AUBURN MEADOWS
COMMUNITY DEVELOPMENTS:
A Planned Residential Development

Larry Klooze
Auburn Meadows Community Developments:
A Planned Residential Development
Acknowledgements

Many thanks to all the people who made this project possible: Ball State University, for providing the opportunity and resources; my distinguished advisors, Jeffrey Hall, Uwe Koehler, Paul Mitchell, and George Young, for taking the time out of their busy schedules to attend my meetings and provide their advice; my father, Dr. Kenneth Klooze, for providing the exceptional site on which to work and fantasize; and especially my wife Rachel, for putting up with the "rigors of this curriculum" for five years and providing me with her valuable support, and my children, Austin and Miranda, for providing me with so much joy and entertainment over the recent years.

Thank you one and all!!!
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Definition</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>2</td>
</tr>
<tr>
<td>Goals &amp; Objectives</td>
<td>3</td>
</tr>
<tr>
<td>Methodology</td>
<td>4</td>
</tr>
<tr>
<td>Research</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Origins of Planned Unit Developments</td>
<td>5</td>
</tr>
<tr>
<td>Early Alternatives to Standard Developments</td>
<td>7</td>
</tr>
<tr>
<td>PUDs on the Rise</td>
<td>8</td>
</tr>
<tr>
<td>Recessional Complications</td>
<td>10</td>
</tr>
<tr>
<td>PUD Ordinances</td>
<td>13</td>
</tr>
<tr>
<td>Trends in the 1980s</td>
<td>19</td>
</tr>
<tr>
<td>Site Inventory &amp; Analysis</td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>21</td>
</tr>
<tr>
<td>Geology</td>
<td>24</td>
</tr>
<tr>
<td>Soils</td>
<td>24</td>
</tr>
<tr>
<td>Hydrology, Topography</td>
<td>29</td>
</tr>
<tr>
<td>Vegetation</td>
<td>29</td>
</tr>
<tr>
<td>Structures &amp; Utilities</td>
<td>31</td>
</tr>
<tr>
<td>Visual Interest</td>
<td>33</td>
</tr>
<tr>
<td>Overlay Analysis</td>
<td>34</td>
</tr>
<tr>
<td>Overlay Summary</td>
<td>35</td>
</tr>
<tr>
<td>Design Development</td>
<td></td>
</tr>
<tr>
<td>Development Criteria</td>
<td>37</td>
</tr>
<tr>
<td>Housing Comparison</td>
<td>41</td>
</tr>
<tr>
<td>Housing Analysis</td>
<td>43</td>
</tr>
<tr>
<td>Development Criteria/Housing Suitability Matrix</td>
<td>45</td>
</tr>
<tr>
<td>Program</td>
<td>46</td>
</tr>
<tr>
<td>Program Relationship Matrix</td>
<td>48</td>
</tr>
<tr>
<td>Conceptual Diagram</td>
<td>49</td>
</tr>
<tr>
<td>Potential Development Concepts</td>
<td>50</td>
</tr>
<tr>
<td>Schematic Development</td>
<td>57</td>
</tr>
<tr>
<td>Schematic Analysis</td>
<td>67</td>
</tr>
<tr>
<td>Cost Comparison</td>
<td>75</td>
</tr>
<tr>
<td>Public Open Space Corridor Development</td>
<td>76</td>
</tr>
<tr>
<td>Cross Sections</td>
<td>80</td>
</tr>
<tr>
<td>Perspectives</td>
<td>81</td>
</tr>
<tr>
<td>Bibliography</td>
<td>82</td>
</tr>
<tr>
<td>Appendix</td>
<td></td>
</tr>
<tr>
<td>Shrub Suitability</td>
<td>85</td>
</tr>
<tr>
<td>Tree Suitability (Woodland Study)</td>
<td>86</td>
</tr>
<tr>
<td>Zoning Excerpts</td>
<td>87</td>
</tr>
<tr>
<td>Cost-Effective Site Planning</td>
<td>92</td>
</tr>
<tr>
<td>Examples of Cost-Effective Communities</td>
<td>101</td>
</tr>
</tbody>
</table>
Introduction

Privately-owned greenspace is an important source of recreation opportunities for urban areas. But unlike publicly owned and supported greenspace, the availability and maintenance of operations and equipment of private recreation facilities depends on the economic viability of their operations. If a private facility cannot generate the funds necessary to maintain operations, then its present use will ultimately be affected by this lack of funds. Private owners in this situation are frequently forced to consider alternate land uses for their property in order to realize a profit.
Problem Statement

The purpose of this project is to change the land use of an existing privately-owned recreation facility in order to make the land cost-effective to its owner. Auburn Meadows Equestrian Center (AMEC), located just north of the I-69 loop around Fort Wayne on Auburn Road, is prime development land being used for a commercial recreational enterprise. In the past decade, its owner has been unable to realize a profit on its operations due to rising operational costs including land taxes and insurance premiums. Taxes have risen considerably due to the housing developments which presently surround AMEC on three sides, and insurance premiums have more than quadrupled because of the facility's use of high-risk animals, horses.

The owner of AMEC has been considering the development of a housing community on this property for some time. Last year, the owner purchased the last remaining parcel of greenspace in the immediate area. This parcel consists of 16 acres of farmland and is directly adjacent to AMEC to the north. This purchase brings the total acreage to 56 acres, and the owner is interested in developing this land into some type of showcase housing community which would utilize the interesting and aesthetic features of these land parcels.
Goals and Objectives

[1] To develop a cost-effective housing land use that will generate an income for the property presently known as Auburn Meadows Equestrian Center, Fort Wayne, Indiana.
*** Develop a housing community with a high-quality living environment that will enhance the land features of the site and attract potential investors/buyers.
*** Maintain ample amounts of green space throughout the development for the recreational use of its future residents.

[2] To research alternate housing approaches that could be utilized in a cost-effective manner on this property.
*** Compare and contrast alternate housing approaches that are appropriate for this site.
*** Choose the housing approach that appears most appropriate to the site for further design development.

