



PRESENT

The transition from past to present is neither precise nor static. At any point in time, that which exists along the river is a part of river area history, though much is of a not-so-old or not-so-delectable vintage. Conversely, everything that remains of the more notable development of the area is a piece of the present. Whatever the relationship between the past and the present, all of that which now graces or disgraces the Riverfront has a potential bearing on the future function and image of the area. To help insure the viability of the Plan, it was necessary to collect and analyze data which would describe the present state of the river and Riverfront.

This segment of the report will focus on aspects of the present. It has also evolved as something of a catchall—including criteria which do not fit clearly into the past or the future.

Usage

While a detailed land use study dividing the uses into approximately fourteen categories has been conducted, they are mapped and described here in a more general form. Uses which relate to each other in an activity sense

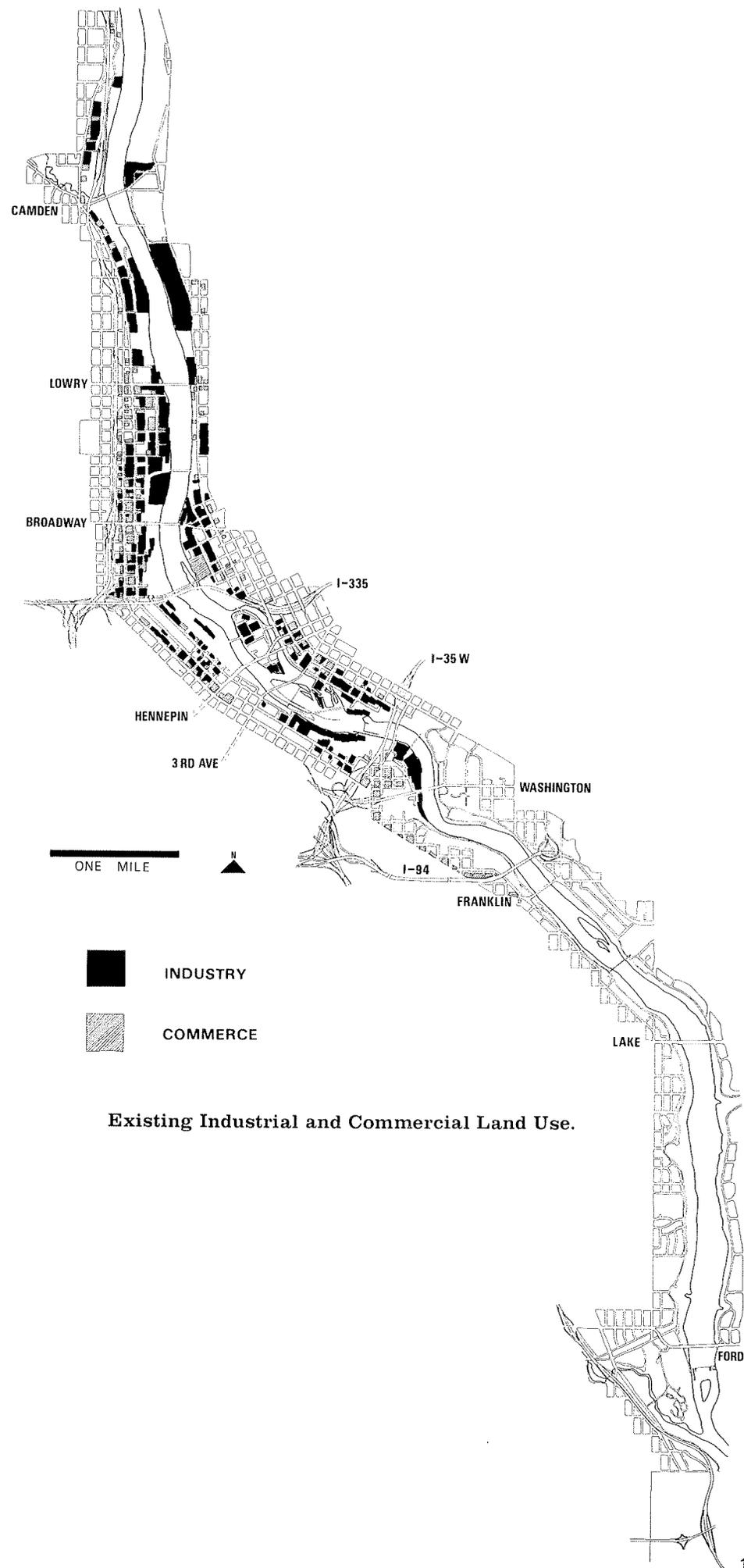
and which have some of the same general characteristics in performance, appearance, and effect upon the environment have been combined.

INDUSTRY

Industry and related activities presently account for almost 30% of Riverfront land—including manufacturing, warehousing, storage, railroads, and utilities.

Most of these uses exist either directly or indirectly as results of historic development processes. While some were originally dependent upon the falls as a source of power, today only two small power plants still use this resource.

Perhaps even more important than the falls were the railroads in fostering industrial development along the river. As they developed through the City, following the flour and lumber milling giants, they opted for the simplest, most direct connections to the centers of activity, a move that placed many of their operations directly on the banks of the river near the centers of Minneapolis and St. Anthony. These rail facilities in turn influenced the development of more industry and industry-related uses on their flanks.



So with St. Anthony Falls as the initial causal force, industries and rails, through mutual reinforcement, grew into a large industrial complex on the edge of the river and near the City's center. As original industry became outdated, new and similar uses occupied their quarters. Today's land use pattern includes many industry-related functions that are tied neither to the railroads nor to the falls but have, because of the physical environment, found it least objectionable to hide in the midst of the dilapidated areas.

One industry-related activity, however, with a clearly justifiable location on the river has emerged. This is the group of uses which depends upon barging as an optimum method of transporting materials or products.

Though the growth of these activities has been slower than anticipated in the years following the completion of the Upper Harbor project, shipments recently have been increasing at a moderate but steady pace. While providing a very direct service to a number of industry-related activities, the waterborne movement system has also played a key role in maintaining a favorable rail freight-rate structure for many high bulk products.

A brief description of over-all pattern of industrial activity on the river includes:

□ Industries and related functions that use the river directly for barging as well as those that may use it for washing or cooling operations.

□ Industry and related uses which are located near the Downtown encircling the falls but which no longer require this proximity, including many which have never used the falls as a power source.

□ Industry and related uses which neither use the river directly, nor are located in the Central area where the highest potential for alternative uses exists. Most of those included in this group are located north of Plymouth Avenue on either side of the river.

Vestiges of industry that once dominated the area around the falls include large, often bulky buildings; many of which have been occupied by activities which make poor use of the structures—for example, warehousing in the lower floors of outdated six and seven story manufacturing buildings.

Industries and related uses positioned farther north along the river are of a physically lower profile, with little structure and substantial outdoor storage. Though there are a few exceptions, most of the Central and Upper areas can be characterized as a visually unattractive and unkempt environment.

THE SCRAP INDUSTRY. Located between the river and Washington Avenue N. in the midst of this mixture of industry, wholesale and warehousing is a group of operations that are somewhat mistakenly referred to as "junkyards." In reality there are three different kinds of operations that are a part of this general grouping:

□ The junk dealers who trade in all kinds of junk, scrap, paper, rags, glass, and other used materials.

□ The auto salvage yards which operate essentially by buying old and wrecked automobiles, salvaging and trading in used and new parts, and disposing of the bulk remains.

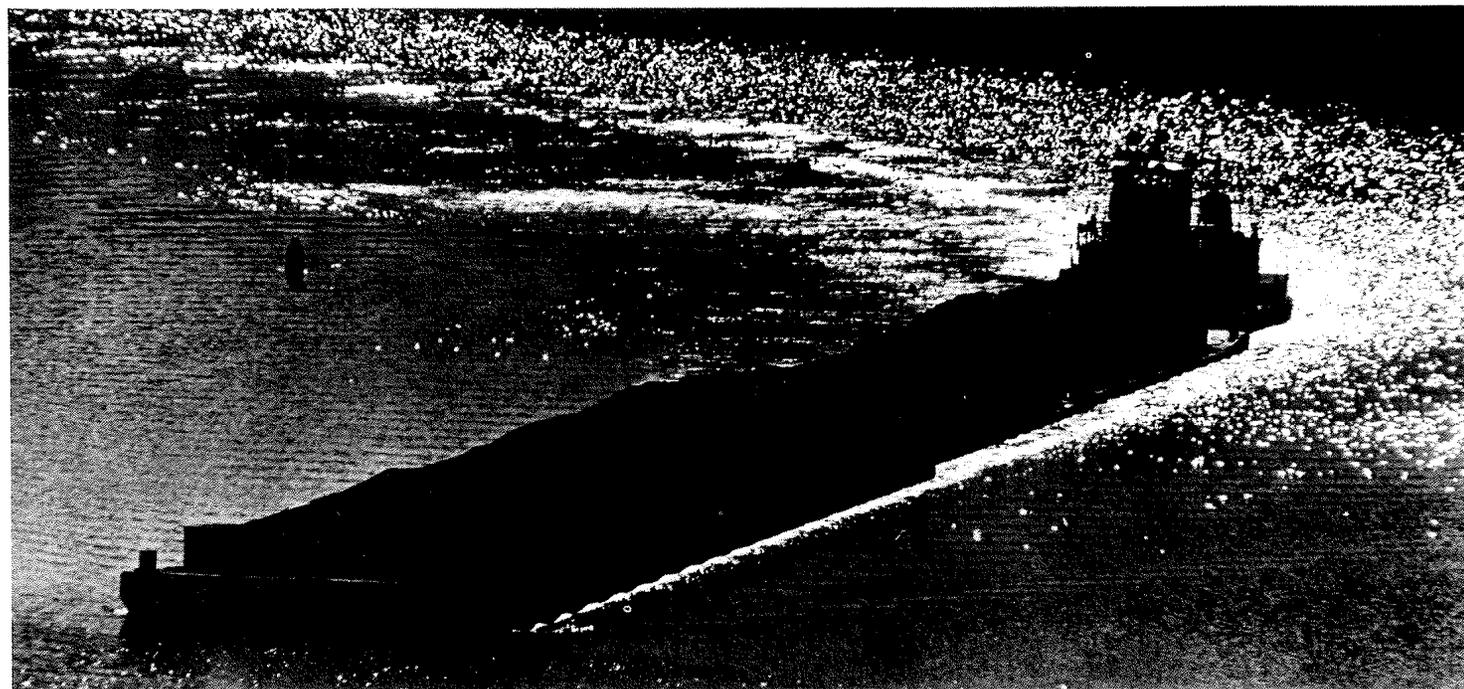
□ The scrap iron and steel dealers who function primarily to separate and return metals for re-use. They trade in iron and steel as well as non-ferrous metals such as copper, aluminum, lead, and brass. In general, more of their business is in recycling scrap from industrial manufacturing than is in auto hulks. However, they do function to compress or shred most automobile remains and ship them back to the mills for re-smelting. This group of industries as a whole has created an unpropitious opinion in the "eye" of the public because of the visual pollution created by its piles of scrap and the air pollution produced by frequent burnings. A constant clamor has been heard to "do something about those junkyards."

At the same time that criticism has arisen concerning the detri-

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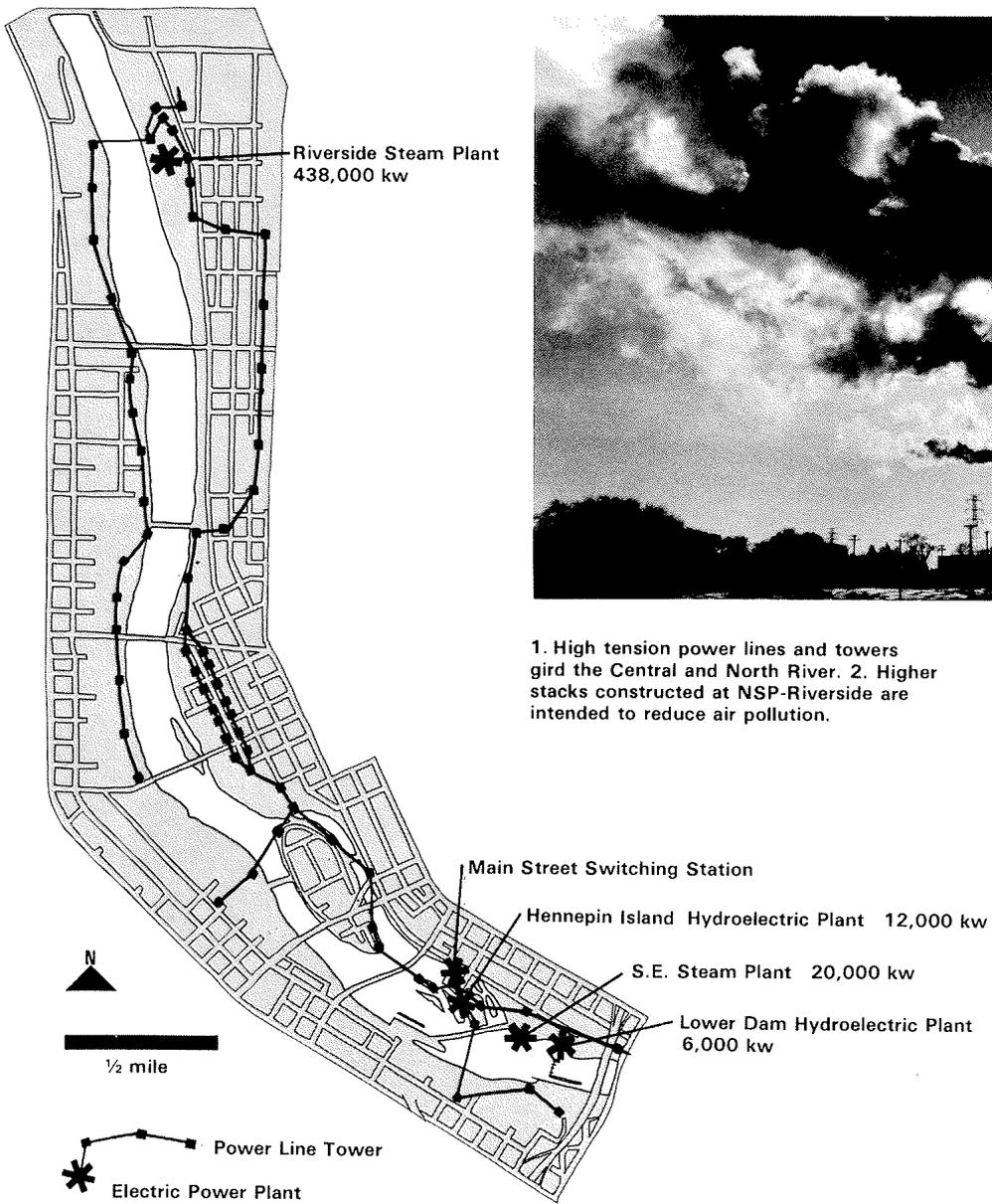
Existing river character is a study in contrasts; pleasing images are often obscured by ugliness.

