House delivered, with freight and tax	22,500
Finish carpentry	1,000
Electrical contractor	1,200
Plumbing contractor	1,000
Landscaping	1,000
Driveway	1,500
Loam and seed	1,500

Soft costs:	
Construction interest	500
Real estate taxes	250
Appraisal	150
Closing costs	300
Title insurance	500
Total	43,400

On a per square foot basis, this would be:

$43,400 / 1,200 = $36/ sq. ft.

Once again, with a 20% markup, the cost to the homebuyer would be:

$43,400 x 1.20% = $52,080.

This is considerably lower than either the stick built, at $86,400, or the modular home, at $73,380. The savings is primarily a result of:

1. The home, when delivered, rolls directly onto a slab, and therefore does not require either a crane or a set crew.
2. Transportation costs are less, for the home is built on the chassis, and the company does not have to return to retrieve the flatbeds.
3. The finishing work requires much less time and materials.
4. Because it takes so much less time to finish the home, construction interest and real estate taxes are considerably less.

Certain costs, such as the cost for an appraisal, closing costs, and title insurance, will remain the same regardless of the method of construction.

Manufactured Home

Each Half is Rolled Directly onto a Slab

The Wheels and Axles are Removed

Examples of Completed Manufactured Homes

An underlying assumption here is that the savings in costs to the contractor or developer would be passed along to the homebuyer. Yet, this might not always be the case. The builder might be able to save on costs by putting up a modular or manufactured home, yet then try to sell the home for the same amount as a stick built home and realize a greater profit.

While builders might try this, homebuyers are becoming increasingly aware of these different methods of construction and the corresponding differences in costs. They know that modular homes and manufactured homes should cost less than stick built homes, and they shop around extensively to get the best buy. Therefore, any builder that puts up a modular home and tries to sell it at stick built prices will be priced out of the market, with homebuyers going elsewhere.

This concludes Part IV. In the next section, we will take the homes built here and put them on the finished lots from Part II to see what the ultimate cost of the home will be to the homebuyer.

Part V

The Finished Home

From Part II, the following costs were derived per building lot:

1.	Clustered one half acre subdivision	$29,017
2.	Standard one half acre subdivision	$37,549
3.	Clustered one acre subdivision	$45,446
4.	Standard one acre subdivision	$58,946

Now, it is important to determine what these lots would cost the homebuyer. Whereas the markup on the homes in Part IV was 20%, the markup on the lots will be much higher, such as 40%. (62) The reason that the markup on the finished lots is so much greater than the markup on the homes is that it took the developer so much longer to bring the lots to their finished state. Not only did it take a tremendous amount of money (well over $5,000,000 in any case), but it also took several years with significant financial exposure. Therefore, the developer needs to be compensated much greater for the time spent to produce the finished lots than for the time spent constructing the homes.

A 40% markup on each of the above would result in a price to the homebuyer of:

1.	Clustered one half acre subdivision	$29,017 x 1.40% = $40,623
2.	Standard one half acre subdivision	$37,549 x 1.40% = $52,568
3.	Clustered one acre subdivision	$45,446 x 1.40% = $63,624
4.	Standard one acre subdivision	$58,946 x 1.40% = $82,524

Now, it remains to be seen what the final price will be for both the house and the lot. From Part IV, it was determined that the price of a 1,200 sq. ft. home would vary according to the method of construction as follows:

1.	Manufactured	$52,080
2.	Modular	$73,380
3.	Stick built	$86,400

Therefore, from Pro Forma VI, the price to a homebuyer for a manufactured home on a one half acre clustered lot would be:

Lot price	$40,623
Home price	$52,080
Total price	$92,703

There it is, a 1,200 sq. ft. single family home on a clustered lot within a one half acre zone for under $100,000. From the matrix in the appendix, it can be seen that the least expensive home is the one shown above costing $92,703. However, a stick built home on a standard lot in a one acre zone will cost $168,924, which is 82% higher. Therefore, it is clearly shown that the greater density zoning, clustering, and manufactured housing will bring down the price of a home considerably.In Southeastern Connecticut, if not in most regions of the country, it would be very difficult, if not impossible to produce a new single family home for $92,703 under any other circumstances.

As mentioned in the Introduction, this would be affordable to those

with a median income of at least $31,000, which is the median income in Southeastern Connecticut. Unfortunately, many young couples, even professional couples, have an income below this amount. They are among the people who are being priced out of the single family home market. All that is available to them are rental units, and condominiums.

Part VI

Problems And Some Solutions

Clearly, there is now a lack of affordable single housing in many communities, and there are many obstacles which prevent more clustered single family subdivisions from being built. The following is a summary of what these obstacles are. Each will then be treated in its respective turn, with suggestions offered where possible.

