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ENVIRONMENTAL RESOURCE ANALYSIS  
OF URBAN RESIDENTIAL SETTINGS

by

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B.A.E., Wichita State University, 1972

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A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1977

Approved by:



Major Professor

Document #  
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## PREFACE

My interest in education and environmental concerns directly affected my choice of a thesis topic. Utilizing my knowledge of landscape architecture in a manner which related to environmental education was the goal.

While I was not able to deal with some of the sociological issues, this subject did allow me to focus on community environmental awareness. I was able to combine my education experiences with my personal concerns in the completion of this thesis.

## ACKNOWLEDGEMENTS

Sincere thanks and appreciation are extended to the following members of my advisory committee for their direction, encouragement and assistance in the preparation of this report. Their review is greatly acknowledged.

Tony Barnes	Major Professor
Dr. Robert Ealy	Committee Member
John Selfridge	Committee Member
Raffaella Nanetti	Advisor
Tom Haldeman	Advisor

## INTRODUCTION

The quality of the environment has historically been a concern to some individuals. John Muir, Aldo Leopold and Henry Thoreau, to name a few, have written about the natural environments with which they were familiar. In the past few years even more people have begun to pay attention to the environment. Animated discussion concerning natural resources and ecology has resulted in people experiencing a growing concern for the surrounding natural environment. This has also resulted in creating a new interest in and a heightened awareness of ones living environment. People are examining the places in which they live and are questioning whether or not they are the best possible places. This expanded awareness has been the result of several factors. One of these factors is increased desire for individual personal growth. As people begin to see their surroundings as reflections of themselves, more care and planning goes into choosing or modifying environments in which to live.

Another factor which has resulted in more concern for the surrounding environment has been the additional amount of information to which people have access, about the places in which they live. More information about the natural resources of these environments is also being made public. This has caused people to examine more closely

their environmental resources and has created a desire among residents to use these resources more wisely.

This expanded awareness reflects what experts in the field of resource analysis have said about the manner in which people view their natural and physical resources. Ian McHarg, a contemporary landscape architect, has stated, "The ecological view requires that we look upon the world, listen and learn."<sup>1</sup> While discussing some of the new ways which people have of looking at their environments, Paul Brooks, in his concern for current land use issues, said, "Underlying this philosophy is the realization that land is not a commodity but a trust. True ownership of a piece of land resides not solely with the holder of the deed, but with all those who know and love it."<sup>2</sup> Along this same line of thought, J.B. Jackson, whose concerns deal with the perceptual quality of the environment, said, "Our relationship with the environment, natural and man made, has greatly changed in the past fifty years. More and more we are inclined to use it as a tool for creating our identity."<sup>3</sup>

One result of this combination of concerns has been that more knowledgeable decisions are being made about how

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<sup>1</sup>Ian McHarg, Design With Nature (Garden City:Double-day, 1969), p. 29.

<sup>2</sup>Paul Brooks, "Acquiring and Protecting Land," Challenge for Survival, ed. Pierre Dansereau (New York: Columbia University, 1970), p. 73.

<sup>3</sup>J.B. Jackson, Landscapes, ed. Erwin H. Zube, (University of Massachusetts, 1970), p. 78.

our natural resources should be used. Jackson optimistically stated, "Each age sees the world in its own manner and has its own notion of beauty; each of them rediscovers the landscape. We ourselves are in the midst of such rediscovery."<sup>4</sup>

This thesis focuses on one way to discover something more about residential environments. In his book dealing with people's attitudes about their surrounding landscape, Peter von Dresser said, "Familiarity with the environment in a new and richer perspective is necessary in order to help visualize and grasp the wide range of opportunities at hand."<sup>5</sup> Therefore, learning about this environment is essential if its resources are to be wisely used.

A desire for greater familiarity with the environment has resulted in an increased demand for knowledge about the environments close to home. Increased need for quality residential environments means that greater effort must be made to find out of what these environments consist. The information basis for finding out about the resources in a given environment is called resource inventory, and the determination of appropriate or different uses for these resources is called resource analysis. This thesis will explore the inventory and analysis of resources as a

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<sup>4</sup>Ibid., p. 113.

<sup>5</sup>Peter von Dresser, A Landscape for Humans (Albuquerque:Biotechnic, 1972), p. 11.



process through which people can gain a better understanding of their home environments. In turn, inventory and analysis are the beginning phases of a larger process which includes decision making, implementation and re-evaluation.

The residential environment consists of the places in which people live; their homes, yards and streets - the entire residential setting. This is an environment to which a person can relate and an environment over which one may have some control. It is also a scale at which individual people can work to find out how environmental resource analysis is carried out.

Conducting an inventory and analysis of resources at the residential scale will result in increased knowledge about and awareness of this environment. Knowing what is there and how one feels about it is a requirement which should be met before any decisions are made concerning alternate uses of these resources.

Since one important aspect of changing the way people live with and treat their environment is to be personally involved with it, this thesis will stress the inventory and analysis of resources at a personal level and as a personal process. It is the intent of the author to show how a similar inventory and analysis could be conducted by a person interested in doing so.

This thesis will demonstrate how people can become more aware of their physical environment and of its impact on them. This is an essential prerequisite if people are

to learn how to use or change their environment to suit their needs.<sup>6</sup> The feeling of competence people get from learning about themselves in relation to the places in which they live is believed to have a telling effect in opening up new possibilities for the use of the resources.

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<sup>6</sup>Fred I. Steele, Physical Settings and Organization Development (Reading:Addison-Wesley, 1973), p. 11.

## Chapter 1

## BACKGROUND OF THE STUDY

## Urban Residential Settings

While it is possible to conduct a resource inventory and analysis at nearly any scale, this study requires a size and scale of environment to which people could easily relate, and one with which they were familiar. The need for choosing a familiar environment is supported by Bernard Orell, an ecologist, as he discussed a similar kind of environmental awareness. "My commentary really then relates to the necessity for a thoughtful educational effort to have people think in terms of the environment in which they live and of the needs that relate to that environment."<sup>7</sup>

Most people live in urban residential settings and so this environment was chosen to be explored. Sharing the concern for this scale of environmental awareness, Randolph Hester writes, "To guarantee themselves a quality of life at home, residents have begun to show greater interest in their neighborhoods."<sup>8</sup>

Peter Blake, in his graphic book about urban

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<sup>7</sup>Bernard L. Orell, "Commentary", Challenge for Survival, ed. Pierre Dansereau (New York:Columbia University, 1970), p. 59.

<sup>8</sup>Randolph Hester, Neighborhood Space:User Needs and Design Responsibility, (Stroudsburg:Dowden, Hutchinson and Ross, 1975), p. 9.

environments, describes an urban residential setting as follows: "The mess that is suburban America departs from the sentimental assumption"... "that everybody should live in their own house on a small lot. The most common residential unit today is a single house of about 1,200 square feet placed on a lot that is 60 feet wide and about 120 feet deep. The house is set back some 25 feet from the sidewalk and about 10 feet from each of the side lines of the property."<sup>9</sup> This is an urban residential setting, and the area chosen to be dealt with consists of single family residences on lots approximately the size that Blake describes.

Blake describes these places as "interminable wastelands dotted with millions of monotonous little houses on monotonous little lots. We walk or drive through them each day; this is where we work, shop and are born, exist and die. What manner of people is being reared in these infernal wastelands? One answer is 'people who no longer see'."<sup>10</sup> If what Blake says is even partially true, then the need to develop methods whereby people can "see" these surroundings is abundantly clear. As Hester succinctly writes, "The public need for well-designed, socially suitable, livable urban neighborhoods that allow for growth of the individual and the change of the neighborhood in a context of holistic community development is clear."<sup>11</sup> He

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<sup>9</sup>Peter Blake, God's Own Junkyard (New York:Holt, Rinehart and Winston, 1964), p. 18.

<sup>10</sup>Ibid., p. 8.

<sup>11</sup>Hester, op. cit., p. 2.

continues by writing that "people in middle-class as well as in poor neighborhoods are saying that a good, clean, livable environment begins at home."<sup>12</sup>

According to Robert Sommer "The logical starting place is ones environment where the scale of problems is manageable and the effects of efforts are apparent."<sup>13</sup> So, for these reasons, an urban residential setting was selected as the environment in which to conduct a resource inventory and analysis. With the urban residential setting as the "logical starting place," the next step is to discuss resource inventory and analysis techniques and develop a method of applying them to this particular environment.

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<sup>12</sup>Ibid., p. 3.

<sup>13</sup>Robert Sommer, Design Awareness (San Francisco: Rinehart, 1972), p. 49.

## Resource Inventory and Analysis

An inventory and analysis of resources can be conducted in a number of ways, however, three methods have been developed which function as guides. These three methods are presented in the book Three Approaches to Environmental Resource Analysis<sup>14</sup> and they were developed by L. Angus Hills, Phil Lewis and Ian McHarg, all of whom are involved with environmental resource analysis, planning and development.

Conducting an inventory entails finding out about and listing or mapping everything that could conceivably be a resource in a chosen setting. Hills starts with a large region of land and breaks it down into smaller units of physiographic differentiation. In each breakdown a different aspect of physiographic make-up such as macro-climate, land form, geology, soils or micro-climate is considered until the smallest unit of homogeneity in landscape features is identified. This smallest unit is then related to a predetermined set of general land use categories.

His method of breaking down larger regions into units of physiographic differentiation based on climate and

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<sup>14</sup>Raymond Bellmap and John Furtado, Three Approaches to Environmental Resource Analysis (Washington D.C.: Conservation Foundation, 1967).

landform features was helpful in determining the residential settings with which to work. These became housing site types with similar landform characteristics throughout. While climate was similar throughout the sites, variety in landforms sometimes resulted in some unique micro-climates being formed. A variety of landforms in each of the different sites and similarity of landforms throughout the particular site were the criteria used in selection.

In his approach, Phil Lewis stresses public awareness of the patterns, both natural and cultural, within the landscape. His work has been centered about the identification of patterns of unique perceptual quality within the landscape. His objective is to identify, preserve, protect and enhance the most outstanding intrinsic values and see that introduced man-made values are developed in harmony with these quality resources. By examining the quality of the environment in which people have their homes, they can begin to recognize unique perceptual quality within their own residential settings. Each chosen site was examined for any unique resources and the over all selection of sites consisted in part of finding areas that contained some unique perceptual or physical characteristic.

Ian McIlarg stresses yet another aspect in his approach to environmental resource analysis. He feels that the landscape reflects the interaction of a complex system of biological processes and that these constitute natural determinants of land use. The procedure established by

McHarg interprets and applies the knowledge of the natural sciences to planning the location and form of development. This cannot be accomplished without a comprehensive inventory of the natural and physical features. This inventory process was used in this study to find out what natural and physical resources exist in the residential settings.

In order to find out how resources might be defined, and which resources should be explored, it was necessary to review the literature about this subject. "Geology and soil, topography and slopes, drainage, vegetation, wildlife, micro-climate, man-made features, visual qualities and relationships, legal regulations, and historical associations are common headings for data collection,"<sup>15</sup> according to Michael Laurie in his introductory book about landscape architecture.

Randolph Hester discussed the subject in terms of spatial resources and included the following: "such spaces as parks, street corners, storefronts, alleys, rooftops, sidewalks, schoolyards, playgrounds, parking lots, streets, paths, junkyards, yards, front porches, streams, abandoned lots, undeveloped lots, secret niches, plazas, churchyards, trash dumps, woods, bus stops, front steps, gardens, outdoor cafes, phone booths, forbidden places, favorite places, utility spaces, floodplains, ponds, greenways, conservation easements, beautification areas, and transportation corridor

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<sup>15</sup>Michael Laurie, Introduction to Landscape Architecture (New York:American Elsevier, 1975), p. 117.



spaces."<sup>16</sup>

Laurie continues his list with "factors that affect the site but are invisible on it. These include for example, building codes and development regulations. There may be other legal aspects such as right of ways and easements."<sup>17</sup>

Vegetation is another resource and it comes in many forms as Frank Egler points out. "There are home grounds. This is the domain of the lawns."<sup>18</sup> Other categories of greenery in the suburban landscape may be parks, forest lands or wildlife lands. He continues with "a type of land which many of you may not have thought about; the sides of our highways, the transmission lines of electric utility corporations, the pipelines of our oil companies, the telephone lines with the greenery underneath."<sup>19</sup>

From this list of potential resources were chosen those that typically applied to residential environments. Similarity in these environments would mean a similarity in some of the resources, but variety in topographical features resulted in some variety in physical resources. However, it was concluded that a typical residential areas would probably contain private home lots, streets, public utilities and access to those utilities as well as sidewalks, drainage

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<sup>16</sup>Hester, op. cit., p. 20. <sup>17</sup>Laurie, op.cit., p. 121.

<sup>18</sup>Frank Egler, "Ecology and Management of the Rural and Suburban Landscape" Challenge for Survival, ed. Pierre Dansereau (New York:Columbia University, 1970), p. 87.

<sup>19</sup>Ibid., p. 91.

swales, easements and vegetation in its varying forms. Other resources would include aspect, micro-climate, views and landmark features.

The field work part of this study consisted of conducting an inventory and analysis of the resources in each of the chosen residential settings. Since the process was developed and tested in specific neighborhoods, and the focus of the thesis is to illustrate a process by which people can become more familiar with their own environment, an evaluation of the methodology used and development of guidelines for its future use became necessary and they are included in the concluding sections. These were necessary components in order to fulfill Hester's claim that one must take "a responsibility for the development and use of new skills, policies and methodologies necessary for designing socially suitable, livable urban neighborhoods."<sup>20</sup>

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<sup>20</sup>Hester, op.cit., p. 12.

## Chapter 2

### SELECTION OF THE STUDY SITES

Selection of the urban residential settings for this study involved several steps.

1. Previously mapped information about Manhattan, Kansas was examined. This consisted of a booklet entitled Environmental Assessment of Manhattan, Kansas and a series of accompanying maps, all of which were compiled by a Landscape Architecture Design IV class in 1976. The purpose of this research was to examine some of the unique and/or similar physical characteristics throughout the Manhattan area in order to choose areas with some variety among them. Obtaining a realistic cross section of some of the common types of physical environments in this city was desired. The specific maps which were examined were those dealing with physiography, housing types, geology, flood plain, soils and town character. These maps suggested that topographical features, ages of housing developments, geology and visual characteristics might be useful variables to examine.

2. A current city map of Manhattan, which showed streets, city blocks, residential areas and points of interest was next examined. The purpose for this step was in order to get some idea of the size of area which would be used. The residential study sites had to be large enough

to be representative of a development and yet remain a size which could be handled adequately by the author. This map was also helpful in determining boundaries for the areas. Some of these considerations were steep slopes, physical barriers and obvious physical boundaries to neighborhoods. A variety of development layouts, some on straight city blocks and some in curvilinear patterns were observed. From this map five representative areas of a workable size, with different kinds of layouts and involving variety in age were selected.

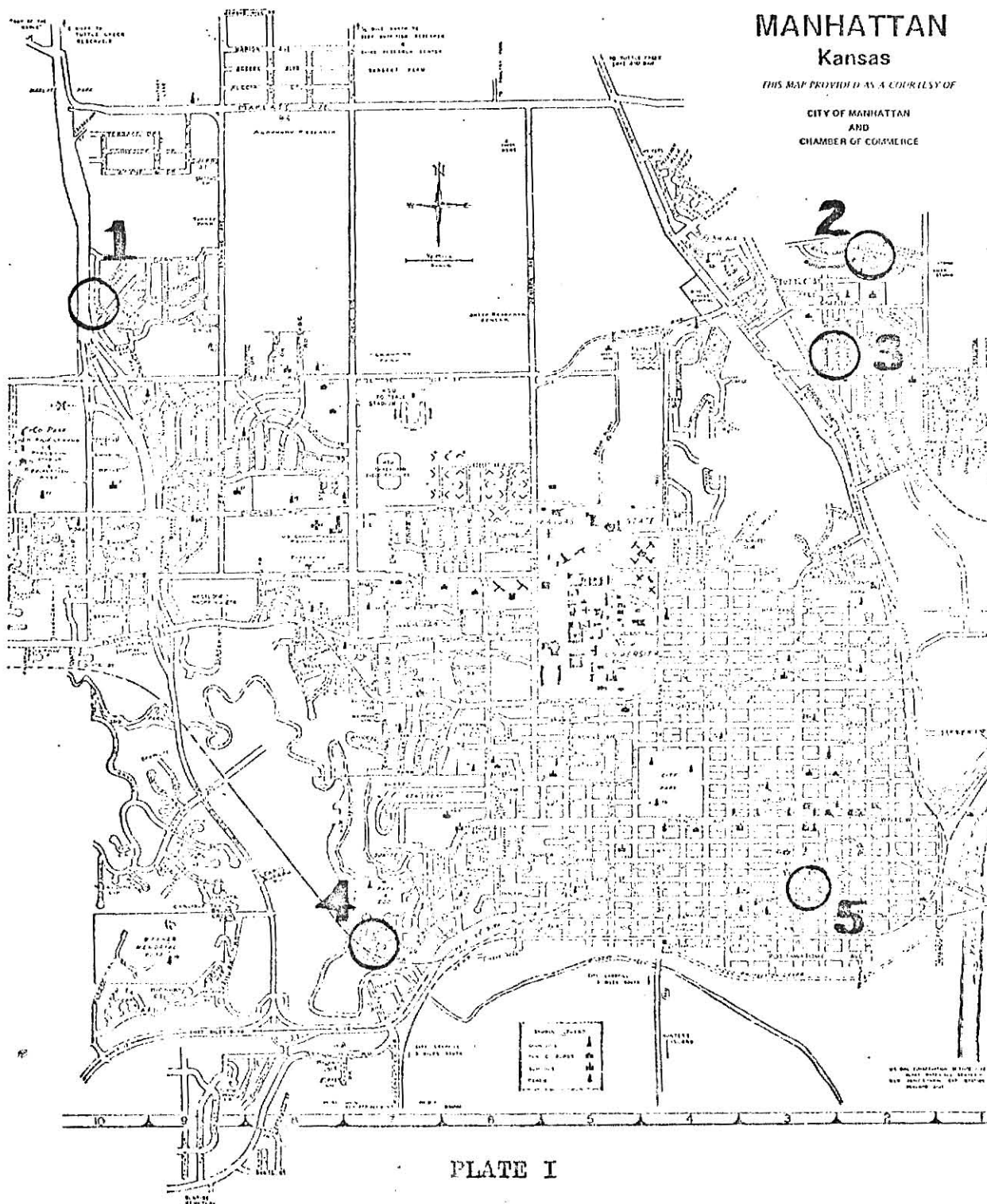
3. Driving through the chosen areas to verify the selection process based on the maps was the next step. The age of the development, which manifested itself in the amount and size of the existing vegetation and style of architecture was a factor to be examined. Other important features observed were lot layout and lot sizes as well as topography. Driving through the selected sites was also helpful in obtaining an impression of the size of each of the chosen areas.

4. City drawings and plans of each of the chosen sites were obtained from the City Engineer's office. At this time some boundaries were reconsidered for the purpose of obtaining additional information. These city maps showed surveying information such as lot lines, easements, right of ways, utility layouts and topography.

5. Prints of the essential areas, taken from the City Engineer's drawings, were obtained and redrawn to a common scale so all the drawings would be a workable size. At this time finalization of the five chosen areas along with their boundaries was completed. Variety among the residential areas took the form of physical features only, as all five of the study sites were similar in geographical area, and all were composed of single family residences.

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## Chapter 3

## INVENTORY OF RESOURCES IN THE STUDY SITES

Inventory of all the natural and physical resources in each of the chosen residential sites could not take place. However, the survey of the literature presented earlier in this study listed data desirable for collection. The need for additional data for collection became apparent as the inventory was being conducted. The final list of resources consisted of those which could be applied to each of the individual areas. Some factors received more detailed attention in one site than in another, but all were applied to each setting.

The following are the final list of resources to be inventoried.

1. Physiography-topography. Included in this category was information about the topography of the area. This information included slope information, relevant elevation changes, drainage patterns and general topographic characteristics. These physiographic features were discussed generally in each area and more specifically as the need arose.

2. Soil and Geology. This information consisted of identifying the soil in terms of topography and previous use, for example flood plain soil or rich farmland soil. Soils information is usually mapped on a county-wide scale



and more detailed information could be gained by conducting individual soils tests. County agencies are available to assist in obtaining more specific information and some of these situations have been pointed out.

3. Vegetation. The existing vegetation was discussed in terms of the sizes, age and kinds of plants found. Some of the categories used were trees, shrubs and lawn areas. Naturally growing vegetation was also considered in the areas which applied. Immature plantings such as those which occur in very new development situations were also examined and inventoried. Discussion centered around the kind and quality of the plant materials as well as the functional uses to which they were put.

4. Utilities. Data about public utilities was obtained from the City Engineer's maps and from field observation. Existing utilities, both underground and overhead, were mapped according to their placement. Also recorded was information about location, placement and size of easements and right of ways.

5. Paved areas. The location and size of streets was a factor in determining boundaries and therefore became important information to be mapped. The actual or paved width of the streets and the width of the street right of ways were also mapped. Where applicable, alleys and sidewalks also were discussed as resources.

6. Spaces. This category consisted of identifiable open spaces which were not being used as housing or streets. Some of the resources which applied were empty lots, drainage ditches and extensive easements.

7. Boundaries. This category consisted of a variety of physical features which looked or functioned as some kind of divider or boundary. Observation showed that there were fences and hedges used to delineate property edges and therefore these were inventoried. Additional data that sometimes came under this category were sidewalks and retaining walls.

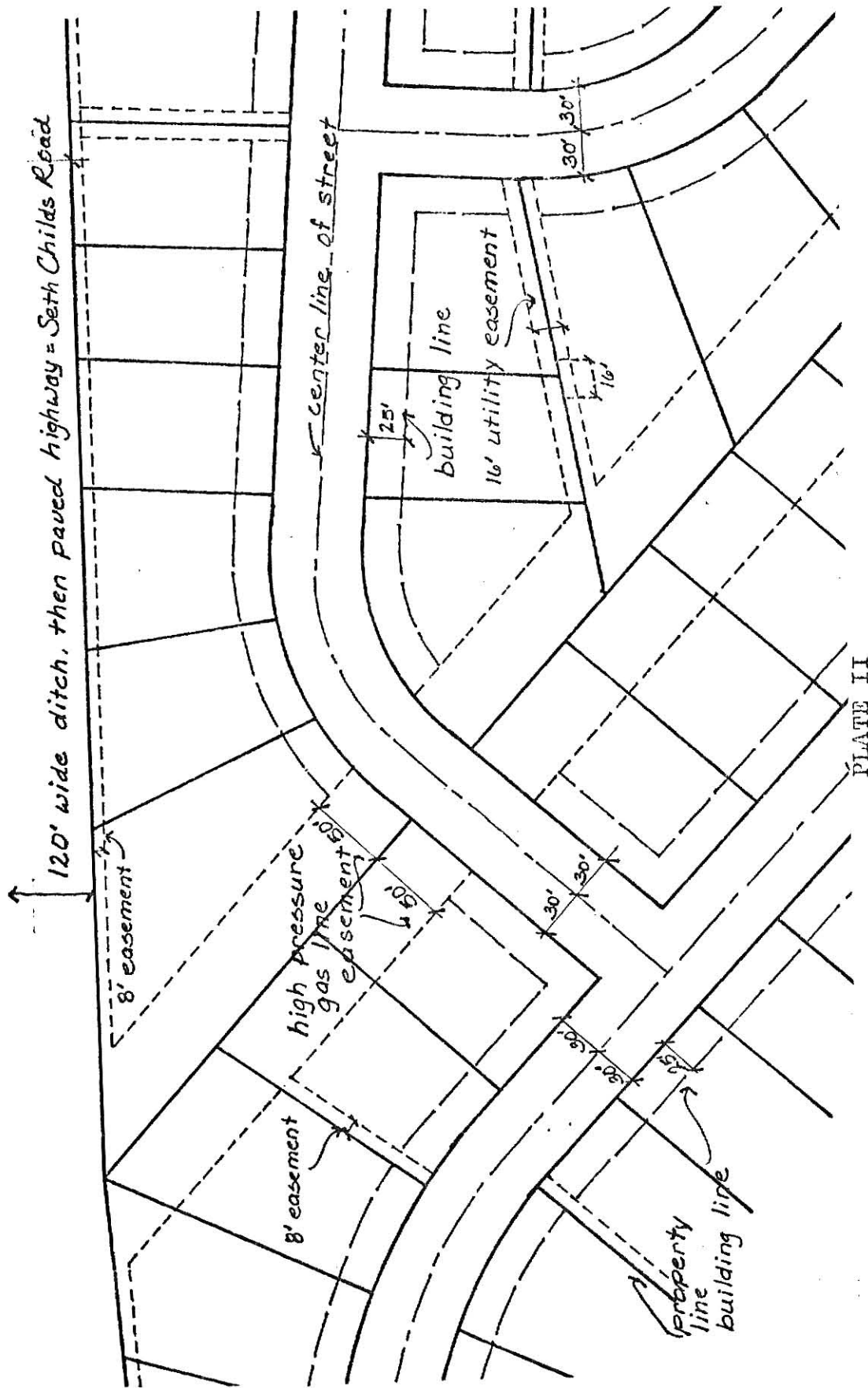
8. Micro-climate. These existed in some instances due to the topographic features in a given area. In another instance vegetation played a role in creating a micro-climate. These micro-climates were identified and recorded as they were experienced.

9. Visual Quality. This consisted of an over-all impression of the particular residential area, including its pattern of development. This information was obtained by walking and driving through the areas.

Photographs of the inventoried resources were taken in order to illustrate the existence and quality of these resources. The pictures served as a record and were useful in drawing sketches to analyze the resources. All the

pictures were taken during periods of observation spent in each of the residential areas. They were taken while staying on public land with occasional permission obtained from a property owner in order to obtain a particular photograph.

The following section is the inventory of the resources with maps and photos to illustrate each study site. The maps show easements, right of ways, paved areas and points of origin for each photograph. The photographs illustrate the resources under discussion. They are numbered in sequence of appearance in the thesis, not the order in which they were taken.