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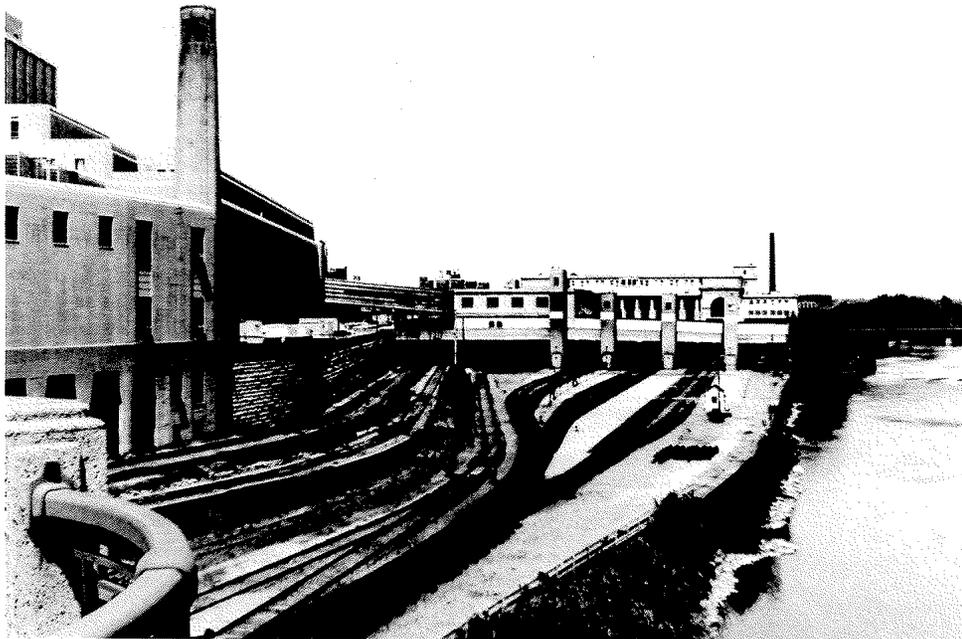




1. High tension power lines and towers gird the Central and North River. 2. Higher stacks constructed at NSP-Riverside are intended to reduce air pollution.



3. Multiple tracks leading to the Burlington Northern station block access to the Central Riverfront.



mental effects of junk and scrap operations on the environment, they have been performing a vital role in the recycling process—returning consumer products to the manufacturing chain. This industry group therefore is needed, and will be even more greatly needed as we settle more comfortably into the process of a man-controlled resource cycle rather than the one-way process from raw material to manufacturer to consumer to landfill. Both sides of this issue must be noted well, for we can no more eliminate “junkyards” from the community than we can continue to tolerate some of the effects of their present form of operation.

RAILROADS. Another industry-related group of activities are the railroads. Although they are more often perceived as movement or transportation elements, they must also be viewed as major land users.

Railroads presently occupy approximately 10% of Riverfront land and about 25% of the land in the Central River area between I-35W and the future I-335. And much of this land is essentially unused, containing rusty rails or no rails at all. It is therefore considered as railroad land, and at the same time as vacant or near-vacant land.

Drastic cuts in rail passenger service have already begun to loosen the foundations of Downtown terminals in Minneapolis, the Milwaukee and Union Depots. The future of rail passenger service is, of course, still an open ques-

tion. Yet it is unlikely that more recent developments including the AMTRAK effort, even if they are quite successful, could or would make good use of these two existing stations.

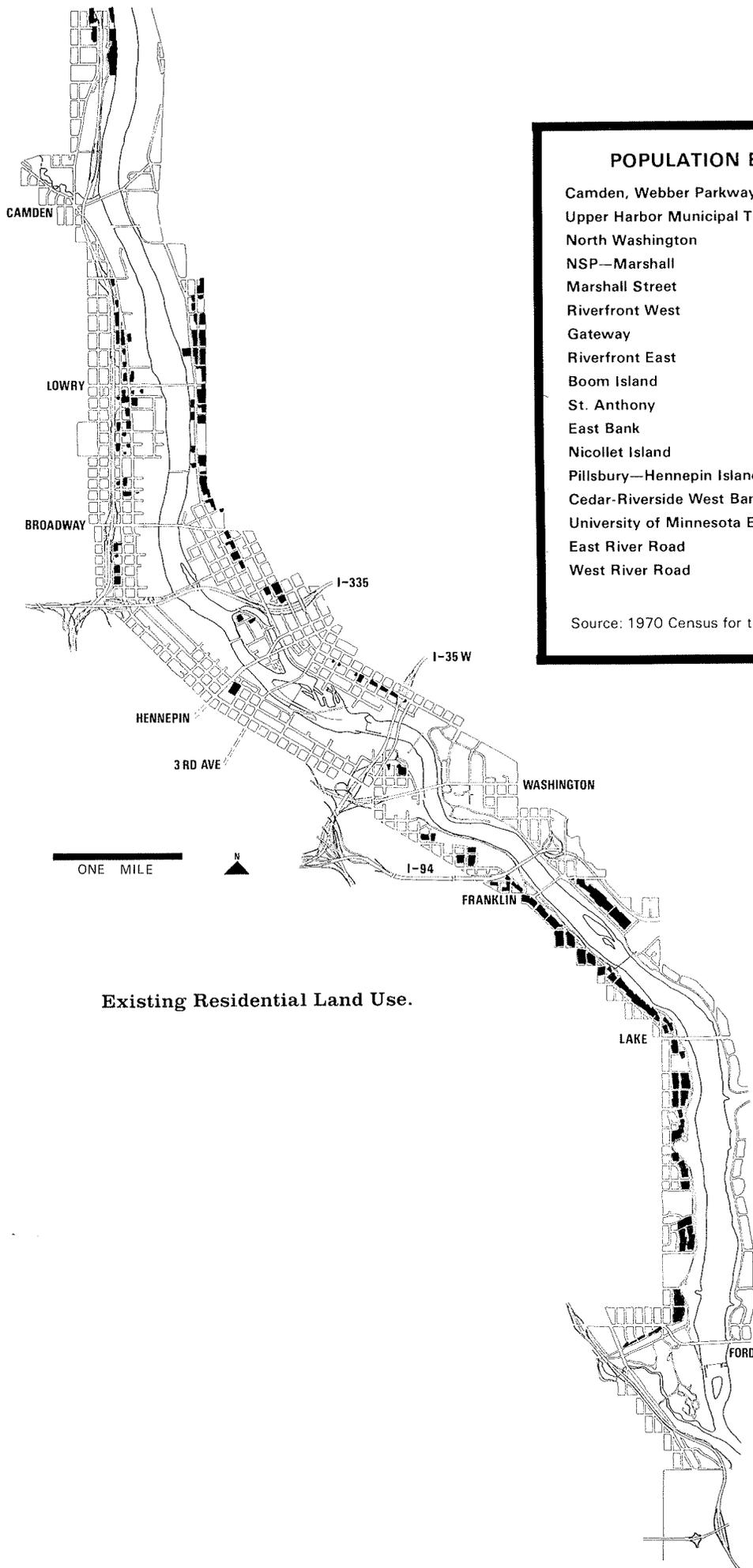
The railroads in their efforts to compete with the trucking of freight have been streamlining and updating their operations. New automated classification yards have been and are being built farther out in the metropolitan area. Because of the flexibility of Trailers on Flat Cars (TOFC), containerization, and other more recent rail technology along with the increased ease of delivery to Downtown by trucks on freeways, the railroads can in many ways service Central Minneapolis as easily from outlying areas as they could from closer in. In addition many rail transported goods and materials need no longer be routed through the Downtown vicinity at all, but can be delivered directly to the outlying locations. There are still, of course, many types of goods that have as their final destination the Downtown and that are not adapted to TOFC or containerizing. Industrial and related uses that depend upon direct rail service will continue to require a Central area rail supply system.

In sum, whether according to plan or not, there will be substantial changes in the next decade or two in the railroad's use of land near the Downtown area. Most of this change will be a decrease in the amount of railroad land used for switching and storage. Some may also result, however, from the higher joint usage of mainline facilities along with increased abandonment of some of the resulting lesser-used rail connections.

HOUSING

Few people live along the river. Few in fact have ever lived along it in proportion to the urban population. Though its inherent beauty was noted by early explorers, the river was rapidly developed as a power and transportation resource with residential uses taking the back seat. This trend has persisted with only a few notable exceptions. Even some historic residential uses no longer exist, including the houses of many of the earliest settlers on the banks of the Central River area and those that were located in “Bohemia Flats”, below the west end of the existing Washington Avenue Bridge.

On Nicollet Island, the Eastman Flats and a handful of separated houses were the beginning of what was to have be-



POPULATION BY DESIGN DISTRICTS

Camden, Webber Parkway	1,343
Upper Harbor Municipal Terminal	435
North Washington	254
NSP—Marshall	122
Marshall Street	131
Riverfront West	270
Gateway	795
Riverfront East	17
Boom Island	0
St. Anthony	280
East Bank	577
Nicollet Island	298
Pillsbury—Hennepin Island	580
Cedar-Riverside West Bank	1,590
University of Minnesota East Bank	4,969
East River Road	254
West River Road	2,798
Total	14,713

Source: 1970 Census for the City of Minneapolis

Existing Residential Land Use.

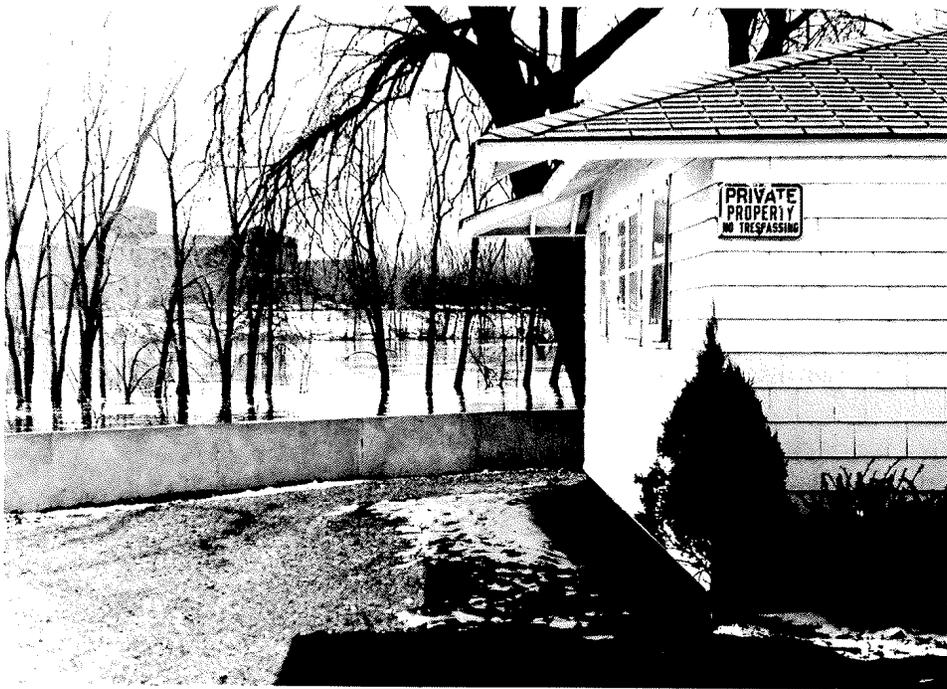
come a handsome residential area. However, the influx of industry and other uses following a largely uncontrolled growth pattern destroyed the concept and left the island in a state of highly mixed use. Today some of the Eastman Flats and a small number of houses, though in substantially deteriorated condition, remain on the island.

Single family residences, interrupted occasionally by small institutions, line the River Roads south of I-94. These houses facing the parkway and the river follow the top edge of the steep bluffs that are characteristic of this segment of the river. They are generally in good condition. Higher density housing including high-rise structures exist on the St. Paul end of the Ford Bridge and are planned near the east end of the Franklin Bridge.

North of the Camden Bridge, the North Mississippi Court development is situated almost directly on the river bank. This early post-war housing was inexpensively constructed and shows signs of deterioration. And just upriver from this project there is a mixture of residential uses, including both cottages and walkup apartments, on the river bank.