[3] To develop a comprehensive package of written and graphic material that will document all stages of this project.
*** Write a book summarizing all thoughts, decisions and processes involved in the completion of the project.
*** Graphically illustrate all steps of inventory, analysis and design.
Methodology

[1] Problem definition/ program development.
*** Analyse current owner situation.
*** Determine the focus and intent of the project.

*** Research various housing approaches that have been utilized in planned residential developments.

*** Investigate and map properties of the site, including soil, slope, vegetation, drainage, solar exposure, etc.
*** Analyse the Zoning Ordinance and Subdivision Control Ordinance of Allen County, Indiana, to determine local requirements.
*** Determine the feasibility of developing all or any of the site for housing
*** Build a study model of the existing site.

*** Investigate at a schematic level the use of various cost-effective housing approaches on the site, including cluster, zero lot line, and/or multiple unit housing.
*** Develop at a more detailed level the housing approach that appears most appropriate for the site, including design development of housing, open space, roads/access paths/boardwalk, and landscaping elements.
PLANNED UNIT DEVELOPMENT (PUD)

Introduction

Planned Unit Development is a type of residential land development with increasing importance; it is America's equivalent of the new community. PUDs have become important tools in the growth of metropolitan areas, as well as smaller communities. As a development technique, PUD permits a mixture of land uses (residential, commercial, and industrial) on the same tract of land; creativity in design, including clustering and mixing dwelling types; and the inclusion of common open space to be used by and maintained for the residents of the proposed development. PUDs become a separate entity developed as a whole within the overall masterplan of the community.

Origins of PUD

The concept of planned unit development is not revolutionary, but is an "evolutionary extension of the existing land use system" (Burchell, 1972). It is an out-growth of zoning, the method of separating areas into zones or districts with specific use, height, and setback requirements applied to each zone. After New York City implemented a comprehensive zoning ordinance in 1916, that system of land use control became popular in most areas of the country. Early zoning ordinances regulated land use on a lot-by-lot basis and provided simplicity in land use regulation by imposing a set of predetermined regulations
that allowed local governments to retain as much control over development as they wished. This also provided land owners with advance knowledge of what they would or would not be permitted to do with their land.

During the 1920s and 1930s, development was taking place one lot at a time in a slow, orderly fashion, and zoning was the solution to most land use conflicts. However, with the advent of rapid subdivision growth following the World War II period, problems with the system became apparent. Zoning did not address a number of problems associated with rapid development: it could not predict when and where development would or should occur; and transition was not provided from one zone to another. As developers began to build larger single-family developments to meet the housing demand, many developers met only the minimum requirements of zoning and subdivision ordinances. This usually meant fitting as many houses as possible on narrow grid-oriented lots, and open space was restricted to front and side yard requirements.

Ninety percent of all post-war residential construction consisted of single-family detached units that were located in areas outside the city on tracts of inexpensive land. This caused a sharp rise in the price of adjacent land. As development continued throughout the 1950s, much of it took place in areas with lower land costs farther out from the cities, creating a "leap-frogging" effect known as suburban sprawl (Moore, 1985). By the end of the decade, there was a growing need for a better approach to residential land use.
Early Alternatives To Standard Development

In spite of developers' tendency to promote suburban sprawl around cities, there were a number of earlier examples of alternatives to traditional subdivisions. In the late 1950s, developments began using the cluster approach and the density transfer concept. Their purpose was to hold down utility costs, preserve additional open space, and conserve land. This allowed the developer to build at higher densities in certain areas in order to preserve open space and natural features in other areas.

This "new concept" was based on an earlier project completed in 1929: Radburn, New Jersey. This project utilized the superblock plan that allowed fifteen percent of the total area to be devoted to an internal network of parks and landscaped walkways. Recreational facilities were also built, and all common open space and amenities were owned, managed, and maintained by a homeowners association.

In 1951, the cluster concept was successfully used in Conantum, a Concord, Massachusetts project, where clustering allowed sixty acres of woodlands and meadows to be preserved. This project also produced design economy through shorter streets and utility connections. The success of the project prompted local officials, although initially skeptical, to endorse clustering and density transfer concepts (Hanke, 1964). However, most planning officials were unwilling to implement alternatives into the traditional zoning and subdivision regulations.
PUDs On The Rise

The initial use of the cluster concept involved strictly single-family detached housing and did not encourage variety in housing types. While clustering provided flexibility, it was simply a design and planning concept (Moore, 1985). However, planned unit developments are both a physical plan and a legal concept, usually defined as a separate ordinance or provision of the Zoning and Subdivision Ordinance.

It is difficult to decide when PUDs first appeared, but by the early 1960s, many such projects had been built. Obviously an outgrowth of cluster housing, PUDs provided a variety of housing types and/or land uses, and a community association that managed and owned common open space and other amenities.

Several factors contributed to the growth of PUDs. Consumer preferences demanded housing variety and amenities that could not be provided through lot by lot development. The reduction of the housing shortage allowed consumers to be more selective. Typical zoning and subdivision controls did nothing to encourage quality and innovation in developments. Developers were becoming more sophisticated and devoted more time and resources to careful planning, and the rise in land costs made innovative alternatives more desirable. Awareness of environmental issues encouraged preserving natural features instead of clearing an entire site of trees and ground covers for ease of construction.
All these factors initiated a growing acceptance to PUDs on the part of the developer and the public.

Community officials also favored PUDs because of the recreational and service amenities that they provided at no cost to the community while at the same time adding to the tax base. PUDs also presented a type of planned approach to community growth that could be considered a part of the community's long-range development plans (Moore, 1985).

Despite all the favorable aspects, there was a deterrent to PUD use—the conflict between traditional zoning regulations and the conditions necessary for successful PUDs. Few PUD plans could comply with the required uniformity of regulations within zoning districts. Legal guidelines were needed at the state level before municipalities would draft PUD ordinances. In 1965, the Urban Land Institute presented model state and community enabling acts for planned unit developments. However, few states passed enabling legislation based on the model, but communities were reassured enough to develop their own PUD ordinances. By 1973, there were more than 100 PUD ordinances in 32 states (So, Mosena, Bangs, 1973).