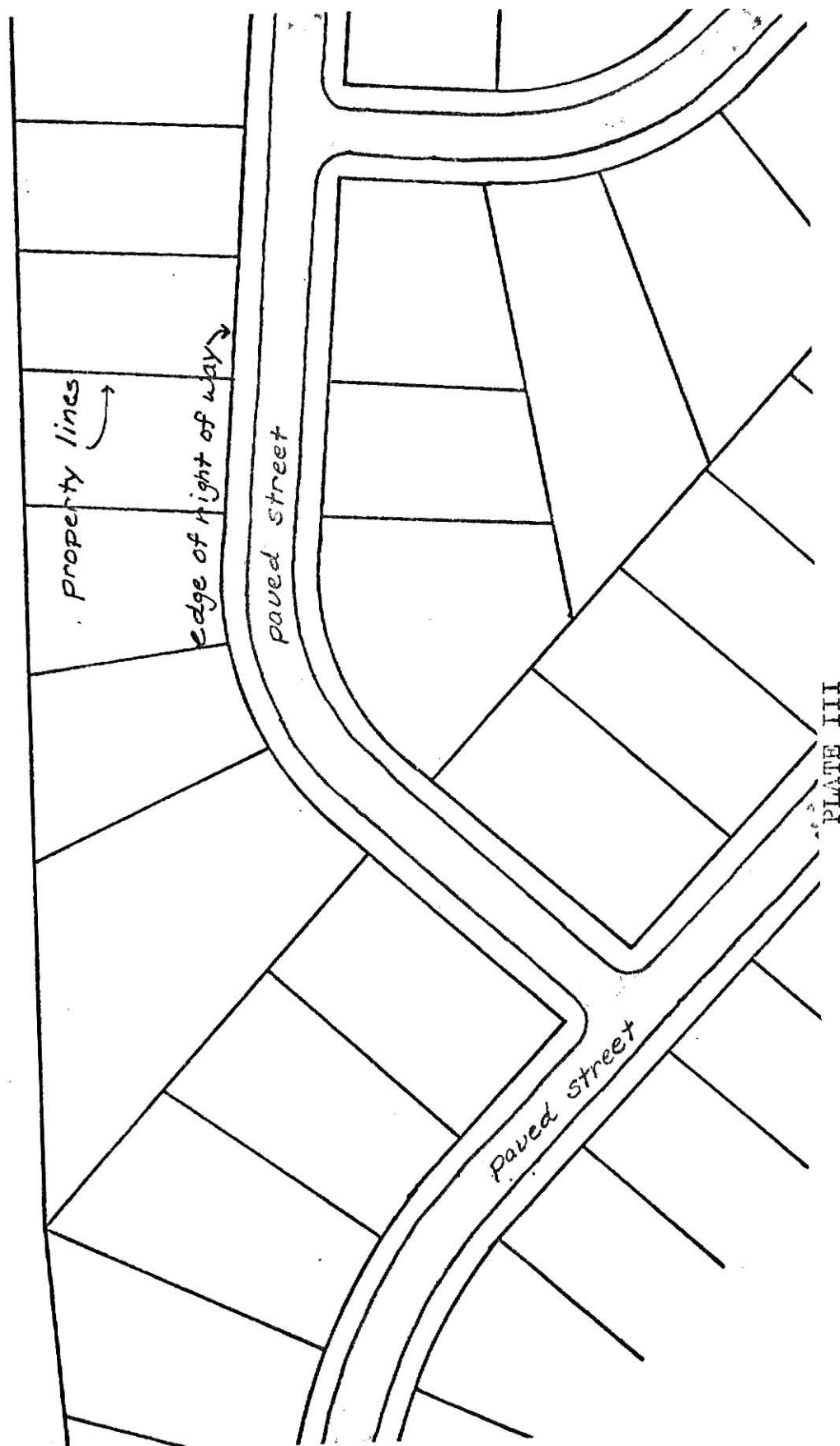


Scale: 1" = 100'

North

STUDY SITE 1

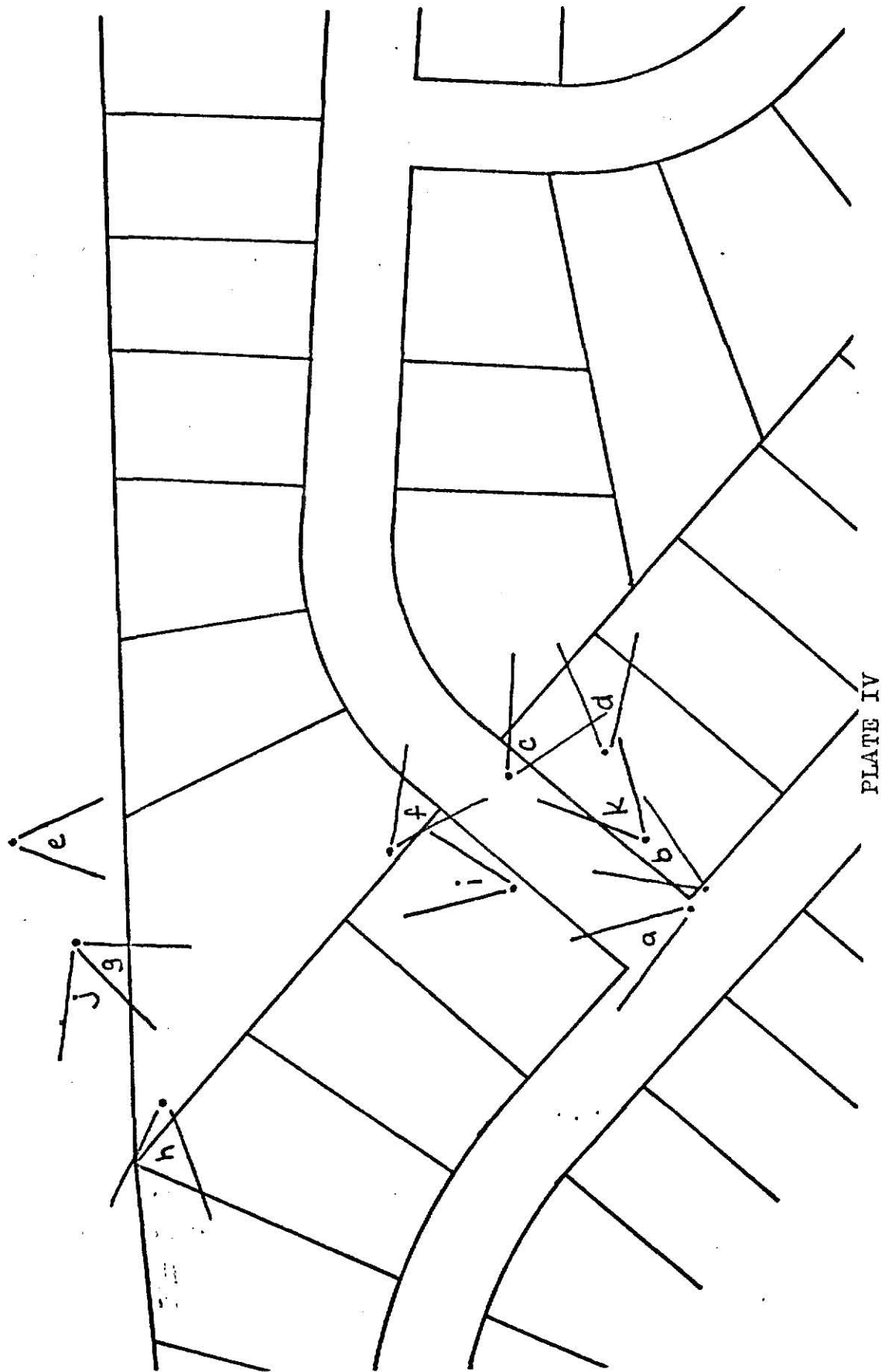
Utilities, Easements, Right of ways



Scale: 1" = 100'  
North ↑

STUDY SITE 1  
Paved Areas

PLATE III



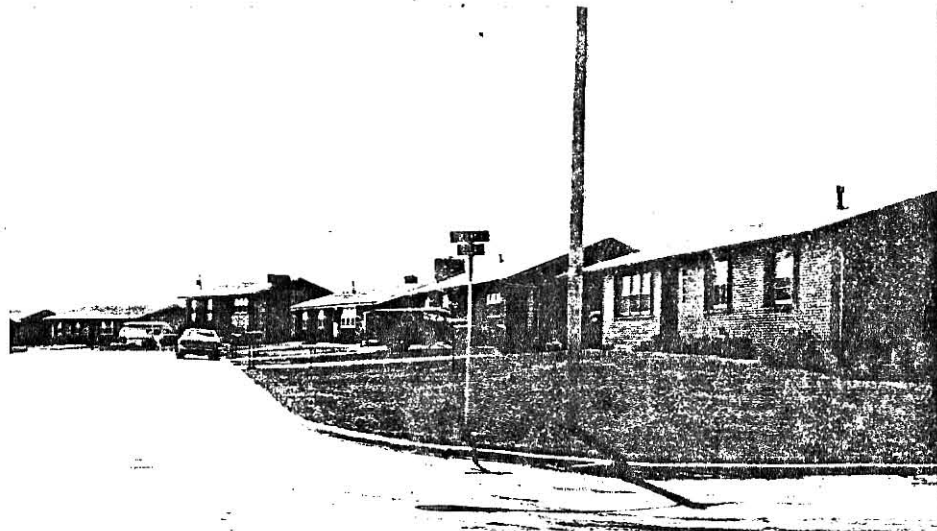
STUDY SITE 1 is approximately 8 acres, with 23 dwelling units. This results in a density of 2.9 du/acre.

#### TOPOGRAPHY

This is a fairly level area with a few gently rolling hills around it. House sites are placed at a slightly higher elevation than the streets to provide for positive drainage away from the house foundations.

#### SLOPE

There is little slope. Drainage goes into the streets and into the slightly lower elevations of the easements.



1-a



1-b

#### SOILS

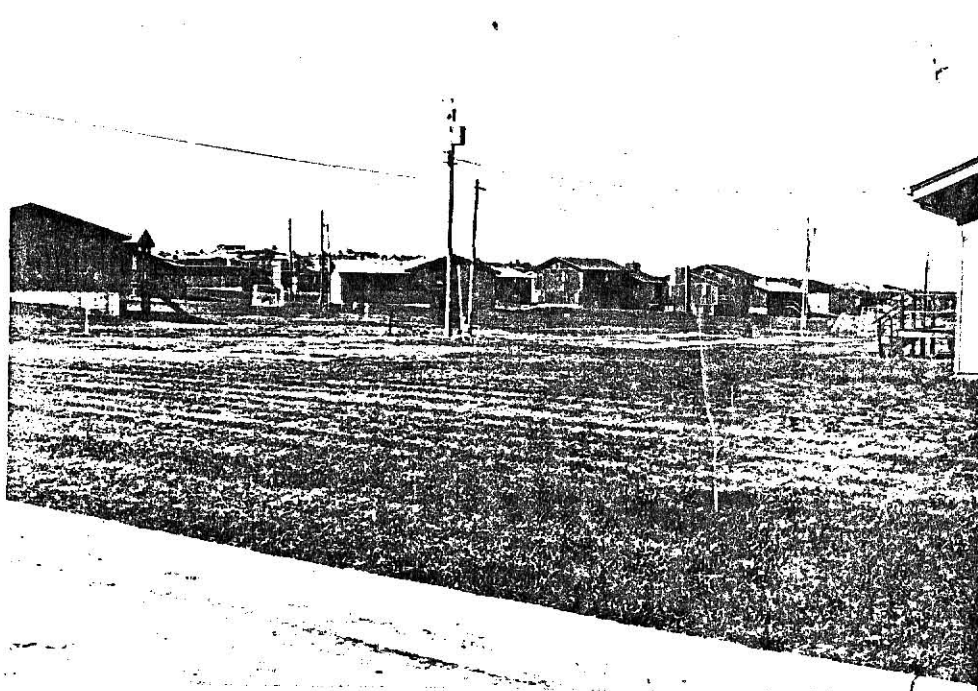
This development probably has fertile soil as it was once an agriculture use area. More information would necessitate getting individual soil samples.

#### GEOLOGY

This does not apply because geology means what underlies the soil and here nothing but soil shows.

## VEGETATION

Grass is the predominate vegetation; there is little else except some new trees and foundation plantings which have been added. They are mostly evergreen and deciduous shrubs. The lawns are well seeded and immaculately cared for. The easements are well maintained.



1-c

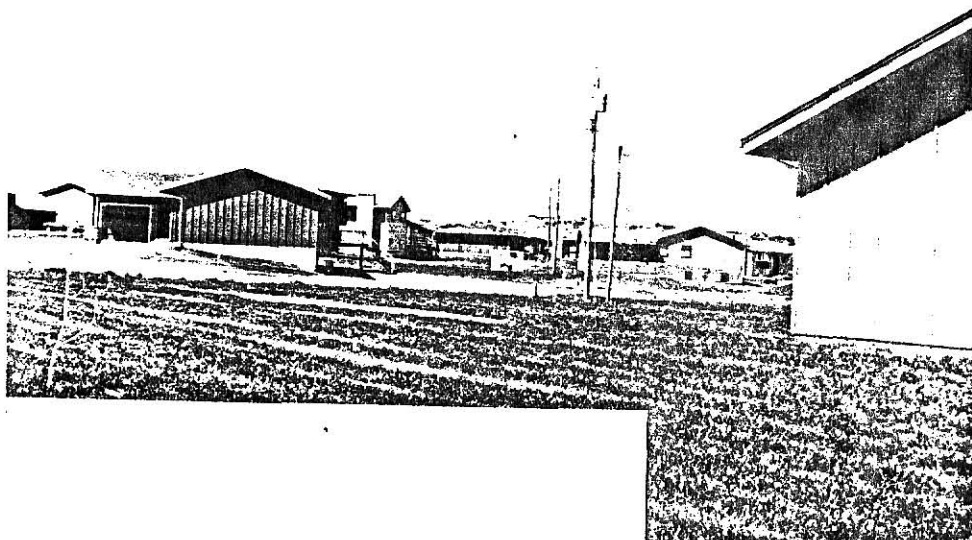
## STREETS

The streets are all concrete, very new and have curb cuts for all the driveways. The streets are not used much for parking as all the homes have large driveways and garages. There are no alleys or sidewalks. Streets carry only residential traffic except for Seth Childs Road which is a paved highway along the west edge of the development.

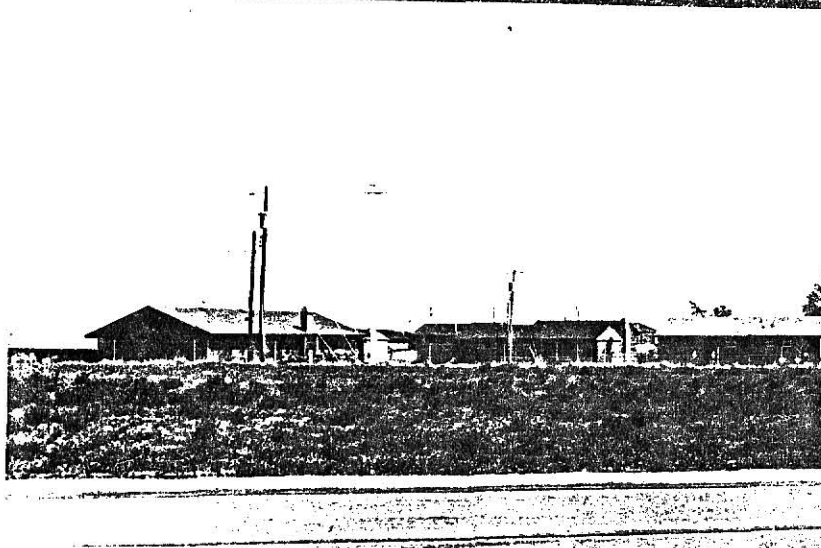


**UTILITIES**

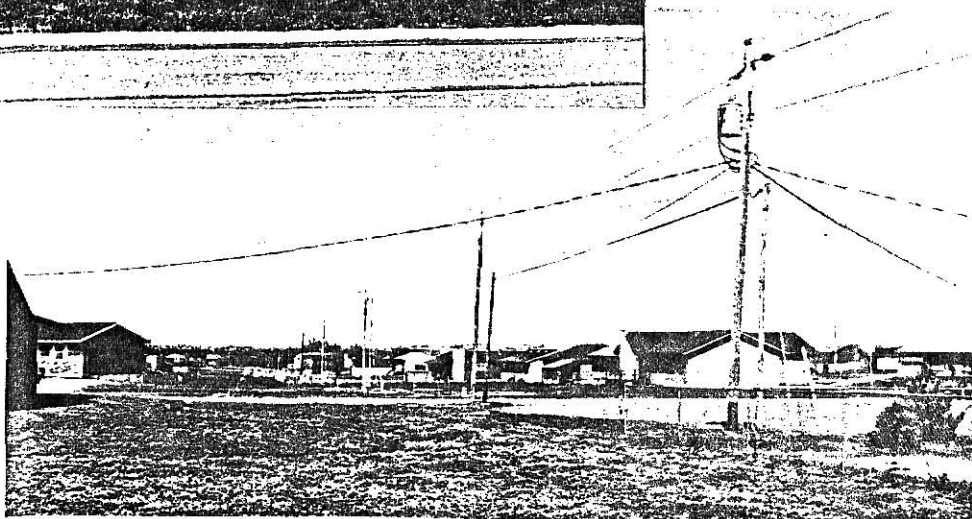
A very large (100' wide) easement runs through the middle of this development. Utility poles are placed in the center of this easement and overhead lines connect to all the houses. Utility poles and lines also run along the back of the lots adjacent to Seth Childs Road. These poles and lines are located in a wide right of way which is fenced off. Overhead lines and poles are also located on the street corners.



1-d



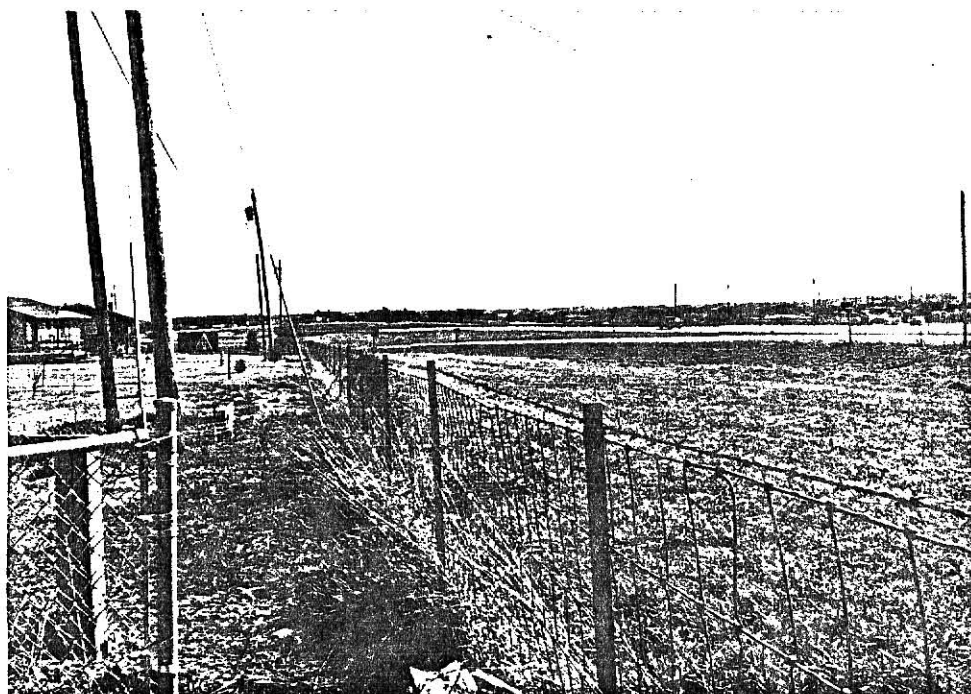
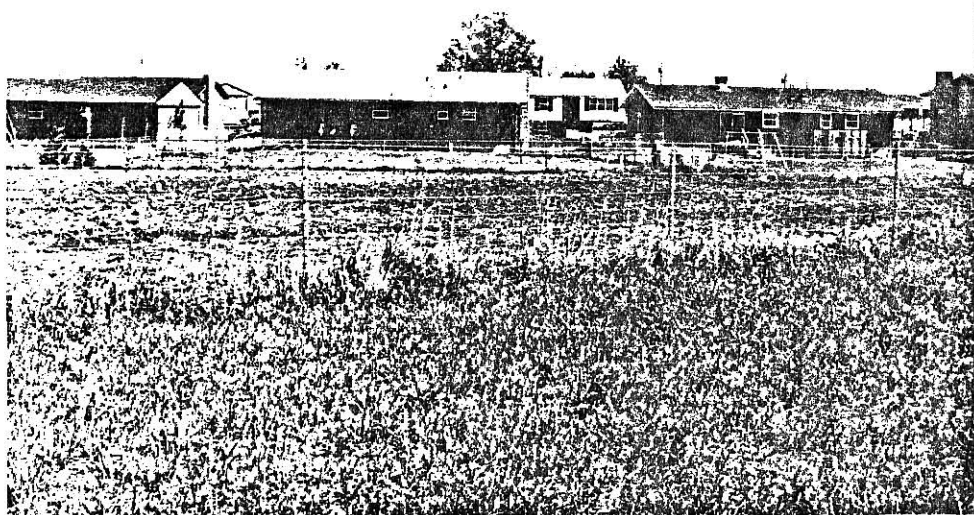
1-e



1-f

**BOUNDARIES**

Most backyards have chain link fences while front-yards are open. The fence along the Seth Childs Road right of way is of wire and barbed wire, but easements are not fenced in. The use of fences breaks the whole backyard area into individual lots.

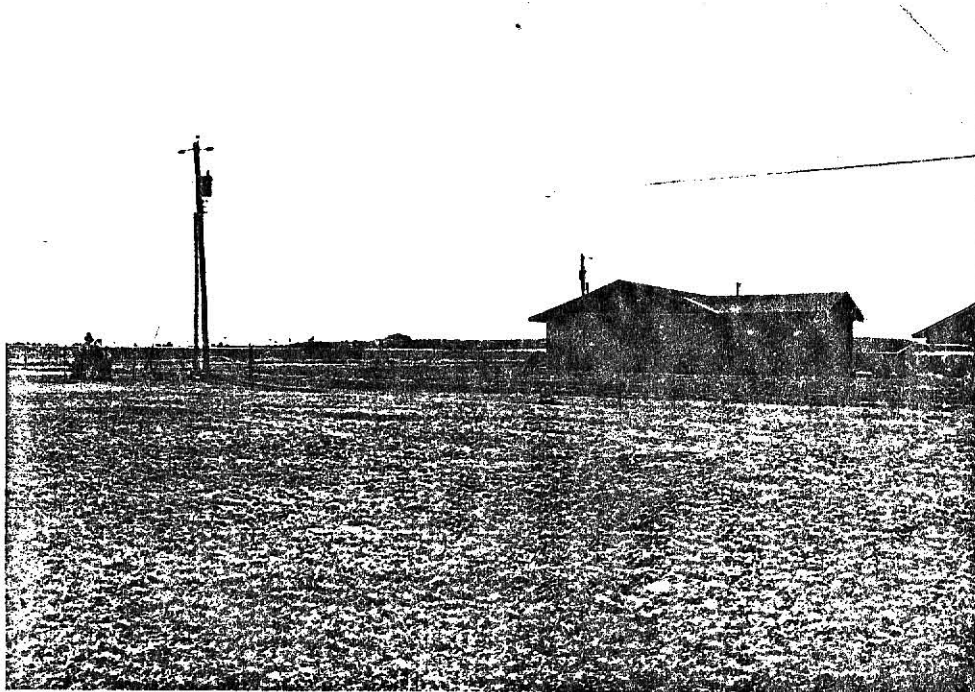


1-g

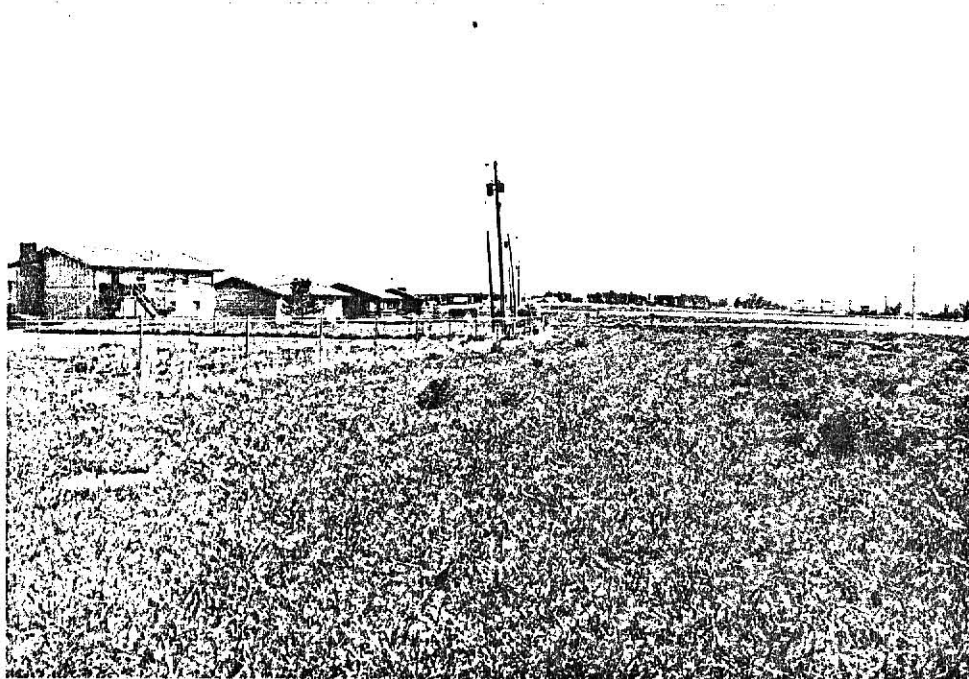
1-h

## SPACES

A large easement in the middle of the development results in a grassy open space much like a common area. It, however, has utility poles located down the middle of it. A large right of way along Seth Childs Road is also an open space but it is fenced off. There are no empty lots or undeveloped areas nearby. Children play in the fenced in backyards.



1-i



1-j

**MICRO-CLIMATE**

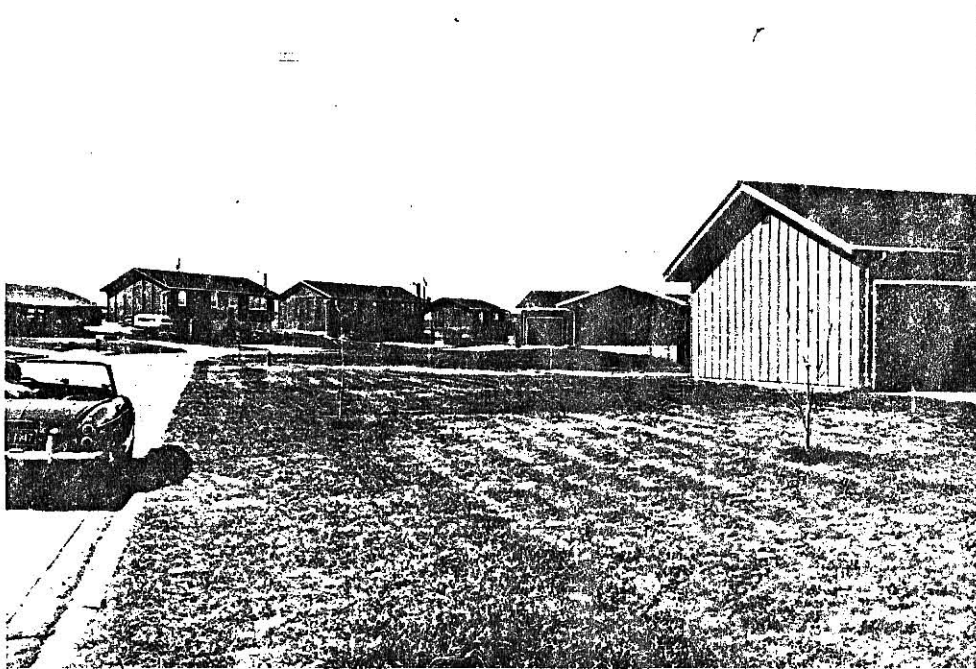
The entire development is open to the full force of the elements due to the levelness of the terrain and the lack of large vegetation. There is a lot of reflected heat off of the paved roads and driveways, although the thick lawns act somewhat as a cooling device.

**ASPECT**

Most homes face either east or west and get lots of difficult to control sun.

**VISUAL QUALITY**

This is a very tidy looking development due to the lack of vegetation and the level topography. There are few additional elements so all the homes and yards look very similar in quality. There is very little to distinguish this area from any other development except the utility poles are now a dominant feature.