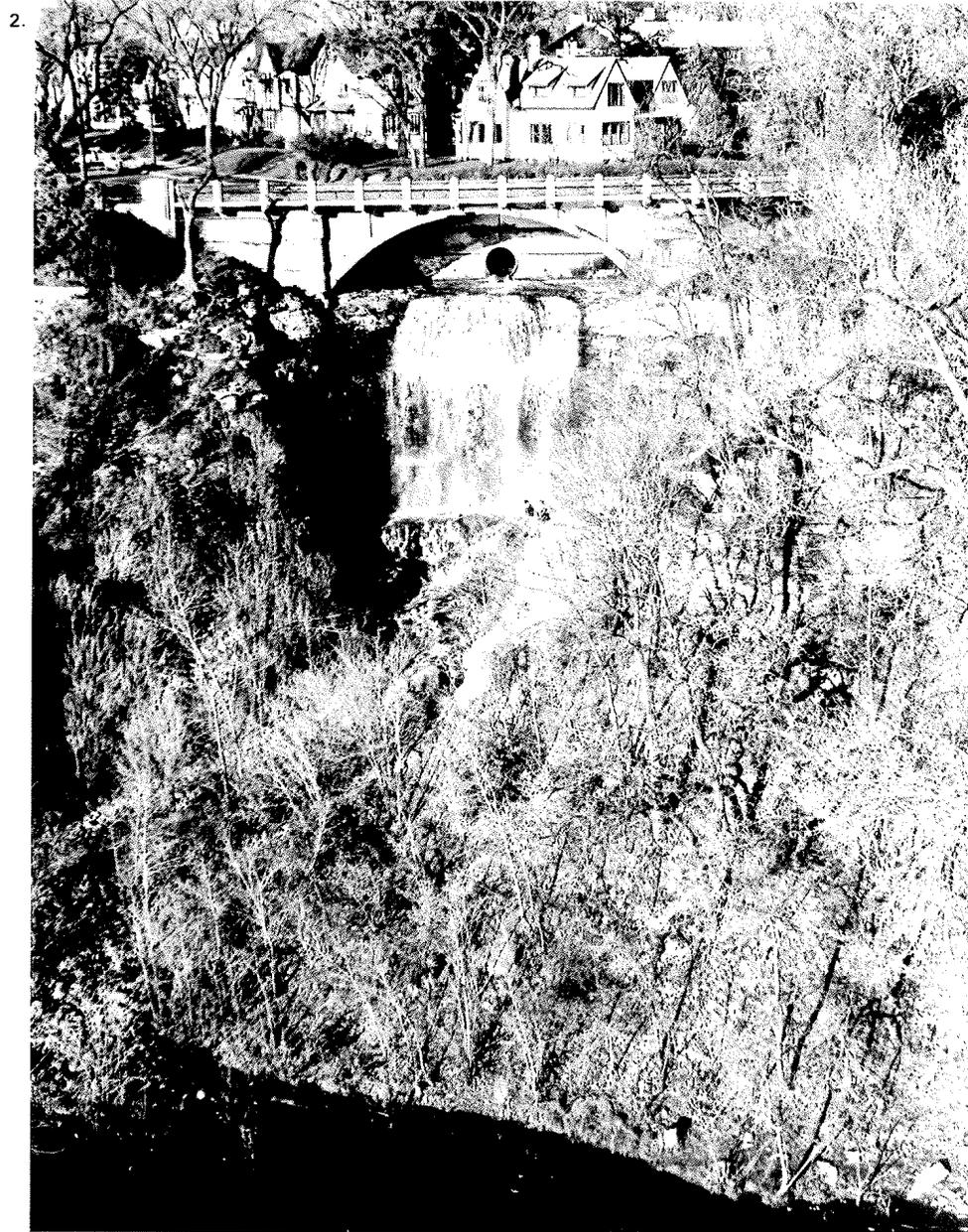
In addition to these few residential areas housing has been developed in other places that are either on or very near the river. Included are existing housing units distributed throughout the North Washington Industrial area, along the upper segment of the river on the east bank, and near the University of Minnesota in the Southeast Community.

Residential uses constitute about 12% of the total river study area land usage, but only about 8% if the Lower River area is not included. The 1970 census shows that about 16,000 people live within the river study corridor. Of these more than 10,000 are located in the University and Lower areas of the river including student population. Or 3.7% of the City's population lives within this river study area which is geographically 6.6% of the City. And, of the people living within the area, only about 5,000 can be considered to be close to the river and as few as several hundred have direct pedestrian access to the river edge uninterrupted by vehicular traffic or other impediments.



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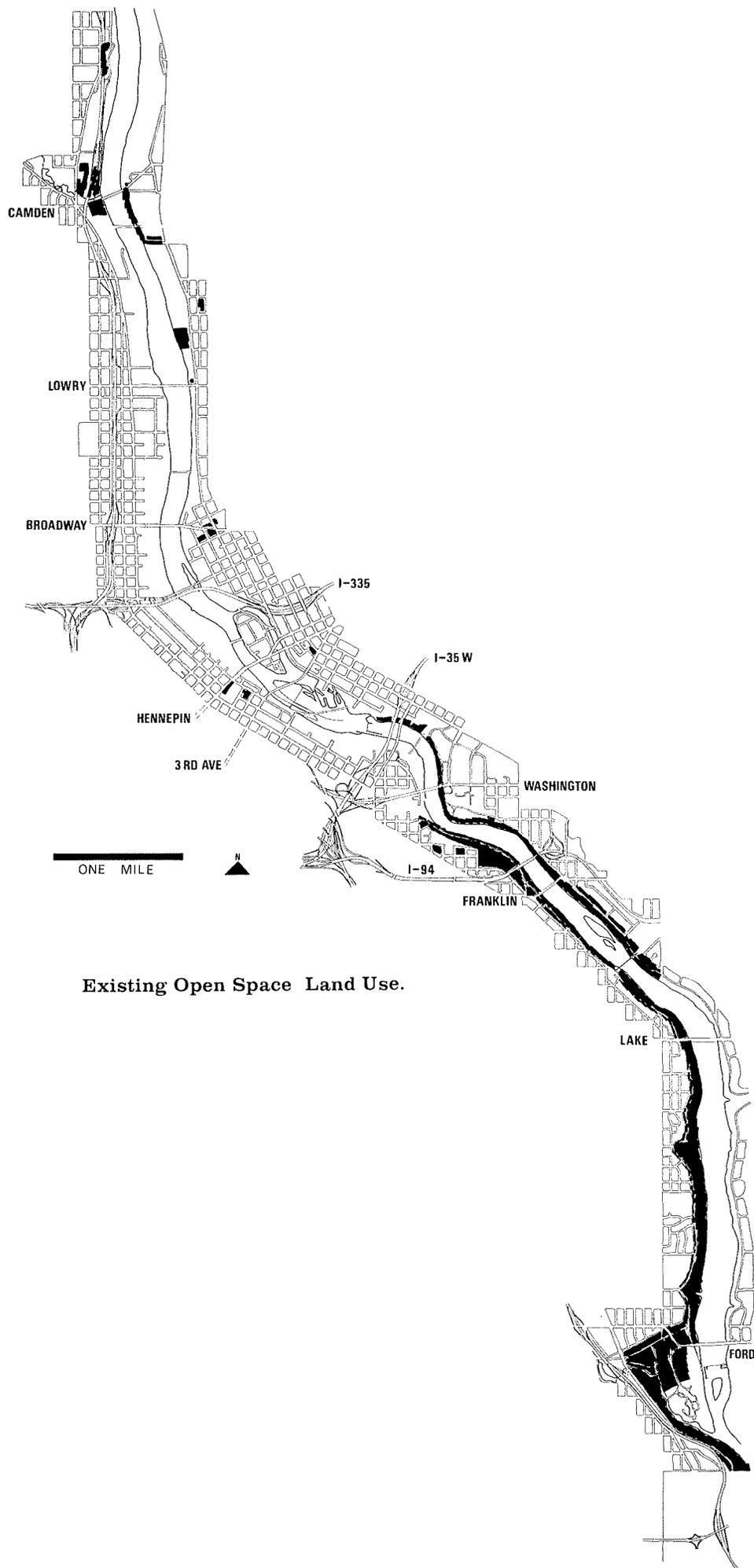
The attractive combination of river edge pathway, vehicular parkway, and housing along the Lower River is not matched along the North River where mixed housing and industry block river access, —nor in the Central area where even the new Gateway apartments are physically divided from the water.



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3.





Existing Open Space Land Use.

OPEN SPACE

It should be obvious that open space and leisure are not synonymous, yet the terms are often used as though they were. Or at least open space is taken to imply recreation, and recreation in turn leisure. In reality, however, many leisure activities do not take place in traditional "Open Space," and all open space is not directly used for leisure pursuits. Open space as a land use and leisure as a broad group of activities are, however, mutual to such a degree that they can be discussed in concert, particularly as each relates to the Riverfront area.

Open space can for descriptive purposes be divided into several different types. Of primary importance is the river itself and the space above it. This space alone is about twelve miles long and from 500' to 1000' wide, and as such is the largest single open space in the City. Where banks and bluffs are undeveloped, another 200' to 300' can be added to each side. This grand open space serves the dual purpose of providing for on-water recreation while constituting a major linear corridor of visual relief from the built-up City. It is this space, as much or more than the water itself, that visually locates the river within the City. Yet more than two-thirds of the total Riverfront edge of this space is presently unavailable for living space or leisure pursuits.

Within this great corridor exist other types of open space. Among them are publicly protected open lands, including the well-known Minnehaha Park, the East and West River Roads and related parkway bluffs, Riverside Park, Marshall Terrace, a portion of St. Anthony Boulevard and the area known as North Mississippi Park. While each of these park areas is at a somewhat different development level they are for the most part well protected for active and passive public use. Each of them also, though presently usable, offers design problems that require attention if well-balanced use and aesthetic integrity with the river and other surroundings are to be achieved and

maintained. Views of the river from the West River Road, for instance, are relatively scarce when full summer foliage exists. And Minnehaha Park is often crowded on summer weekends to the extent that it may well lose some of its widespread appeal if this crowding is not rectified.

In addition to the public open spaces, a substantial amount of vacant and underutilized open land lies along the river, particularly in Central and Upper areas. Because many of these spaces are neither economically productive nor usable by the public they might be referred to as negative open space.

Freeway corridors are open space dominated by vehicles, and with an exception or two, are largely unusable for recreation. Other City streets form open spaces oriented to both vehicles and pedestrians, and may or may not constitute positive open space, depending on several factors including their location, purpose, and over-all design. Another variety of open space is comprised of all the smaller scale spaces around and between buildings. These kinds of spaces as well may or may not be functionally or aesthetically positive open space.

While all of the above kinds of open space are important to the over-all design of a well-ordered and yet stimulating environment, they must each be considered in a different fashion. For the most part, further reference in this report to open space will focus on the first two types: the river and river corridors as a major visual space, and the river and river banks as public open land oriented toward active and passive leisure usage. Negative spaces including many street rights-of-way are considered for their potential, and the smaller spaces around buildings are looked upon as being primarily elements of site planning.

Though separated above for descriptive purposes, these open spaces in reality are not always so clearly distinctive, nor need they be. A leisurely walk may well begin in a small, off-river open space (a private yard, for instance), proceed down a well-designed street through a passive public open space, and terminate in the greater river corridor space.

LEISURE ACTIVITY

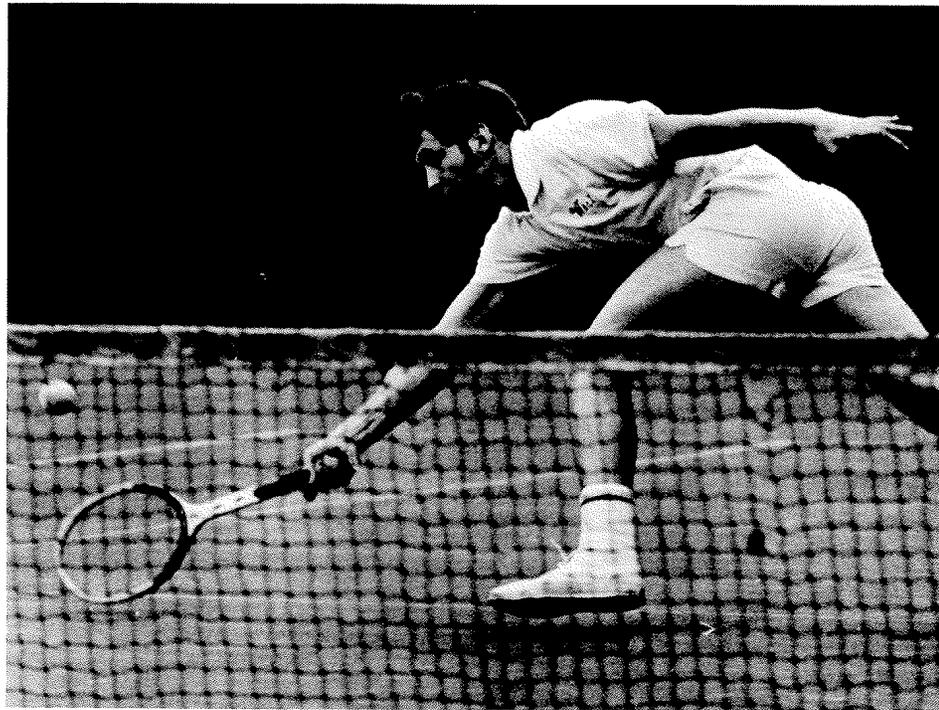
Though leisure may include a variety of private activities, the term is used in this report to describe functional classifications, all of which are public in nature.