1. The high price of land, and the large up front costs which make it difficult to proceed with developments of this kind.
2. Lack of consistency within subdivision regulations.
3. Lack of consistency between local, state, and federal levels.
4. Public opposition.
5. Lack of suitable land.

The High Price Of Land

In Part I of this study, I described the large up front costs related to land development, including the purchase of land, appraisals, and engineering. Many local developers are not financially able to proceed with a large scale affordable housing development because the up front costs are so great.

One of the traditional ways of overcoming the large up front costs required when land is purchased is to try a joint venture of the land purchase. Assuming that the owner of the property wants only to sell the land (rather than to take a long term option or to joint venture the development), a lender is sometimes considered as a joint venture partner. The lender would acquire the land jointly with the developer, rather than

lend the money for its purchase. The developer would build the infrastructure and housing with the lender's money, and profits would be split.

Unfortunately, in today's real estate market, it seems doubtful that there would be many banks interested in this kind of arrangement. Many banks have had to write off large loans against their cash reserves, and they have become very cautious, even with regard to affordable housing developments where the need is clearly known.

A somewhat new and innovative method of financing land has recently been tried in Connecticut. This involves a joint venture between a developer and a nonprofit housing company. The land is purchased with funds provided by state grant through the Department of Housing. The developer then builds the infrastructure and the housing. Only the homes are sold, with the land held in perpetuity by the nonprofit organization. The owner of the house pays a nominal monthly fee in land rent to the nonprofit, which uses the proceeds for operating expenses. (63)

Although this method of financing offers many possible opportunities for developers and homeowners alike (for the price of the home to the consumer is substantially lower once the land is factored out), it is entirely contingent upon the existence of this type of program. While Connecticut currently has a substantial amount of money available for grants to nonprofits, this money, provided by state bonding, was approved in previous legislative sessions. Facing a budget deficit, it is not certain whether continued funding will be approved in the future.

But are there any other ways to obtain land financing? In recent years, there has been a considerable amount of activity towards the public purchase of open space. Sometimes, the state provides the funding for the purchase of the open space, yet at other times, the funding is provided by

the municipality itself. Recently, Groton proposed an $8,000,000 bond issue for the purpose of acquiring open space. The interest on the bonds would be paid by the taxpayers over a long term period. When put before the voters, this passed by a 2:1 margin, and several hundred acres of land were subsequently purchased (even though much open space is derived through the subdivision process at no cost to the taxpayers).

In the same way, it seems entirely possible for a community to acquire land, financed through a bond issue, for the purpose of building affordable housing, with the funds administered through a local nonprofit housing company However, a number of factors must be considered

Just as there is great opposition when affordable housing development proposals are submitted, it is just as likely that there would be intense opposition to buying land for affordable housing, even in communities where the need for such housing is well documented. There would likely be the misconception that tax dollars would be used to subsidize lower income housing, with many negative connotations attached to this. Although the ultimate homebuyers would be moderate income families, the opposition and misconceptions would still doubtlessly exist. Nonetheless, where the housing problem has gotten so severe that it has become an impediment to economic development, there might be a more receptive attitude towards a proposal of this kind. Furthermore, if open land was purchased to build affordable housing, who would build the housing? Clearly, the opportunity for favoratism exists, with the contract going to developers with personal connections. This situation could be avoided if the bidding on the road and housing contracts were open to the public. Anyone could bid, and the bids would be published after they were received.

2. Lack Of Consistency Within Subdivision Regulations

Clearly, subdivision regulations which permit clustered housing are necessary if there is to be progress in providing single family affordable homes. Yet, the existence of such a regulation in and of itself is not sufficient. If a community is really going to try to make a concerted effort to provide affordable housing, then all parts of the subdivision regulations must be examined to determine how they can be modified to help bring this about.

Although Groton adopted a manufactured home subdivision on clustered lots, other crucial parts of these regulations were not altered in any way to be consistent with this goal.

Specifically, road specifications must be examined to determine whether they can be relaxed in any way whatsoever to help bring costs down. Here, the subdivision regulations determined that the main road within this subdivision should be classified as a collector street and should therefore be built to the highest possible standards. Although four different road classifications existed, each with its own standards, there was very little recognition that these standards themselves can contribute to higher costs.

When a collector street is built, the road must have 5" of blacktop, be 36' wide, and have a 60' right of way. If built to the next lowest classification, as an access road, then a road would only have to be built with 2" of blacktop, be 30' wide, and have a 50' right of way. (64)

During the public hearing process, there was much discussion between the planning and staff and the commission members as to which of these road classifications would be required. Ultimately, the

commission decided that the road should be built as a collector street, the highest standard, to alleviate traffic in such a high density development. Perhaps the commission was correct to require the collector street. Still, if the town is really serious about providing affordable housing, then it must examine its own regulations to determine where allowances can be made to help bring down the prices of the homes. In some cases, such as here, there must be more coordination between the planning staff and the department of public works, which has a great interest in seeing that the highest road classifications are required.