1-k

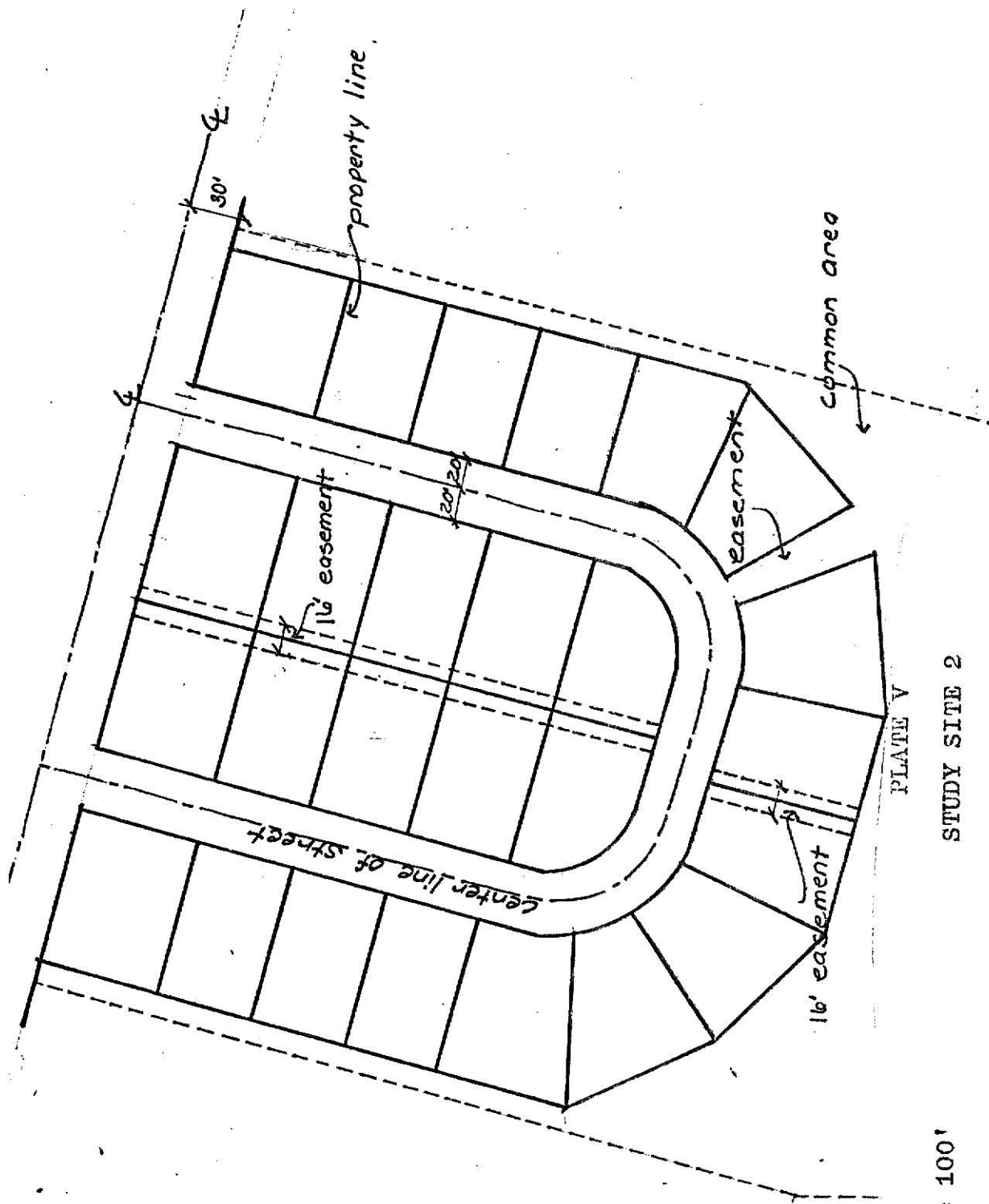


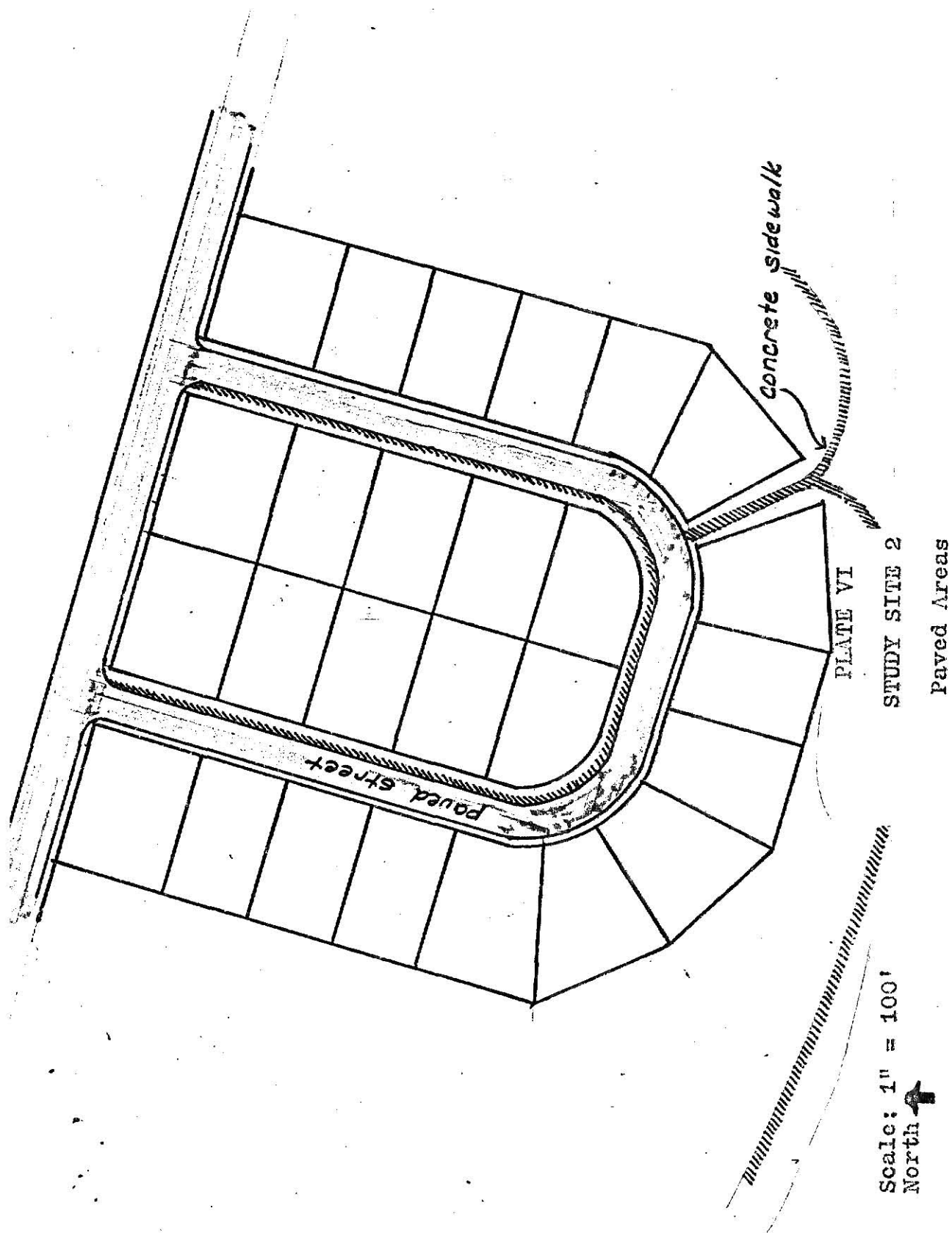
PLATE V

Scale: 1" = 100'

North ↑

STUDY SITE 2

Utilities, Easements, Right of ways



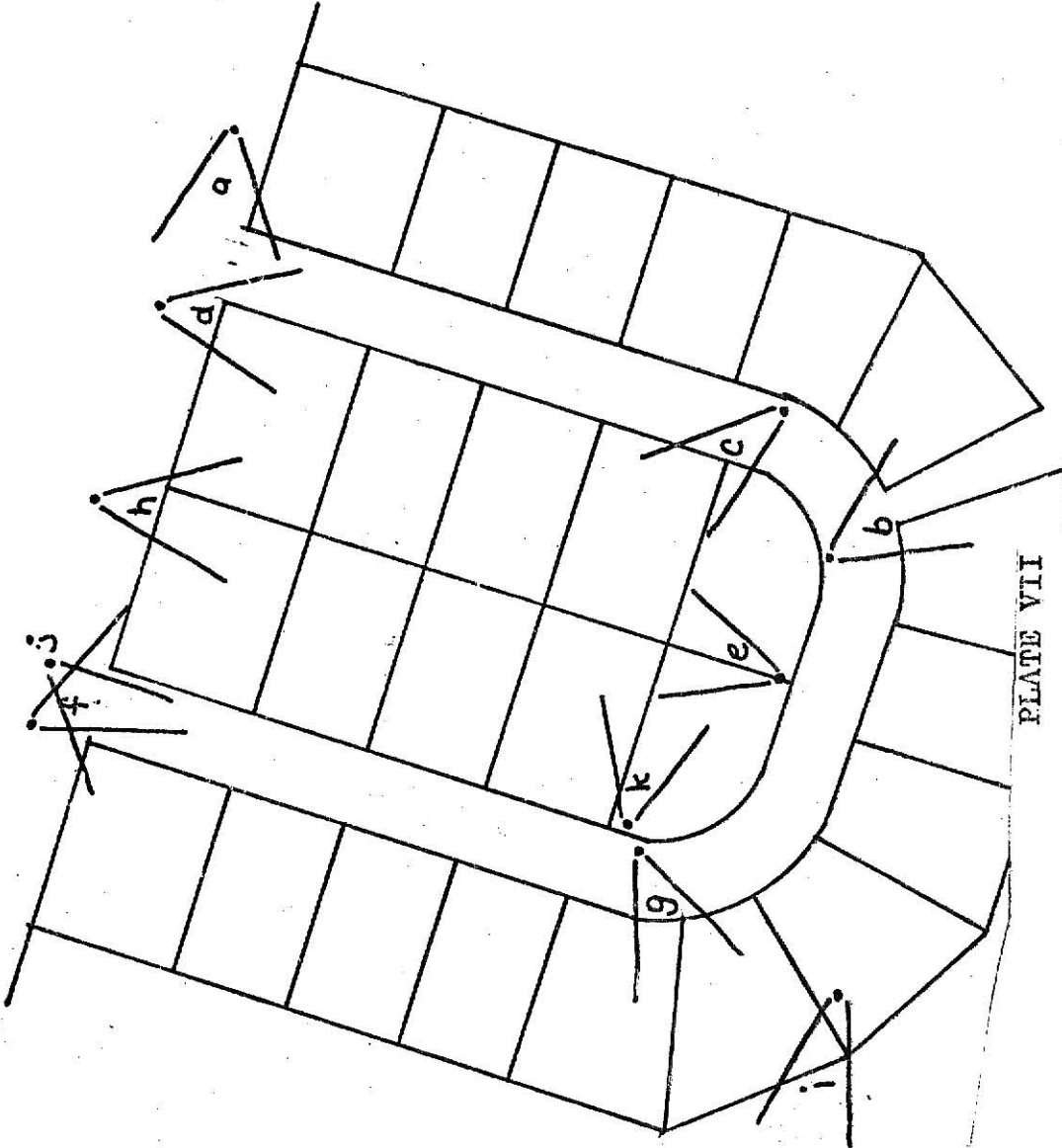


PLATE VII

Scale: 1" = 100'  
North 

STUDY SITE 2

Photograph Locations



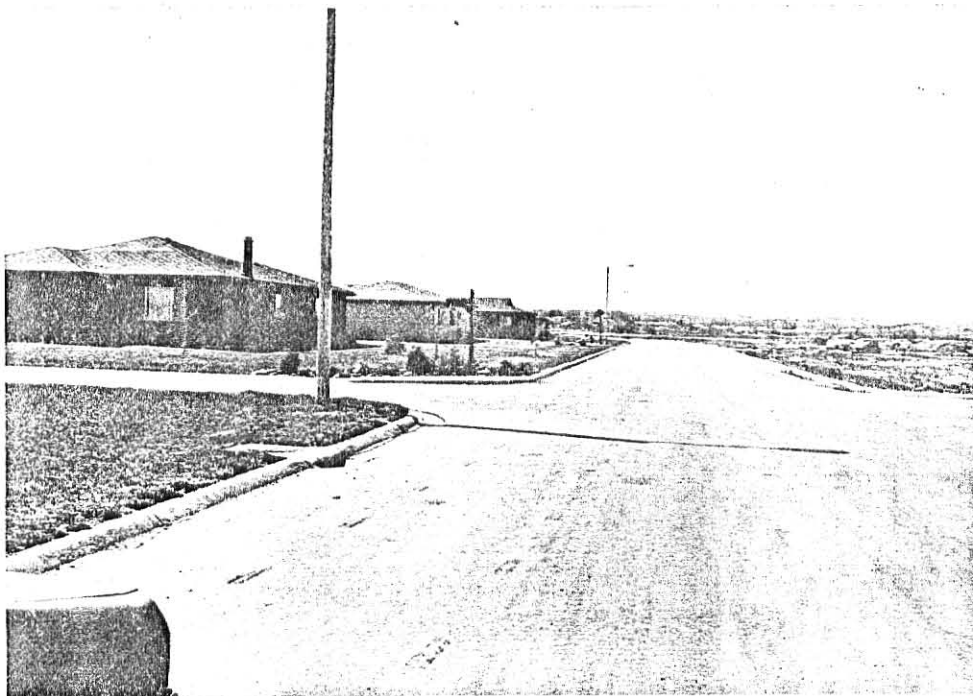
STUDY SITE 2 is approximately 6.9 acres, with 26 dwelling units. This results in a density of 3.76 du/acre.

#### TOPOGRAPHY

This is a very level development. The only changes in elevation are the slightly higher house elevations and the slightly lower common areas. This provides for positive drainage away from the residences.

#### SLOPE

There is little slope contained on this site. Drainage is into the streets and common areas due to the slightly higher elevation of the houses.



2-a

#### SOIL

This is probably alluvial soil as this development was once in agriculture use and is in a flood plain. More information would necessitate getting individual soil samples taken.

#### GEOLOGY

Does not apply.

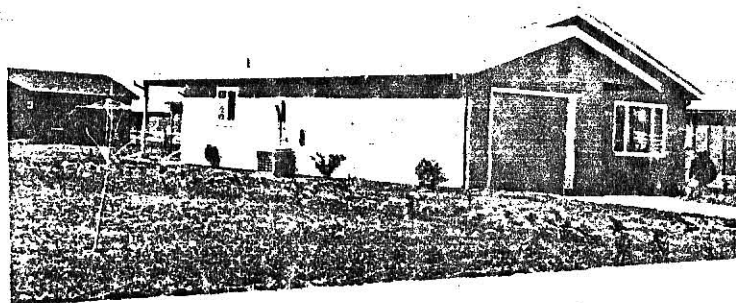


## VEGETATION

There are no existing, established trees or shrubs. All new plantings are mostly of the foundation type, such as small shrubs, flowers and a few trees. One house has a border of newly planted pine trees spaced about 2' apart. Lawns are newly seeded and well cared for. The common areas have seeded lawns and are kept mowed. One row of existing elm trees grows an adjacent school yard near the south edge of a common area, but the other common areas have no trees or shrubs.



2-b



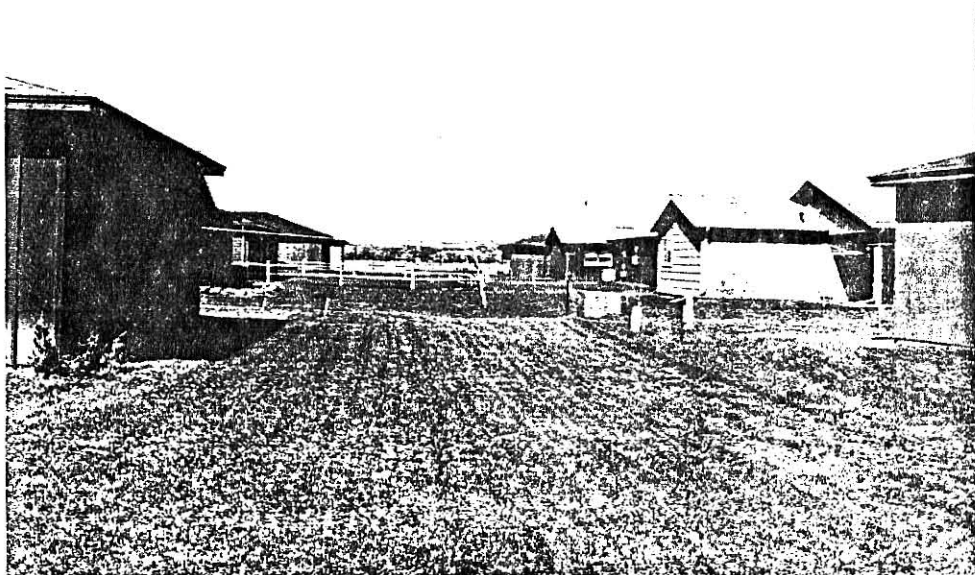
2-c



2-d

### UTILITIES

All wires and utilities are placed underground, carried in an easement which runs down the middle of the development. Street lights are placed at the entrance corners of the development. There are right of ways on each side of the streets.



### STREETS

Streets are all concrete with mountable curbs so no curb cuts are necessary at the driveways. Drives are all paved and in good condition. A sidewalk is located along the inside curve of the street (on only one side). One sidewalk leads to the school and across the common area. The interior street carries only local residential traffic with an asphalt paved collector located along the north edge of the development.



**BOUNDARIES**

There are a few chain link fences around the backyards and a few partial wooden fences which act as dividers. They provide some visual enclosure. The entire development is bounded on three sides by an established common area.



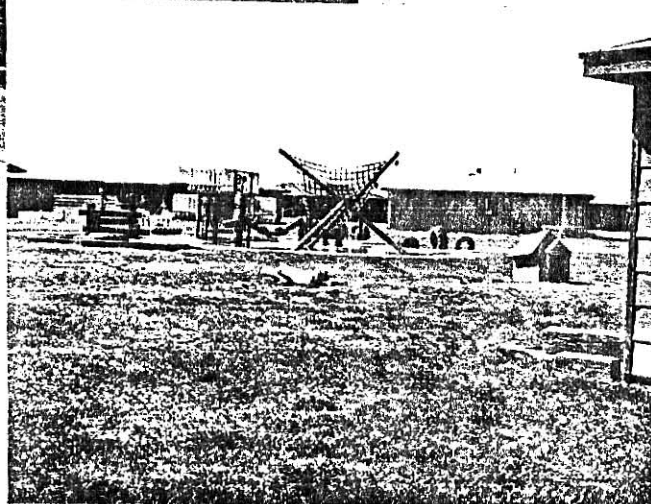
2-g

**SPACES**

Planned common areas act as playgrounds and were designed into the development plan. Open fields around the development are partly school yard and partly existing agricultural fields. Backyards with fences merge together to form what feels like a common area in the center of the development.



2-h



2-i

**MICRO-CLIMATE**

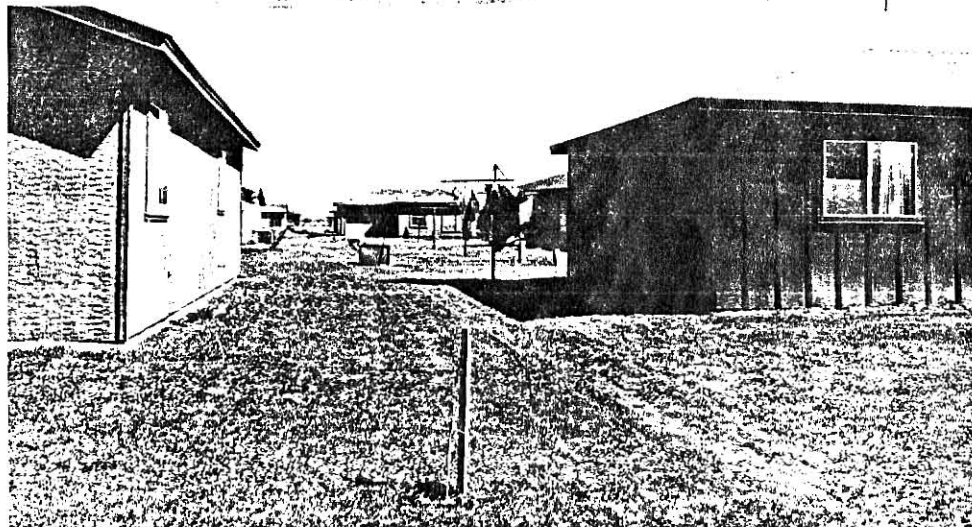
Sun reflecting off the paved streets results in increased heat. Common areas between houses and in the play area get full sun and are open and subject to all severe weather. Being slightly lower, the common areas retain run off creating damp and muddy conditions.

**ASPECT**

Most homes face east or west. The only north/south facing houses are at the south end of the development.



2-j



2-k

**VISUAL QUALITY**

The homes are placed fairly close together and are very similar in size, color and material construction. Common areas are large enough in size to give the development a open feeling. A few elements such as laundry lines, divider fences and barbecue areas have been placed with respect to their individual use and relation to individual structures but without thought to having them relate to each other.