RECREATION. Recreation is often referred to as being either active or passive. It is more appropriate, however, to consider all such forms of activity to be on a continuum between the two. Each different form may be distinguished by the focus of attention of the person involved in the activity, and relatedly by the kind of space in which it occurs.

In the more active recreational forms the participant's attention is primarily on himself, his teammates, and the game or sport in which he is involved. Often, in fact, this concentration on performance renders the individual almost totally oblivious to his surroundings. Many of these types of activities require highly delineated spaces and hard surfaces, and some are best suited to indoor space. The nature of these recreational activities which reduce the individual's awareness of the surrounding environment would indicate that they need not be located in areas of great natural beauty such as the Riverfront.

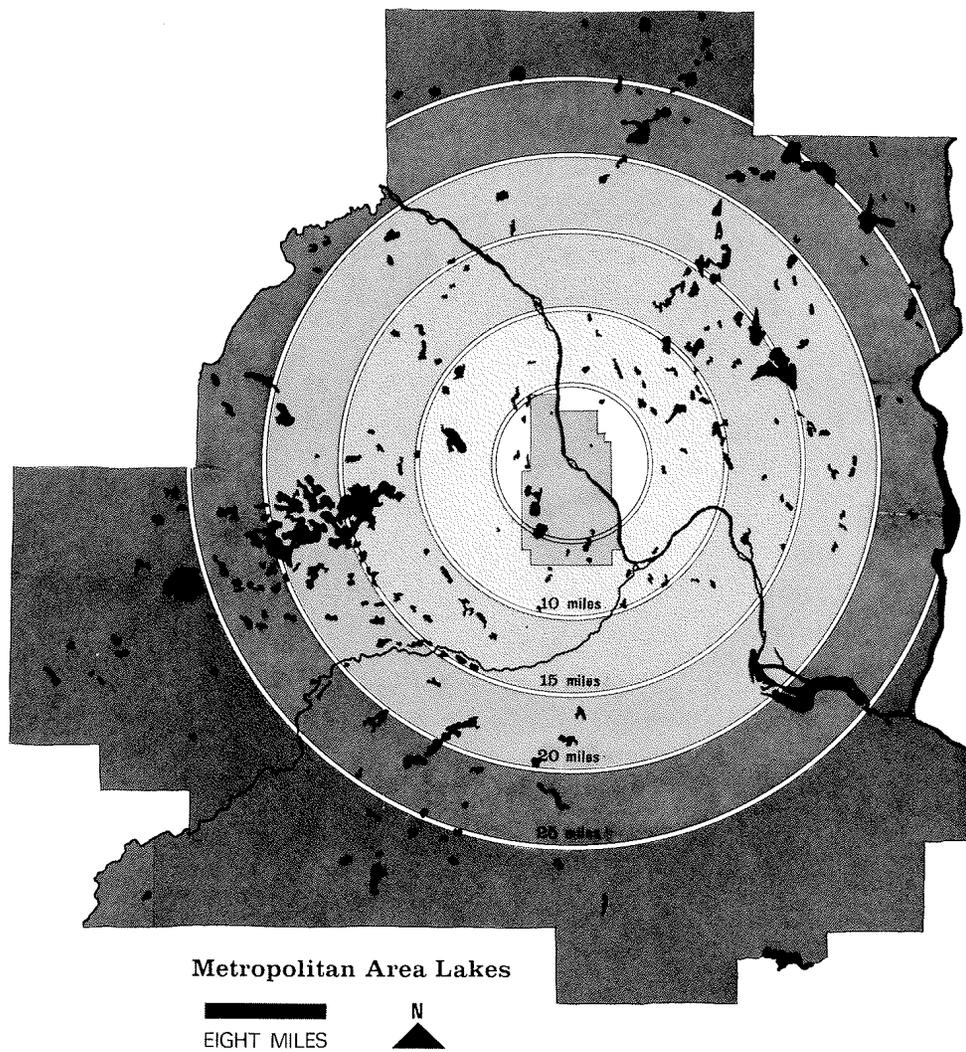
Passive recreational activity on the other hand is more highly focused on the surrounding environment either through direct conscious observation, or through the more subconscious mood-creating influence it has on the activity. The most passive form of recreation (leisure) would, for instance, involve just sitting and viewing the surroundings. Walking is also very passive. Horseback or bicycle riding, though considered to be relatively passive activities, or at least often enjoyed in passively oriented spaces, can become quite active when they are more vigorously pursued as in racing.

Recreation on and along the river as a whole is clearly far from what it could be. That which does exist includes the following:



Who needs the river? 1. The tennis player is oblivious to his aesthetic surroundings.
2. The fisherman on the other hand has time to appreciate his environment between bites.
3. You can't row on dry land.





Many lakes within a 25-mile radius of MISSISSIPPI/MINNEAPOLIS are more appropriate than the river for swimming, water-skiing, or the use of "runabouts."

ON-WATER RECREATION. Some recreational power boating presently occurs on the river within Minneapolis. It includes boats ranging up to 50' to 60' in length. These uses have been severely restricted though, by delays in lockage which can amount to as much as 30 minutes per lock combined with the lack of marina or boat docking and launching facilities. cursory examination has indicated, however, that considerable interest exists for expanding boating opportunities on the City's stretch of the river.

Notable differences exist between boating on rivers and boating on lakes. Sailing, for instance, is not well suited to rivers, particularly in such areas as the Minneapolis Riverfront, where the narrow channel and impediments like bridges and dams exist. Nor is water-skiing well-adapted here where the river traffic and the current are hazardous and where lakes are so plentiful. Also, although it depends greatly on the size and character of the river

or lake, smaller recreational craft are often somewhat better suited to lake use and larger ones to the rivers.

The primary reason for this is that the smaller motorized boats are used much more for water-skiing and shorter running about, hence the trade name "Run-about." They are less equipped for spending longer periods of time on the water. Larger crafts—25' and up—are like small living units and are used much more for the full day, week-end or even longer excursions. Because river touring and exploration is much less limited than that on most lakes, many larger boat owners prefer the river.

To increase the appeal for recreational boating in Minneapolis, full-service marinas as well as other points of interest and enjoyment such as restaurants and entertainment are needed.

Though a number of criteria must be satisfied before marinas can be developed, the limiting factor in the City is the availability of appropriate space. Less than a handful of locations could be used for full-service marina activity on the basis of topography alone. Because of the relative narrowness of the river in this area no room exists, as it does in wider river stretches, for building marinas out from the present shoreline. They must instead be carved out of presently low spots along the banks. Places where marina development is therefore possible include the University Flats on the East Bank, the existing Washington Avenue Terminal area, Boom Island, and perhaps the North Loop. Other areas are, however, appropriate for the development of less extensive boat docking facilities.

The two areas in the vicinity of the University of Minnesota possess the advantage of being below the two St. Anthony locks. At the same time, they could present problems with respect to vehicular accessibility and may conflict with other river and land uses.

One of the activities that may be hampered by power boating near the University Flats area is rowing. Though this sport has not grown as rapidly as it might have, it is active and maintains prospects for higher popularity in the future. The lower stretch of the river from the University of Minnesota southward is said to be one of the best crew areas in the country, largely due to the wind protection offered by the bluffs. This potential may be threatened by dredging operations, which should be carefully re-examined.

Fishing is also enjoyed by a number of people along the banks of the river. While it is not comparable to the northern parts of Minnesota, it is estimated that as much as 30% of the catch is in game fish.

RIVER PARKS. Minnehaha Falls, the central attraction in Minnehaha Park, is surrounded by a largely passive area used primarily for picnicking, strolling, and viewing the falls. Older stone walkways around the falls are well integrated with natural rock outcroppings and with the mood and tempo of the space. The area is heavily used, particularly on summer weekends. Below the falls the park has been left in a more natural state and contains a number of hiking trails. And both the upper and lower levels include some space for active recreation in off-peak hours.

The primary concern in this area should be that of solving the problems asso-

ciated with overcrowding on summer weekends. Also of interest is the use of the lower part of the park and its potential connection to a regional greenway system stretching to the south and east along the river.

The West River Road parkway extends from Minnehaha Park on the south to the Cedar-Riverside area. It is a natural area characterized by rugged bluffs and steep wooded slopes and used primarily for pleasure driving, walking, and hiking. During summer months, however, it is nearly impossible to view the river through the dense foliage.

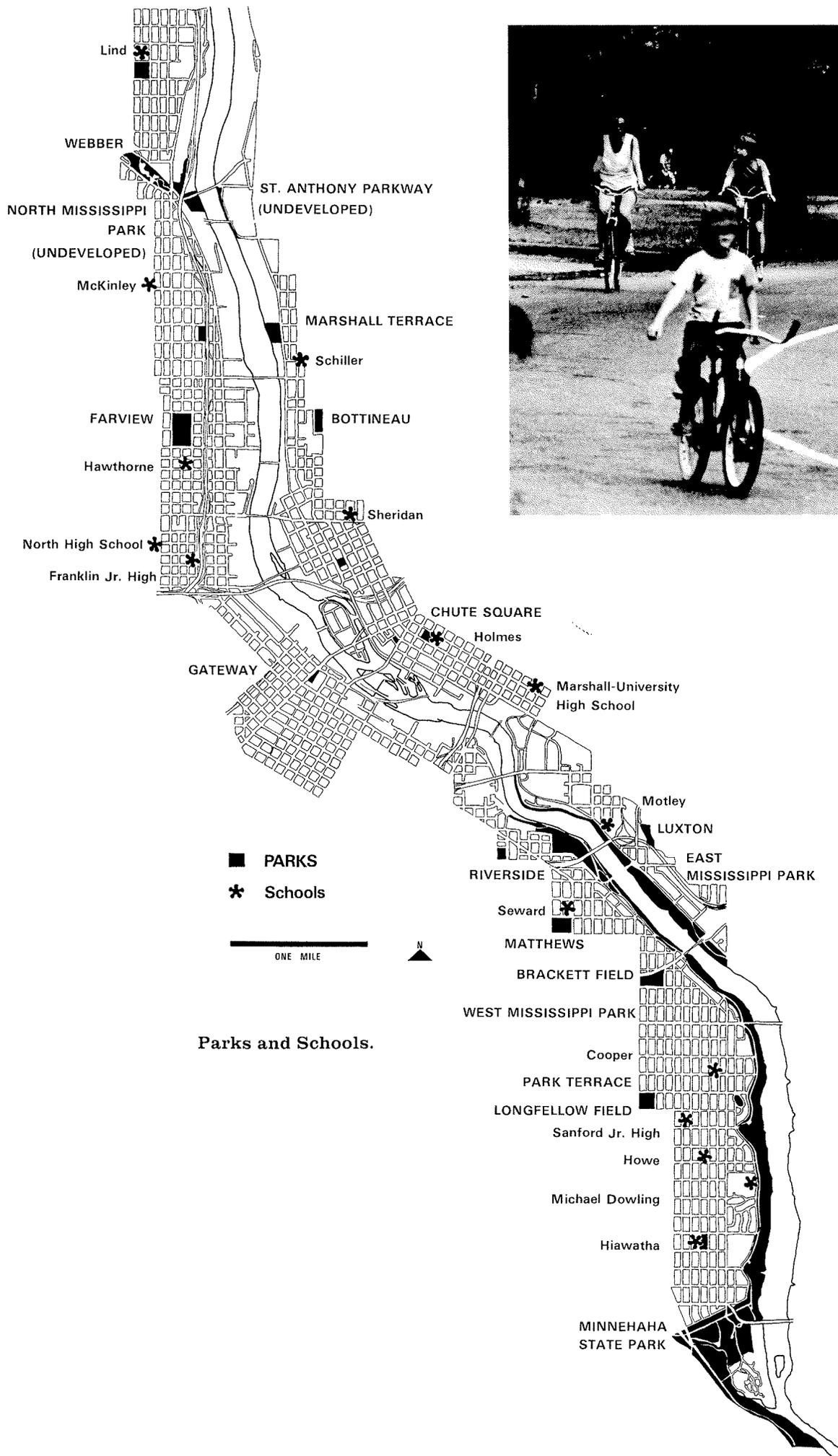
Of quite similar character to the West River Road parkway, the East River Road extends from the St. Paul city limits, where it connects with a comparable linear greenway, to the University Flats below the Coffman Union and from there on along the University's East Bank to the campus power plant. Its basic uses are the same as those of the West River Road area, though impediments to pedestrian movement exist at several locations.

Located near the upper end of the West River Road, Riverside Park is a combination of active and passive areas, with most active space on top of the bluff. Picnicking and unorganized activity are combined with active uses. Segments of the park are underutilized.

Marshall Terrace is located on the river side of Marshall Street between 27th and 28th Avenues N.E. It provides neighborhood scale recreation space with an undeveloped river edge that lacks specific interest.

An area known as North Mississippi Park, situated underneath and to the north of the Camden Bridge, has been left in a natural state with the exception of a minor public boat launching facility just south of the bridge. The natural and more passive part of the park surrounds Shingle Creek as it flows from the Webber Parkway area into the river. Though well-endowed with interesting topography and plant life, the design of the area is not complete nor has it been adequately protected in the more natural areas, from misuse. Motorcycle hill-climbing which takes place often in this park, for instance, is probably not compatible with other kinds of river open space use.

These then are the public recreation spaces and recreational activity along the river. All of them are beneficial results of commendable efforts of the past, yet the over-all recreational potential of the river is far below optimization.



Parks and Schools.