What about zoning changes? In the development which is the subject of this study, a large section of Groton was rezoned from half acre zoning to one acre zoning, although the development here was submitted before the public hearing was held, and was therefore 'grandfathered' under the existing one half acre zone. (While part of the rationale for the rezoning was the inability to bring sewers to many of these parcels, it was clearly shown that many of the parcels could easily be sewered, and therefore should be exempt from the new zoning.)

As shown earlier in this paper, less dense zoning will clearly make the homes more expensive, for the costs per lot will be significantly higher. Once again, if a community is really serious about providing affordable housing, then there must be consistency between the zoning regulations and the subdivision regulations. Allowing for greater density manufactured housing in the subdivision regulations but then rezoning large sections of town to a less dense land use are not consistent with each other. Having a clustered regulation is not enough. Without the zoning, it will not be possible to bring about affordable single family homes.

3. Lack Of Consistency Between Local, State, And Federal Levels Wetlands Delineation

In Part I, many of the costs related to land development were described. One of the earliest things that must be done is the wetlands delineation by a soils scientist. The findings of the soils scientist are then reviewed by the environmental planner. However, I also showed that the soils scientist must reflag the wetlands for review by the U.S. Army Corp. of Engineers, for the Corp. classifies wetlands differently than the State of Connecticut. The Corp. may then determine that a federal permit is required, in addition to the wetlands permit issued by the local community.

The extra costs involved here are obvious. Not only must the soils scientist be paid twice to locate wetlands in the field and then map them out, but the separate application to the Corp. involves significant time and money. Often, an attorney with expertise in dealing with the Corp. must be retained. Furthermore, because the Corp. is so understaffed at this time, there could be waiting periods of over a year before an application is acted upon.

Although the Corp. acts in the public interest, there has to be a way in which the delays involved by two separate applications (one to the local wetlands commission, the other to the Corp.) can be alleviated. Specifically, states should bring their wetlands definitions in accordance with federal definitions as set by the U.S. Army Corp. of Engineers. If this were to occur, then the soils scientist would only have to flag wetlands one time, and the results could be utilized by both the local wetlands commission and the Corp. In fact, if such consistency were to take place, it is questionable whether the Corp. would even have to get involved. The

local environmental planner and wetlands commission would review the same issues regarding storm water discharge, wetlands disturbance, and other matters to be specified, and the time delays of going to the Corp. could be greatly reduced.

Building Codes

In Part IV of this study, I described the different building codes which currently exist. Whereas a manufactured home is governed by H.U.D., which is a federal code, modular and stick built homes are governed by B.O.C.A., which is a state and local code. Yet, manufactured homes, while governed by a federal code, are not permitted in all communities, for the state and local code prevails.

Clearly, the code as set down by the federal government should be accepted throughout the country, in all communities. As a federal code, it should be evident that it meets minimum standards of construction, strength and durability, fire resistance, and energy efficiency.

Double wide manufactured homes should be permitted nationwide, but they are not. Although the Connecticut State Legislature passed a bill which permitted double wide manufactured homes on any lot in the state, (65) other states have not followed suit. At this time, it is often on a town by town basis. Where this situation exists, planners should encourage the building department and tax assessor's office to treat double wide manufactured homes like any other homes, and to assess them as real estate, rather than as personal property.

4. Public Opposition

Needless to say, public opposition was severe with regard to this subdivision. Public hearings ran long into the night, precluding the

commissions from conducting any other business. It is noteworthy that the local press covers these hearings and this opposition is sometimes proclaimed in headlines. Needless to say, developers follow these stories and many have commented that they don't want to deal with such opposition, and that it would be easier for them to develop subdivisions with larger lots and expensive houses. The neighbors might prefer this, because they might think that it would increase their property values, and some members of the town might like it, because it might put less of a strain on public services. Even though most families would have to have an income of at least $31,000 to afford one of these homes, there is still tremendous opposition. Hence, it is not the reasons given above which drive developers away (high land costs, time delays, etc.), but a wish to create as little controversy as possible and conduct their business activities in a quiet and peaceful manner. If opponents succeed in anything, it is to deter other developers from proposing affordable housing developments in other areas and even in other communities.

If the project is approved, it can be appealed, and it can sit in court for at least two years until it can go ahead. Hence, the potential for an appeal has become another deterrent to affordable housing.

The developer's engineer, in his amazement at the extent of the opposition, said that in some areas of the country, this subdivision would be recognized as "an environmental wonder". (66) Enormous effort went into the design in an attempt to preserve as many of the natural features as possible. Even the historic sites on the property were set aside and would be catalogued for future study.