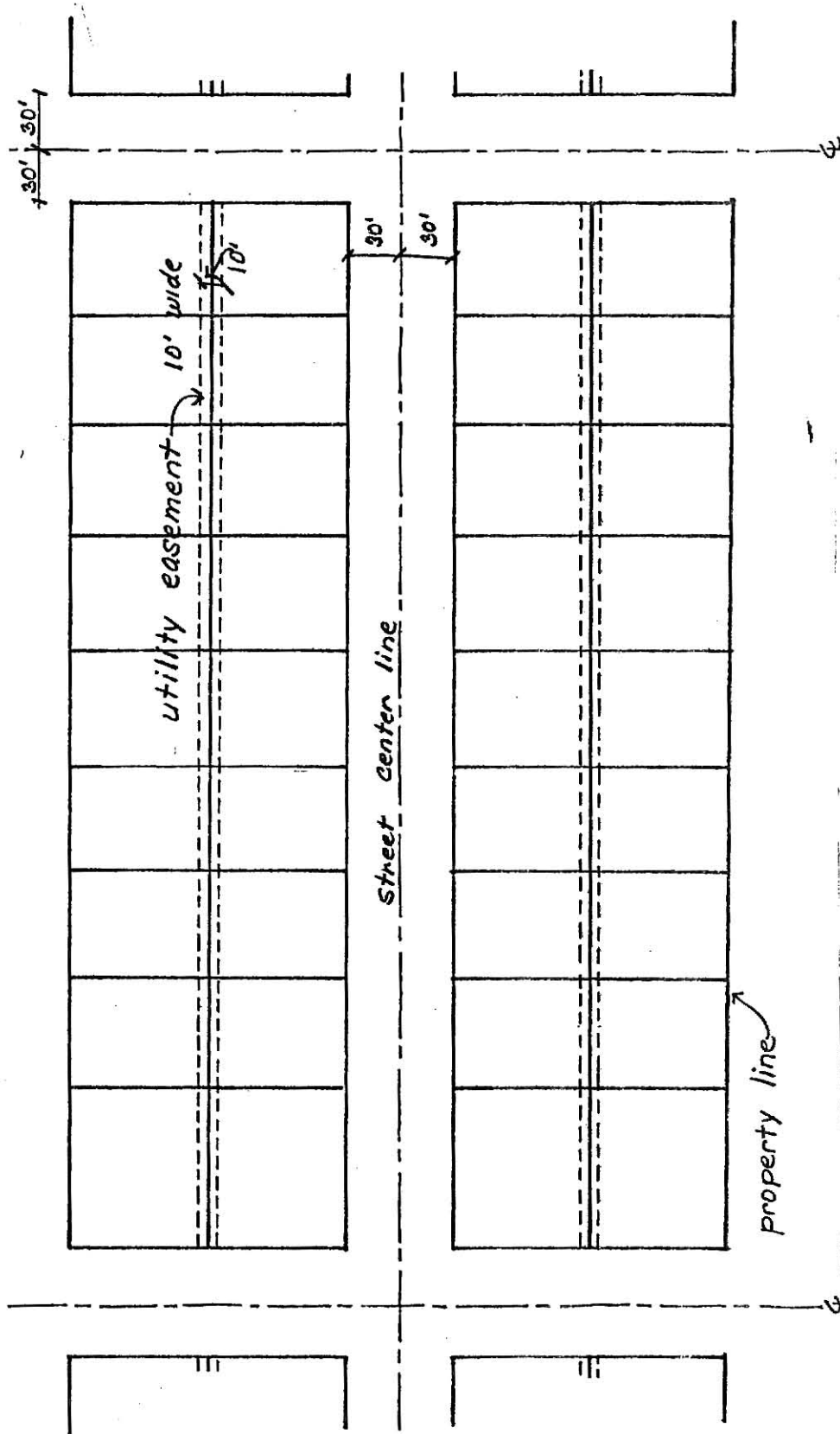


PLATE VIII

Scale: 1" = 100'  
North →

STUDY SITE 3

Utilities, Easements, Right of ways

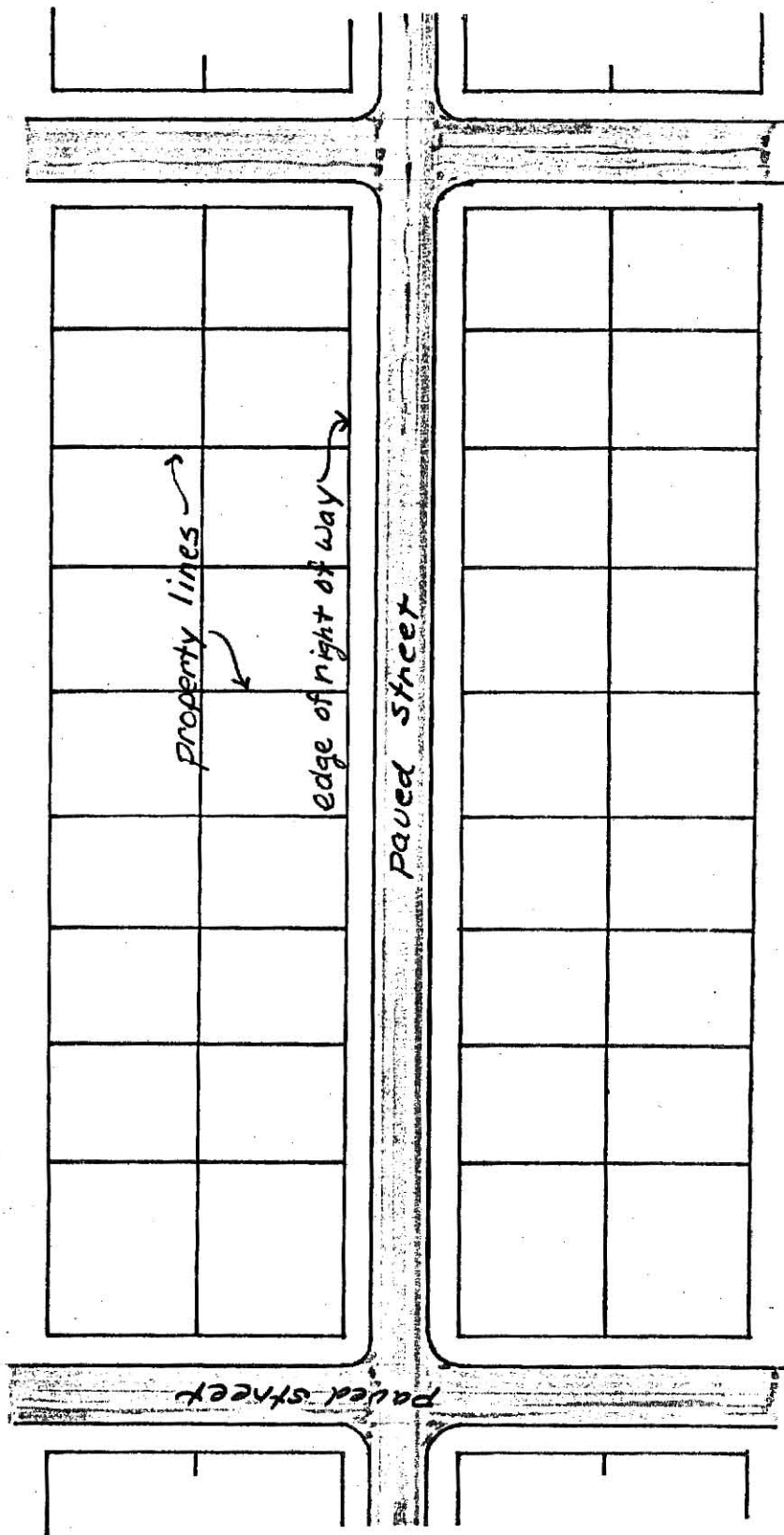


PLATE IX  
STUDY SITE 3  
Paved Areas

Scale: 1" = 100'  
North ↑

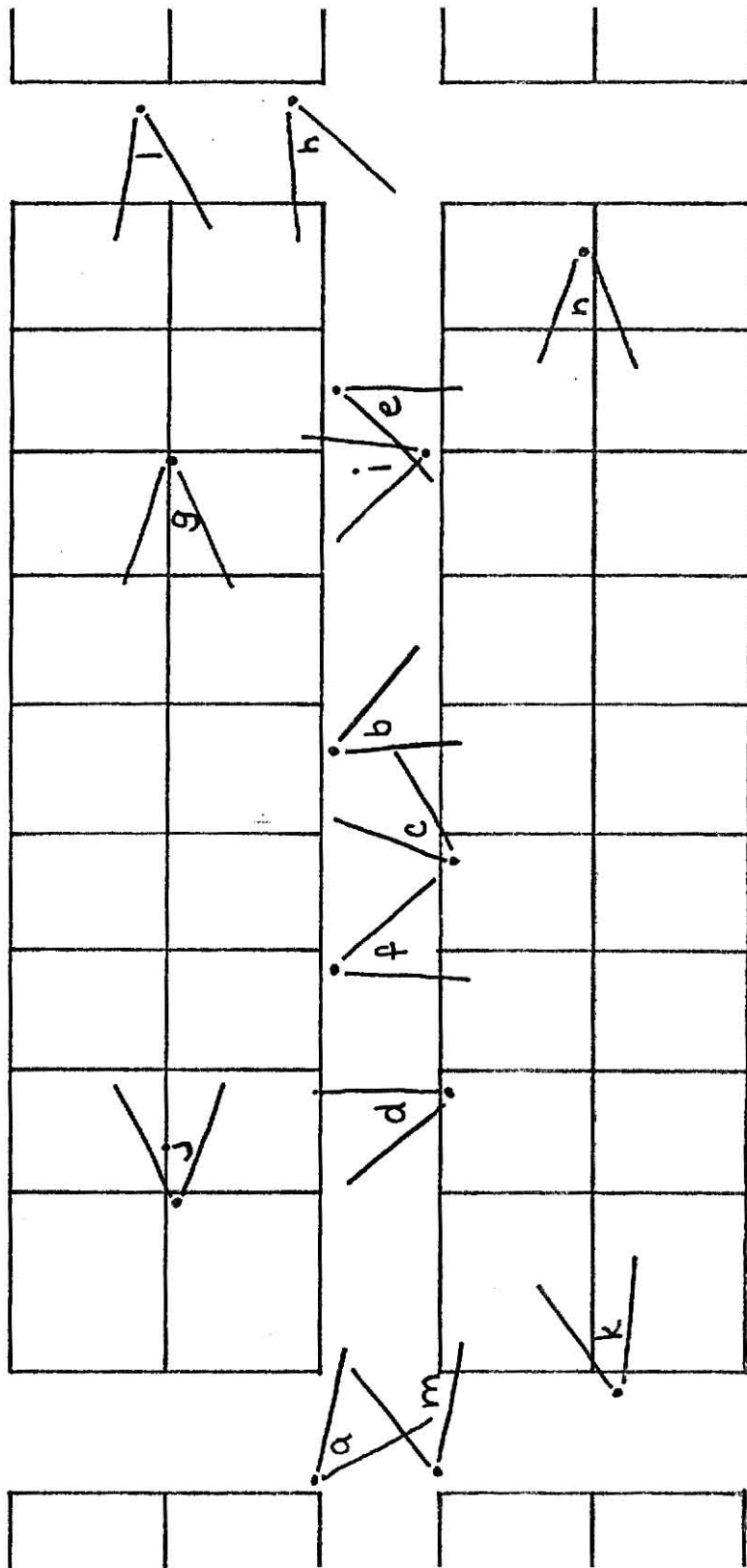



PLATE X

STUDY SITE 3

Photograph Locations

Scale: 1" = 100'

North 



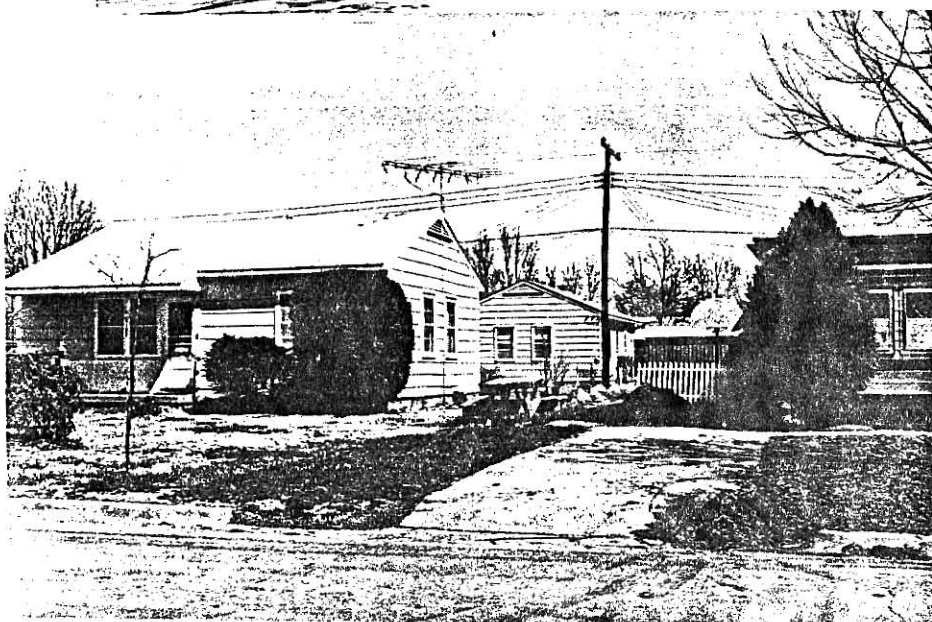
STUDY SITE 3 is approximately 6.4 acres, with 36 dwelling units. This results in a density of 5.6 du/acre.

#### TOPOGRAPHY

This is a very level area. Houses are slightly raised to provide for positive drainage away from the foundations.

#### SLOPE

There is little slope. Drainage away from the houses goes into the streets.



3-a

3-b

#### SOIL

While soils have been mapped for a large area which includes this development, more detailed information would necessitate getting individual soil samples.

#### GEOLOGY

Does not apply as the surface is all fertile soil.



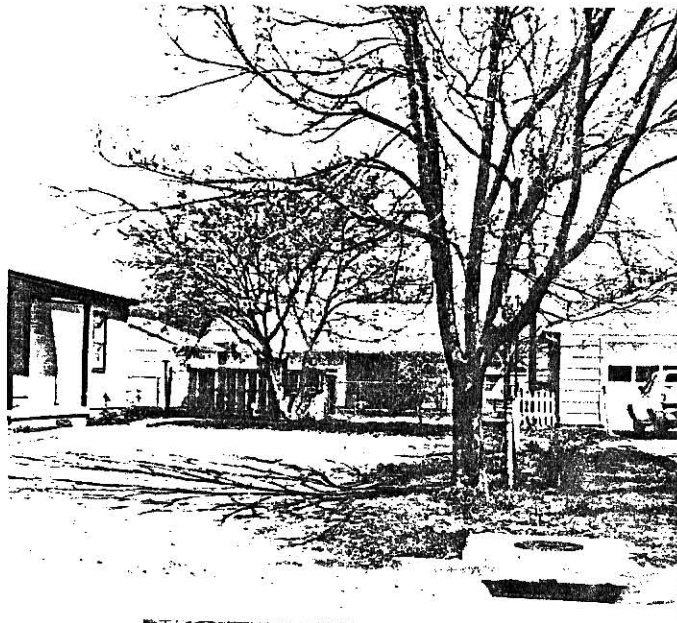
## VEGETATION

There are many established lawn trees and shrubs. Some new trees have been planted around the houses. Existing deciduous trees are mainly elm, sycamore and willow. Existing evergreen trees are predominately upright juniper varieties. Shrubs include Pfitzer junipers, forsythia and euonymous. Many shrubs are used to define yards and are trimmed as hedges. Trees line the streets along the front-yards and are also present in the backyards. Weed trees, brush and weeds are found in the backyards, lining the utility easement. Lawns are maintained with some having been recently seeded.

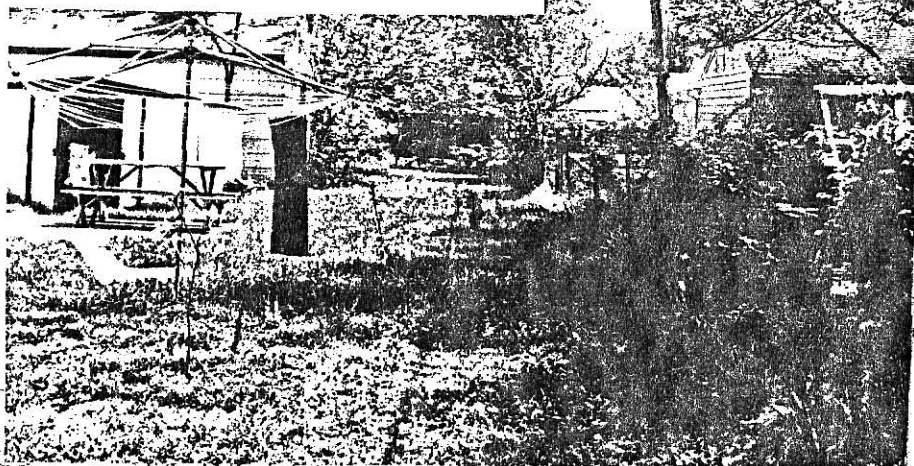


**BOUNDARIES**

Many wire fences are used to define the backyard areas. Shrubs are trimmed to function as fences and barriers around the frontyards. Some wooden divider fences are used and they take a variety of forms. Most fences are poorly maintained and a wide variety of materials have been used in their construction.



3-f



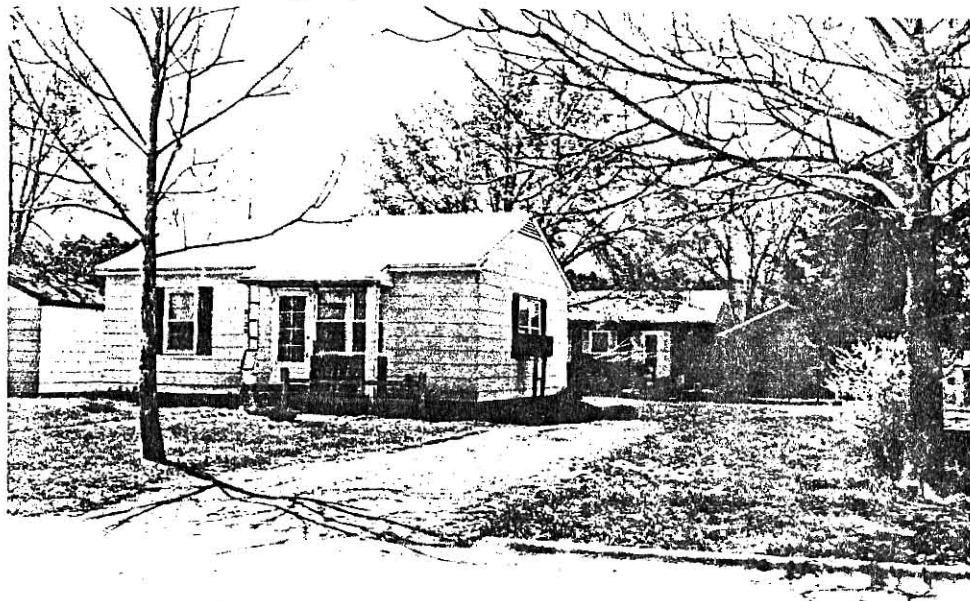
3-g



3-h

**STREETS**

Streets are concrete with curb cuts at all drive-ways. Drives are either paved or dirt and gravel. Parking occurs in the drives and in the streets since there are few garages. There are no alleys and no sidewalks. Streets running through the development carry only local residential traffic and children play in them.



3-i

**SPACES**

There are no empty lots or community spaces. The houses are close together with only room for a driveway and a small yard between them. Houses divide the lots into small front and back yards.



3-j

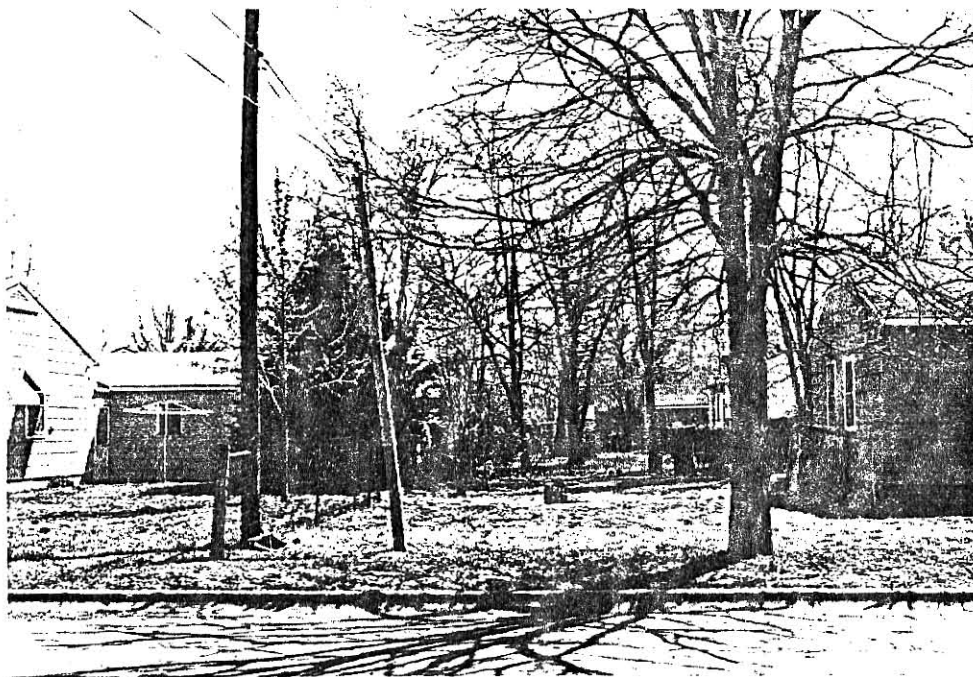


**UTILITIES**

Utility lines and poles are placed in the easement to the back of the lots, and along the streets going east and west. The utility easements use land from the back of each lot and run north and south. There are alot of poles and overhead wires. Other utilities are placed beneath the streets.



3-k



3-1

**MICRO-CLIMATE**

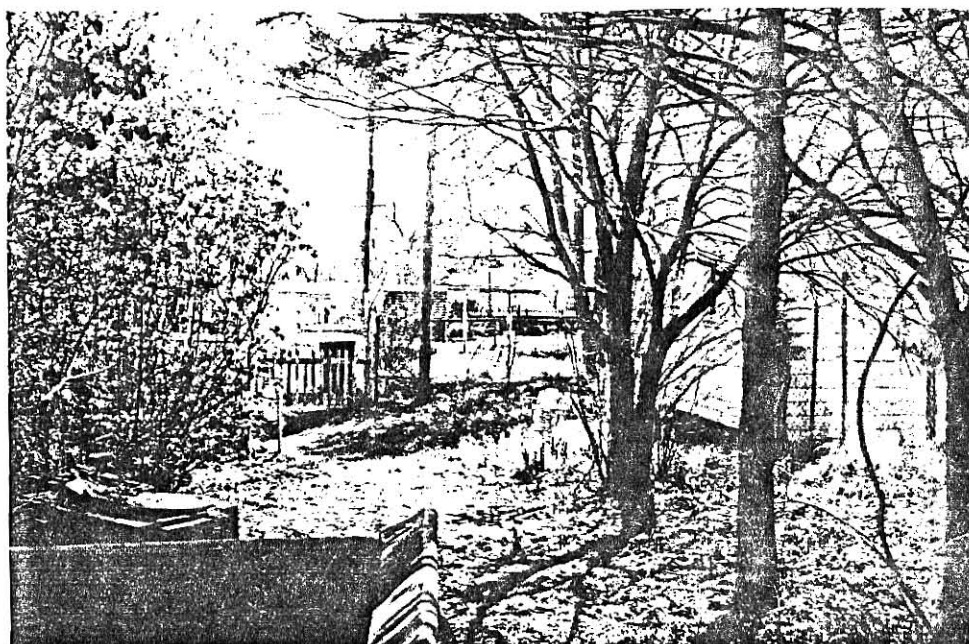
Large existing trees and shrubs result in protection from the elements and have a cooling effect in the summer.

**ASPECT**

Homes face either east or west and the streets run north and south.



3-m



3-n

**VISUAL QUALITY**

Many elements such as fences, shrubs, cars, utility poles and buildings, clothes lines and porches make this area look full and lived in. The trees are large and attractive. Improvements made to the yards and houses have been carried out individually and do not relate to each other. All homes and lots are nearly the same size.

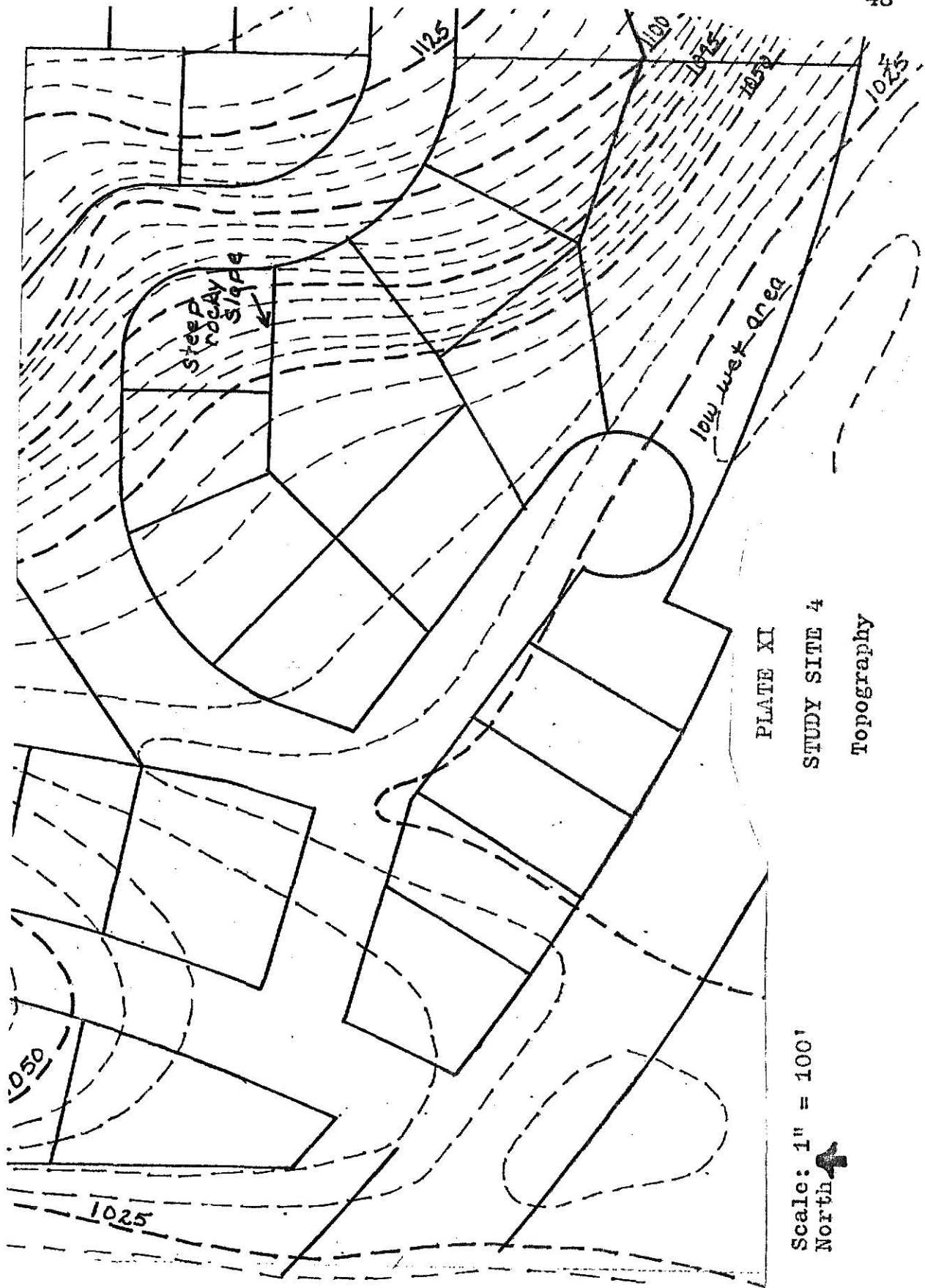


PLATE XI  
STUDY SITE 4  
Topography

Scale: 1" = 100'  
North 



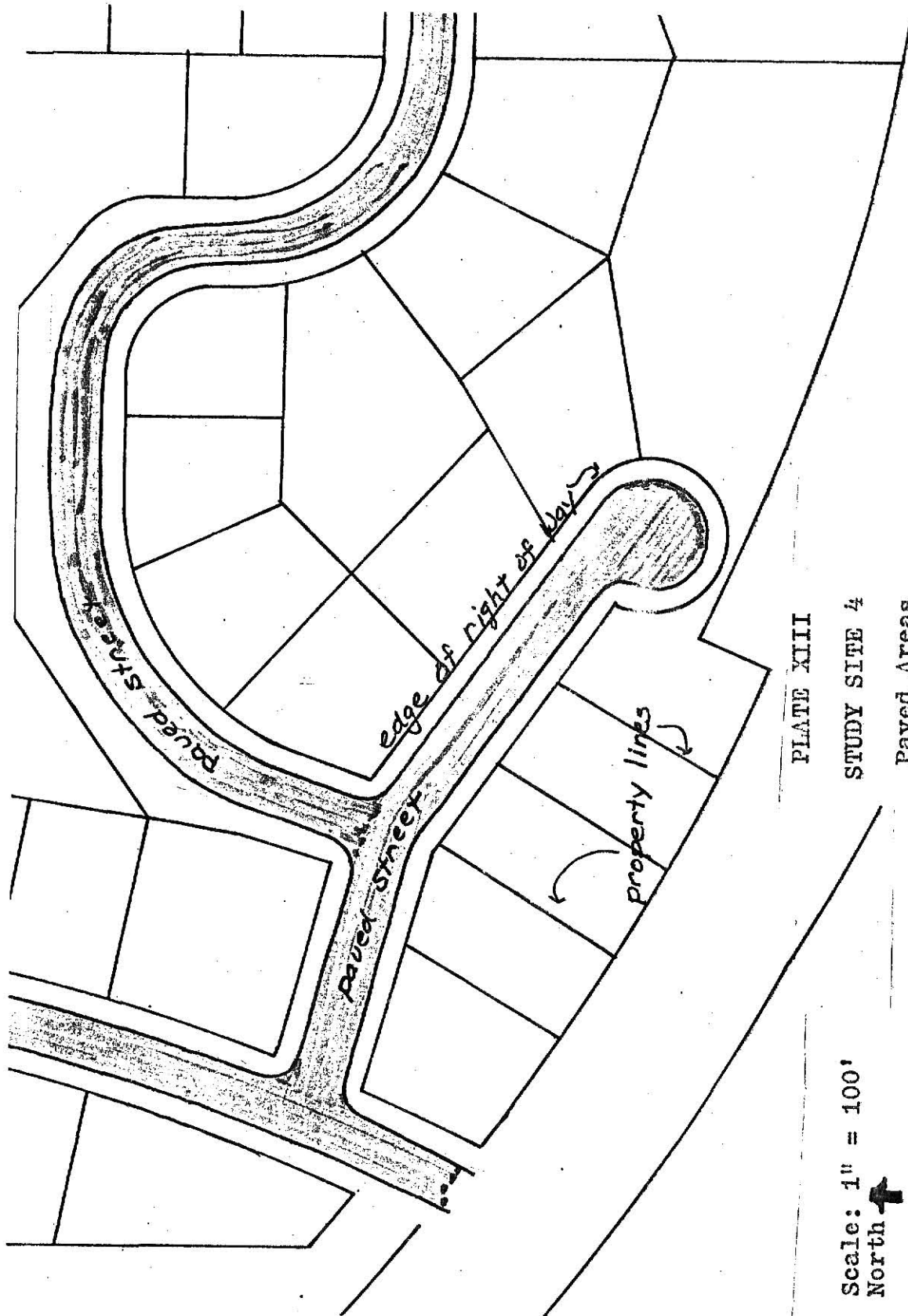


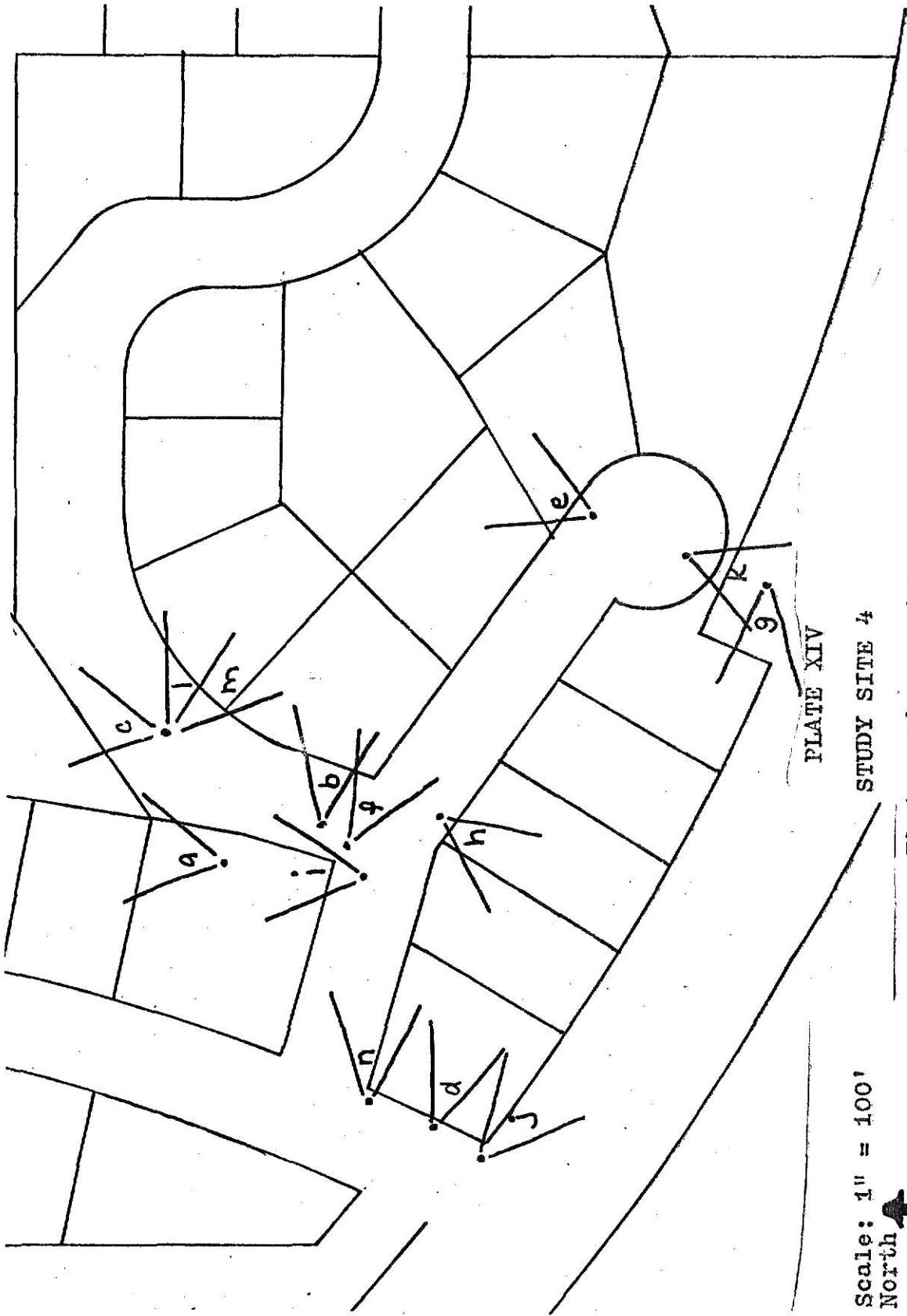
PLATE XIII

STUDY SITE 4

Paved Areas

Scale: 1" = 100'  
North ↑





Scale: 1" = 100'  
 North ↑

PLATE XIV  
 STUDY SITE 4  
 Photograph Locations

STUDY SITE 4 is approximately 8 acres, with 20 dwelling units. This results in a density of 2.5 du/acre.