2. Sunday afternoon bicycling on the River Parkway.

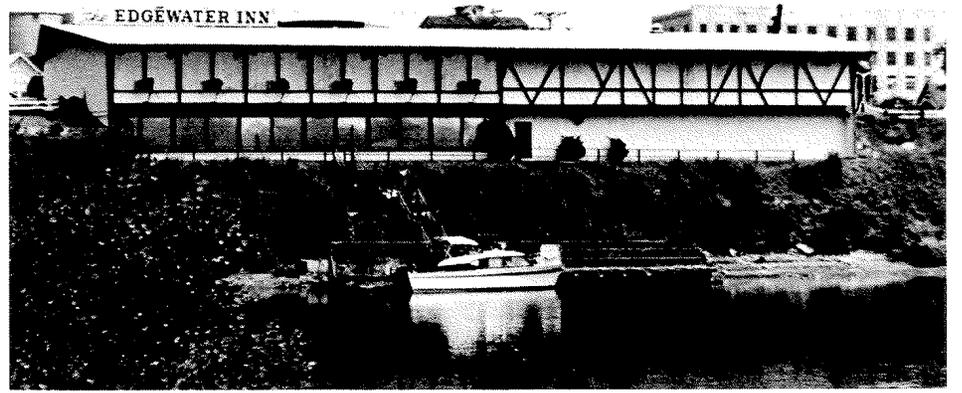
CULTURE AND ENTERTAINMENT.

It is quite well-known that Minneapolis and the encompassing Twin City's area have a high rating for their variety of cultural opportunities. Of the inordinate wealth of culture, however, only one function, the University of Minnesota "Showboat," has a direct relationship with the river area. Entertainment forms, including dining, music, and all others, are nearly as scarce along the river as are cultural ones. At present the "grand" total of entertainment along the river's edge equals two restaurants—the Fuji-Ya near the Downtown at 5th Avenue S., and the Edgewater Inn at the east end of the Lowry Avenue Bridge.

Though neither culture nor entertainment may need the river to the extent that some other activities do, they nevertheless gain immeasurably when juxtaposed with aesthetically stimulating surroundings. Theater, music hall, or restaurant arrivals and intermissions, in natural surroundings with the effects of lighting reflecting off the water at night, can add greatly to the total experience. It seems almost inconceivable that a City of nearly half a million people in the center of a metropolitan area of four times that number, and straddling a 12-mile segment of the greatest river in North America, has but three distinct places on that river where any kind of entertainment or culture can be enjoyed.



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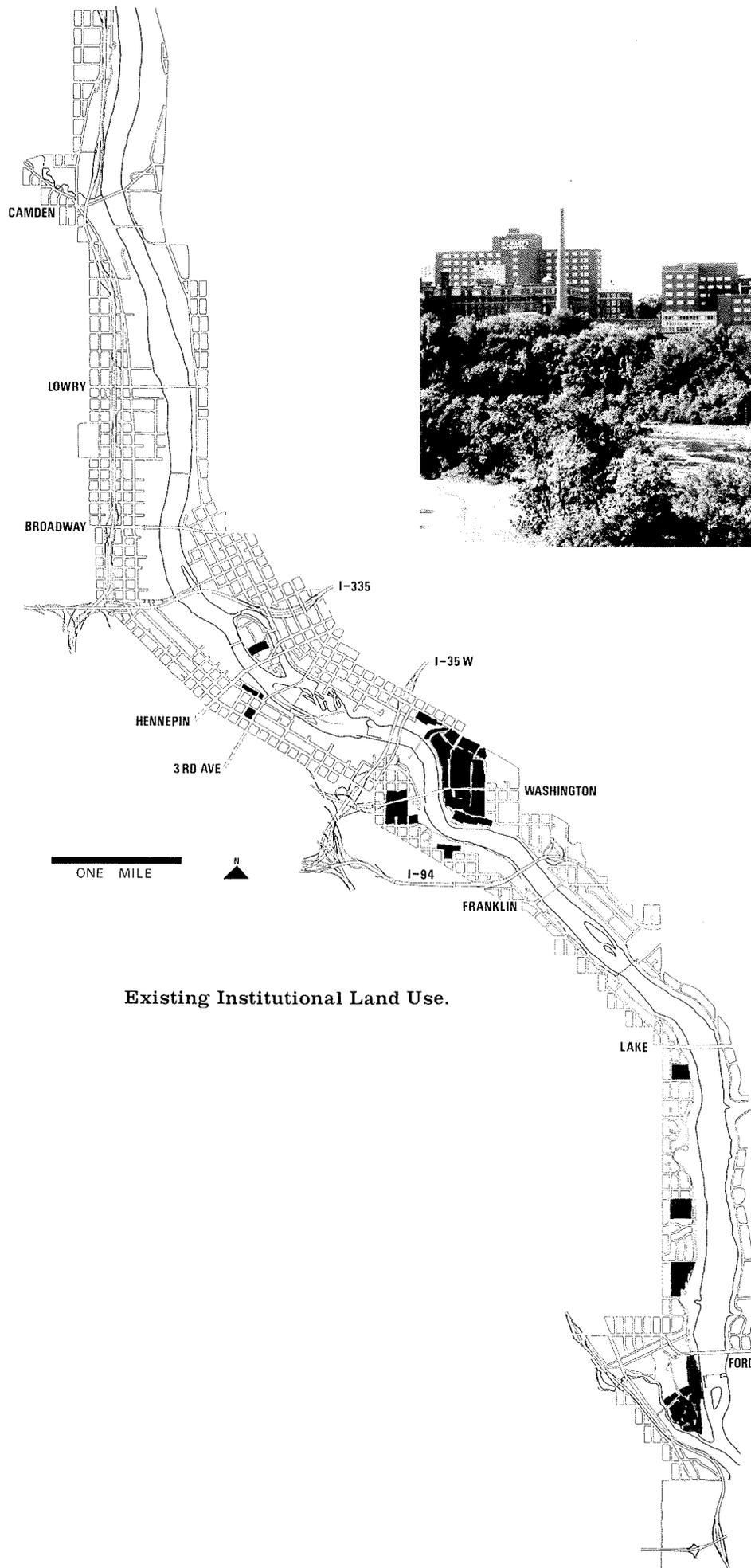
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Existing Riverfront entertainment includes summer theater at the Showboat, and dining at the Edgewater Inn or Fuji-Ya restaurant.

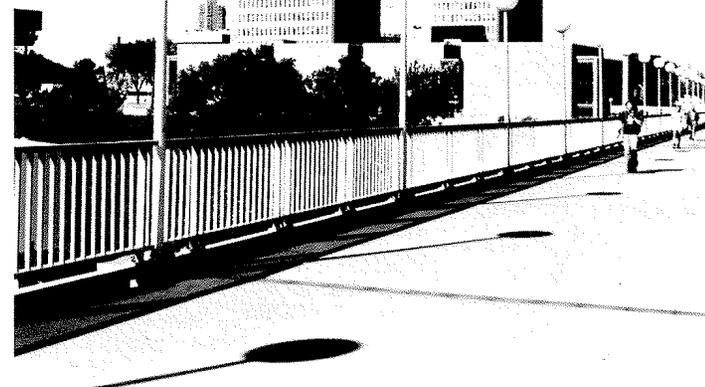
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Existing Institutional Land Use.



St. Mary's Hospital, Fairview Hospital, and the University of Minnesota now dominate the University area Riverfront.



INSTITUTIONS

Several institutions exist along the river south of the I-35W Bridge. By far the largest of these, the University of Minnesota, occupies approximately 3000 feet of the East Bank and will in the future constitute a significant portion of the West Bank in the Cedar-Riverside area. With a future student enrollment of around 50,000 added to the related staff, faculty, visitors and other individuals, the University will continue to dominate this part of the river.

On the East Bank the bluffs are quite steep and thus relatively inaccessible to pedestrians. The area has though, with only a few exceptions, been well protected. The West Bank campus when completed will serve approximately 25,000 students and will include the University's main library, union, performing arts center, law school and some additional classroom buildings. Considerably greater potential for developing access to the lower river edge exists here than on the East Bank because of the nature of the land form, and because of extensive redevelopment scheduled for this area.

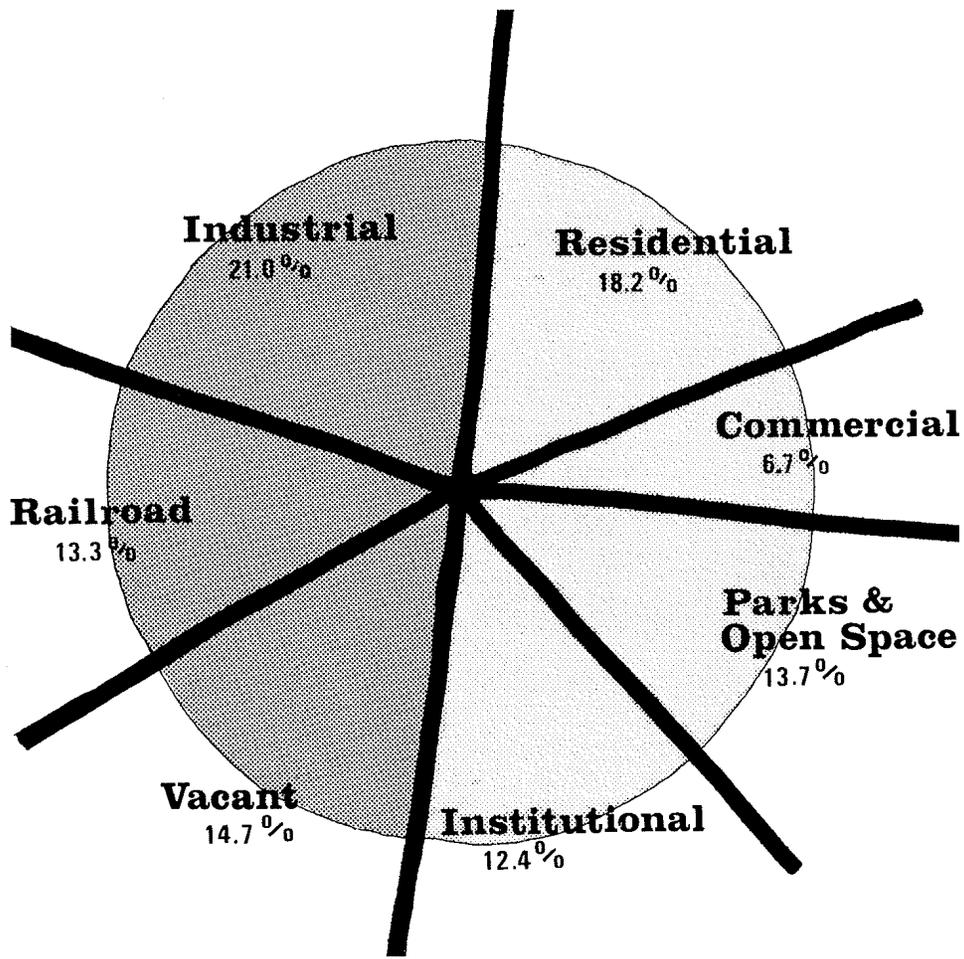
Also on the West Bank are two large hospitals: St. Mary's and Fairview. These two institutions, located just downriver from the University of Minnesota on the West Bank, stand high on the bluffs above the upper end of the West River Road. And nearby, but separated from the river by the hospitals and Riverside Avenue, is

Augsburg College. Each of these institutions could benefit from improved connections to the passive leisure space and aesthetic setting of the river.

Farther southward are several other institutions, all of which face the West River Road and thereby possess what could be referred to as indirect river frontage. Minnehaha Academy is located at 31st Street S., Dowling School for Crippled Children at 39th Street S., Breck School at 42nd Street S., and The Sheltering Arms at 43rd Street S. Adjacent to the Ford Dam and surrounded by Minnehaha Park is the Minnesota Soldiers' Home. Each of these facilities is located so that residents or visitors can enjoy a visually pleasing passive park area that cannot be found adjacent to many other City institutions.