Because PUDs allowed higher density development, they were seen as an opportunity to offer lower unit costs and thus more affordable housing. However, in the early years, any cost savings were usually offset by the high cost of the numerous amenities that were required to make early PUD projects marketable. In any case, PUDs were a more economical way to develop in built-up areas where land costs
were high. But despite the increasing popularity of PUDs, only three percent of all new housing units built between 1968 and 1973 were in planned unit developments (Burchell, 1973).

In spite of the relatively small percentage of PUD housing, they played a large role in the trend toward large-scale development in the 1960s and early 1970s based on the potential benefits of large-scale developments for developers and residents. These benefits included economies of scale in construction, increased efficiency in public service and infrastructure costs, variety and innovation in housing type, and a higher quality living environment due to better planning and availability of amenities (Moore, 1985). The highlight of this trend was the "new town", exemplified by Reston, Virginia and Columbia, Maryland.

Recessional Complications

The disadvantages of large-scale developments became obvious during the recession of 1974. Developers had become overly optimistic about marketing potential and the availability of financing for such large projects. This led to huge capital investments during a period of high inflation, rising interest rates, and low marketability due to the unstable economic conditions. Consumers were also reluctant to invest at high mortgage rates in innovative housing (zero-lot-line and cluster units) whose long-term appreciation and marketability were unknown. Also, the amenities offered by PUDs were considered unnecessary.
luxuries in a tight and volatile economy (Moore, 1985).

The recession, brought on by the energy shortage and rising prices, affected the character of PUDs in many ways. The rise in energy prices resulted in a more favorable market for more energy efficient attached units and smaller units that could be found in PUDs. The development of projects closer to employment areas allowed residents decreased travel time and travel expense, thus focusing development on closer, more built up areas. This focus, in turn, created an increase in the cost of land in those areas, which made land acquisition more difficult for developers.

The recession of 1981 also affected PUDs. Because of the rise in the prime interest rate to 21.5 percent, developers responded by building smaller units with fewer amenities that were located in small-to-mid-sized developments. The age of the large-scale PUD was on the decline due to the increased cost of financing. However, the large-scale PUD made a comeback as a result of joint venture partnerships which saw the entrance of large insurance companies and their vast reserves of capital into the development industry (Urban Land Institute, 1983). But sadly, in order to maintain a profit for developers, PUDs with good amenity packages had become available only to upper-income buyers (Moore, 1985).

As the housing industry has become accustomed to the rise and fall of economic and market conditions, PUDs have adapted to these changes. Overall, PUD development has
declined in recent years with an accompanying decline in the size of development. While some large-scale projects are still being developed, most PUDs are seen as a tool for development of difficult sites that were previously overlooked because of their natural features such as rough terrain. These sites can usually be purchased at lower land costs, so it is still possible for PUD units to be built and sold less expensively than units built under traditional zoning restrictions (Moore, 1985).
PUD Ordinances

Before a planned unit development can be built, the local governing board must approve a development provision that does not conform to the traditional regulations contained in the zoning ordinance or subdivision ordinance. In some communities, the PUD provisions are included in the zoning ordinance or subdivision ordinance, but they can stand on their own as a separate ordinance. Regardless of where they exist, their purpose is to allow development that is substantially different in both product and process from the standard zoning ordinance. Frequently, PUD provisions have been established at the request of local developers who seek regulation flexibility that will allow innovative projects. However, when developers were too closely involved, regulations were drafted that were more favorable to the developer than to the community. Increasing skepticism of developer involvement has caused many PUD provisions to be initiated by local planning staffs to retain control over development and to encourage planned rather than piece-by-piece growth of their communities. Sometimes, local interest groups have played an important role in developing PUD provisions.

The goals and objectives of PUD Ordinances vary greatly, depending on the location of the project, the size, and the people involved. But generally, the provisions deal with four main issues: flexibility in development standards; use of innovative housing types; use of increased amenities; and the role of negotiation in the process (Moore, 1985).
Flexibility in development standards concerns allowing variations of density and use in the requirements of the zoning ordinance, such as eliminating yard and setback requirements. This allows more innovative land planning and permits developers to tailor their project to the site and its natural features. Even though the developer must devote more time and money to the planning of the PUD, it will result in something other than the typical sprawling subdivision, usually with a higher-quality living environment. An added bonus is frequently increased density, allowing construction costs to be spread over more units with the result of more affordable housing units.

PUDs are an effective method of integrating a variety of housing types in one development. This is an important goal for some local governments due to the objections of single-family residents to the construction of multi-family housing in their immediate area. However, developers will usually provide only what the market will accept. Even though PUD ordinances are designed to encourage innovative housing, developers tend to steer clear of any housing types that are not proven marketable in that area (Tomioka, 1984).

PUDs typically provide a greater range of amenities than would be otherwise provided in a traditional subdivision, including recreational facilities and/or common open space. These amenities are encouraged by the municipality because: they promote a higher quality living environment; the amenities are constructed by the developer; and the amenities are maintained by the community.
association. However, the developer must carefully consider the amount of amenities included in a development: the more amenities present, the higher the marketability of the units; but with more amenities comes greater burden on the community association after the units are sold. This is very vital because amenities are of little importance if they are not properly managed and maintained (Moore, 1985).

The role of negotiation between developer and the local planning officials is perhaps the most important difference between traditional zoning ordinances and PUD ordinances. Each development is considered on its own merits in terms of what the area can handle, and the project usually ends up with a negotiated plan based on the desires of the municipality. The municipality has quality control over the entire development and can minimize adverse impacts on surrounding areas. However, the negotiated solution may or may not favor the developer, and the approval process is usually complex and time consuming.