#### TOPOGRAPHY

This area is hilly with a steep slope on the north and east edges of the development. The streets are fairly level but with somewhat of a cross slope. Water drains into the streets and into the drainage swale located at the south edge of the development. Another drainage swale on the west, between the houses and the street, catches some runoff. Use of small, native stone, retaining walls at the edges of the development, where the slope begins to taper off, is fairly common. A steep embankment alongside the railroad defines the south edge of the development.

#### SLOPE

The northeast edge of this area slopes downward toward the south at an approximate 35% slope. This slope is rocky and has native vegetation on it. It is formed of native stone. The rest of the development slopes gently toward the southwest at about 5%.

#### SOIL

Individual tests would need to be made as desired. There will be an alkaline characteristic due to the outcropping native limestone in this area.



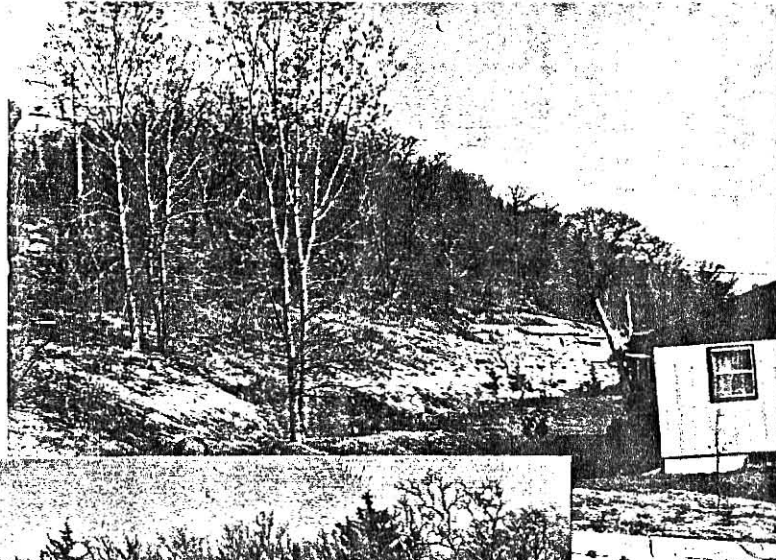
4-a

#### GEOLOGY

Native limestone exists either on the surface or very close to it and needs to be considered.

## VEGETATION

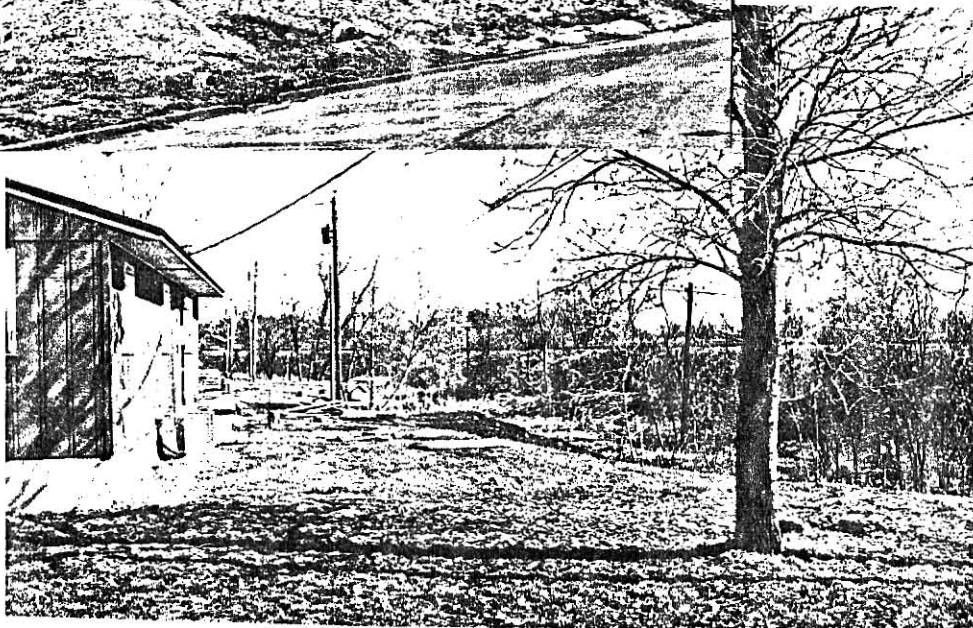
There are some existing, older, native trees such as hackberry, cottonwood and elm. There are some dead trees and stumps as well. New trees have been planted near some of the houses. There is much scrub brush and weed trees on the railroad embankment and in the drainage swales. Native cedar and brush exist on the rocky hillsides. Some lawns are well seeded and established. There are a few foundation plantings which consist of shrubs and flowers.



4-b



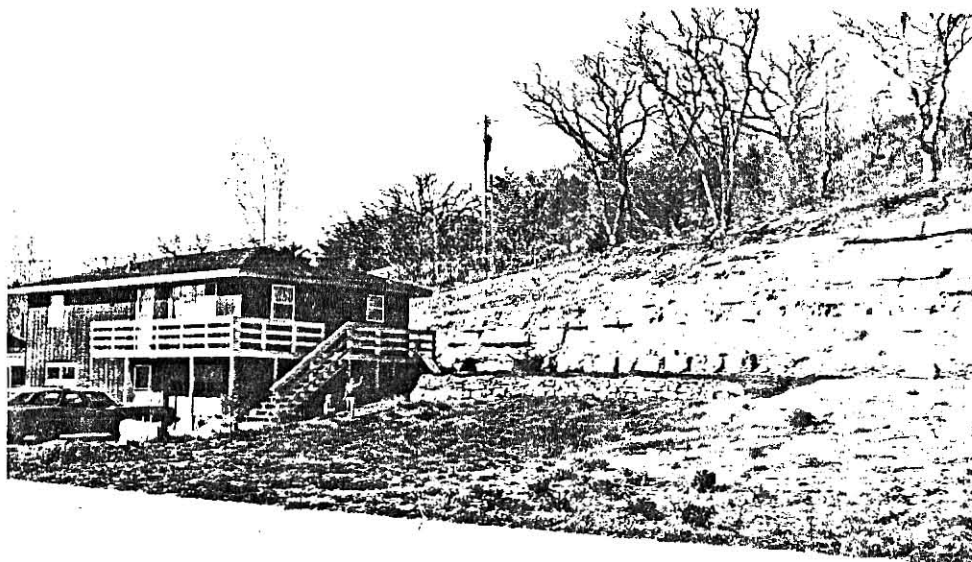
4-c



4-d

**BOUNDARIES**

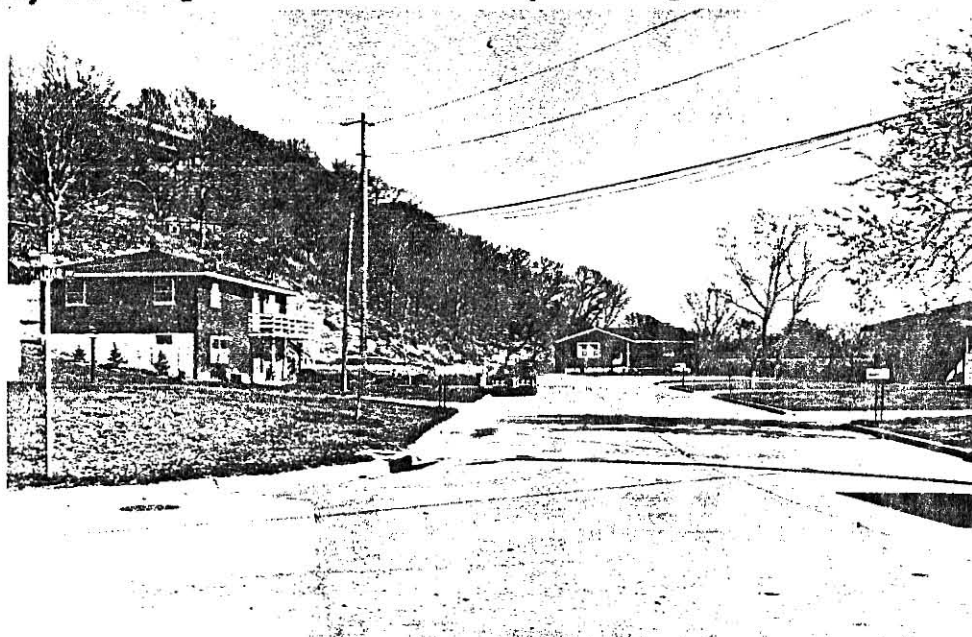
Some retaining walls of native limestone have been formed at the edges of the slopes and around the yards. Only one backyard is fenced. There are no fences around the railroad embankment or around the drainage swales.



4-e

**STREETS**

The streets are paved and curbed with curb cuts for the driveways. There are no sidewalks or alleys. One street ends in a cul-de-sac and another changes to a gravel road as it crosses the railroad. Due to the very steep slope on the street entering the north edge of the development, slow speeds are necessary throughout.



4-f

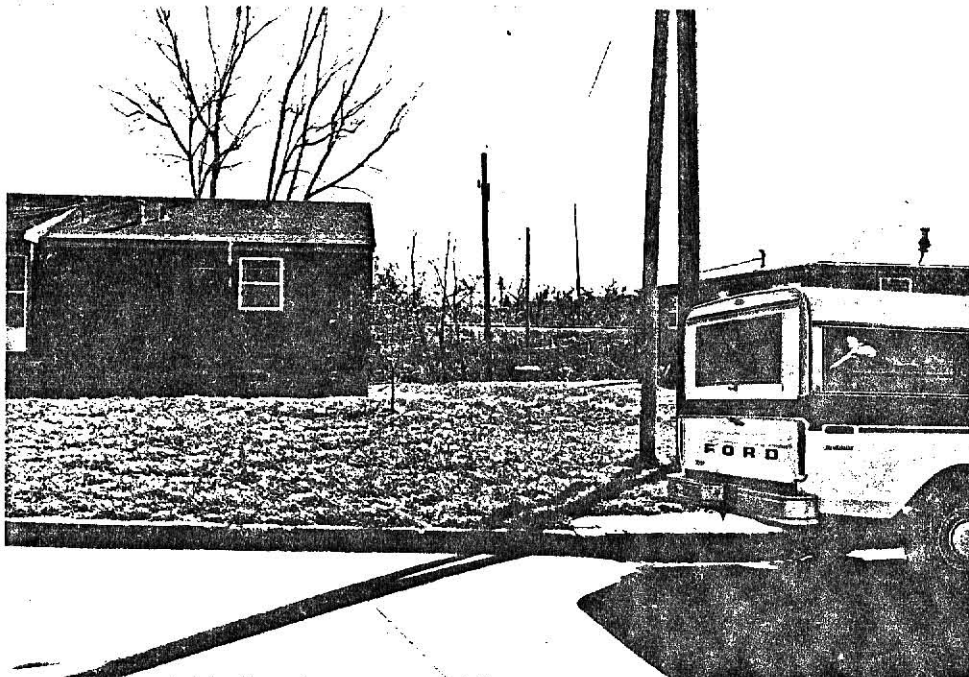


**UTILITIES**

Poles and overhead wires line the streets and the backs of the residential lots. A wide (100') railroad easement includes the embankment and drainage swale along the south edge of the development. Other easements run between the lots, for utility poles, and along the streets. There is a right of way along either side of the paved streets.



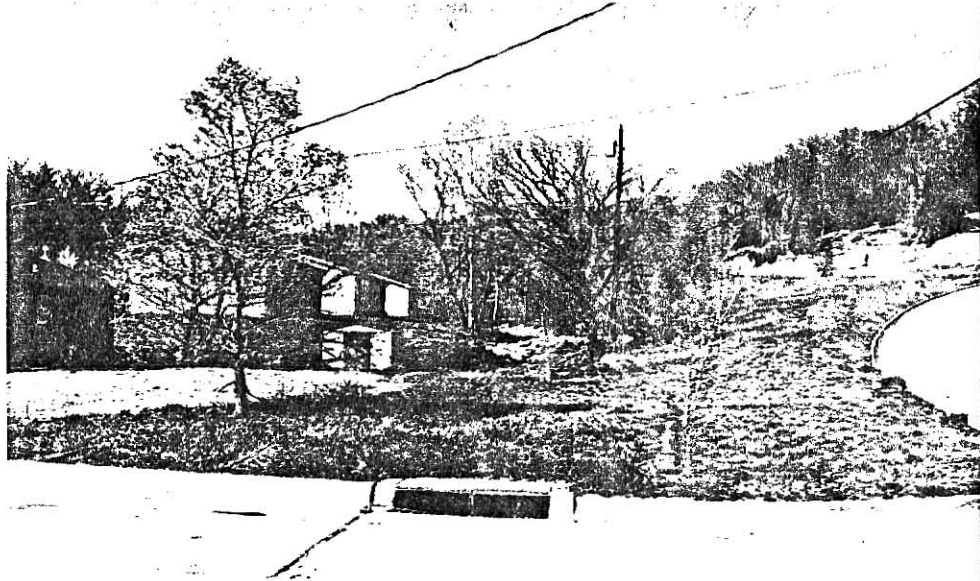
4-g



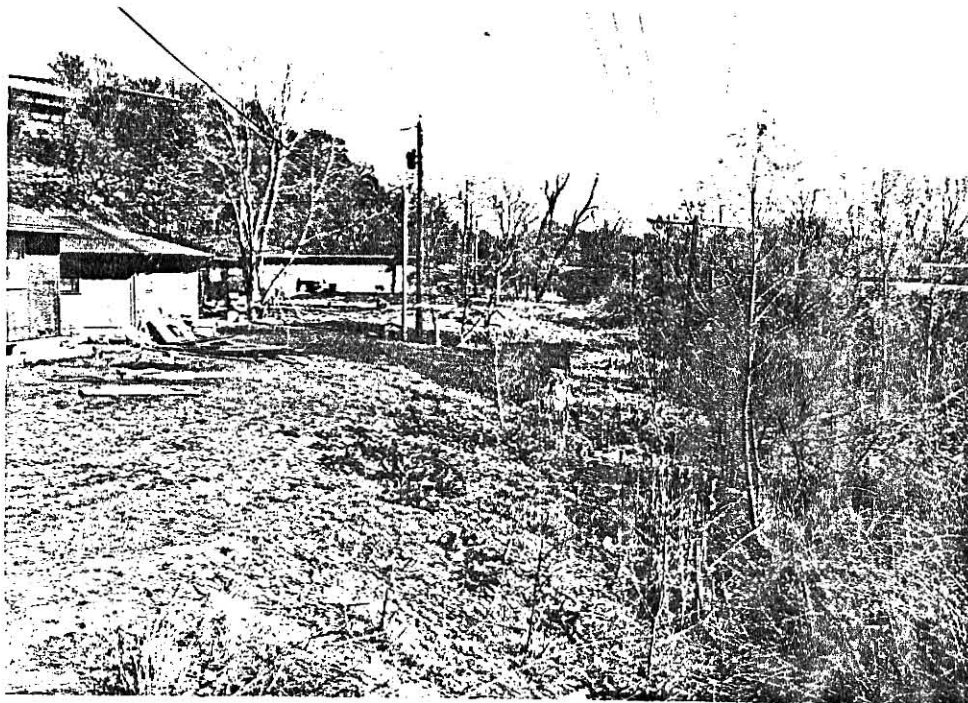
4-h

## SPACES

Much natural and undeveloped space exists along the face of the slope on the northeast edge, in the drainage swales and on the railroad embankment. These areas are undeveloped and uncleared, with native rock and vegetation abounding. There is one empty lot at the foot of the rocky hillside. The gently sloping drainage swale alongside the railroad embankment is undeveloped, with many native plant materials growing there.



4-i



4-j

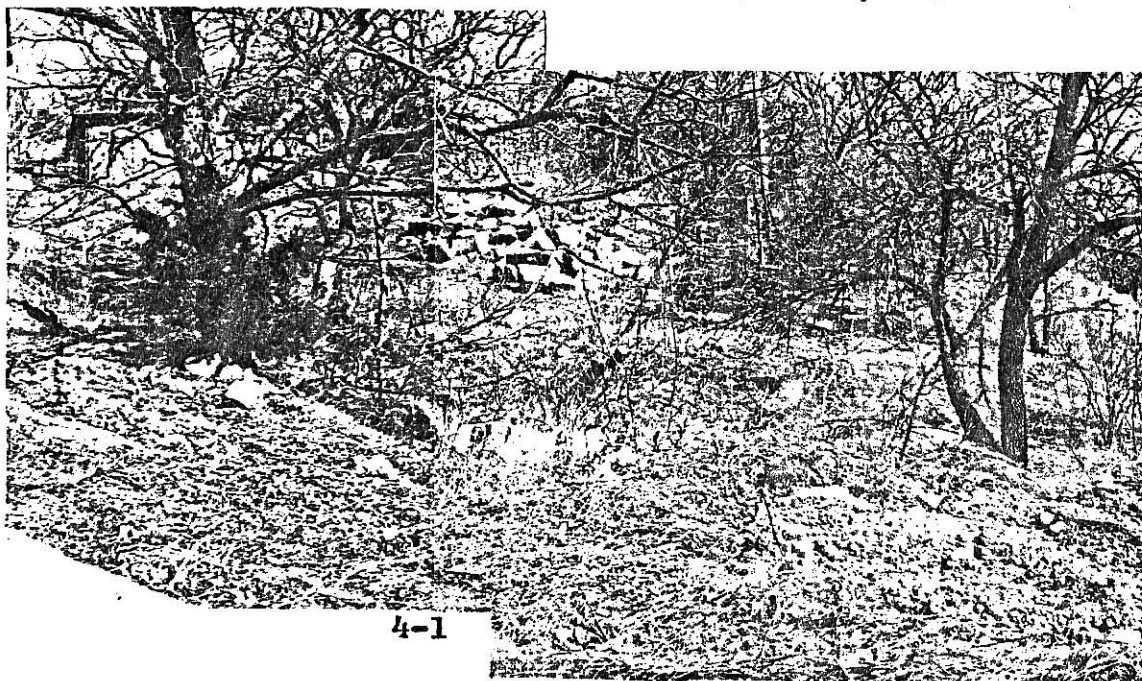
**MICRO-CLIMATE**

One micro-climate exists in the swale on the north side of the railroad embankment. It has a lower elevation and is in the shade created by the embankment. This swale is behind the houses and is sheltered by the houses and the tall bank. It is frequently damp and contains native vegetation.



4-k

Another micro-climate exists on the rocky slope at the north edge of the site. It is rocky and bare of shade due to the thin layer of soil in which plants must grow. It catches lots of south sun and is a very warm, dry area.



4-l

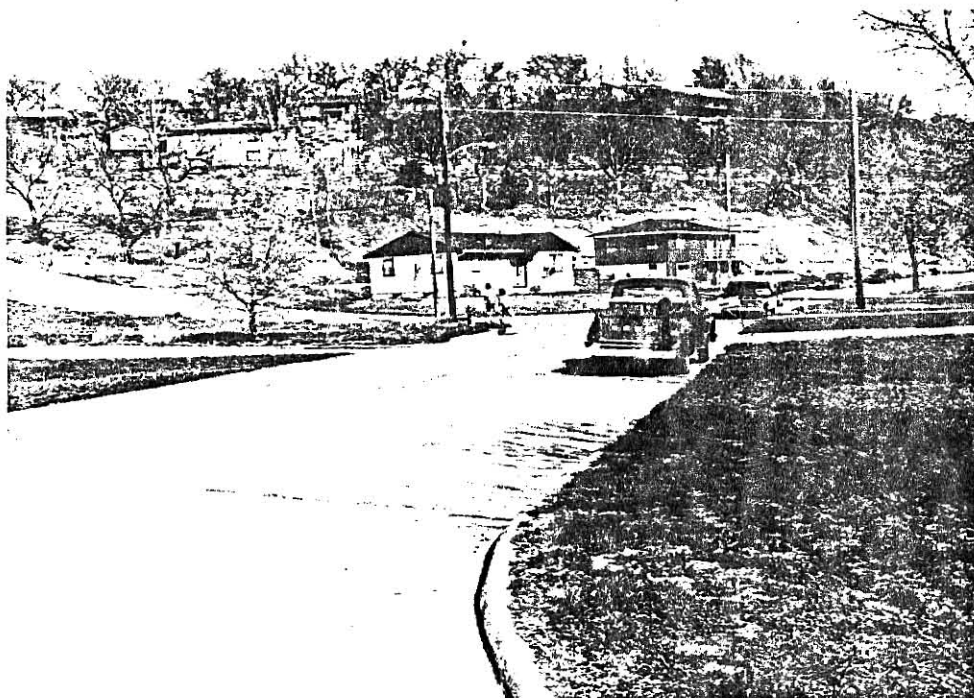
4-m

**ASPECT**

Most homes face either north or south. The two houses on the north side of the street, backed up to the steep slope, get full sun exposure. Homes on the south side of the street get full sun in their backyards.

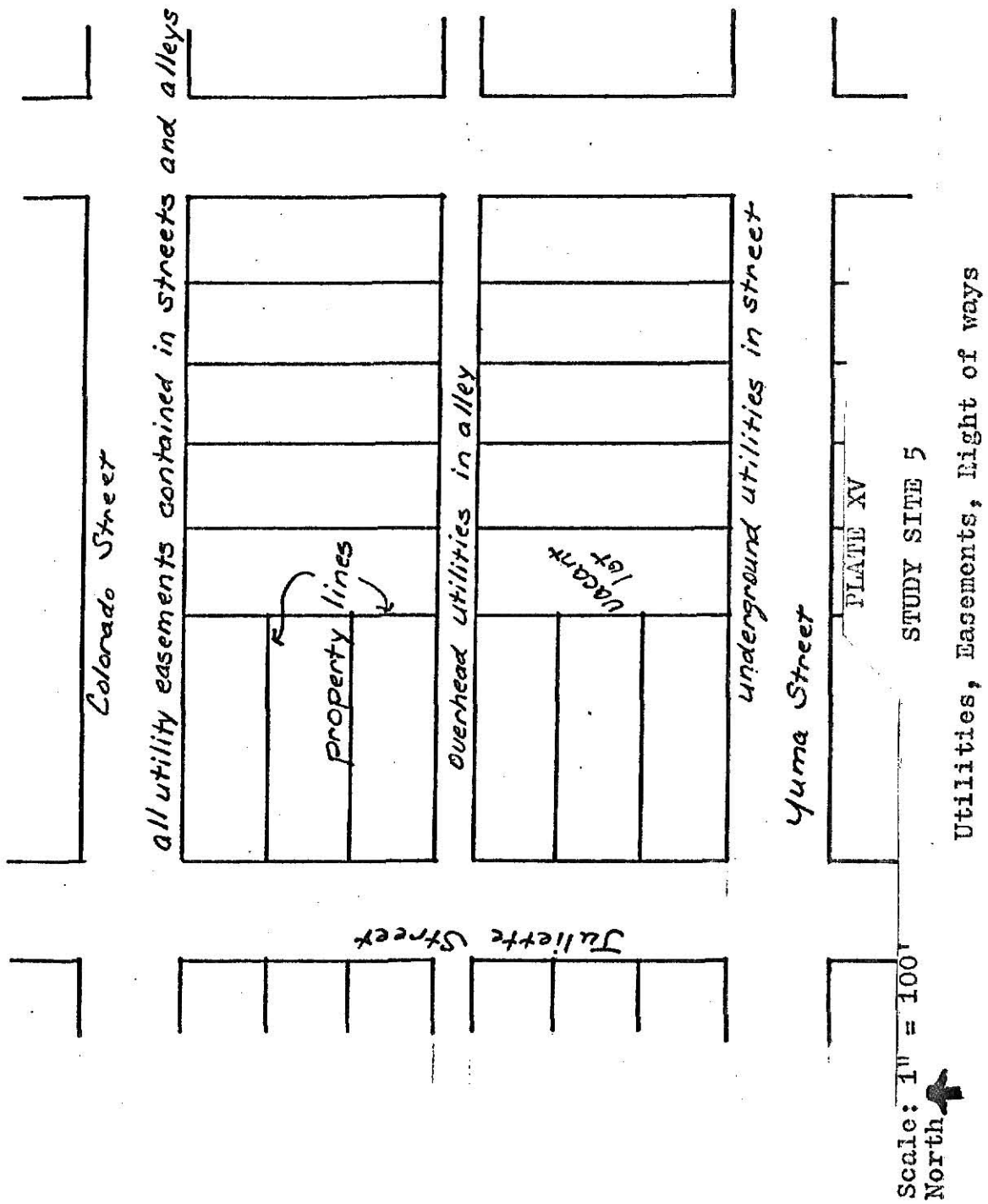
**VISUAL QUALITY**

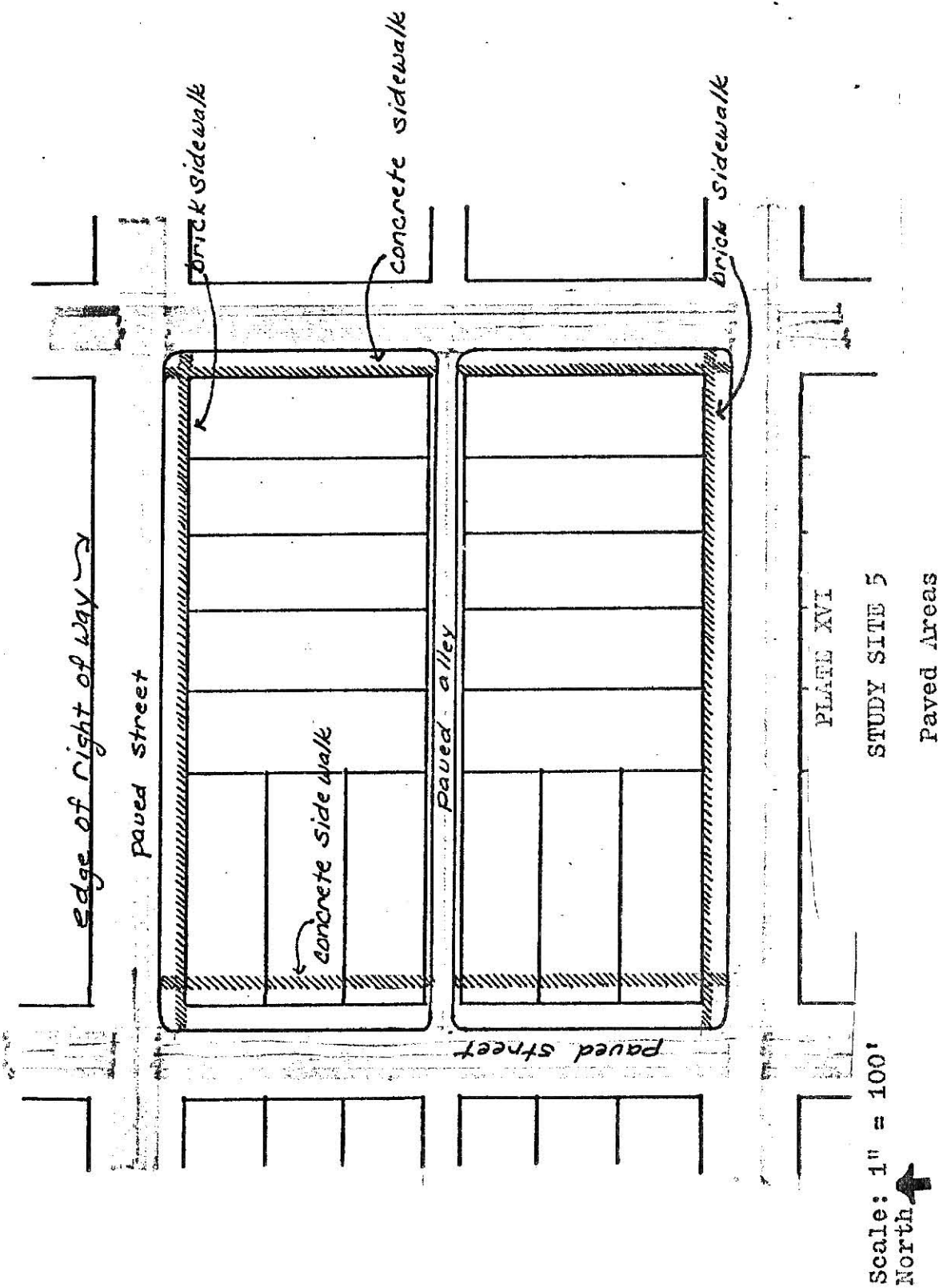
This is a sheltered looking area, protected from the elements by the slope and embankment. It is away from any heavy traffic and fairly isolated. Some old vegetation and some new, in addition to a mixture of house styles and sizes give some variety to the visual quality of this development. The back of the lots are overgrown with native vegetation, especially along the edge of the railroad and in the drainage swales.