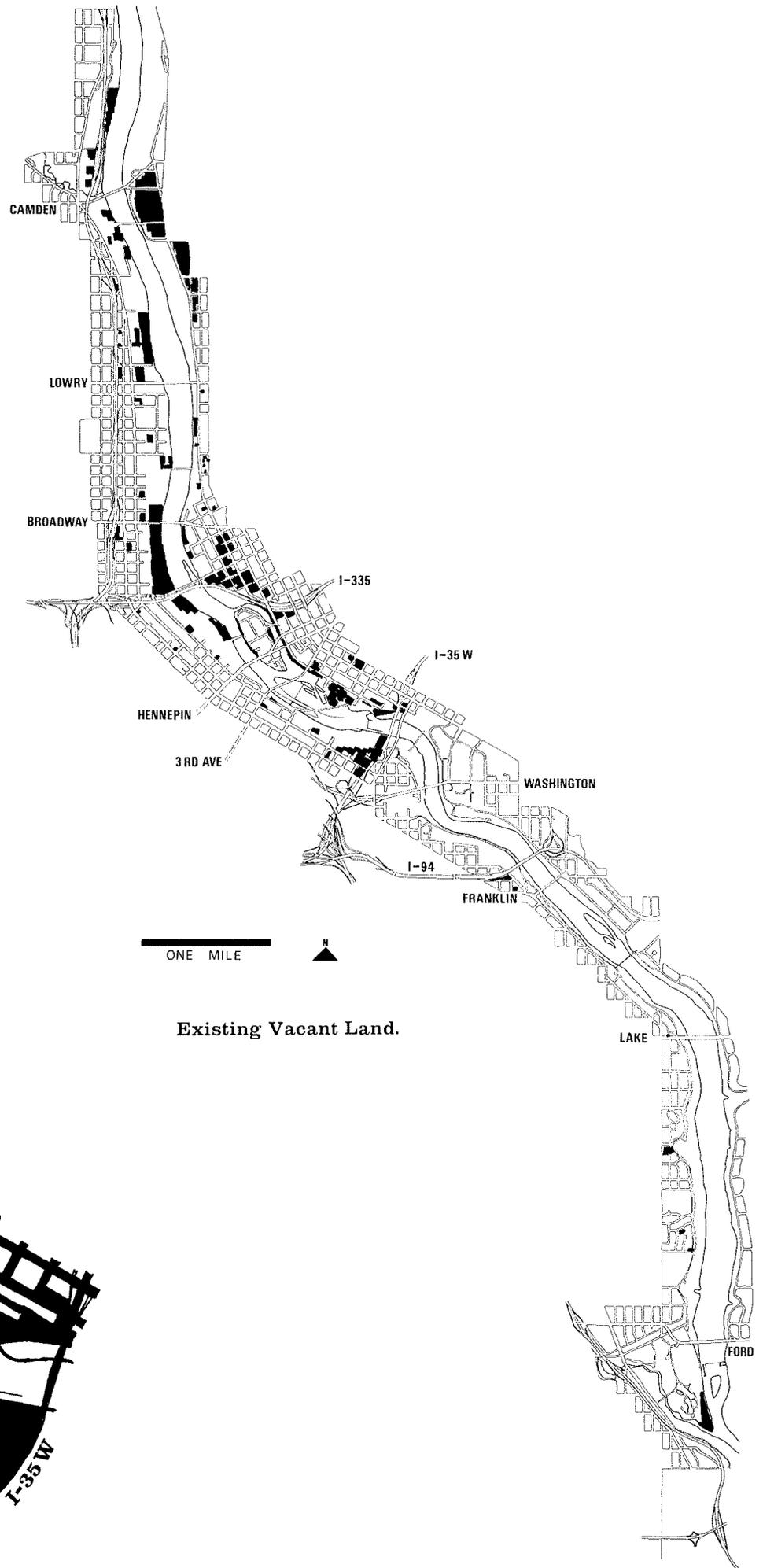
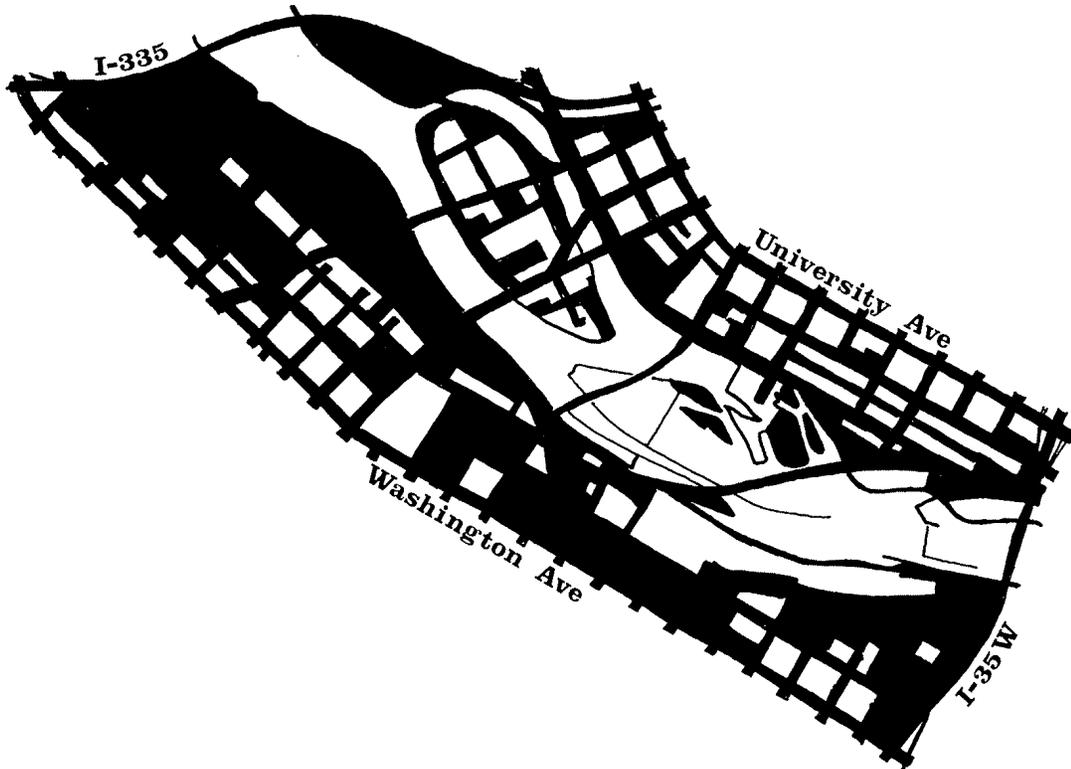
Another institution, DeLaSalle High School, is located in the middle of Nicollet Island, an area in which major transactions are planned.

It should be noted that while all of the above institutions benefit appreciably from their river locations, and some are in minor ways using the river environment for educative purposes, none of them is uniquely a river oriented facility. The presence of several educational institutions located along the river, for example, may imply, but does not insure, that the river and its environs are being advantageously used as an educational resource.



1. Division of land use along the entire Minneapolis Riverfront.

2. Shown in black, vacant and underutilized land in the Central area includes parking lots, streets and alleys, vacant and railroad land.



VACANT AND UNDERUTILIZED LAND

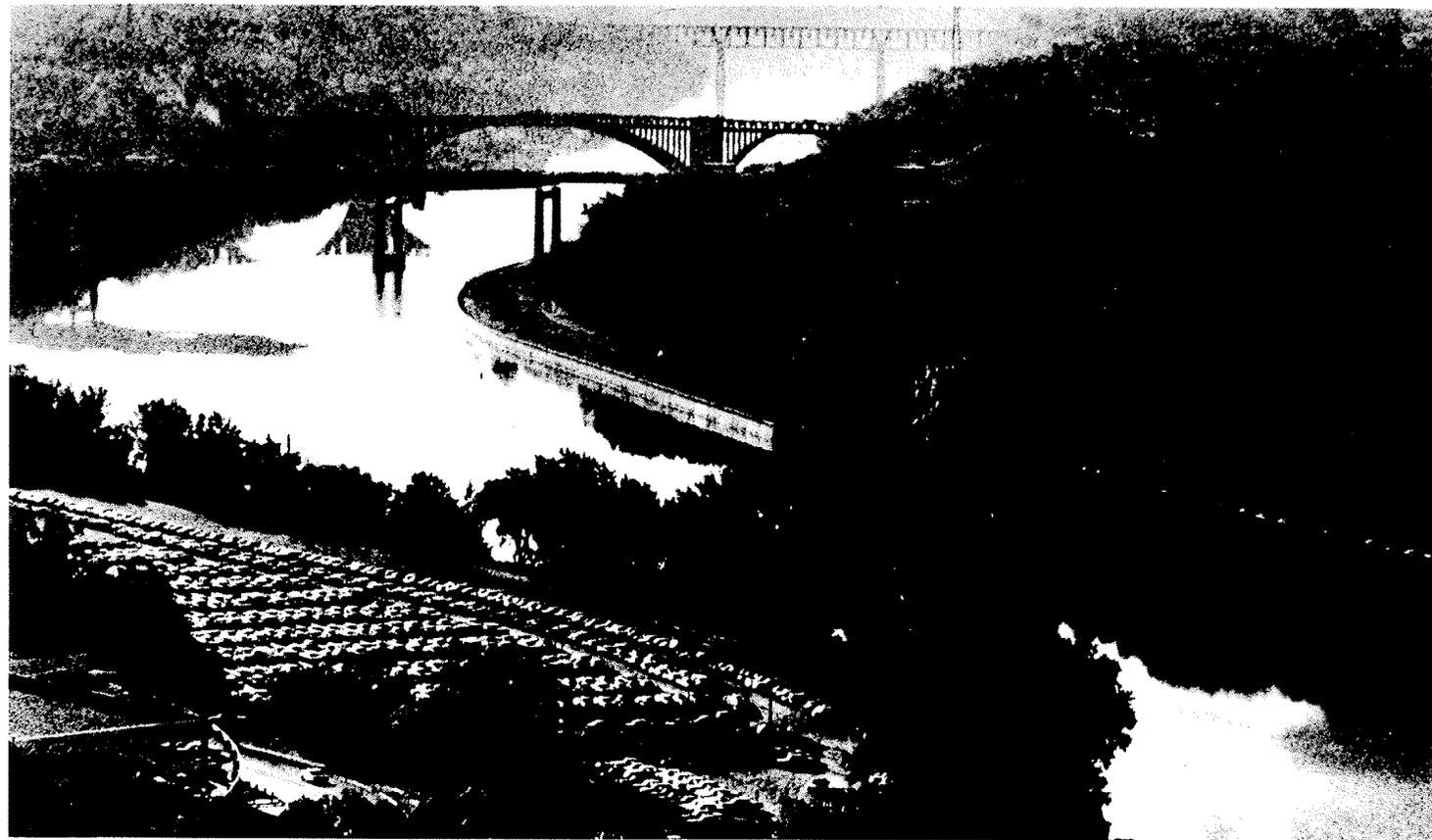
Definitive of the present state of the river area as well as of its outstanding potential for the future is the matter of present versus future value. The full value of any area large or small is, of course, difficult to measure precisely. It includes elusive facets such as personal enrichment and public well-being which can be defined, in part, by social, political, aesthetic and other characteristics. All of these aspects must be constantly borne in mind as development programs are undertaken.

Many of these same concerns are reflected to a great extent, however, by the economic considerations. It may be impossible, for instance, to place a dollar value on a beautiful sunset as seen across the water. Yet it is quite possible to measure the improved tax base caused by increased land and building values—values which in turn may be supported by the totality of an improved environment, one aspect of which may be the ability to experience that very sunset.

The real value of the City is measured in the relationship of land and building value to the costs of services. As long as the property tax is a major part of the municipal revenue package, this will be so. And as any part of the City diverges from the optimum ratio of revenue generation to costs, it has a direct relationship to the economic vitality of the City as a whole. Here, the not-so-easily measured values are important. Each piece of property need not have a dollar return equal to or higher than its costs, but it must have a positive total value related to other functioning elements in the system. For instance, parks cost much and return nothing in dollars, but their effect on the surrounding environment is to provide direct social benefits and thereby indirectly support the economic value of surrounding uses.

On the other hand, vacant, underutilized, and misused land often costs much, returns little, and at the same time has a detrimental effect on the value of surrounding uses.

Some parts of the Riverfront, notably along the lower gorge and in portions of the Upper River area, reflect near optimum benefit to cost status—in short, "highest and best use." Many other parts of the Riverfront are not, however, contributing to the economic vitality of the City, but are, in fact, counter-actively



Student and faculty parking wastes the potential of the University Flats.

helping to drain it. These are the areas on which the plan is focused.

The general categories of land use along the river which are most detrimental to the over-all economic picture are:

Vacant land. Land which does not always cost much directly but at the same time returns little in revenues and helps to downgrade surrounding areas.

Excess or underutilized railroad land. The railroads for the most part pay a gross earnings tax to the state, of which only a small portion is returned to the City—an amount far below the property tax potential. These lands can be looked upon, therefore, as being similar to vacant land with respect to their positive value to the City. Railroad land and facilities which are vital parts of inter- and intra-city delivery systems, on the other hand, are wholly justified economically.

Underutilized and poorly used land and facilities. This category includes many industrial and industry-related activities which have been functioning un-

der less than optimum conditions—with outdated physical plants or access difficulties, in the midst of chaotic land patterns and the accompanying negative image of such surroundings.

Unnecessary street rights-of-way. Similar to railroads, vehicular traffic ways, as parts of the over-all movement system, support the values of the activities they serve. It is when a street is no longer necessary to the functioning of the system that it becomes an economic liability.

The river area presently contains 209 acres of vacant land or about 8.4% of the total land area. It encompasses, at the same time, 217 acres of railroad land, another 8.7%. And over-all, about 490 acres or about 20% Riverfront area is used for public streets and alleys.

In the Central area of the river the figures are: vacant, 22 acres or 4%; railroad, 133 acres or 26%; streets and alleys, 97 acres or 19%; and parking, 29 acres or 5%. Together they total 281 acres or 54% of all land use in the Central area.

While main line rails, streets, and parking will of necessity re-

main, a significant portion of these lands can and should be redeveloped—including all of the vacant land as well as large amounts of poorly utilized land not included in the above figures. The increase in tax revenue from integrated redevelopment of much of this land will more than pay for the costs of the public amenities including open space that are described in the plan.

ZONING

Present zoning patterns along the river are the result of an historic sequence of events beginning long before zoning itself was employed. Since the river was basically used during the early years of its development for power production and transportation, the land along much of its banks was disposed to these kinds of activities. As industry flourished so did transportation facilities employed in the movement of goods, chiefly the railroads. The mutuality of these two uses, industry and railroads, led to even further growth. Thus by 1924, when the first zoning ordinance was adopted in Minneapolis, considerable development had already taken place.

Since one of the primary purposes of zoning was to separate land uses and in particular to protect living areas from the deleterious effects of industrial activities, areas which were being used for industry were zoned industrial and areas containing larger amounts of housing were zoned residential.

Over the following four decades considerable study, public discussion and decision-making took place, culminating in a new zoning ordinance in 1963. Yet, even at that time, there was little real indication that any major changes in the kinds of uses along the river were imminent. Nor was it, for other reasons, timely to make substantial alterations in the zoning map for this area.