A condition of stagnation now exists. Many developers are reluctant to take any significant action to provide affordable housing for they feel

certain that they will face opposition and appeals. What then, can be done to move beyond this impasse, to help address this critical situation before it becomes thoroughly out of reach of a practical solution?

Connecticut has established a special court of appeals to hear appeals when affordable housing proposals are not approved. By establishing a court of this kind, the state legislature has tried to insure that local political pressures will not prevent affordable housing developments from proceeding. If other states had a court of this kind, more progress might be made in this direction.

The automatic right to appeal an approved subdivision should be reconsidered. Perhaps there could be a panel which would review cases before they get to the courts, and with the authority to dispose of those cases which it determines are without merit. The long delays, and subsequently higher costs which appeals bring could possibly then be alleviated.

5. Lack Of Suitable Land For Higher Density Clustered Housing

For a clustered development to succeed in producing lower priced homes, the site must be rather large. A limitation from a policy standpoint is that in certain regions, such as parts of Connecticut for example, there is a growing shortage of parcels of this size which are suitable for development, for they either consist largely of wetlands, ledge, or severe slopes. Furthermore, those sites which are suitable for housing of this kind are growing ever more expensive.

In many communities, most of the subdivisions are on smaller sites where clustering has less of a benefit than on a larger site. Therefore, even with a clustered regulation, and even with a private development sector interested in affordable housing, there may be a shortage of the

type of parcels needed for this regulation to be effective. Little, if anything, can be done about this obstacle, for when a community is largely built out, the only housing solution is multifamily units which require a much smaller site. The affordable single family home in these communities will become almost impossible to provide, and this has become the situation in many suburban areas, areas where housing was once affordable, but is no longer so.

Part VII

Conclusion

As mentioned earlier, the MHS was reduced by 50 lots during the public hearing process. 16 of these lots were eliminated because they were situated opposite a stream which the wetlands commission did not want impacted. However, the planning commission determined that these 16 lots could be combined into one large lot and given a future use. This parcel could be accessed by a main road without crossing the stream. The developer intends to utilize this parcel in a way that will benefit the homeowners in the MHS. Most likely, a day care center will be planned on this site, for it is a permitted use within the zone.

Final engineering plans are currently being completed. At that time, they will be presented to the town for review. Once they are signed, road bids will be received, a bond will be posted, and construction will begin. The development requires final approval from the State Traffic Commission and the Army Corp. of Engineers, and the developer states that these should be forthcoming in the near future.

The developer has indicated that there were several options other than developing the property as the MHS. They are:

1. To sell it. However, the the developer is less inclined to do this, as the buyer might not share the commitment to affordable housing and could build much more expensive homes.

2. Develop the site as a mobile home park. The housing units would be sold, with the land leased to the homebuyer. The developer is not inclined to do this, as the great benefits of equity in the land would be deprived to the homebuyer.

3. Develop the property as intended. This is the option which will most certainly occur. However, the developer clearly considered each option above as the appeal period progressed.

The developer is interested in pursuing other manufactured home subdivisions around the state. However, as stated throughout this study, this can only occur with the necessary zoning, cluster regulations, and availability of public utilities.

This study offers solutions within the single family market. Naturally, condominiums and other kinds of multi-family housing offer other solutions, but they were not the subject of this study. Owning a single family home remains the highest priority for families, rather than multi-family housing, and it is for this market that I have emphasized my efforts, both here in this study, and in my professional life.

Cost Pro Forma I

218 clustered manufactured homes in a one half acre zone with 9,810 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0016
Land acquisition	850,000.00					850,000.00	0.0540
Civil Engineering	177,875.00					177,875.00	0.0113
Traffic Engineering	3,000.00					3,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0003
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0048
Public Hearings	2,500.00					2,500.00	0.0002
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0038
Legal-Court	20,000.00					20,000.00	0.0013
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0005
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0060
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0013
Road and infrastructure		729,000.00	729,000.00	729,000.00	729,000.00	2,916,000.00	0.1851
Off-site improvements		500,000.00				500,000.00	0.0317
Bond, description, contract	32,000.00					32,000.00	0.0020
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0138
Manufactured home costs		2,843,600.00	2,343,600.00	2,843,600.00	2,843,600.00	9,874,400.00	0.5950
Interest	365,000.00	499,122.00	189,561.00	189,561.00	189,561.00	1,872,805.00	0.0871
Total costs	1,608,875.00	4,098,472.00	3,348,911.00	3,348,911.00	3,348,911.00	15,754,080.00	1.0000