Density is one of the most important issues handled by PUD ordinances. There are many ways to deal with the density issue. The ordinance may permit density transfer from one area of the site to another with no overall increase in density allowed for the entire site under traditional zoning. This technique can be useful to developers whose sites have unbuildable natural features, such as steep terrain or water features. Another approach involves density increases (bonuses) that can be granted provided the development includes considerable more amenities than would
be found in a traditional subdivision. A specified percentage increase in density can be allowed based on the percentage of common open space (developed or undeveloped) provided in the development. The percentages can vary depending on whether the common open space is developed for active recreation or undeveloped for passive recreation. A third approach to density would designate the required amount of square footage of common open space (both developed and undeveloped) based on the number of housing units in the development.

PUD ordinances may also include a variety of requirements relating to development standards, parking, landscaping, and many other aspects usually handled in zoning ordinances. Frequently, PUD standards for parking and landscaping consist of more requirements than in a typical subdivision. These standards may be spelled out in the ordinance or determined through the negotiation process.

All requirements for the submission of an application and the procedures to be followed by both the developer and the local government should be detailed in the PUD ordinance. This usually includes the steps to be followed by all involved, the items that need to be submitted for review, who is responsible for the various review stages, and the time limits, if any (Moore, 1985).

The PUD ordinance will have a direct impact on the final development of the project. If the ordinance allows for high-density development and a fast review and approval process, developers will be much more likely to take
advantage of the PUD ordinance in their developmental concepts. Allowable density is perhaps the most important factor of influence because of its implications in overall profit for the developer. With construction costs being spread over a larger number of housing units, more affordable housing units will also be the result. The amount of required open space will have a similar impact on the developer and the final product. Both of these factors help determine the feasibility of the development and the amount of financing required.

Adequate financing, for both the developer and the consumer, is critical to the success of PUDs. Developers must have sufficient funds available before even planning a major project. Initial professional services, such as planning, architectural, and engineering work, are significantly higher in a PUD project than in a traditional subdivision. A higher level of expertise is needed across the board when planning a PUD project, which raises planning costs. The length of the review and approval process will also impact the financial requirements because the process is more time consuming and results in a longer holding period for developers than in a traditional subdivision. During this lengthy process, the developer is liable for all interest and finance charges on funds borrowed for land acquisition and initial amenities construction. Frequently, local authorities will require that a substantial portion of the amenities be constructed before any permits for residential construction are granted. These front-end
development costs, coupled with high interest rates, can become quite a burden on the developer and may act as a negative incentive to PUD projects. Ultimately, the availability of permanent financing at reasonable interest rates for the developer and the consumer is a critical factor in the development of PUDs.

Even if all the above factors are present and favorable, the ultimate success of the PUD rests in the hands of the community association. The community association is usually composed of individual housing unit owners within the project organized for the purpose of maintaining, regulating, and operating common property of the project. Membership in the association is usually mandatory for unit owners. The association is frequently established by the developer prior to the sale of any units or lots through a Declaration of Covenant, Conditions, and Restrictions. This document, the association’s "constitution", establishes the rules by which the residents must abide, the responsibilities of the community association, and the powers of the association to assess monthly fees of the members. The amount of responsibility given the association can vary, depending on the amount and type of amenities in the project and the amount of private street and utility systems that are owned by the project. The association may also have the power to enforce height and setback requirements as well as screening, fencing, and landscaping requirements established for the project.

The main problems experienced by community associations
are concerned with the rising costs of maintenance and the lack of administrative expertise. If adequate monthly fees are not properly assessed and collected by the association, there will be a lack of adequate financial reserves from which to maintain the amenities. A lack of administrative expertise can cause serious long-term problems in amenities management. Most associations are run by a volunteer board with little management experience. The resulting problems can be reduced if the developer takes an active part in initial establishment and operation of the association and allows for a lengthy transition period to educate the residents in management practices before the developer relinquishes control to the association. Sometimes the use of a hired staff with management experience will alleviate these problems. However, the best way to avoid these problems is to involve residents in the management process as early as possible (Moore, 1985).

**Trends in the 1980s**

Although it is irrelevant to this study whether PUDs are growing in popularity, there are definite trends that affect their use in the 1980s. Financial constraints caused by high interest rates and increased land acquisition costs have caused a shift away from large-scale PUD projects. But for developers committed to a large-scale project, joint-venture partnerships can still make them feasible. It is also possible for developers to sell off portions of the site to other builders while maintaining basic control over
the development.

The PUD concept has also been applied to smaller sites with much success. But the normal result of this practice is a higher priced housing unit designed to appeal to an upper-income market whose children have grown up and left the home or who are looking for a second home. Reduced maintenance in most PUDs is an attractive feature for many upper-income couples.

The effect of inflation in the 1970s and 1980s has resulted in the acceptance of smaller units and higher densities for many housing markets. Because many potential home buyers have been priced out of the traditional single-family market, they are more willing to consider the alternatives offered in planned unit developments. Thus, the major trends that have influenced the PUD in recent years have all been related to economic and social conditions. The rise in interest rates and land costs have limited the feasibility of large-scale projects and resulted in smaller PUDs, the expansion of the childless couple and second-home market have made these projects more marketable, and inflation has led to the development of smaller units at higher densities. All of these trends have directly affected the nature of the PUD product (Urban Land Institute, 1983).
SITE INVENTORY & ANALYSIS

Context

Auburn Meadows is located immediately north of and adjacent to the boundary of the City of Fort Wayne, in Allen County, Indiana. It is presently surrounded by residential developments and rural residences. In the past few years, there has been a push by housing developers to the north of Fort Wayne, and some interesting planned residential developments have been and are continuing to be constructed in the area. To the west, a very recent single-family detached subdivision with sensitivity to the landform has been constructed with a density of 2.5 dwelling units per acre. To the northwest there is a grid-oriented single-family detached subdivision with a density of 3 dwelling units per acre; and to the north and east, rural residences at a density of one dwelling unit per 1.5 acres and up can be found.