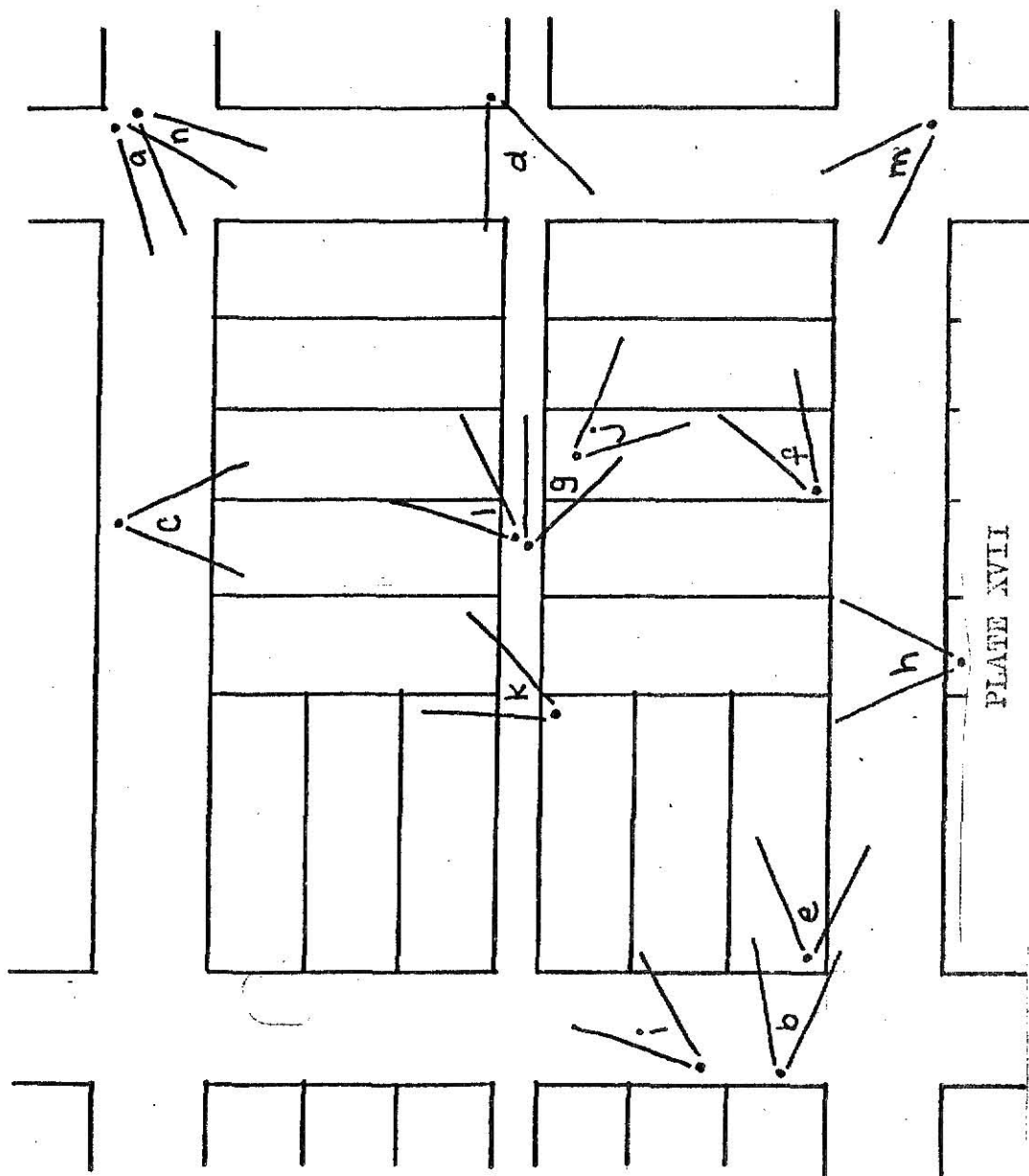


4-n









Scale: 1" = 100'

North ↑

PLATE XVII

STUDY SITE 5

Photograph Locations

STUDY SITE 5 is a city block approximately 3.5 acres, with 16 dwelling units. This results in a density of 4.6 du/acre.

#### TOPOGRAPHY

This is a level area with a slightly lower elevation at the southeast corner.

#### SLOPE

A gentle slope downward toward the southeast corner results in the use of a seat-high retaining wall along the east and south edges of the site.



5-a

#### SOIL

Soils have been mapped for large areas of Manhattan, in which this development is included. More detailed information would necessitate getting individual soil samples.

#### GEOLOGY

Does not apply because surface that shows is all soil.

#### VEGETATION

There are quite a number of old trees, mostly elm and pin oak, which line the streets. These are large street trees, and they grow in the alley as well. Much old vegetation such as trees and shrubs exists around the houses and in the backyards. New trees have been planted along Colorado and Juliette Streets, and in some people's yards. These new trees are mostly sycamore and pin oak. There are not many well kept lawns. Most are a combination of

grass, weeds, and bare earth. Grassy areas along the streets (between the sidewalks and the streets) are especially nice along Juliette and Colorado Streets. Shrubs are used to define the edges of the yards and are used as foundation plantings. Most shrubs have not been trimmed, but rather retain their natural growth habits.



5-b



5-c

## UTILITIES

Poles exist in the alley and have many overhead wires. Poles along the streets are for street lights. Easements are contained along the alley and the streets.



5-d

## STREETS

All the streets are paved and curbed with curb cuts for the driveways on all the streets except Yuma. Sidewalks are concrete paved along 6th and Juliette Streets and are of old brick paving along Yuma and Colorado Streets. They are in good condition. The alley is concrete paved and has some old buildings on each side of it. The alley contains garbage cans and is lined with old wire and chain link fences. Some parking occurs in the alley and along the streets. Water drains into the alley and the streets.

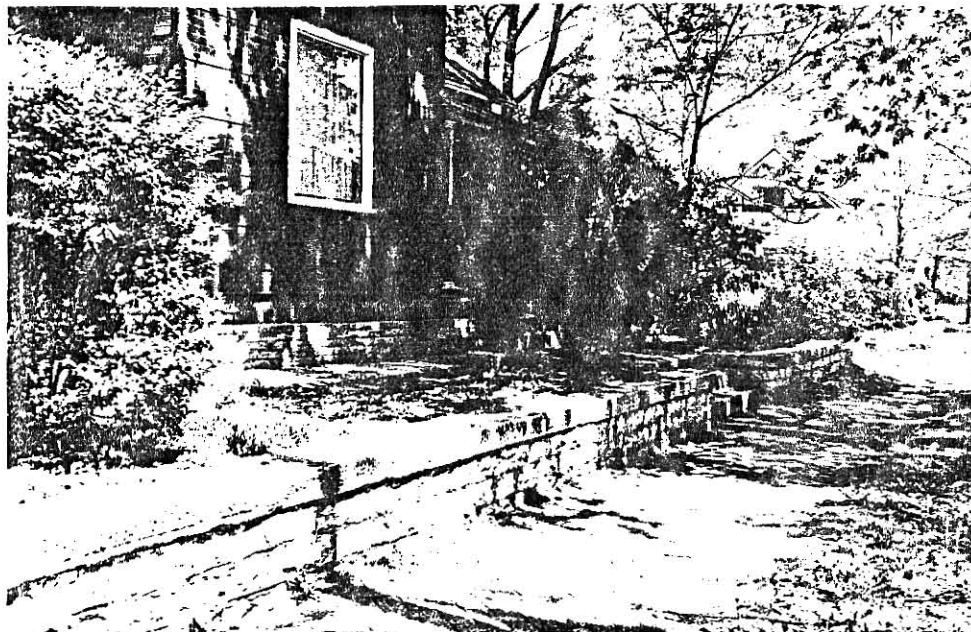


5-e



**BOUNDARIES**

Chain link and wire fences define the backyards and line the alley. A small, native stone retaining wall of seat-height exists along 6th and Yuma streets. Some concrete blocks are used around the yards to define flower beds and boundaries.



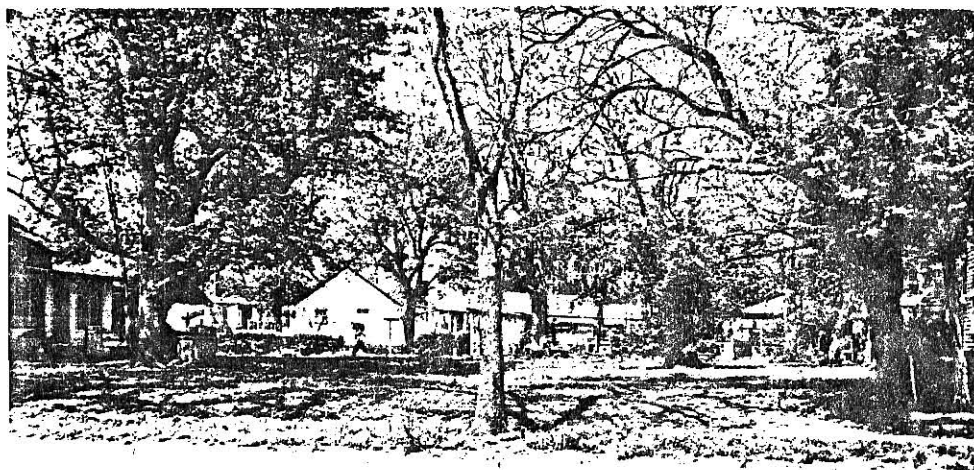
5-f



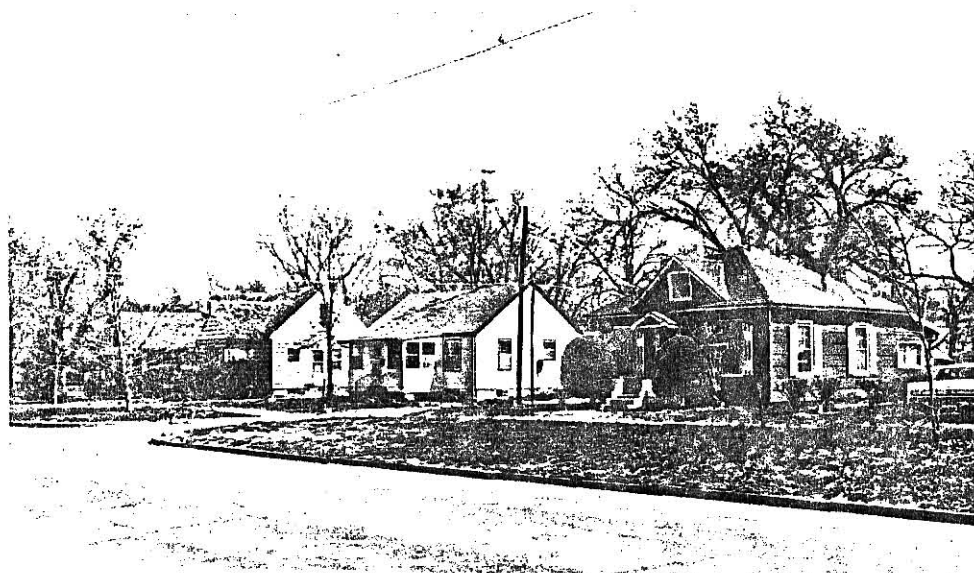
5-g

**SPACES**

An empty lot exists on Yuma Street, between houses and surrounded by trees. A fairly large space (24' wide), between the sidewalk and the street along Juliette is grass covered and has some trees. In the alley large open spaces exist and they, along with the backyards, are very overgrown with weeds and shrubs, and are surrounded by trees or fences. Some of these backyard spaces are used for parking and gardens, and some are not noticeably used.

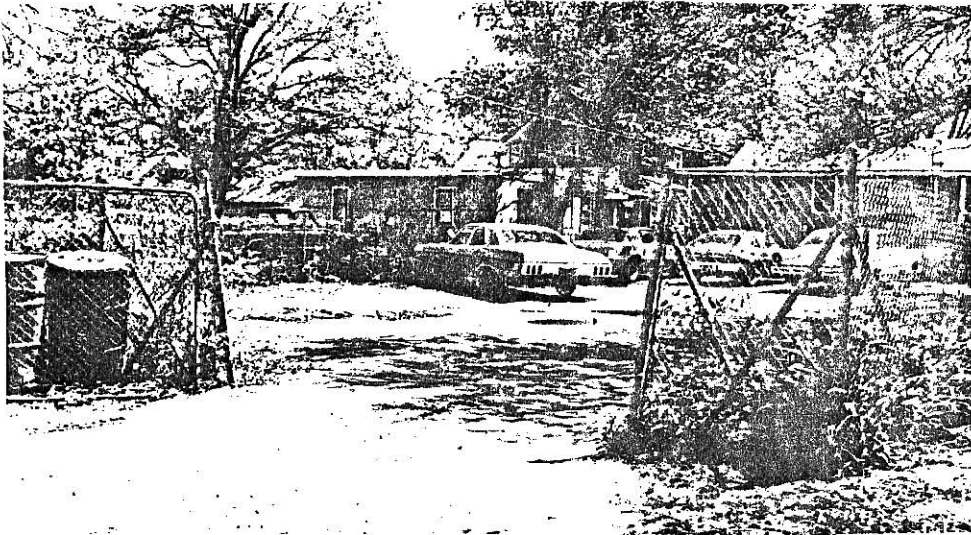


5-h



5-i





5-j



5-k



5-l

**MICRO-CLIMATE**

The one empty lot is shaded, protected from the elements and very pleasant. The alley is hot due to reflected heat from the paving. Reflected heat off of Yuma Street results in the south edge of the block being rather warm. Areas in the backyards are surrounded by trees, shady and out of the wind.

**ASPECT**

Most houses face north or south. The alley runs east and west.

**VISUAL QUALITY**

This area looks old and lived in due to the age of the houses and the size of the trees. Lots of humanizing elements give a lived in quality to the yards. Activity carried on in the backyards and the alley adds to this quality. Busy streets on the south and west make it seem quite urban.



5-m



5-n

## Chapter 4

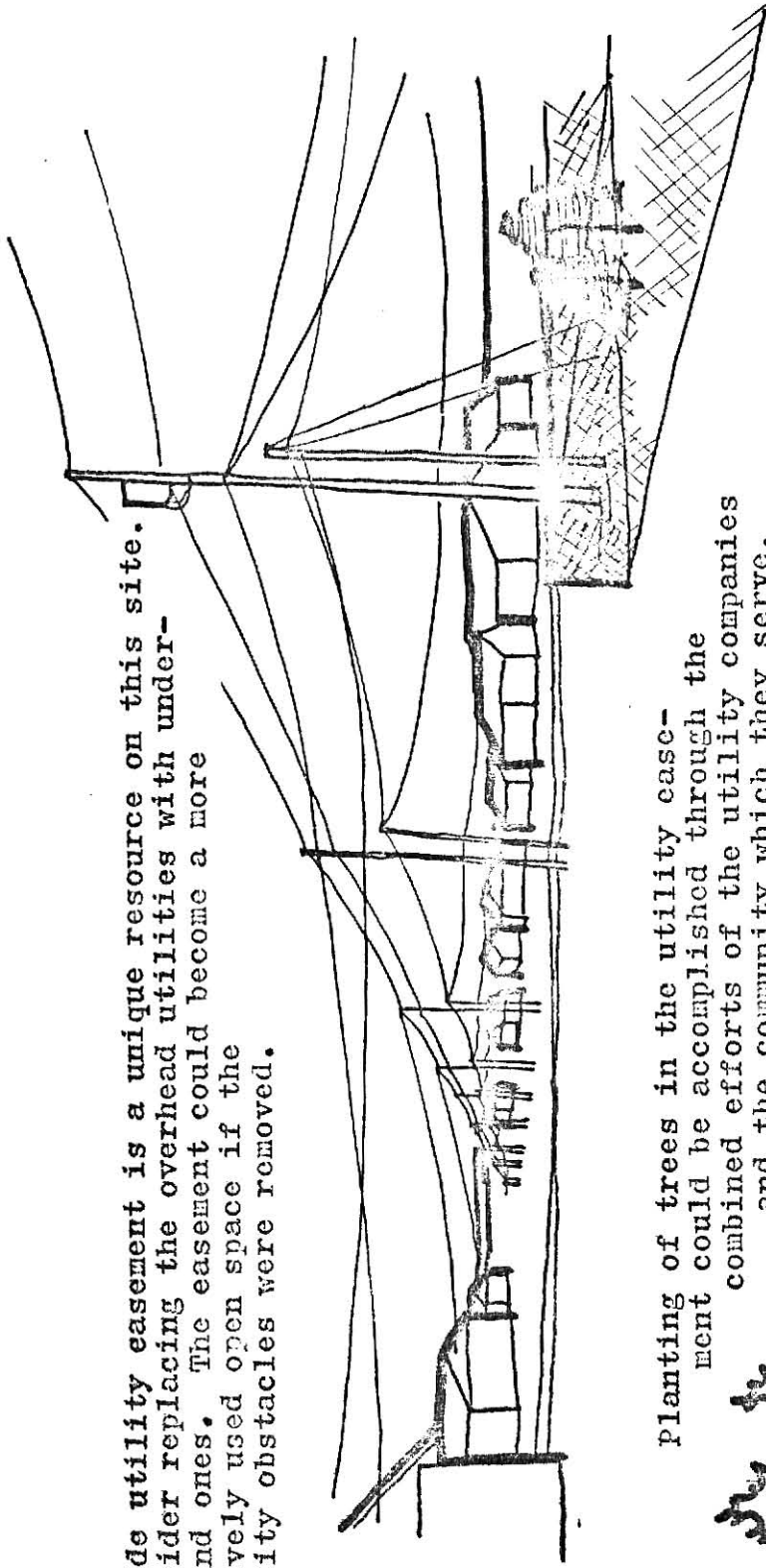
## ANALYSIS OF RESOURCES IN THE STUDY SITES

Having inventoried the resources, an analysis of them is next conducted to determine appropriate uses to which they can be put. Selection of some unique physical features or resources in each of the residential sites was the first step. This entailed a process of comparing and contrasting the various resources in each of the areas in order to see what resources the areas had in common and what ones were unique to a particular development. In this analysis of the resources comments are made about each of the resources that are identified as unique. Some of the special features discussed are topography, geology, physical boundaries, easements and vegetation. Something unique to each area was found and in some cases more than one inventoried resource existed in an unusual form.

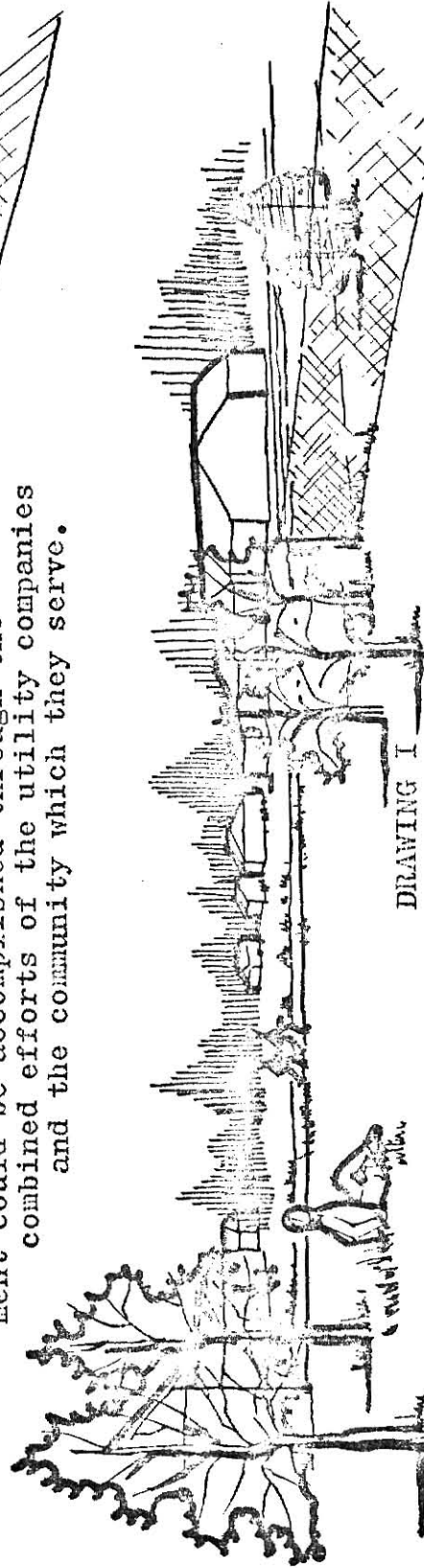
This section consists of drawings which illustrate the unique resources and each sketch is accompanied by comments which serve to identify the resource and how it is or could be used. The value of the resources is discussed in terms of potential changes in their use. These observations could be applied to other developments in which the resource being discussed exists in a similarly unique fashion.

The sketches are based on maps, photographs and observation in order to realistically portray the resource.

A wide utility easement is a unique resource on this site. Consider replacing the overhead utilities with underground ones. The easement could become a more actively used open space if the utility obstacles were removed.



Planting of trees in the utility easement could be accomplished through the combined efforts of the utility companies and the community which they serve.



DRAWING I

STUDY SITE 1

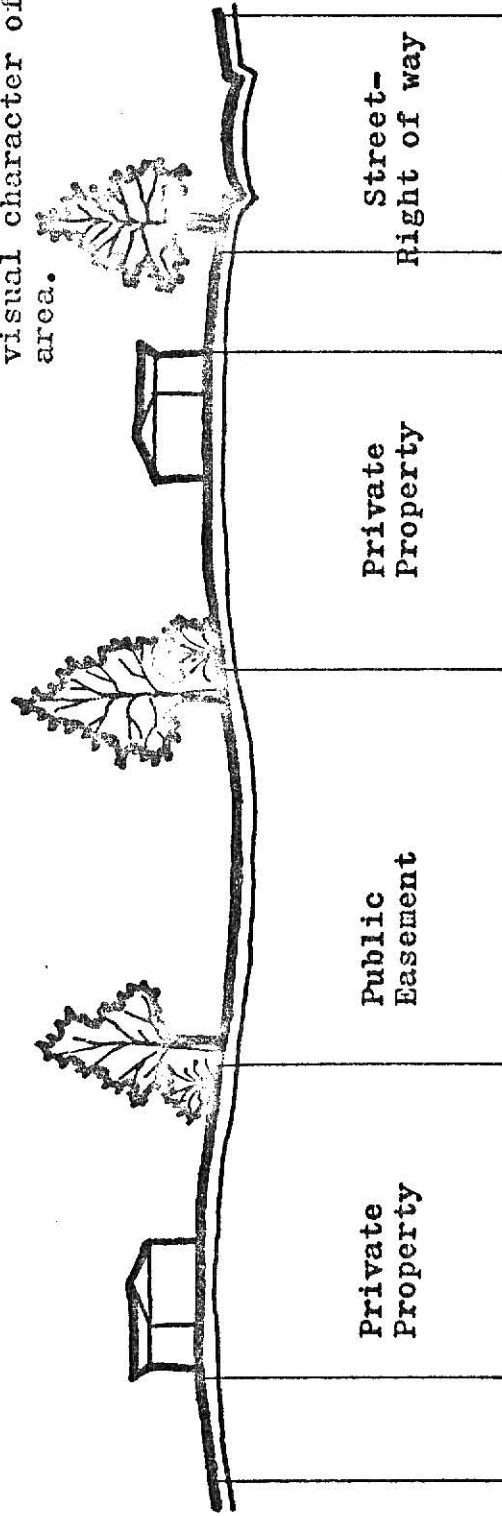
Utility Space Considerations

In newly developed residential settings vegetation can be planted to serve a variety of needs.

Vegetation placed on private property functions as a visual and physical boundary to the property.

Consider planting vegetation along the edge of utility easements to define a public open space, especially if the utilities are placed underground.

Street trees planted and maintained by the city are placed in the right of way and enhance the visual character of the area.



DRAWING II

STUDY SITE 1

Planting Alternatives

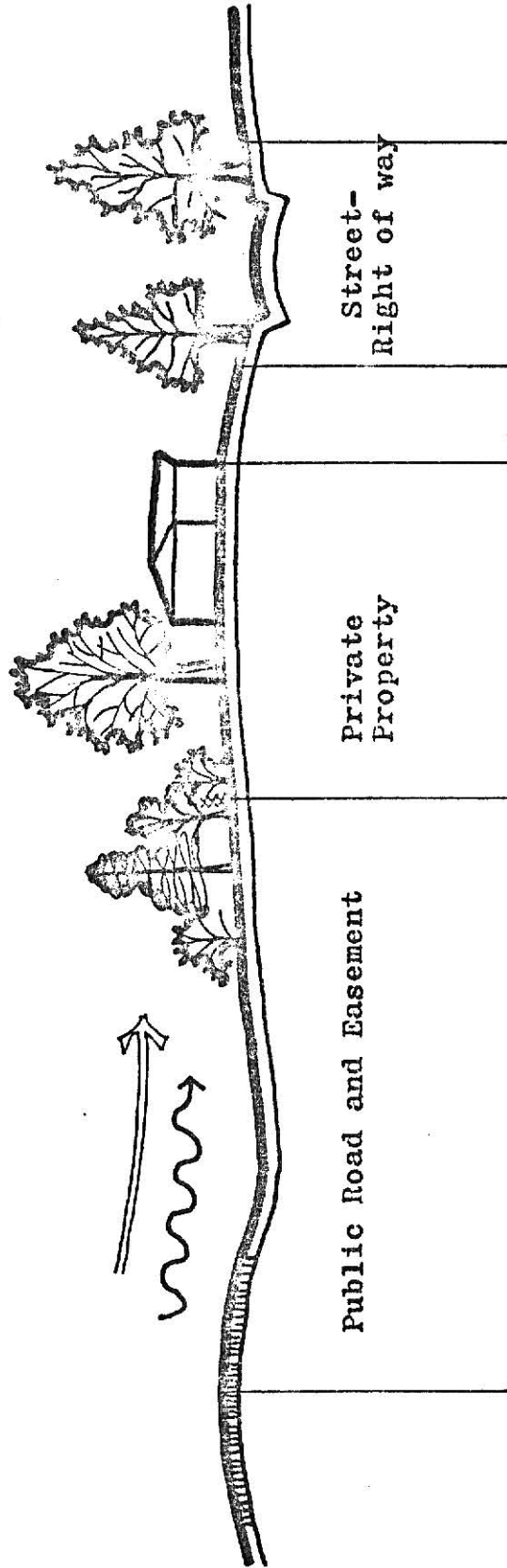


An area with no existing vegetation has little protection from such elements as wind and sun.