Cost Pro Forma I (a)
218 clustered modular homes in a one half acre zone with 9,810 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0013
Land acquisition	850,000.00					850,000.00	0.0428
Civil Engineering	177,875.00					177,875.00	0.0089
Traffic Engineering	3,000.00					3,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0002
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0038
Public Hearings	2,500.00					2,500.00	0.0001
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0030
Legal-Court	20,000.00					20,000.00	0.0010
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0004
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0047
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0010
Road and infrastructure		729,000.00	729,000.00	729,000.00	729,000.00	2,916,000.00	0.1467
Off-site improvements		500,000.00				500,000.00	0.0252
Bond, description, contract	32,000.00					32,000.00	0.0016
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0109
Modular home costs		3,302,100.00	3,302,100.00	3,302,100.00	3,302,100.00	13,208,400.00	0.6646
Interest	365,000.00	554,142.00	247,071.00	247,071.00	247,071.00	1,660,355.00	0.0835
Total costs	1,608,875.00	5,171,992.00	4,364,921.00	4,364,921.00	4,364,921.00	19,875,630.00	1.0000

Cost Pro Forma I (b)
218 clustered stick built homes in a one half acre zone with 9,810 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0011
Land acquisition	850,000.00					850,000.00	0.0380
Civil Engineering	177,875.00					177,875.00	0.0079
Traffic Engineering	3,000.00					3,000.00	0.0001
Hydrological Engineering	4,500.00					4,500.00	0.0002
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0033
Public Hearings	2,500.00					2,500.00	0.0001
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0027
Legal-Court	20,000.00					20,000.00	0.0009
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0004
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0042
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0009
Road and infrastructure		729,000.00	729,000.00	729,000.00	729,000.00	2,916,000.00	0.1302
Off-site improvements		500,000.00				500,000.00	0.0223
Bond, description, contract	32,000.00					32,000.00	0.0014
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0097
Stick built home costs		3,888,000.00	3,888,000.00	3,888,000.00	3,888,000.00	15,552,000.00	0.6944
Interest	365,000.00	624,450.00	282,225.00	282,225.00	282,225.00	1,836,125.00	0.0820
Total costs	1,608,875.00	5,828,200.00	4,985,975.00	4,985,975.00	4,985,975.00	22,395,000.00	1.0000

Cost Pro Forma II

132 clustered manufactured homes in a one half acre zone with 8,910 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0021
Land acquisition	850,000.00					850,000.00	0.0710
Civil Engineering	177,875.00					177,875.00	0.0149
Traffic Engineering	8,000.00					8,000.00	0.0009
Hydrological Engineering	4,500.00					4,500.00	0.0004
Soils Scientist	2,000.00					2,000.00	0.0002
Modifications	75,000.00					75,000.00	0.0063
Public Hearings	2,500.00					2,500.00	0.0002
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0050
Legal-Court	20,000.00					20,000.00	0.0017
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0007
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0079
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0017
Road and infrastructure		668,250.00	668,250.00	668,250.00	668,250.00	2,673,000.00	0.2234
Off-site improvements		500,000.00				500,000.00	0.0418
Bond, description, contract	32,000.00					32,000.00	0.0027
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0181
Manufactured home costs		1,432,200.00	1,432,200.00	1,432,200.00	1,432,200.00	5,728,800.00	0.4787
Interest	365,000.00	822,464.00	262,464.00	262,464.00	262,464.00	1,474,856.00	0.1232
Total costs	1,608,875.00	3,009,664.00	2,449,664.00	2,449,664.00	2,449,664.00	11,967,531.00	1.0000

Cost Pro Forma II (a)
192 clustered modular homes in a one half acre zone with 8,910 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0017
Land acquisition	850,000.00					850,000.00	0.0589
Civil Engineering	177,875.00					177,875.00	0.0122
Traffic Engineering	8,000.00					8,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0009
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0051
Public Hearings	2,500.00					2,500.00	0.0002
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0041
Legal-Court	20,000.00					20,000.00	0.0014
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0005
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0064
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0014
Road and infrastructure		668,250.00	668,250.00	668,250.00	668,250.00	2,673,000.00	0.1832
Off-site improvements		500,000.00				500,000.00	0.0349
Bond, description, contract	32,000.00					32,000.00	0.0022
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0149
Modular home costs		2,017,950.00	2,017,950.00	2,017,950.00	2,017,950.00	8,071,800.00	0.5532
Interest	365,000.00	892,754.00	892,754.00	892,754.00	892,754.00	1,756,016.00	0.1209
Total costs	1,608,875.00	3,665,704.00	3,105,704.00	3,105,704.00	3,105,704.00	14,591,691.00	1.0000