Support facilities are being developed to the west and northwest, including office parks and shopping centers. Elementary through high school facilities are within one mile to the west. Interstate Highway 69 passes closely to the southeast; however, access to this system is limited to one to two miles away to the southwest (Coldwater Road interchange) or north (Dupont Road interchange).
**ZONING** | **DESCRIPTION** | **MAXIMUM DENSITY** | **HEIGHT LIMIT** | **MIN. NET LOT AREA** | **MIN. FRONT FACING RECREATION** |
--- | --- | --- | --- | --- | --- |
RSP-1 | SINGLE FAMILY DETACHED | 520 sq ft | 25' MAB | 2,250 sq ft | 50' | NA  
RSP-3 | PLANNED SINGLE FAMILY DETACHED | 520 sq ft | 25' MAB | 2,250 sq ft | 50' | NA  
RSP-3 | PLANNED MULTIPLE FAMILY | 200 sq ft | 25' MAB | 1,500 sq ft | 50' | NA

**AUBURN MEADOWS**
Community Developments
ADJACENT ZONING/LEGAL CONSTRAINTS

LARRY KLOOZE
LA 405 6
May 1988
Scale:  

N°
Initial analysis of the immediate site area uncovers a variety of landscapes and forms that are a result of the centuries of geologic formation and the decades of man's minimal improvements.

Geology

In most of Allen County, the parent material is a result of the Wisconsin Glacier Age which left a series of ground and terminal moraines throughout northern Indiana. This glacial drift consists of silty and clayey material mixed with varying amounts of sand and gravel-size to boulder-size rock fragments that is between 100 and 200 feet thick. Auburn Meadows is situated on the Wabash moraine overlying the Traverse and Detroit River bedrock formations. The flood plains in this area are a result of alluvium buildup over the ages due to periodical flooding of the streams and rivers. These factors present no severe limitations to development of the site as a planned residential community.

Soils

The land at Auburn Meadows is part of the Morley-Blount Soil Association that is found in upland areas of the county. These soils consist of Morley, Blount, Washtenaw & Eel series, and they are generally deep, moderately well drained to somewhat poorly drained, nearly level to steep, medium-textured silt loam soils on uplands.

More specifically, the Morley series consist of deep,
moderately well drained, gently sloping to steep soils on uplands. There are four types of Morley soils on this site: MrB, MrB2, MrC2 & MsD3. On all Morley soils, erosion is a major hazard, and controlling runoff is a problem. This is complicated by surface topsoil layers that are only 3 to 6 inches thick on MrB2 and MrC2, and less than 3 inches on MsD3, which is also traversed by gullies 18 to 24 inches deep. These factors result in poor suitability for road subgrade, moderate to severe limitations on foundations, but fair to good suitability for ponds and reservoirs.

The Blount series, BmA and BmB on this site, are also silt loams that are deep, somewhat poorly drained, nearly level and gently sloping soils occurring on upland till plains. Blount soils have a slight hazard of erosion, but its main limitation is wetness due to a high water table. This results in poor suitability for road subgrade and severe limitations for building foundations, but fair suitability for ponds and reservoirs.

The Washtenaw series (Wh), also a silt loam, consists of deep, very poorly drained, nearly level soils in upland depressions and on bottom lands. Washtenaw soils' major limitation is wetness, and this results in poor suitability for road subgrade and severe limitations for foundations, but fair to good suitability for ponds and reservoirs.

The last soil series, the Eel series, is also a silt loam. It consists of deep, moderately well drained, nearly level soils on bottom lands. This soil is on stream banks close to the main channel, and flooding and streambank
erosion are serious hazards. These factors result in poor suitability for road subgrade and severe limitations for foundations, but fair suitability for ponds and reservoirs.

Overall, these soils are generally unsuitable to development comprised of roads and buildings because of the moderate to severe limitations that occur throughout the site for the implementation of these man-made structures. However, the fact that identical soils were recently developed immediately west of Auburn Meadows indicates that architectural and engineering problems derived from the soils on this site can be overcome through fairly common engineering practices but will result in increased costs overall for development as a planned residential community. Therefore, it is extremely important that the community be planned and designed cost-effectively to reduce development costs throughout the site in order to offset the increased costs that are due to the soil conditions. This can be facilitated by limiting the lengths of streets and reducing the road widths and right-of-ways, as roads are one of the costliest and energy/labor intensive basic needs associated with community development.
<table>
<thead>
<tr>
<th>SOILS, SUITABILITY</th>
<th>BmA</th>
<th>BmB</th>
<th>Es</th>
<th>MrB</th>
<th>MrB2</th>
<th>MrC2</th>
<th>MsD3</th>
<th>Wh</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL TYPE</td>
<td>silt loam</td>
<td>silt loam</td>
<td>silt loam</td>
<td>silt loam</td>
<td>silt loam</td>
<td>silt loam</td>
<td>silt loam</td>
<td>silt loam</td>
</tr>
<tr>
<td>SLOPE</td>
<td>0-2%</td>
<td>2-6%</td>
<td>0-2%</td>
<td>2-6%</td>
<td>2-6%</td>
<td>6-12%</td>
<td>12-18%</td>
<td>0-2%</td>
</tr>
<tr>
<td>EROSION FACTOR</td>
<td>Iw-2</td>
<td>Iw-2</td>
<td>I-2</td>
<td>Ile-6</td>
<td>Ile-6</td>
<td>Ile-6</td>
<td>Vle-1</td>
<td>IIw-1</td>
</tr>
<tr>
<td>CAPABILITY UNIT</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>WOODLAND GROUP</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>SHRUB SUITABILITY</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>SUITABILITY FOR:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand &amp; Gravel</td>
<td>unsuit.</td>
<td>unsuit.</td>
<td>unsuit.</td>
<td>unsuit.</td>
<td>unsuit.</td>
<td>unsuit.</td>
<td>unsuit.</td>
<td>unsuit.</td>
</tr>
<tr>
<td>Road Subgrade</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
</tr>
<tr>
<td>Drainage</td>
<td>slow/HWT</td>
<td>slow/HWT</td>
<td>flood</td>
<td>ok</td>
<td>ok</td>
<td>ok</td>
<td>slow/HWT</td>
<td>fair-good</td>
</tr>
<tr>
<td>Pond/Reservoir</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>LIMITATIONS FOR:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation overall</td>
<td>severe</td>
<td>severe</td>
<td>severe</td>
<td>mod-sev.</td>
<td>mod-sev.</td>
<td>mod-sev.</td>
<td>mod-sev.</td>
<td>severe</td>
</tr>
<tr>
<td>Bearing Capacity</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>Shrink/Swell</td>
<td>moderate</td>
<td>moderate</td>
<td>mod-high</td>
<td>high</td>
<td>high</td>
<td>high</td>
<td>high</td>
<td>moderate</td>
</tr>
<tr>
<td>Frost/Heave</td>
<td>mod-high</td>
<td>mod-high</td>
<td>mod-high</td>
<td>mod-high</td>
<td>mod-high</td>
<td>mod-high</td>
<td>mod-high</td>
<td>mod-high</td>
</tr>
<tr>
<td>Shear Strength</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>poor</td>
<td>fair</td>
</tr>
<tr>
<td>Water Table</td>
<td>seawater</td>
<td>seawater</td>
<td>flood</td>
<td>high</td>
<td>high</td>
<td>high</td>
<td>high</td>
<td>high</td>
</tr>
</tbody>
</table>
Hydrology, Topography