This paved highway creates traffic noise and reflected heat which are carried into the yards and homes by prevailing west winds. The existing grass lined ditch, if supplemented with additional plants could function as a wind break, noise baffle and cooling element for the summer breeze.

While it takes several years for newly planted trees to become effective shade trees, the final result is pleasurable and economically sound.

Street trees create a cooling effect both visually as well as physically.



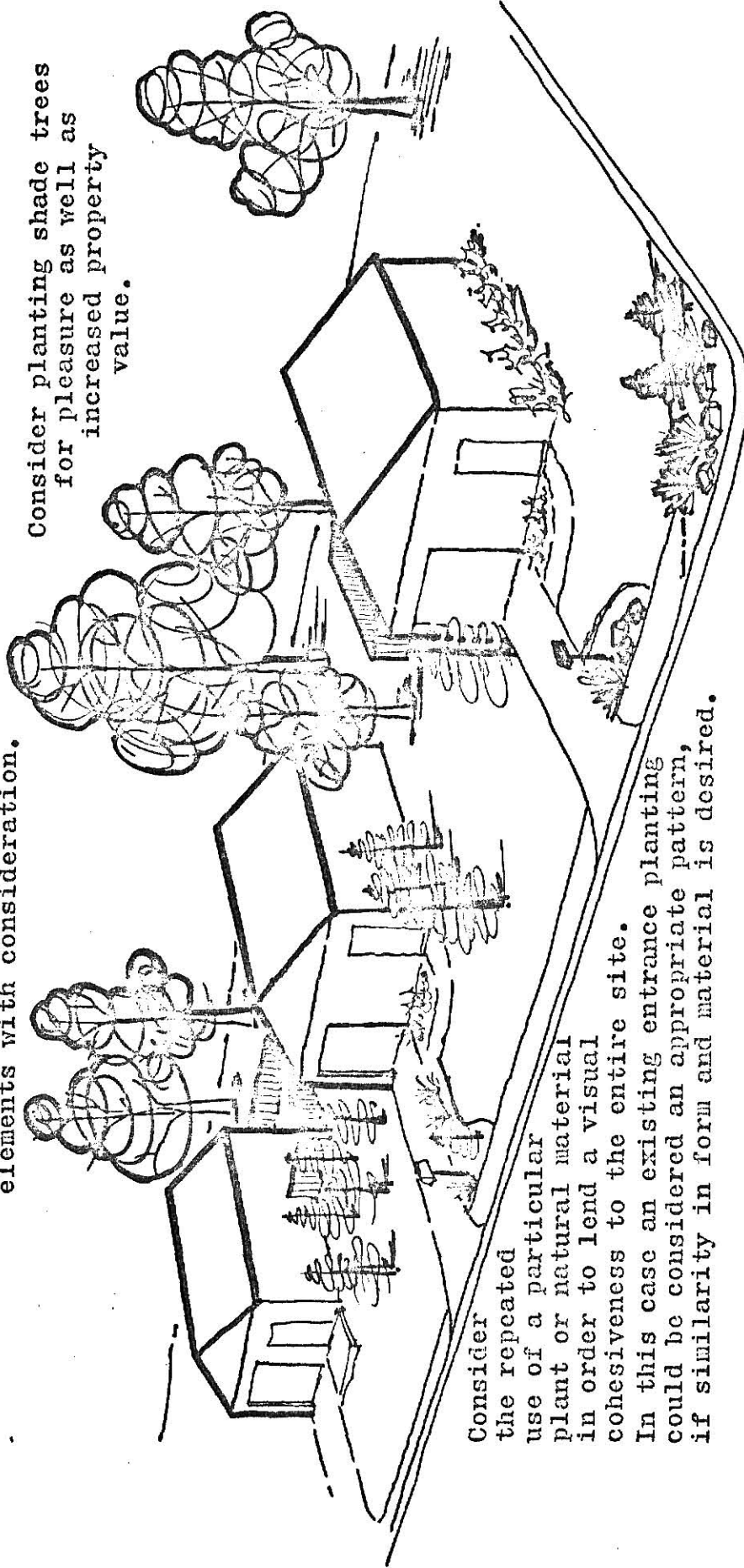
DRAWING III

STUDY SITE 1

Environmental Factors

A new development with few existing trees or variations in land forms offers the opportunity to add humanizing elements with consideration.

Consider planting shade trees for pleasure as well as increased property value.



Consider the repeated use of a particular plant or natural material in order to lend a visual cohesiveness to the entire site. In this case an existing entrance planting could be considered an appropriate pattern, if similarity in form and material is desired.

DRAWING IV

STUDY SITE 2

Additional Humanizing Elements

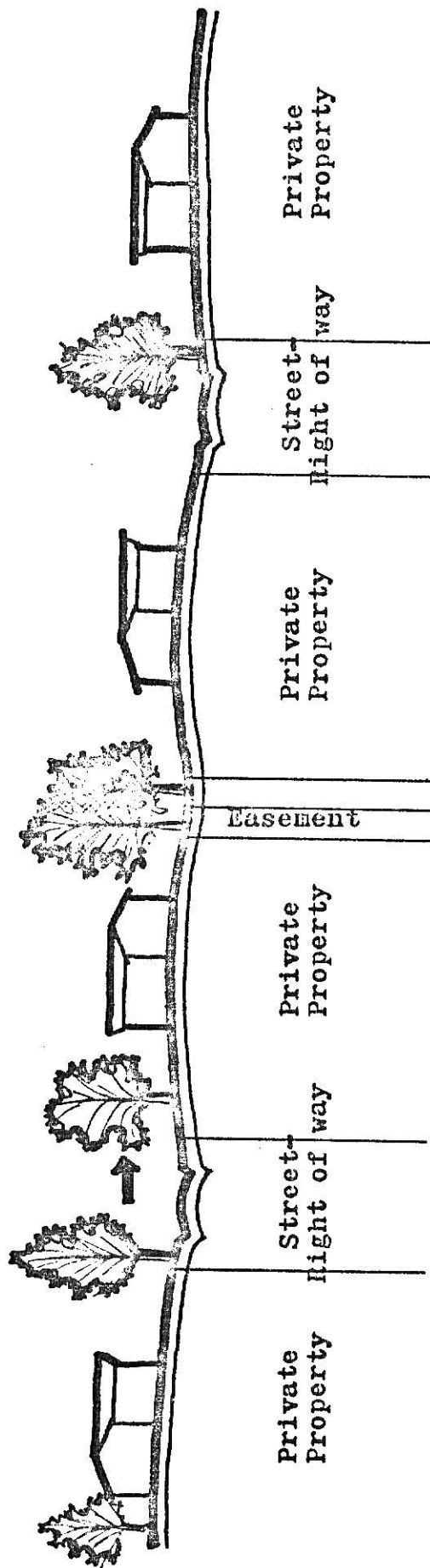


A development with level topography and few trees offers little protection from the forces of nature.

Consider planting shade trees for increased comfort as well as increased value to the property.

Planting of street trees takes the combined efforts of the community but the results are a benefit to all.

Consider utilizing the easements for tree plantings which would function as a visual barrier to the adjacent houses.



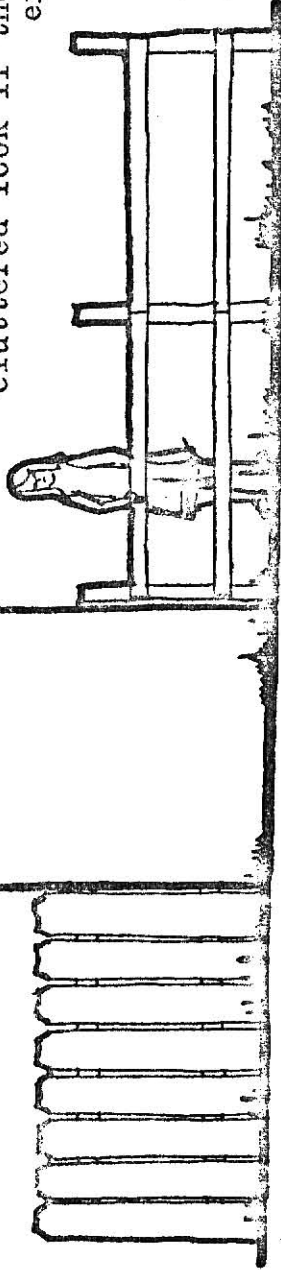
DRAWING V

STUDY SITE 2

Environmental Factors

Consider that different types of fences will function differently. Careful planning will provide more flexible use.

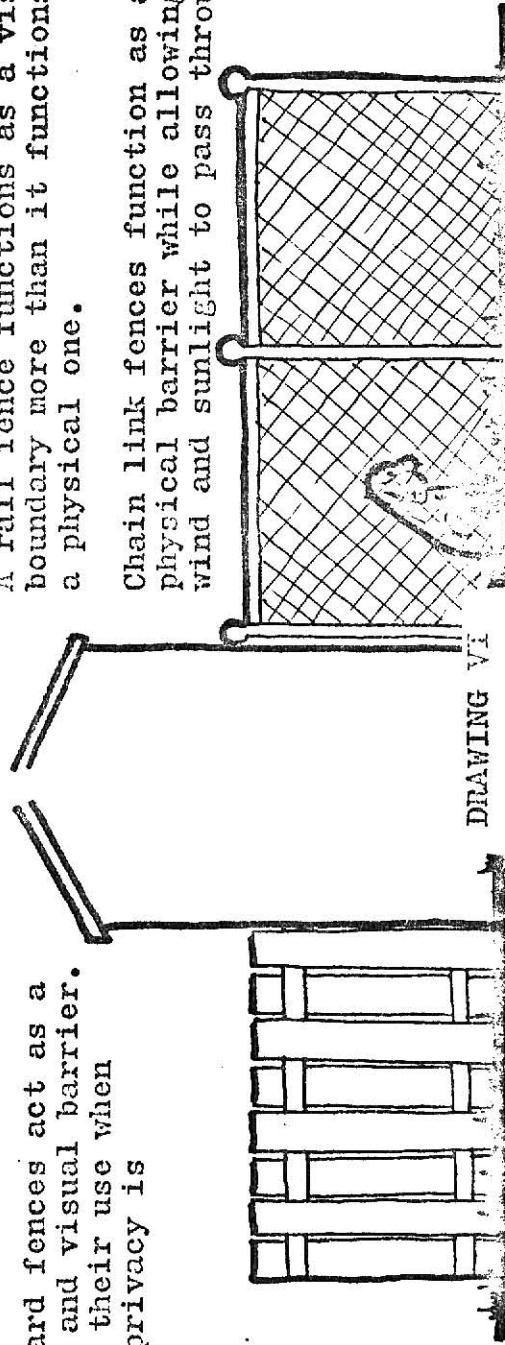
While fences are not the only possible physical boundary, in a new development they can be constructed to fulfill immediate privacy and barrier needs. Small lots however, can become visually smaller and the entire development take on a cluttered look if they are used exclusively.



Solid board fences act as a physical and visual barrier. Consider their use when extreme privacy is desired.

A rail fence functions as a visual boundary more than it functions as a physical one.

Chain link fences function as a physical barrier while allowing wind and sunlight to pass through.



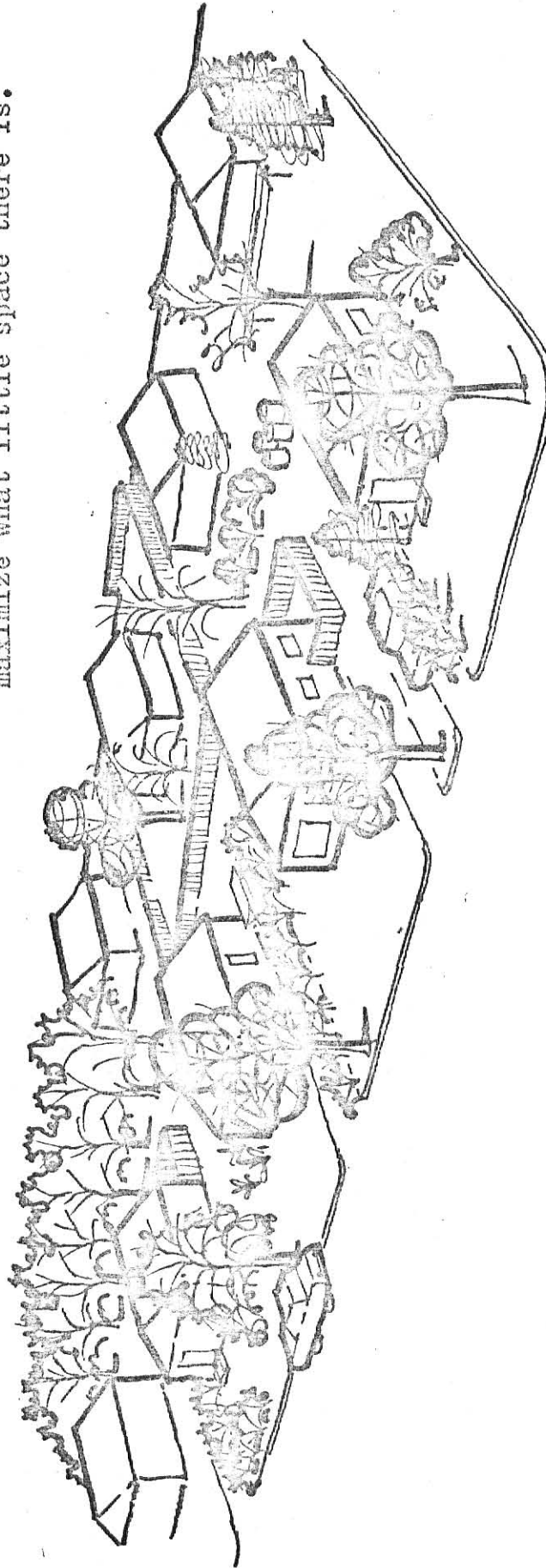
DRAWING VI

STUDY SITE 2

Physical Boundaries

Older developments often have well established vegetation. The existing shade trees are a unique resource in this area and play an important role in maintaining a pleasant environment.

When home lots are relatively small the extensive use of fences, hedges and walls to act as boundaries may result in diminishing the usable space. Consider combining some outdoor spaces such as garbage areas, drive-ways and play areas in order to maximize what little space there is.

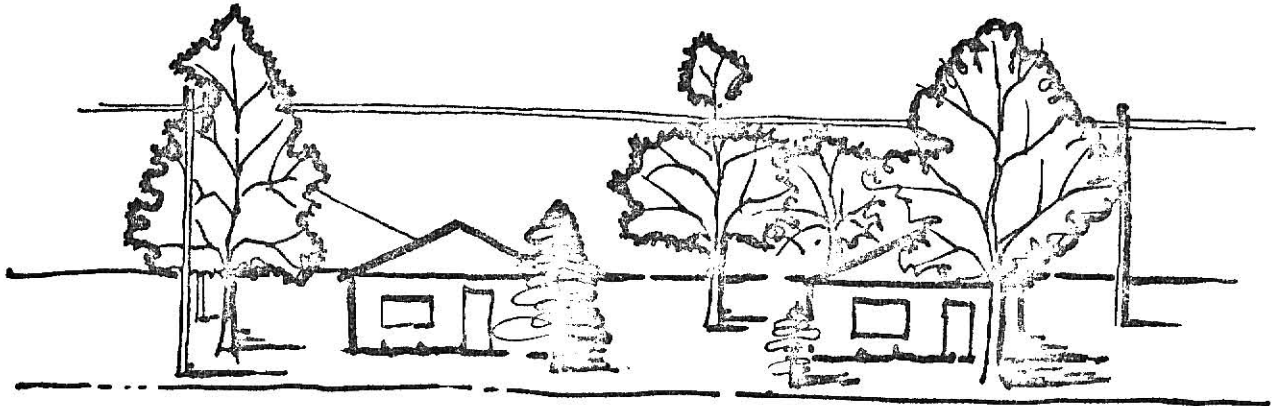


DRAWING VII

STUDY SITE 3

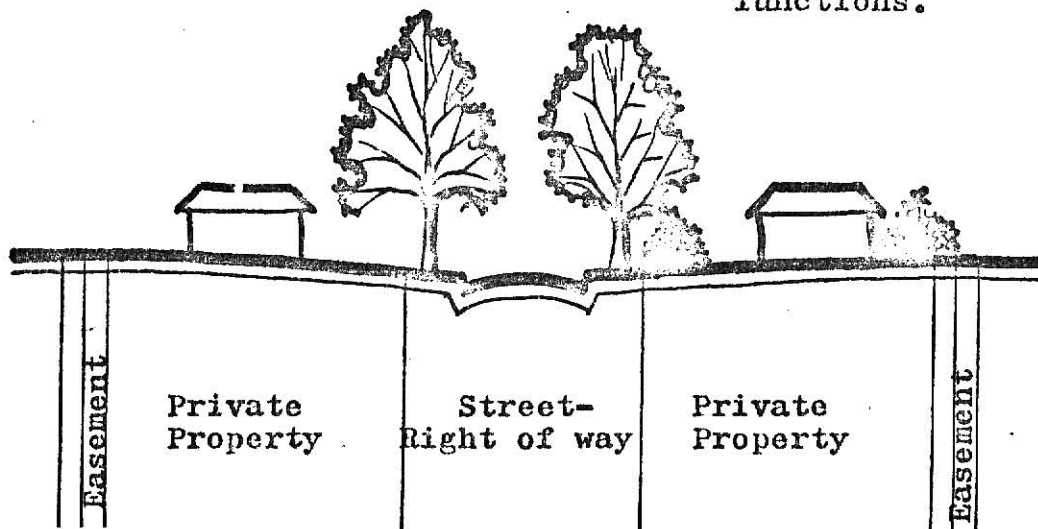
Visual Character

A variety of large shade trees exist on this site. Overhead utilities interfere with the growth of a number of these trees. Consider underground placement of these utilities in order to preserve natural growth habits.



The existing vegetation helps to minimize effects from natural forces by providing shade, functioning as wind breaks and natural boundaries. Consider care and preservation of these healthy specimens.

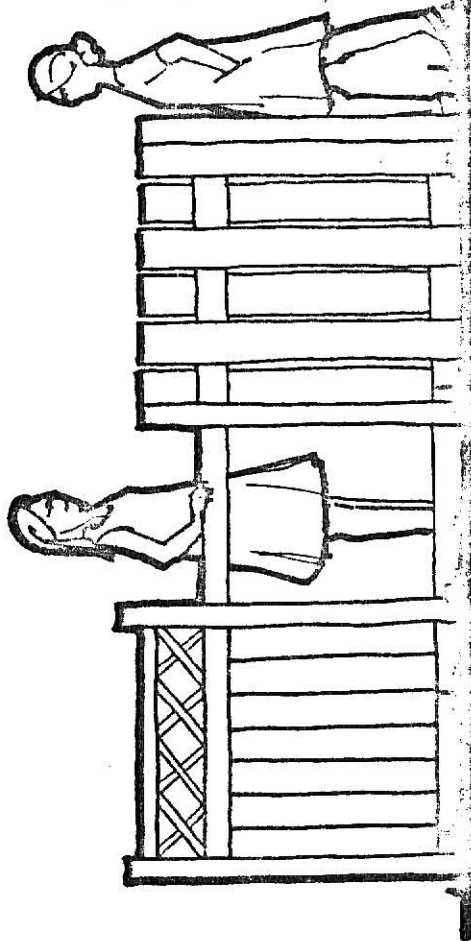
Consider planting low growing vegetation near the utility easement to serve boundary and privacy functions.



DRAWING VIII

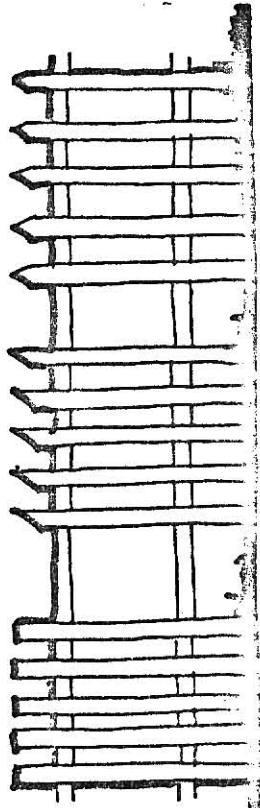
STUDY SITE 3

Unique resource



Wooden fences such as these act as physical and visual barriers.

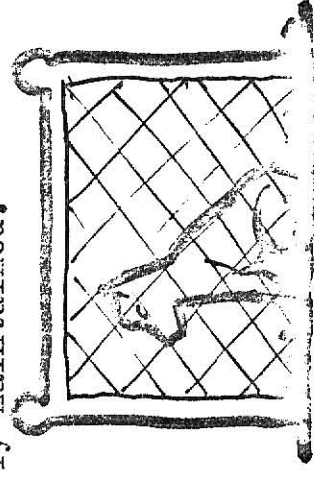
The extensive use of fences in this area causes the already small lots to be broken up even smaller. Consider the functions of each type of fence and materials to be used before construction takes place.



Picket fences function as barriers and could also serve a decorative purpose if properly maintained.



Wire fences, snow fences and chain link fences all function as a physical barrier with variety in visual appeal. Maintenance of any fence is important if it is to remain functional and attractive.

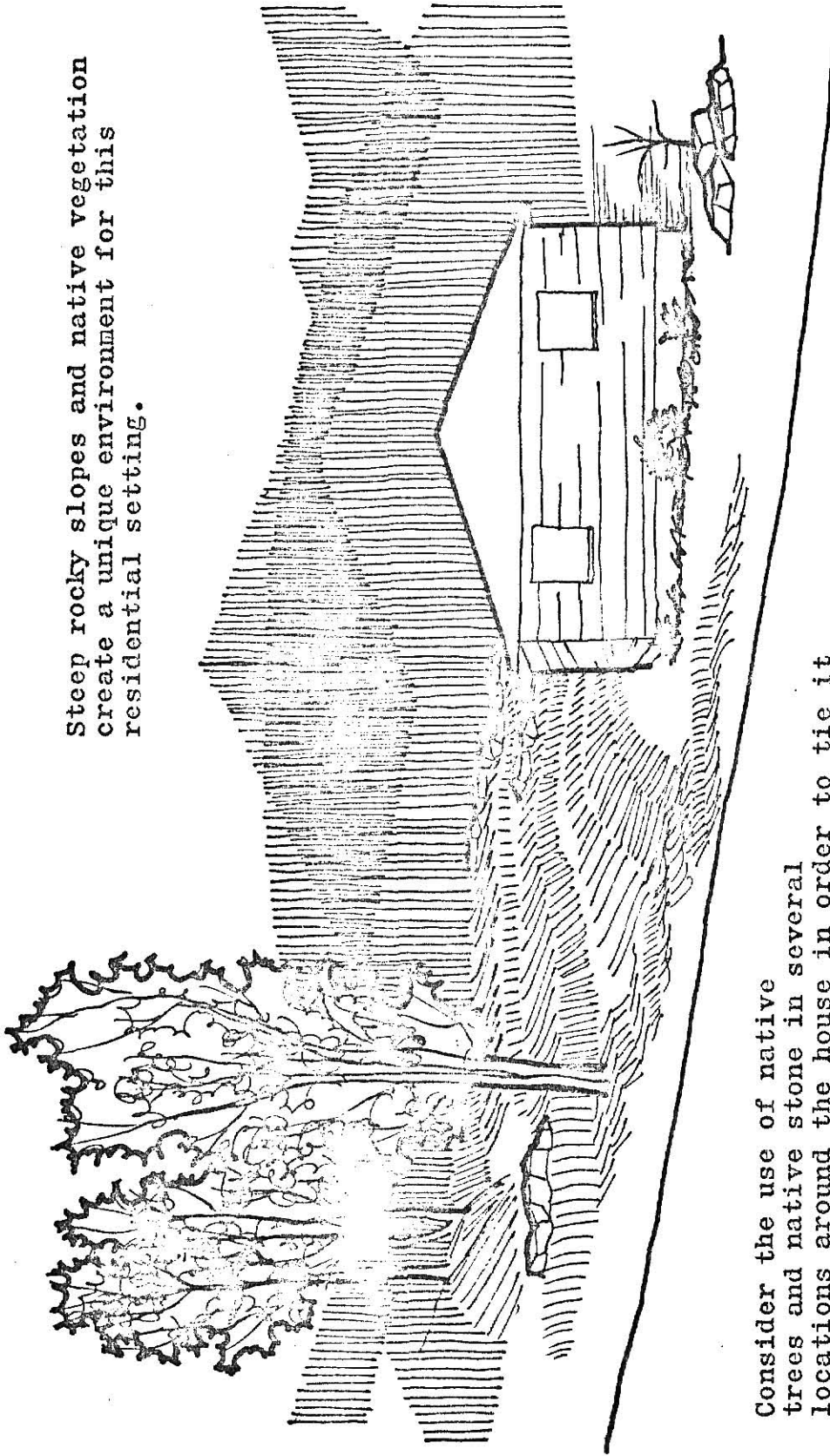


DRAWING IX

STUDY SITE 3

Physical Boundaries

Steep rocky slopes and native vegetation  
create a unique environment for this  
residential setting.



Consider the use of native  
trees and native stone in several  
locations around the house in order to tie it  
more closely to its surrounding environment.

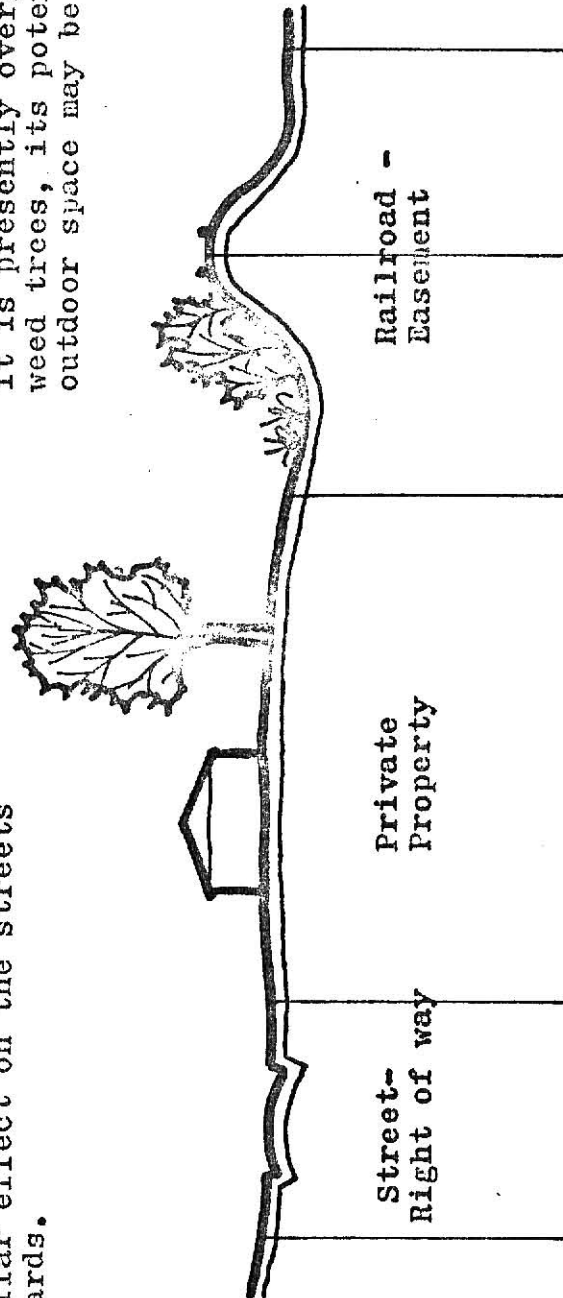
DRAWING X

STUDY SITE 4

Topography

The existing shade trees provide protection from the summer sun. Consider the addition of street trees for a similar effect on the streets and yards.