Cost Pro Forma II (b)
132 clustered stick built homes in a one half acre zone with 8,910 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0015
Land acquisition	850,000.00					850,000.00	0.0525
Civil Engineering	177,875.00					177,875.00	0.0110
Traffic Engineering	3,000.00					3,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0003
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0046
Public Hearings	2,500.00					2,500.00	0.0002
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0037
Legal-Court	20,000.00					20,000.00	0.0012
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0005
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0058
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0012
Road and infrastructure		668,250.00	668,250.00	668,250.00	668,250.00	2,673,000.00	0.1650
Off-site improvements		500,000.00				500,000.00	0.0309
Bond, description, contract	32,000.00					32,000.00	0.0020
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0134
Stick built home costs		2,376,000.00	2,376,000.00	2,376,000.00	2,376,000.00	9,504,000.00	0.5868
Interest	365,000.00	495,720.00	975,720.00	975,720.00	975,720.00	1,927,880.00	0.1190
Total costs	1,608,875.00	4,066,720.00	3,506,720.00	3,506,720.00	3,506,720.00	16,195,755.00	1.0000

Cost Pro Forma III

218 manufactured homes in a standard one half acre zone with 16,350 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0014
Land acquisition	850,000.00					850,000.00	0.0476
Civil Engineering	177,875.00					177,875.00	0.0100
Traffic Engineering	3,000.00					3,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0003
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0042
Public Hearings	2,500.00					2,500.00	0.0001
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0034
Legal-Court	20,000.00					20,000.00	0.0011
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0004
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0053
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0011
Road and infrastructure		1,215,000.00	1,215,000.00	1,215,000.00	1,215,000.00	4,860,000.00	0.2724
Off-site improvements		500,000.00				500,000.00	0.0280
Bond, description, contract	32,000.00					32,000.00	0.0018
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0122
Manufactured home costs		2,343,600.00	2,343,600.00	2,343,600.00	2,343,600.00	9,374,400.00	0.5254
Interest	365,000.00	497,442.00	218,721.00	218,721.00	218,721.00	1,518,605.00	0.0851
Total costs	1,608,875.00	4,642,792.00	3,864,071.00	3,864,071.00	3,864,071.00	17,843,880.00	1.0000

Cost Pro Forma III (a)
218 modular homes in a standard one half acre zone with 16,950 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0011
Land acquisition	850,000.00					850,000.00	0.0387
Civil Engineering	177,875.00					177,875.00	0.0081
Traffic Engineering	3,000.00					3,000.00	0.0001
Hydrological Engineering	4,500.00					4,500.00	0.0002
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0034
Public Hearings	2,500.00					2,500.00	0.0001
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0027
Legal-Court	20,000.00					20,000.00	0.0009
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0004
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0043
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0009
Road and infrastructure		1,215,000.00	1,215,000.00	1,215,000.00	1,215,000.00	4,860,000.00	0.2213
Off-site improvements		500,000.00				500,000.00	0.0228
Bond, description, contract	32,000.00					32,000.00	0.0015
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0099
Modular home costs		3,802,100.00	3,802,100.00	3,802,100.00	3,802,100.00	19,208,400.00	0.8013
Interest	365,000.00	612,462.00	276,231.00	276,231.00	276,231.00	1,806,155.00	0.0822
Total costs	1,608,875.00	5,716,312.00	4,880,081.00	4,880,081.00	4,880,081.00	21,965,430.00	1.0000

Cost Pro Forma III (b)
218 stick built homes in a stardard one half acre zone with 16,850 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0010
Land acquisition	850,000.00					850,000.00	0.0347
Civil Engineering	177,875.00					177,875.00	0.0073
Traffic Engineering	3,000.00					3,000.00	0.0001
Hydrological Engineering	4,500.00					4,500.00	0.0002
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0031
Public Hearings	2,500.00					2,500.00	0.0001
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0025
Legal-Court	20,000.00					20,000.00	0.0008
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0003
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0038
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0008
Road and infrastructure		1,215,000.00	1,215,000.00	1,215,000.00	1,215,000.00	4,860,000.00	0.1985
Off-site improvements		500,000.00				500,000.00	0.0204
Bond, description, contract	32,000.00					32,000.00	0.0013
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0089
Stick built home costs		3,888,000.00	3,888,000.00	3,888,000.00	3,888,000.00	15,552,000.00	0.6352
Interest	365,000.00	682,770.00	911,385.00	911,385.00	911,385.00	1,981,925.00	0.0809
Total costs	1,608,875.00	6,372,520.00	5,501,135.00	5,501,135.00	5,501,185.00	24,494,800.00	1.0000