Threading through the heart of the site, Beckett's Run flows from west to east across the width of the property. This establishes two basic zones of land sloping up and away from the creek that provide higher elevations in the northern and southern sectors and good views over the central creek area. A few drainage swales flow into the stream as it crosses the site. Beckett's Run is part of a larger floodplain that could provide many opportunities for ponding and the use of water features. Near the creek, various burrowed areas provide interesting relief in the landscape, and the creek bank itself is somewhat vertical in places. Utilization of the creek and low land area as community open space would retain these features and help provide a quality living environment for the future residents.

Vegetation

There occur various mature tree lines and masses around the property that protect the natural drainage features of the site. The tree line around the perimeter to the north, south, and west is fairly consistent, with slight visual penetration in the winter, but adequate screening in the summer when the foliage is present. The tree line at the creek creates a visual division of the land into two major sloping parcels. Two tree lines, one located just south of the creek running east to west and another separating the new 16 acre parcel from the original 40 acre parcel, create
HYDROLOGY/TOPOGRAFHY

RECHETTS RUM FLOWS WEST TO
CAST ACROSS THE PROPERTY,
ESTABLISHING TWO ZONES OF
LAND SLOPING UP AWAY FROM
THE CREEK THAT PROVIDE GOOD
VIEWS OVER THE CENTRAL
CREEK AREA. AN EXTENSIVE
FLOODPLAIN PROVIDES MANY
OPPORTUNITIES FOR PONDING
AND OTHER WATER FEATURES.
VARIOUS BURRORED AREAS
PROVIDE INTEREST AND RELIEF
IN THE LANDSCAPE.

VEGETATION

VARIous TREE LINES AND MASSES
PROTECT THE NATURAL DRAINAGE
SYSTEM, THE TREE LINE AROUND
THE PERIMETER PROVIDES FAIRLY
Adequate screening and
ENCLosure. THE TREE LINE AT
THE CREEK DIVIDES THE SITE
INTO TWO MAJOR PARCELS, WITH
OTHER TREE LINES AND MASSES
proVIDING SMALLER "OUTDOOR
ROOMS" WHICH PROVIDE FURTHER
ZONAL DEVELOPMENT TO THE
SITE.
further division of the total area. The internal tree lines, the creek, and the topography help define spaces and provide aesthetic interest and zonal development to the site. These features should be retained as much as possible to provide variety in the environment for the proposed community development.

Structures and Utilities

Man-made structures consist of the existing equestrian facility which is concentrated in the southwest and southeast sectors of the property (mainly southeast). The existing structures include a large indoor arena/stable, a two-story residence, a maintenance building, a medium-sized barn, an outdoor stable, an outdoor stadium, a dressage ring, various paddocks (fenced-in areas) for temporary animal storage, and two one-lane bridges crossing the creek. All structures serve to provide a complete equestrian experience to visitors. A portion of the equipment (jumps, fences) is becoming run down due to lack of consistent maintenance, but everything is rustic in nature.

On site circulation is composed of a one-lane gravel road that loops from east to west in the southern sector, with a minor vehicle path crossing across the creek, to the west, and back across the creek to hook into the loop road. Parking areas exist at the entrance to the property. The entrance to the facility is hazardly located at a low spot on the bordering road (Auburn Road), and entrance and exit visibility is hampered by the rise to the north and south.
STUCTURES
Man-made structures are concentrated on the southern one-third of the site and all are related to the existing equestrian facility. The structures include:
- Indoor arena/stables
- Two-story residence
- Two maintenance buildings
- Barn
- Outdoor stables
- Outdoor stadium
- Various paddocks
- Two bridges

Circulation consists of a one lane gravel road that loops east-west to provide access to all structures. Parking is provided at the entrance. Access from Auburn Road is provided at a hazardous point due to the rise to the north and south limiting visibility.

UTILITIES
Other than the usual lines servicing the residence, the only utility is a sanitary sewer line running parallel to the creek to its north crossing the entire site. This line services the development to the west.
The public utility has constructed a sanitary sewer line that runs parallel to the creek about twenty feet to the north across the entire site. This system could be easily tapped into and utilized by the proposed development. It is the only utility line that runs through the site. Natural gas service is available at the Auburn road right-of-way and runs the length of the site. City water services Lincoln Village to the west, and there is the possibility of linking into that system on the west side of the site.