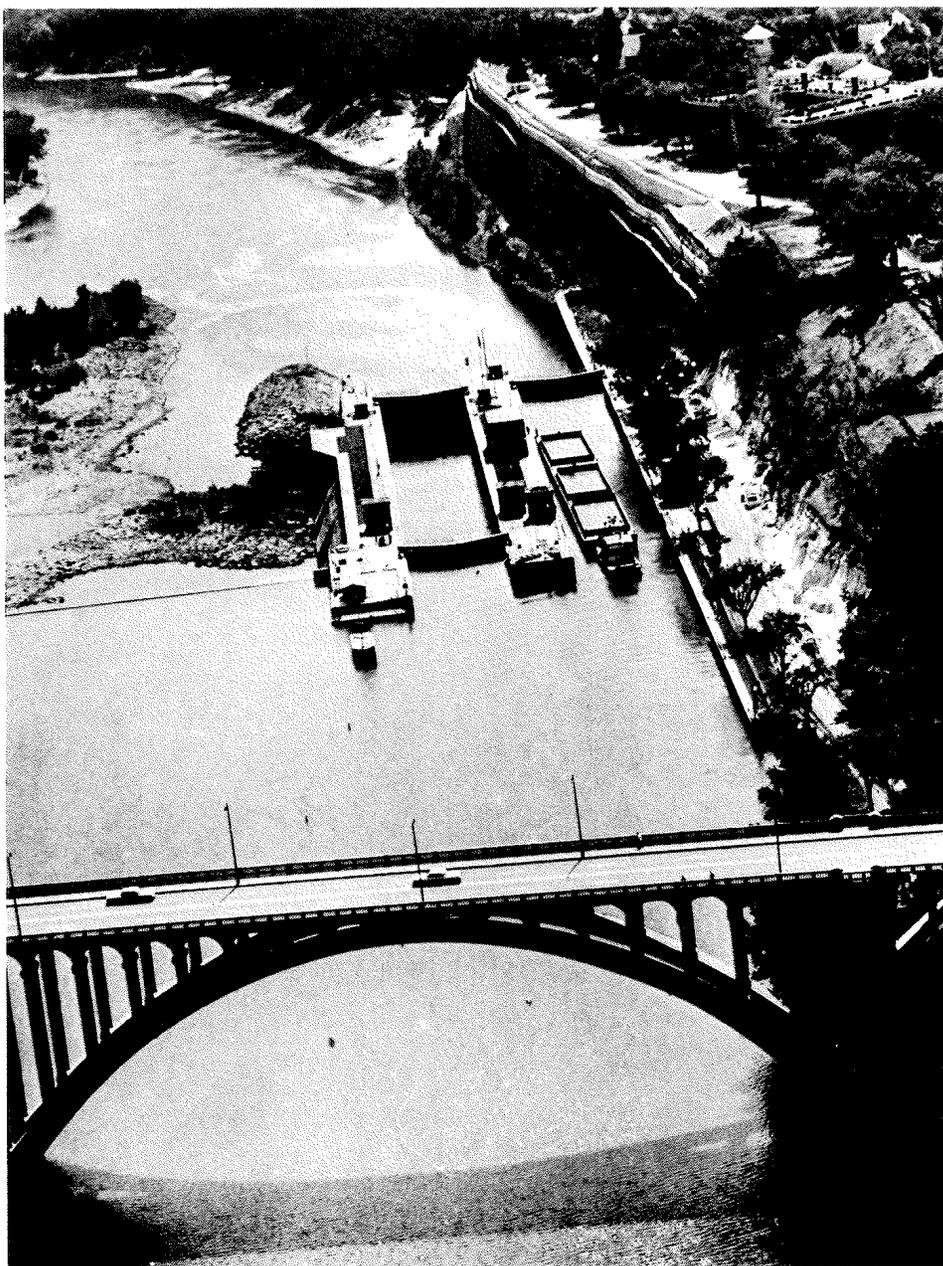
Today, the use of the river and Riverfront has become a major concern. As this plan will demonstrate, alternatives to historically accepted general use and activity in certain areas along the river not only exist, but are preferable. In many of these areas changes in zoning will be required in order to implement the alternatives. At the same time there are a number of areas along the river where the most appropriate future land use either exists or can well be implemented under existing zoning.

Zoning has become increasingly sophisticated, incorporating many features that were not included in its earlier days. Of these, such instruments as planned development have opened the door to newer forms of development that are often more sensitive to the needs of the citizen and the urban community. Even today, however, the zoning ordinance does not always constitute an adequate control mechanism relative to certain kinds of unique urban features—among them waterfronts, highly mixed but specialized uses, and features of City-wide and regional significance. For instance, the use of or need for river frontage has had little bearing on zoning along public waters, including the river.

Areas which are, at present, zoned in such a way as to be the most inconsistent with advantageous development patterns are located in the Central area: Nicollet Island, the Main Street districts, the North Loop, and Industry Square.

Movement

Along the river, as elsewhere, the uses of land constitute but one portion of the



Locking past the Ford Bridge dam, the barge will descend 38 feet. The river drops over 100 feet through Minneapolis.

over-all picture. Only as they are linked to each other through the diverse set of movement patterns do they become integrated elements in the highly dynamic urban organism. These varied modes of movement or transportation are intended to serve the specific purposes of people and goods. And it is in this respect that each form of movement presents both problems and potentials, particularly when viewed in relation to anticipated changes in land use.

Though the differing types of existing movement are quite interrelated, they are discussed under separate headings as follows: On-Water Movement (boats and barges), the Vehicular System, the Railroads, and Pedestrian Movement.

ON-WATER MOVEMENT

Movement on the river itself can be clearly separated into two general types: recreational pleasure boating and commercial barging. The focus here will be on the latter, since pleasure boating has already been discussed under "Recreation."

Sharing the river with the recreational boaters are the much larger commercial barges and the tows which move them about. These barges laden with coal, gravel, lumber, grain, and numerous other products and materials are destined to and from terminals on the Upper Harbor. The expanding Minneapolis Municipal Terminal at Dowling Avenue N. is one of the primary desti-

nations. Private tie-ups at a half dozen or so other locations also exist.

Although the rate of growth of commercial barging activity has not fully lived up to forecasts made at the time the Upper Harbor Project was completed, it is nevertheless now enjoying a measurable annual increase. At the same time the full value of this activity must be based in part on the diversification of available transport modes that it helps to provide, and not simply on present barge shipments by volume.

The nine-foot deep channel necessary for barging terminates just below the Soo Line Railroad Bridge at Camden, allowing only smaller recreational craft to continue farther upriver from this point.

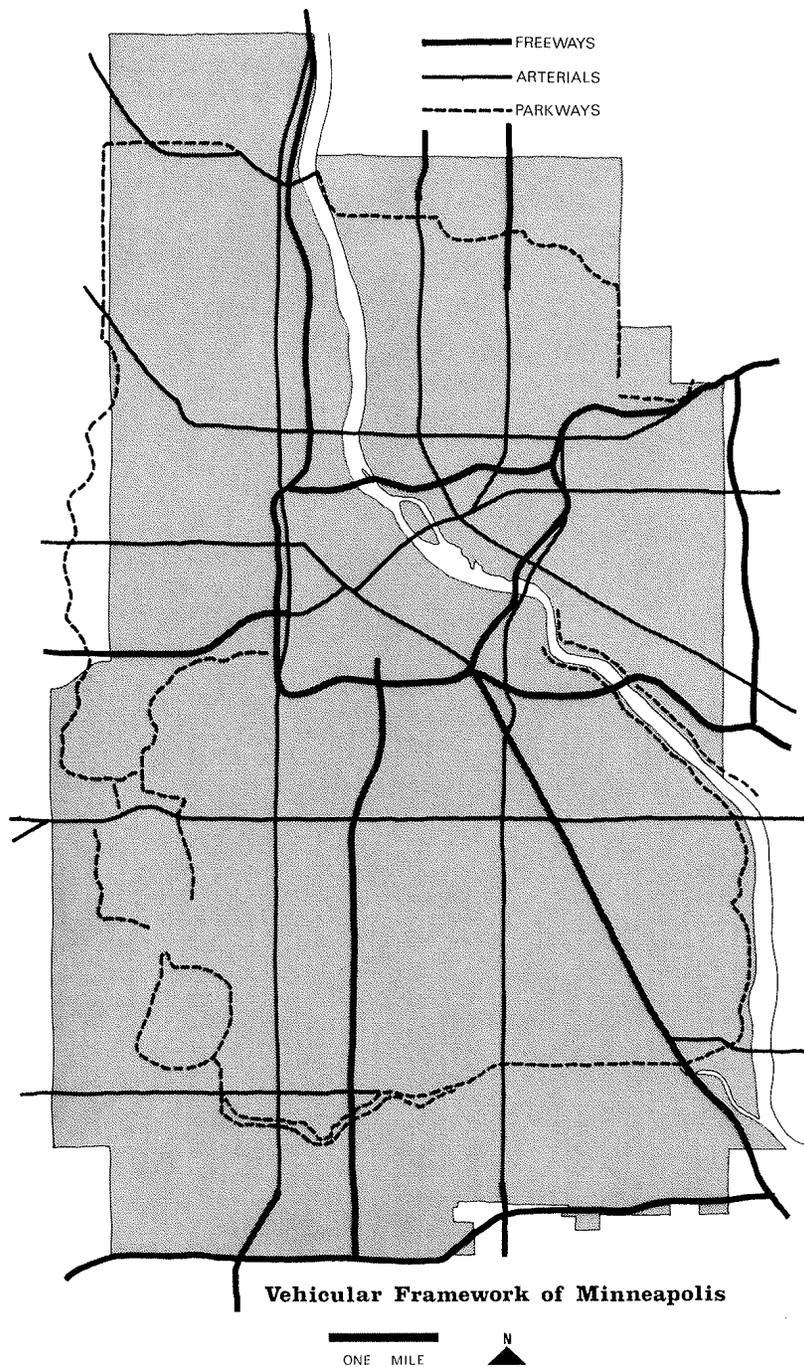
In addition, Minneapolis locks are narrower than most on the lower Mississippi, accommodating only one barge-width. Barges are therefore separated below St. Paul and delivered to Minneapolis one or two at a time.

Both recreational boat traffic and barge traffic are expected to increase on the river in Minneapolis in the coming years. Some of the minor problems which exist today may well be magnified by this expanded activity.

THE VEHICULAR SYSTEM

Two general concerns are evident in the study of vehicular movement as it relates to the Riverfront. First of all, this area is just one segment of the larger City and region. A majority of river area vehicular traffic therefore is performing on complex City-wide and regional networks to which the river is often nothing but a major physical barrier. Secondly, the river and the activity spaces along the river are places in their own right. They also must be provided with adequate vehicular access in order to function effectively.

Automobiles, trucks, and some bus routes are initially oriented to the developing freeway system. While this system is obviously not uniquely designed for river purposes, it nevertheless serves river area purposes in much the same way as it serves other parts of the City. Freeways can help



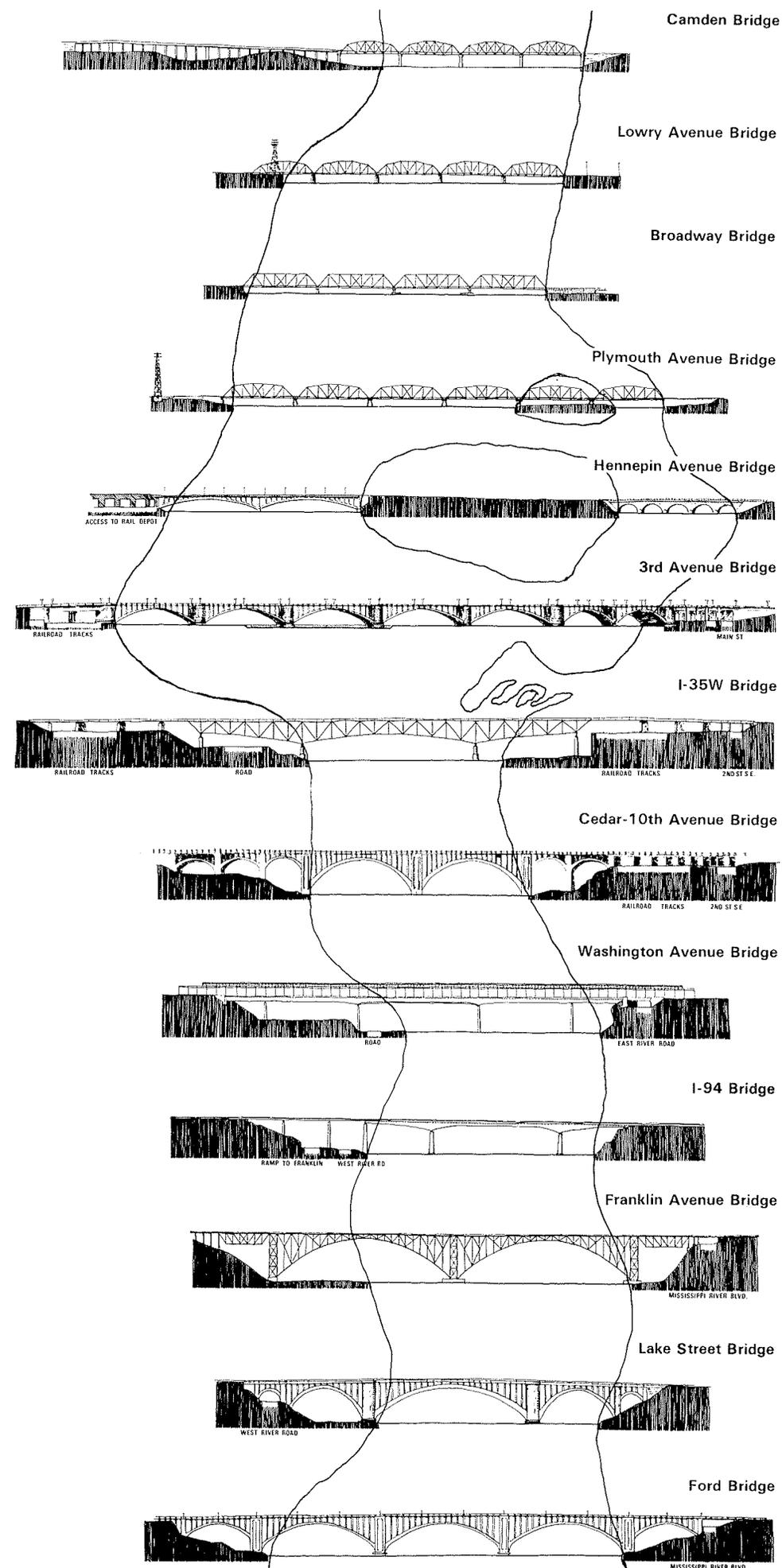
to deliver people from outlying areas to the general vicinity of the river and, in turn, can allow those who would live near the river to move with ease throughout the metropolitan area. Freeways in like way serve industry and commerce by providing facilitated movement for trucks on the larger metropolitan scale. Nowhere does this high volume system lead directly to the Riverfront, nor should it. Accesses have been located on existing freeways and are planned on future ones in locations that will, for the most part, serve river activities well and without noticeable disruption.