Cost Pro Forma IV
132 manufactured homes in a standard one half acre zone with 14,850 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0018
Land acquisition	850,000.00					850,000.00	0.0609
Civil Engineering	177,875.00					177,875.00	0.0127
Traffic Engineering	3,000.00					3,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0009
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0054
Public Hearings	2,500.00					2,500.00	0.0002
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0049
Legal-Court	20,000.00					20,000.00	0.0014
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0006
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0067
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0014
Road and infrastructure		1,113,750.00	1,113,750.00	1,113,750.00	1,113,750.00	4,455,000.00	0.3190
Off-site improvements		500,000.00				500,000.00	0.0358
Bond, description, contract	32,000.00					32,000.00	0.0029
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0155
Manufactured home costs		1,432,200.00	1,432,200.00	1,432,200.00	1,432,200.00	5,728,800.00	0.4103
Interest	365,000.00	875,924.00	815,924.00	815,924.00	815,924.00	1,688,696.00	0.1209
Total costs	1,608,875.00	3,508,624.00	2,948,624.00	2,948,624.00	2,948,624.00	13,963,371.00	1.0000

Cost Pro Forma IV (a)
132 modular homes in a standard one half acre zone with 14,850 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0015
Land acquisition	850,000.00					850,000.00	0.0512
Civil Engineering	177,875.00					177,875.00	0.0107
Traffic Engineering	8,000.00					8,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0009
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0045
Public Hearings	2,500.00					2,500.00	0.0002
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0036
Legal-Court	20,000.00					20,000.00	0.0012
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0005
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0057
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0012
Road and infrastructure		1,113,750.00	1,113,750.00	1,113,750.00	1,113,750.00	4,455,000.00	0.2686
Off-site improvements		500,000.00				500,000.00	0.0301
Bond, description, contract	32,000.00					32,000.00	0.0019
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0131
Modular home costs		2,017,950.00	2,017,950.00	2,017,950.00	2,017,950.00	8,071,800.00	0.4866
Interest	365,000.00	446,214.00	986,214.00	986,214.00	986,214.00	1,969,856.00	0.1188
Total costs	1,608,875.00	4,164,664.00	3,604,664.00	3,604,664.00	3,604,664.00	16,587,531.00	1.0000

Cost Pro Forma IV (b)
192 stick built homes in a standard one half acre zone with 14,850 linear feet of road and infrastructure

	Preconstruction	Phase 1	Phase 2	Phase 3	Phase 4	Total	% of Total
Out of pocket	25,000.00					25,000.00	0.0014
Land acquisition	850,000.00					850,000.00	0.0467
Civil Engineering	177,875.00					177,875.00	0.0098
Traffic Engineering	3,000.00					3,000.00	0.0002
Hydrological Engineering	4,500.00					4,500.00	0.0002
Soils Scientist	2,000.00					2,000.00	0.0001
Modifications	75,000.00					75,000.00	0.0041
Public Hearings	2,500.00					2,500.00	0.0001
Legal-Real Estate	30,000.00	7,500.00	7,500.00	7,500.00	7,500.00	60,000.00	0.0039
Legal-Court	20,000.00					20,000.00	0.0011
Accounting	4,000.00	1,000.00	1,000.00	1,000.00	1,000.00	8,000.00	0.0004
Real Estate Taxes	14,000.00	20,000.00	20,000.00	20,000.00	20,000.00	94,000.00	0.0052
Insurance	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	20,000.00	0.0011
Road and infrastructure		1,113,750.00	1,113,750.00	1,113,750.00	1,113,750.00	4,455,000.00	0.2449
Off-site improvements		500,000.00				500,000.00	0.0275
Bond, description, contract	32,000.00					32,000.00	0.0018
Surveying, inspection		54,250.00	54,250.00	54,250.00	54,250.00	217,000.00	0.0119
Stick built home costs		2,376,000.00	2,376,000.00	2,376,000.00	2,376,000.00	9,504,000.00	0.5224
Interest	365,000.00	489,180.00	429,180.00	429,180.00	429,180.00	2,141,720.00	0.1177
Total costs	1,606,875.00	4,565,680.00	4,005,680.00	4,005,680.00	4,005,680.00	18,191,595.00	1.0000

Matrix of Sales Prices

	Land	House	Sales Price
1/2 acre clustered			
Manufactured	40,623.00	52,080.00	92,703.00
Modular	40,623.00	73,380.00	114,003.00
Stick Built	40,623.00	86,400.00	127,023.00
1/2 acre standard			
Manufactured	52,568.00	52,080.00	104,648.00
Modular	52,568.00	73,380.00	125,948.00
Stick Built	52,568.00	86,400.00	138,968.00
1 acre clustered	63,624.00	52,080.00	115,704.00
Manufactured	63,624.00	73,380.00	137,004.00
Modular	63,624.00	86,400.00	150,024.00
Stick Built			
1 acre standard			
Manufactured	82,524.00	52,080.00	134,604.00
Modular	82,524.00	73,380.00	155,904.00
Stick Built	82,524.00	86,400.00	168,924.00