**Visual Interest**

As mentioned before, the topography provides many interesting vantage points throughout the site. There is an excellent view of the central site area from Auburn Road at its higher point, and the natural high points on the northern and southern sectors of the property provide exceptional views across the flood plain. These views are broken up into six smaller parcels by the tree lines that enclose, cross, and enhance the landforms. The proposed community development should utilize the visual features of the site by orienting housing, open space, and circulation to take advantage of the views.
Overlay Analysis

Soils

All soils are potential development sites with the exception of the Eel soils, which are located in the flood plain. Although there are limitations for development of the other soil types, these can be overcome through common engineering practices.

Hydrology

The flood plain area is not suitable for development because of the spring flooding sequence. Natural drainage swales are suitable for development, but it is preferable to retain these features in their natural condition as much as possible in order to preserve the natural drainage system.

Vegetation

The existing mature vegetation should remain for its aesthetic and screening capacity. Therefore, these features are considered unsuitable for development.
Overlay Summary

The areas considered unsuitable for development include the flood plain, the major drainage swales, and the parts of the site bearing mature vegetation. This still leaves much of the northern and southern sectors of the entire site as suitable for the development of roads and structures. The unsuitable areas can be utilized as open space, as these areas spread throughout the central site area in the vicinity of the creek and would provide an ample system of green space flowing through the site's central area with excellent opportunities for development of ponds and passive recreation areas.
DEVELOPMENT CRITERIA

Site/ Open Space
***Promote efficient, cost-effective use of land
***Provide variety of land uses, housing types
***Provide a comfortable, charming human scale environment
***Provide a minimum of 25% of site as open space
***Retain drainage swale as major open space corridor
***Use natural engineering for storm drainage
***Protect flood plain
***Promote passive recreation
***Provide detention ponds as visual assets
***Provide strong landscape treatment around housing units
***Provide visual order and structure to site
***Provide visual and physical buffers, screens
***Provide vegetation, landforms as windbreak on N & W
***Provide trellised walk where appropriate
***Provide clubhouse for social activities of residents

Housing
***Fit buildings to landform
***Preserve open space and unique natural features
***Retain natural drainage system
***Concentrate dev't on less aesthetic areas
***Reduce auto impact wherever possible
***Provide housing for variety of households
***Do not segregate household types
***Provide mixture of housing types and densities
***Provide a sense of neighborhood
***Provide non-monotonous living environment
***Reduce development costs
***Reduce maintenance costs (roads, utilities)
***Provide small lots to reduce infrastructure costs
***Orient lots to take advantage of breezes
***Minimize front lot frontage on open space
***Maximize rear lot frontage on open space
***Avoid frontage on major collector
***Utilize minimum yard setbacks
***Use walls, fences, screens for sense of enclosure
***Provide usable and private sideyards
***Provide shared driveways, garages, carports
***Provide strong architectural design throughout
***Provide each unit with separate identity
***Provide southern exposure where possible
***Provide windbreak on N & W
***Provide screen in rear yard for privacy
***Provide exterior sense of enclosure for each unit
***Provide patios as transition area
***Arrange windows to outdoor rooms
***Use blank end walls and skylites to add interior privacy
***Use overhangs and trellises to provide facade interest
***Provide canopy, trellis, balcony, overhang on S
***Provide recessed windows on S & E
**Streets**

***Provide human scale veh. & ped. circulation networks***

***Reduce auto impact***

***Provide overhead canopy***

***Vary alignment to provide short vistas***

***Provide only T-intersections (90 deg.)***

***Provide signage at intersections***

***Layout roads so they form loops (max. 50 cars/loop)***

***Reduce minor collector to 28' ROW, 20' wide***

***Reduce major collector to 40' ROW, 26' wide***

***Use cul-de-sacs to reduce length of streets***

***Provide 45' OD turnarounds on cul-de-sacs***

***Provide neighborhood identity (gateway) at entrances***

***Provide major signage, landscaping, berming at entrances***

***Landscape all islands***

***Limit paved areas near house***

***Shade all paved areas near house (canopy, trellis, wall)***

***Use grasscrete shoulders on 20' width for extra parking***

***Eliminate curbs where possible (open space)***

**Parking**

***Supply adequate parking (2/u) at reasonable distance***

***Keep parking off street as much as possible***

***Provide garage, carport for each unit***

***Use canopy trees to shade***

***Use grasscrete for infrequent use areas and driveways***

***Use 18' setback to provide ample parking space in drive***
**Utilities**

***Use common trenching***

***Shorten length of streets, utilities with clusters***

***Reduce setbacks to shorten utility connections***

**Walks/ Paths**

***Layout paths separate from roads (independent network)***

***Provide access to site's unique features***

***Provide 5-6' path to accommodate pedestrian and bicycle***

***Provide gazebo at major pathway nodes***

***Provide pathway from cul-de-sac to cul-de-sac***

***Provide benches periodically along path network***

***Group mailboxes for each cluster on path***

***Walks not needed on short streets, cul-de-sacs***

***Provide sidewalk along one side only on minor collector***

**Vegetation**

***Retain existing vegetation as much as possible***

***Provide scale, unity, privacy, shade, windbreak, screen***

***Utilize trees lines to organize and define space***

***Use vegetation to create and enhance natural landscape***

***Provide screen and shade for parking areas***

***Soften the raw appearance of new developments with veg.***

**Walls/ Fences**

***Provide clear separation of private and public areas***
HOUSING COMPARISON

Clustering

Preserves open space
Efficient use of land features
Ends monotony
Provides sense of neighborhood
Allows mixture of housing types and densities
Concentrates dev't on buildable part of site
Retains natural drainage
Less erosion control needed
Reduces development costs
Reduces clearing and grading in construction
Reduces infrastructure
Reduces maintenance costs (roads, utilities)

Small Lot

Zero lot line flexibility
Less yard maintenance
Minimum yard setbacks
Open space more essential to separate clusters
Vegetation needed for privacy
Walls, fences provide sense of enclosure (outdr.rm.)
Overhangs and trellis add interest
Patio a must
Arrange windows to outdoor rooms
Blank end walls and skylites add interior privacy
Attached (duplex, triplex)