The heavily vegetated area on the north facing slope of the railroad embankment is a cool and moist micro-climate. Although it is presently overgrown with weed trees, its potential as an outdoor space may be considered.



DRAWING XI

STUDY SITE 4

Micro-climate

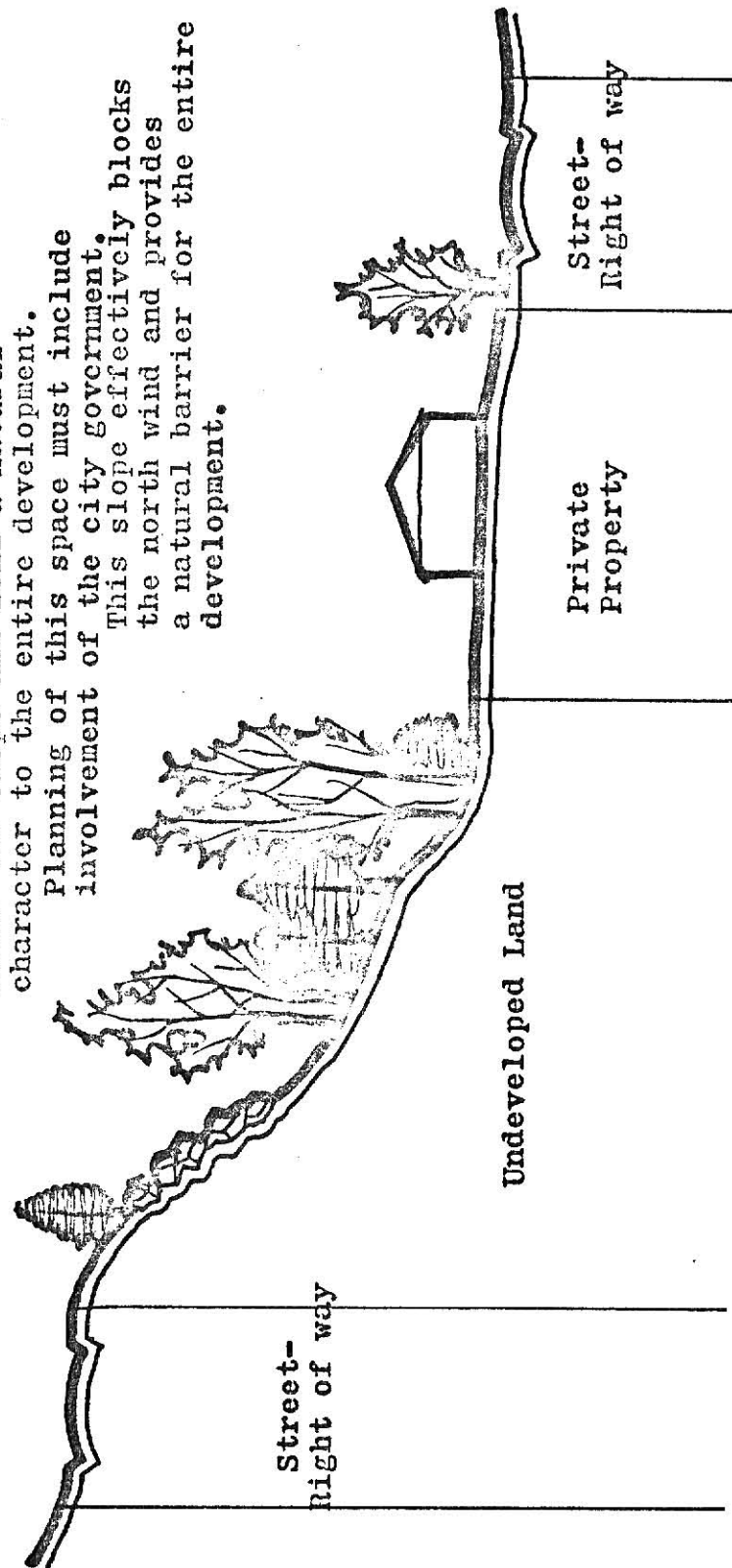


While this steep south facing slope has been surveyed into lots, it has not been developed for housing. Therefore, it could be considered, visually, a public space.

Native limestone and native vegetation cover the slope and lend a natural character to the entire development.

Planning of this space must include involvement of the city government.

This slope effectively blocks the north wind and provides a natural barrier for the entire development.

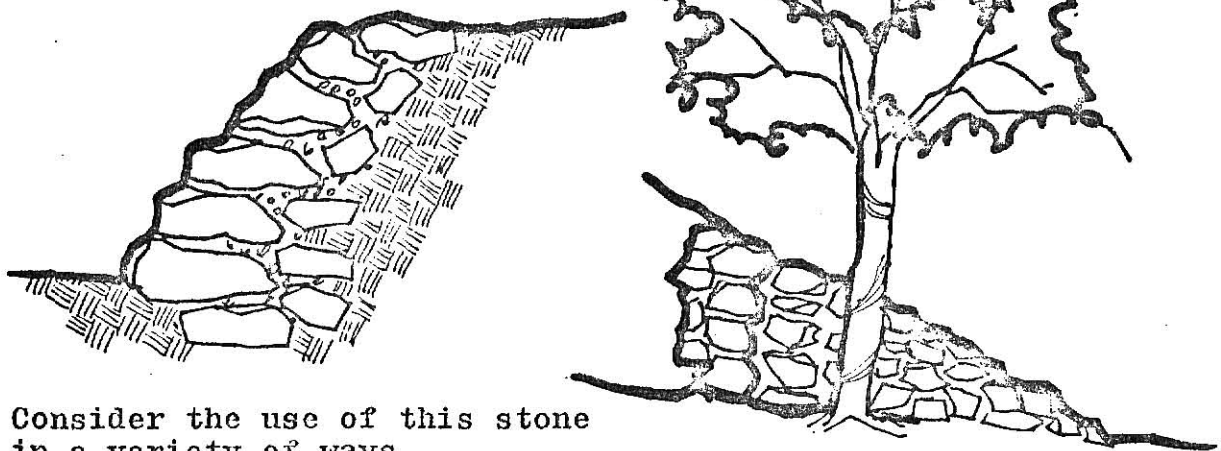


DRAWING XII

STUDY SITE 4

Physical Features

A unique resource in this area is the large quantity of native limestone which exists at surface level.

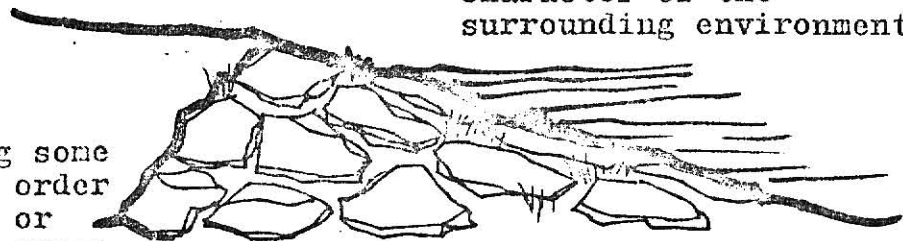


Consider the use of this stone in a variety of ways.

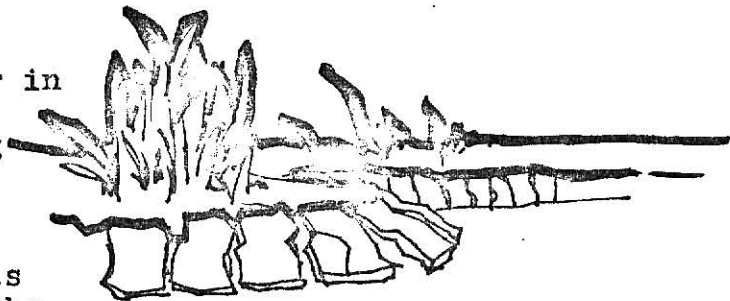
Retaining walls of exceptional quality can be constructed from this native stone.

Tree wells formed out of the natural stone retain much of the character of the surrounding environment.

Consider laying some stones flat in order to cover level or gently sloping areas for an extended outdoor space.



Rocks which are similar in size and shape can be used to border planting beds or act as boundary markers.



Consider the use of this stone for walks and paths leading to outdoor use areas.



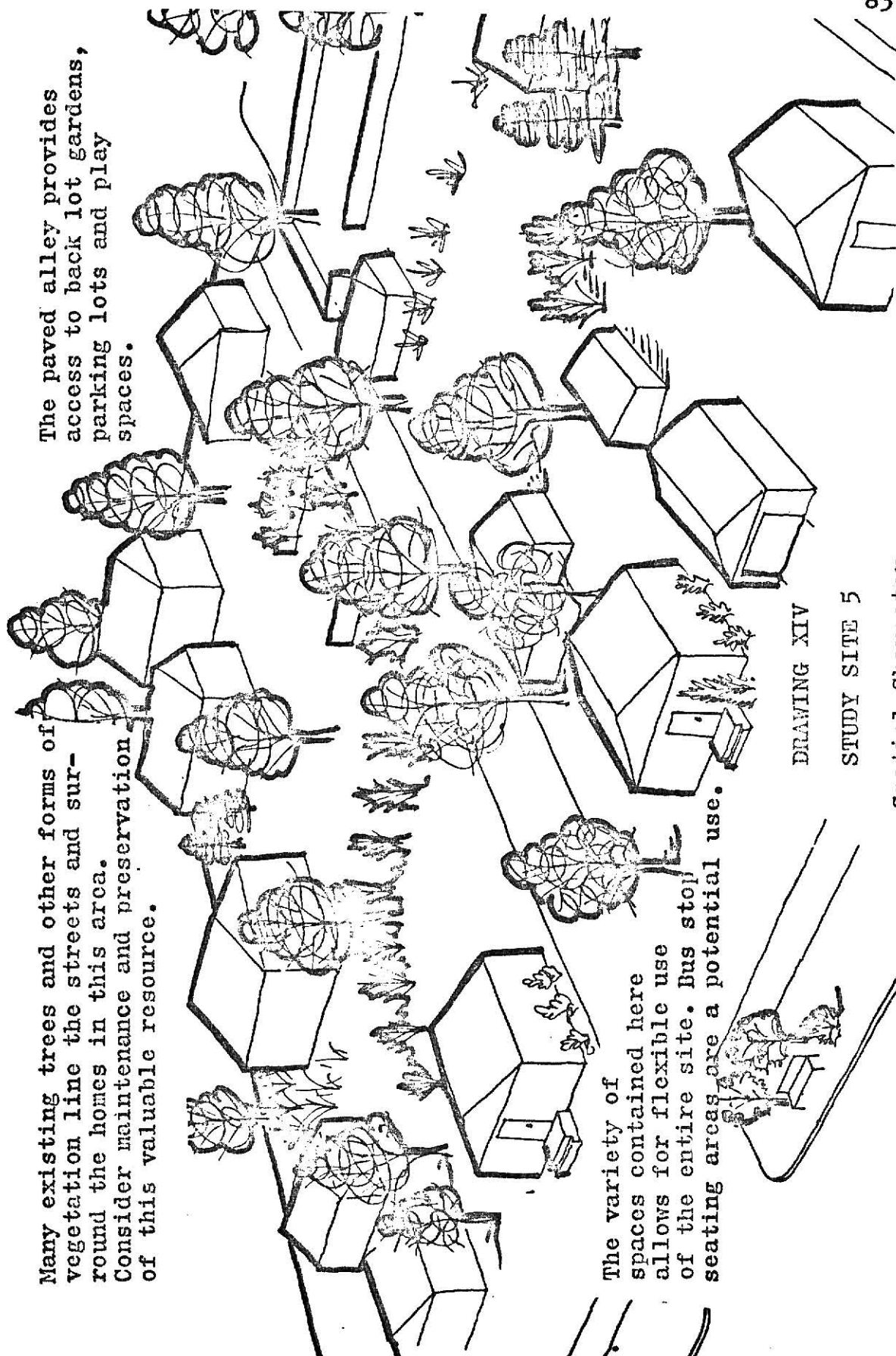
DRAWING XIII

STUDY SITE 4

Unique Resource

Many existing trees and other forms of vegetation line the streets and surround the homes in this area. Consider maintenance and preservation of this valuable resource.

The paved alley provides access to back lot gardens, parking lots and play spaces.



The variety of spaces contained here allows for flexible use of the entire site. Bus stop seating areas are a potential use.

DRAWING XIV

STUDY SITE 5

Spatial Character

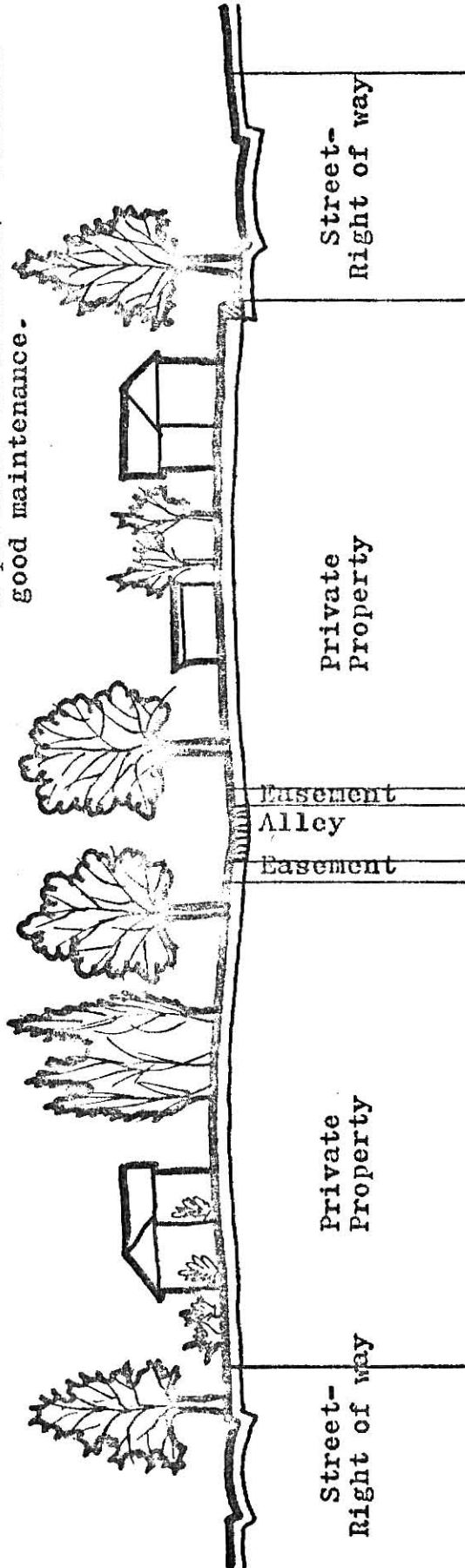
The many tall shade trees in this area provide the setting with a physically and visually pleasing atmosphere.

Consider replacing some of the Elm trees with careful thought toward maintaining the present desirable conditions.

Spaces behind the homes, adjacent to the alley, are used in a variety of ways.

Consider maintenance of the fences and buildings in these spaces to insure continued use.

Existing street trees provide a pleasant environment. Consider good maintenance.



DRAWING XV

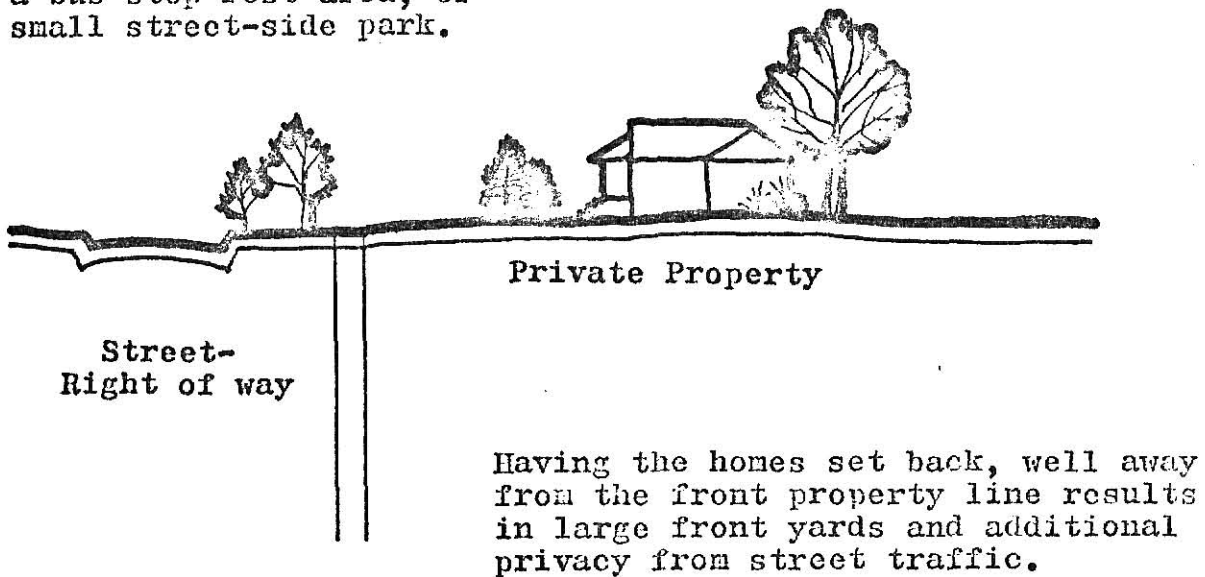
STUDY SITE 5

Spatial Use Considerations

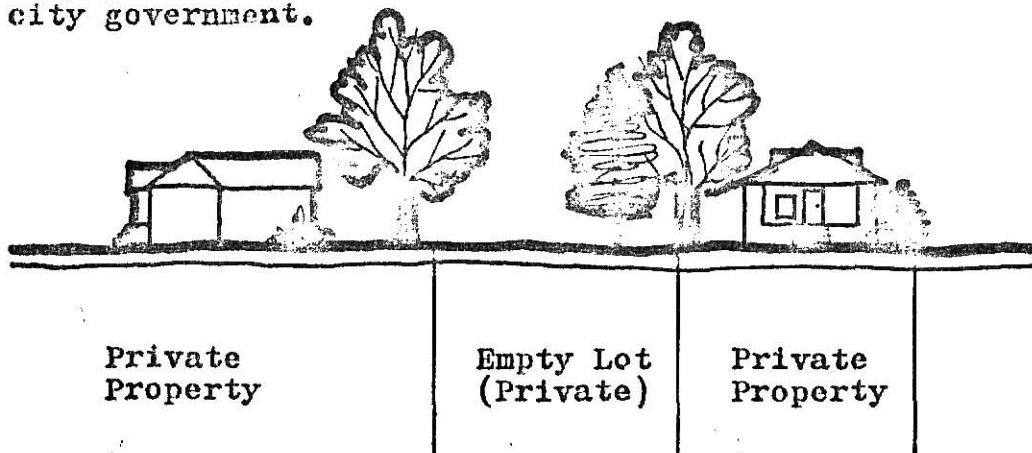
This site contains some unique spaces which lend themselves to a variety of uses and needs.

An existing wide right of way, adjacent to the street, provides the opportunity for combined community efforts in order to create a pleasant rest area.

This might take the form of a bus-stop rest area, or small street-side park.



An empty lot can be made useful in a number of ways. Such a lot exists on this site. Consider community plans and maintenance in an effort to develop a community use area. Some alternatives might be a children's play space, a community garden, or a neighborhood park. Discuss options with city government.



DRAWING XVI

STUDY SITE 5

Unique Resource

## Chapter 5

### PROJECT EVALUATION

Methods or techniques used in conducting the resource inventory and analysis have been listed along with a discussion as to the success of each. Following the discussion are a few words of guidance which could be applied if people were to use this method in a resource inventory and analysis of their own.

1. Background Information Gathering. Preliminary information was obtained from maps and other available resources. The maps and accompanying booklet entitled Environmental Assessment of Manhattan, Kansas was a unique resource for this particular project. The information obtained from it was necessary to start the project. Some of the sources used to gather that information were; City Engineer of Manhattan, Planning Department of Manhattan, Utilities Department of Manhattan. Local landscape architects were also consulted. Several Kansas State University resources were used and the departments of Civil Engineering, Geology, Agronomy and Biology were most directly involved. With the exception of the university resources, there would be similar resources in any city and they could be used to gain the same kind of background information. While a university setting is not available to everyone, some of the information gathered there is made available through local Extension Service Offices.

2. Current Information Gathering. The city engineer plans furnished basic information pertaining to survey boundaries, easements and right of ways. Although this information had to be supplemented by on-site observation, it was helpful to have plans and drawings at which to look, since the placement of some of the easements and utilities could only be determined from the engineer's plans. Familiarity with this particular resource was gained through visits to the offices and through discussions with these city employees. It was found that plans for the newer developments were most complete while plans of the older developments were more difficult to obtain.

3. Site Visits. Visiting the site was an essential phase. If people were doing this kind of an inventory in their own residential neighborhood, they would have visited the site on several occasions, however it is a good idea to walk through it while keeping the inventory purpose foremost in mind. It is clear that some items will be missed on a first visit and subsequent visits to the area are essential. Visiting the site during a variety of weather conditions provides a lot of answers to questions about runoff and drainage conditions, micro-climates and quality of plant materials. Planning several visits at different times of day and on different days of the week is also a good way of insuring that the site will be seen while being used in a wide variety of ways.



4. Mapping Information. The mapping procedure, one of transferring information to scaled maps of each residential area, served a valuable purpose. Redrawing the resources caused missing information to become glaringly apparent while increasing awareness of the residential areas as a whole. There is awareness and information to be gained from having to actually draw a map of even the most familiar of environments.

5. Photographs. Using photography was particularly helpful in aiding memory of details that might have otherwise been overlooked. Pictures were used to refresh the memory and to add details to the drawings. Use of photography provided the opportunity of seeing the residential area in a different perspective than could be obtained by simply walking through the site. Contrasting and comparing visual impressions and photographs aided in getting a clearer picture of patterns that were developing. A helpful step for individuals conducting a similar inventory in their own neighborhood would be to explore other residential areas and get pictures of similar resources. This would help in stimulating the imagination to the potential that exists.

6. Analysis. The final step, one of analysis, could be the most important one. This final phase of bringing together all the information, selecting what was unique and examining how resources are used was a logical

conclusion to the entire process. This would be even more true if one were in a position to make some of the changes that are discussed. By examining the resources in terms of their uniqueness or their potential, one can see things in a new and different way. While determining what to do with these resources, use of the imagination and brainstorming in groups can be stimulating and productive. Showing a concern, reinforced with detailed information and invested time, can do wonders in convincing others of the validity of a particular project.

The idea of conducting a resource inventory and analysis at this scale has validity since changes in the way in which environmental resources are used must begin with the individual. The individual can have the greatest impact on this piece of the environment.

## Chapter 6

### GUIDELINES

These guidelines are suggested steps to be followed by people who want to conduct an inventory and analysis of resources in an urban residential setting.

1. Organize. Identify the community leaders who would be most likely to take an active role in making desired changes. Establish channels of communication to the city government. Try to involve all the local residents in a strong community effort.

2. Define the Site Area. Describe, draw on a map, or in some other manner clearly make the boundaries of the area which will be examined. This might be accomplished by examining maps of the area or by driving through and visiting the site, whatever it takes, be familiar with the site. Know where it is located and what its boundaries are.

3. Define the Resources. Determine what factors are relevant for information gathering and what items will be explored. While this selection will depend on the site under consideration, use of the following list is a start.

Land; topography, slope, soil, geology, area size, quality, location

Vegetation; native and adapted, trees, shrubs, lawn areas, quantity, quality, size, condition, age, location

Water and water bodies; moving, still, location, size, drainage, amount, quality

Environmental factors; climate, micro-climate, air currents, temperature, wind, rain, snow, sunlight, shade

Physical boundaries; streets, walks, paths, alleys, roads, railroads, fences, walls, ditches, location, condition

Spaces; open, accessible, closed, natural, man-made, size, shape, condition, location

Historically significant features; buildings, trails, river landings, indian relics, location, quality, age

Legal regulations; zoning, easements, right of ways, ownership, private property, public property, utilities

Structures; houses, buildings, parking lots, fences, utility poles, fire hydrants, bus stops

Special features; landmarks, views, perceptual quality, visual quality

Adjacent land use, schools, streets, kind of use, location, activity

4. Inventory the Resources. Describe the site in terms of the chosen resources and describe the resources existing there. As each resource is explored a record should be made of its existence and condition. This might be to draw it, sketch it, place it on a map, draw a plan of it, or photograph it, but make a record of its existence.

5. Analyze the Use of the Resources. Describe how each resource is either used or not used in this particular setting. It is preferable that this record be made by members of the user group, or at least with their input. Examine the use of similar resources in other communities, through personal observation or with the aid of outsiders

who have access to or experience within other communities. Record the use of the resources with sketches, words and/or photographs.

6. Determine Unique Resources. Examine the site for any special or unique resource. Contrasting and comparing this site with others may help in determining the uniqueness of a particular resource. Identification of a special resource might result in efforts centered around its use.

7. Determine Appropriate Uses of the Resources. This should be done by members of the user group after the options and alternatives have been explored. Some options for use might range from ignoring an item to placing it on a pedestal. There might be needs for enhancement, maintenance, destruction of a resource, removal and replacement or improved access to a resource. This list is up to the particular people most closely involved with its use.

Any community has a number of agencies or people who can be of help throughout this process. Some of those that might prove particularly helpful are listed below.

City officials, employees and departments such as engineering, planning and zoning board

Local educational people, teachers and students interested in this subject, colleges, junior colleges, elementary and high schools, educational facilities such as libraries or reference centers

Services provided by the county, state or federal governments such as the County Extension Service or local Fish and Game officials

Local residents with expertise in certain areas such as landscape architecture, architecture, engineering, biology, botany, history and other people with these interests.

Local citizens, people who live in and around the area in question, especially children

Garden clubs or special interest groups, such as the Audobon Society

Oneself, through observation and discussion of the project, becomes a valuable resource

Several books selected from the bibliography which might be particularly helpful in the early stages of community organization and environmental awareness are:

Landscapes by J.B. Jackson

Sand County Almanac by Aldo Leopold

Challenge for Survival edited by Pierre Dansereau

Design Awareness by Robert Sommer

Neighborhood Power by David Morris and Karl Hess

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ENVIRONMENTAL RESOURCE ANALYSIS  
OF URBAN RESIDENTIAL SETTINGS

by

ADA M. NIEDENTHAL

B.A.E., Wichita State University, 1972

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1977

## ABSTRACT

The growing concern for natural and physical resources has led to people finding ways in which information about their environment can be compiled and understood. An examination of the literature shows that while this has been practiced on a broad scale, there is still a need to develop methods of analyzing resources at a more personal scale, involving one's home environment. Based on previous research about resource inventory and analysis, this study has developed a methodology which could be used by residents to examine the physical and natural resources which exist in their own urban residential environments.

Five different urban residential settings were selected and used as a test of the methodology. The resources existing in each of these settings were analyzed and presentation made regarding use of these resources.

A special feature of this study has been the inclusion of graphic material in order to promote visualization and understanding of the resources involved. This material took the form of photographs and sketches which depict the resources in the different residential sites.

An evaluation of the developed methodology, along with suggestions for its improved use completed the study.