References

1. Section 6.9.1. of Town of Groton, Ct. Subdivision Regulations.
2. Ibid., Sections 6.9.3.-6.9.9.
3. Bill Kaszubski, New London Board of Realtors, 711 Broad St. Ext., Waterford, Conn.
4. National Association of Realtors, as quoted in the New London Day, April 3, 1990, as supplied by the Washington Associated Press.
5. New London Board of Realtors, Ibid.
6. Appraisal by The Cushman Company, P.O. Box 67, Mystic, Conn., September 18, 1989, pp. 21-22.
7. Ibid., p. 24.
8. Ibid.
9. Developer of MHS.
10. Cushman, Ibid.
11. Ibid.
12. Ibid.
13. Anthony A. Joyce, III, Commercial Mortgage Officer, Norwich Savings Society, P.O. Box 1048, Norwich, Conn.
14. Developer.
15. Enviro-Tech Consultants, Box 233, Dayville, Conn.
16. Enviro-Tech Consultants, Ibid.
17. Total Technology, Inc, 458 Williams St., New London, Conn.
18. Ibid.
19. Ibid.
20. Ibid.
21. F. A. Hesketh & Associates, Inc., 101 Millbrook Common, Bloomfield, Conn.
22. Meehan Associates, 387 North Main St., Manchester, Conn.

23. Environmental Design Assoc. PC, Box 247, Wilton, Conn.
24. Enviro-Tech Consultants, Ibid.
25. Total Technology, Ibid.
26. Michael T. Gothie & Company, 112 New London Road, Groton, Conn.
27. Pavetti and Freeman, Box 829, New London, Conn.
28. Ibid.
29. Ibid.
30. Louis Levine Agency, Inc., 914 Hartford Turnpike, Waterford, Conn.
31. Developer.
32. Total Technology, Ibid.
33. Developer.
34. Memorandum from Director of Planning to Planning Commission, March 4, 1988.
35. Docket No. 08 99 46, Superior Court, Judicial District of New London at Norwich.
36. Developer.
37. Michael McCurdy, Assistant Vice President, The Bank of Southeastern Connecticut, 716 Broat St. Ext., Waterford, Conn.
38. King & Mullen, P.C., Box 134, Uncasville, Conn./Pavetti and Freeman, Ibid.
39. Developer.
40. Atlas Paving Company, Inc., 1350 Baldwin Road, Gales Ferry, Conn.
41. Total Technology, Inc., Ibid.
42. Walter Blanker, Director of Public Works Department, Town of Groton, Conn.
43. Section 6.9.6. Town of Groton Subdivision Regulations.
44. Developer.
45. Ibid.
46. Louis Levine Agency, Inc., Ibid.

47. Boyd A. Cristofori, Jane S. Olney, Energy Management Services, Northeast Utilities, Box 591, New London, Conn.

48. Developer.

49. Permit No. 87-15, issued by Town of Groton, Conn. Inland Wetland Agency, February 10, 1988.

50. James Milton Brown, Molly A. Sellman. Manufactured Housing: The Invalidity of the "Mobility" Standard, from The Urban Lawyer, Vol 19, No. 2, Spring 1987.

51. Permit No. 87-15, Ibid.

52. Developer.

53. Fran Wein, ERA Realty, 423 Long Hill Rd., Groton, Conn.
Phil Turner, McCue Mortgage Co., 8 Union Pl, New London, Conn.
Adams Builders, Inc., 42 New Shore Road,Waterford, Conn.

54. Developer.

55. Penn Lyon Homes, Inc., One Airport Road, Selinsgrove, Pa.

56. Allied Crane Service, Inc., 18 Eastern Ave., New London, Conn.

57. Penn Lyon Homes, Inc., Ibid.

58. Developer.

59. Statistical Report by Manufactured Housing Institute, 1745 Jefferson Davis Highway, Arlington, Va., 1989.

60. Developer.

61. Ibid.

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63. State of Connecticut Department of Housing, Community Land Bank/ Land Trust Program, 1179 Main St., Hartford, Conn.

64. Table of Road Specifications, Groton, Conn. Zoning Regulations.

65. Public Act 88-203, October 1, 1988.

66. Total Technology, Inc., Ibid.

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2. How to Buy a Manufactured Home.
3. How to Deal With Planning and Zoning Issues.
4. Zoning and Manufactured Homes.
5. MHI Reports.
6. Manufacturing Reports.

Other:

7. New England Manufactured Housing News.
8. Mobile/Manufactured Home Merchandiser.
9. The State of the Nation's Housing, Joint Center for Housing Studies of Harvard University, 1988.
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