Requires less land
Small property easier to maintain
Provide each unit with separate identity
Provide wall in rear yard for privacy

Zero Lot Line

Sideyard usable & private (easement req. for maint.)
Shared driveways, carports, garages reduce auto impact

Townhouse

Supply adequate parking not too near or far
HOUSING ANALYSIS

The analysis of the potential housing types to be utilized on this site is based on the development criteria of the site. This has been done in the form of a matrix (following). The matrix compares the main development criteria to housing types, layout types, and lot sizes. The housing types considered include attached single-family, zero-lot-line single-family, and townhouse multi-family units. The layout types considered include cluster arrangements and standard grid layout. Lots were analyzed by size: large (more than 20,000 sq.ft.), medium (8,000 to 20,000 sq.ft.), and small (less than 8,000 sq.ft.).

The results of the housing type analysis indicate that all three types are considered suitable for use on this site, with minor reservations concerning the townhouse multi-family types due to the increased concentration of automobiles in the immediate area.

The housing layout analysis shows that cluster layouts compare favorably to the development criteria, while the standard layout indicates major conflicts with many of the criteria.

The lot size analysis favors small to medium sized lots, with small lots showing strong suitability when compared to almost all of the development criteria, and with medium lots showing moderate suitability for their use on this site. Large lots indicate major conflicts with most of the development criteria.
The overall results of this matrix show favorable suitability for the use of attached single-family units, zero-lot-line single-family units, and townhouse multi-family units when used in a cluster arrangement on small to medium sized lots.
<table>
<thead>
<tr>
<th>Suitability</th>
<th>Attended single-family</th>
<th>Zero lot line single-family</th>
<th>Townhouse multi-family</th>
<th>Cluster</th>
<th>Standard layout</th>
<th>Large lot</th>
<th>Medium lot</th>
<th>Small lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient use of land</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Preserve open space</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Retain natural drainage</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Integration of equest. trail</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Create human scale env.</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Concentration of dev't.</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Reduction of auto impact</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Create sense of neighborhood</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Reduce dev't costs</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Efficient path system</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Energy efficient housing</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Provide frontage on open space</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Create sense of enclosure</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Provide shared driveways</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Create strong landscape element</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>Provide adequate parking</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
</tbody>
</table>
PROGRAM

This site will be developed in such a way as to provide numerous opportunities for passive recreation in the open space/creek corridor. There will also be two active recreation elements (tennis courts and a swimming pool) provided for those residents who are more physically oriented. These active elements will be located within close proximity of the clubhouse and centrally located on the site for easy access by all residents. This clubhouse complex will be the focal element of the entire site. It will be located on higher ground so that views from the clubhouse will focus on the creek corridor. The clubhouse should be visible from the main entrance of the housing community, but not near the entrance. The clubhouse will also include a deck for sunning and relaxation, a party room for use by the residents, and the community association offices.

A path system will be provided for bicyclers, joggers, and strollers that will wind throughout the site and act like fingers protruding into the housing areas to the north and south of the open space corridor, providing easy access from the housing clusters to the main open space areas. Playgrounds will be situated near the path system and close to the housing areas, accompanied by gazebos, so that families will have a place to go to play with their children without having to walk all the way to the creek corridor or clubhouse.

The open space/creek corridor will be developed with a
series of water features (ponds) for visual interest, and paths will be prominent around their perimeter so that residents will be encouraged to interact with these features. Footbridges will cross the creek to provide path connections for the northern and southern sectors of the site.

Refer to the Program Relationship Matrix (following) for further analysis of the relationships between individual items within the community.
<table>
<thead>
<tr>
<th>Relationship</th>
<th>Passive open space</th>
<th>Pond/creek</th>
<th>Patte</th>
<th>Equestrian trail</th>
<th>Bike rack</th>
<th>Rest room</th>
<th>Bench</th>
<th>Clubhouse</th>
<th>Tree cluster</th>
<th>Housing</th>
<th>Wall, fence</th>
<th>Patio</th>
<th>Parking</th>
<th>Garage, carport</th>
<th>Intense landscaping</th>
<th>Utilities</th>
<th>Major street</th>
<th>Minor street</th>
<th>Entrance</th>
<th>Playground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive open space</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Pond/creek</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Pavillion, gazebo</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Path</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Equestrian trail</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Bike rack</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Rest room</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Bench</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Clubhouse</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Tree cluster</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Wall, fence</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Patio</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Parking</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Garage, carport</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Intense landscaping</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Major street</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Minor street</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Entrance</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
<tr>
<td>Playground</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ● ● ●</td>
<td>● ● ● ●</td>
<td>● ● ● ●</td>
<td></td>
</tr>
</tbody>
</table>

**Relationship**
- ● strong
- ○ moderate
- ○ little
- none
- ★ conflict
CONCEPTUAL DIAGRAM

LEGEND

CREEK
MAJOR STREET
MINOR STREET
PATH
PAV PAVILLION
BR BIKE RACK
RR REST ROOM
B BENCH
CH CLUBHOUSE
PG PLAYGROUND
P PARKING
***The natural features of the site, including mature vegetation, the creek, and the topography, separate the site into nine zones of development that are each different in size, shape, and features contained within.
**Includes creek, flood plain, and major drainage swale.**

**Potential to bleed into northern section from drainage swale and south toward pond.**

**Corridor is broken up into smaller parcels by existing mature vegetation.**
***Exceptional views over creek & pond areas from adjacent higher ground.
***Good views of rolling terrain in creek area from higher elevations to the north and south.
**Open space buffer separates existing rural residences.**
**Single-family medium density adjacent to existing single-family medium density located to west & southwest.**
**Single-family higher density centrally located north & south, separated from existing single-family housing.**
**Multi-family high density adjacent to Auburn Road to reduce internal traffic flow.**
**Multi-family high density adjacent to proposed multi-family across Auburn Road.**