Linked to the freeway system and lacking the face of the City is the system of arterial and collector streets. This next level down provides, like the branches

of a tree, for convenient access to all parts of the City. It is this part of the system that delivers users to clusters of activity along the river. Movement may be facilitated on arterials by signals, multiple lanes, and controlled parking.

There are thirteen vehicular bridges crossing the river, two of which are part of the freeway system. And two new ones are planned; one at Camden to replace the deteriorated bridge there, and the other for I-335, to cross the river just below the existing Plymouth Avenue Bridge.

The popularity of the private automobile creates problems not only in



accommodating them on the freeways, streets, and bridges, but also in trying to determine what to do with them when they are not in use. In short, parking! Presently cars are parked up and down the river; along the streets, on the sidewalks, and in some areas on any land that even remotely appears to be vacant.

Parking should, of course, be as close to the final destination as possible,



A welter of parked vehicles clutters the Riverfront.

subject to the condition that it does not interfere with either the functional or the aesthetic purposes of surrounding activities.

As any auto driver can testify, trucks also are quite prevalent on the City's freeways and arterial streets. These trucks, which serve the City's manufacturing, warehousing, wholesaling and retailing activities, play a major role in maintaining the economic vitality of the City. They tie productive activities together within the City and metropolitan area as well as providing necessary links to the outside world. As important as they are in these respects, however, trucks also produce certain deleterious effects. Noise is perhaps the most noticeable of these, but, because of size and lower maneuverability, trucks can also adversely affect traffic movement. For these reasons truck routes are designated throughout the City in places where the effects of truck traffic on other elements of the City can be minimized. These routes, as often as possible, are located outside of residential neighborhoods. Yet they must at the same time be sufficient in number and location to provide reasonable efficiency in the delivery of goods from one area to another within the City.

Truck routes cross the river on all of the major bridges and extend parallel to the river along several streets in-

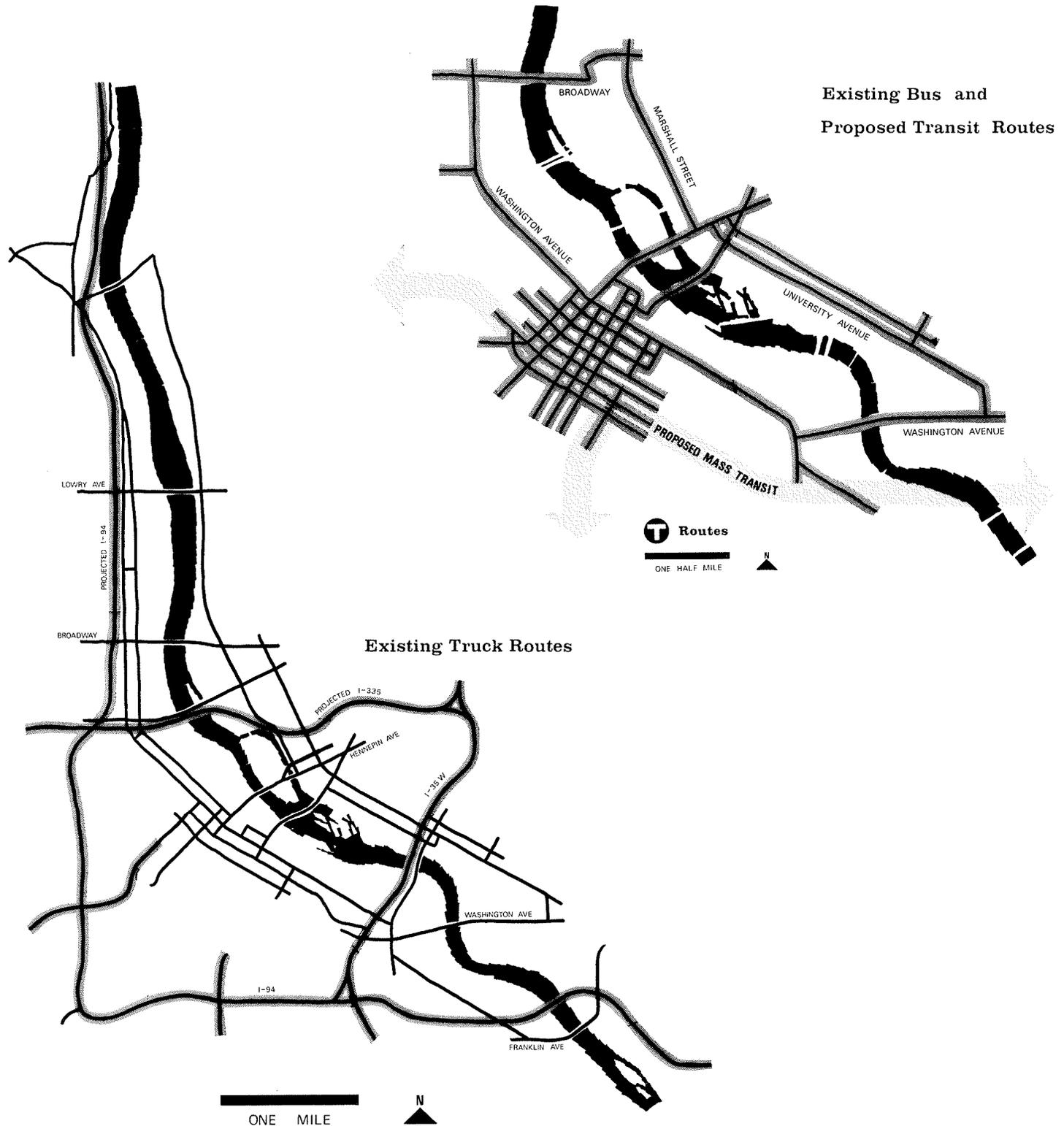
cluding Washington Avenue, 2nd Avenue North, 2nd Street S.E., Main Street and Marshall Street N.E.

Another significant aspect of trucking is that while most of their activity takes place on truck routes, many deliveries and pickups occur on non-route locations. In fact almost every roadway must accommodate trucks to some degree. All uses, even residential and open space, must on occasion be serv-

iced in ways that require truck accessibility.

In addition to automobiles and trucks, the City's only existing form of mass transit, the bus system, uses the vehicular pathways. In order to maintain and improve upon the efficiency and convenience of the automobile system, the bus system must work. And to work well, room for turning, adequate stops and shelters, and a number of other

factors unique to the bus operation must exist. Presently buses have little relationship with the river except in a few specific locations. They do play a significant role relative to the Downtown and the University of Minnesota area, and serve to some degree the employment areas along both sides of the north part of the river. Aside from these areas, buses and the people using them seldom come in contact with the river and then only when they are



crossing one of the bridges on their way to or from Downtown Minneapolis, St. Paul, and other activity centers.

In order to help alleviate some of the present automobile congestion, a significant effort is underway to develop a more advanced mass transit system within the Twin Cities area. The main focus of this effort is on providing linkage between the outlying residential areas and the major commercial and employment centers; including among others Downtown Minneapolis and St. Paul, the University of Minnesota, and the Midway Industrial area. Certain aspects of any future system will be of concern relative to the river area such as where and how river crossings are to be handled. Also, though a primary high speed system cannot be expected to serve much of the river area directly, secondary and integrated collector systems might well be expected to do so.

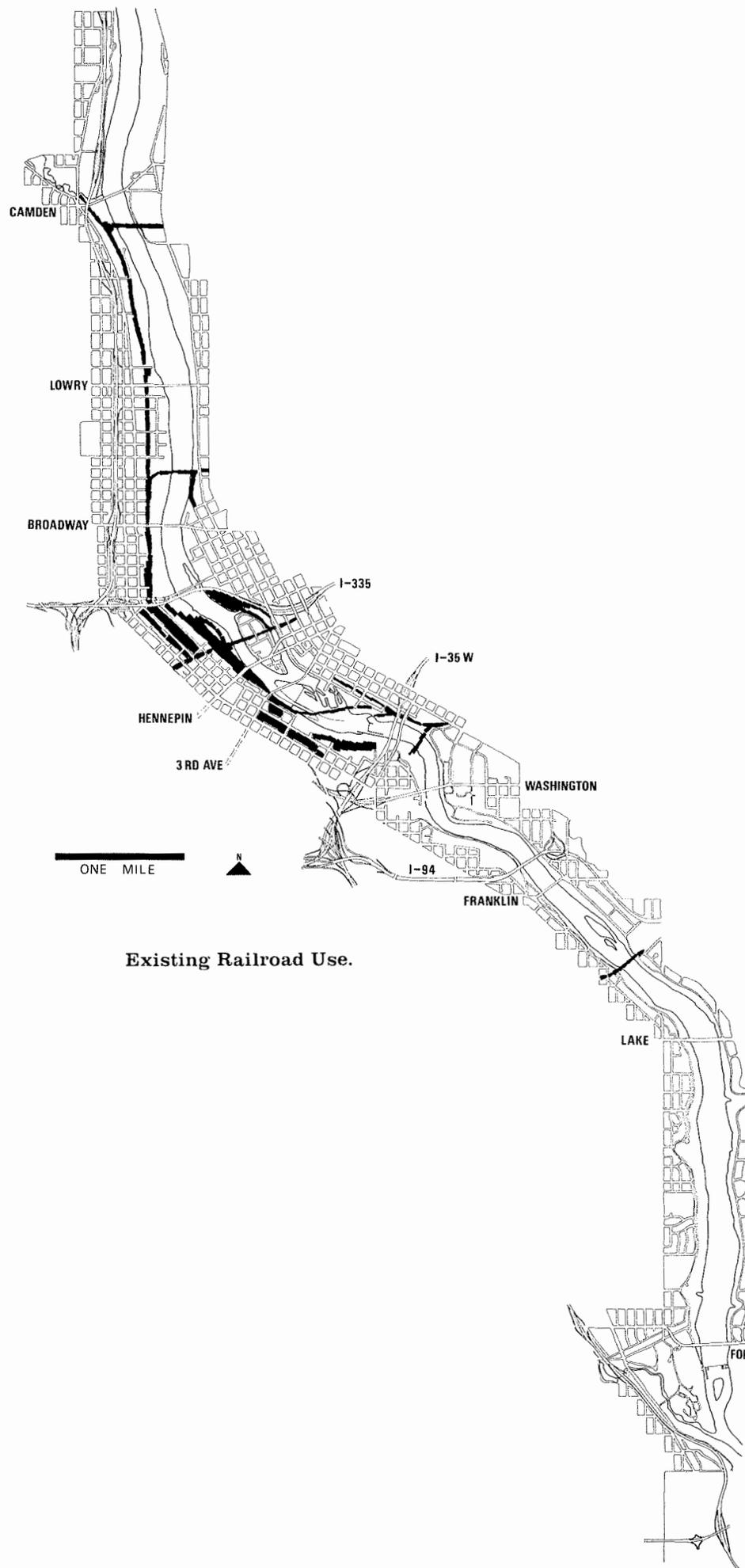
RAILROADS

For decades, railroad operations and railroad land have dominated large parts of the Riverfront. In more recent years, however, several factors have combined to reduce their activities in this area.

The development of the interstate system and the subsequent growth in the trucking of goods has forced the railroads to make a series of changes. The shifting of many freight shipments, particularly those of less-than-carload (LCL) size, to truck hauling, has eliminated the need for direct rail service to many of the smaller industries. Also, as larger industries requiring direct rail service have located out of the core area in outlying sites, railroad operations have quite logically followed. Added to these changes is the trailer-on-flatcar (TOFC) operation in which semi-truck trailers are hauled over the longer distances by rail.

Land costs, traffic congestion, and the expanded scale and improved technology of these rail operations have combined to move substantial portions of the railroads' facilities farther out of the core of the metropolitan area. Consequently, large amounts of railroad land have been left vacant or underutilized in the older industrial segments of the City.

The above changes notwithstanding, the railroads presently serve a variety of clientele in many of the inner areas and are likely to continue to do so. And



Existing Railroad Use.

because of the major investment that would be required, it is not likely that the railroads will implement major shifts in their main line facilities or other such critical elements of their operating system.

An extraordinary potential exists for development along the river area relative to existing railroad land and facilities. These include, in addition to redevelopment of unused land for new uses, the employment of multiple land usage including air rights and subterranean rights, as well as the re-designing of some parts of the railroad system.

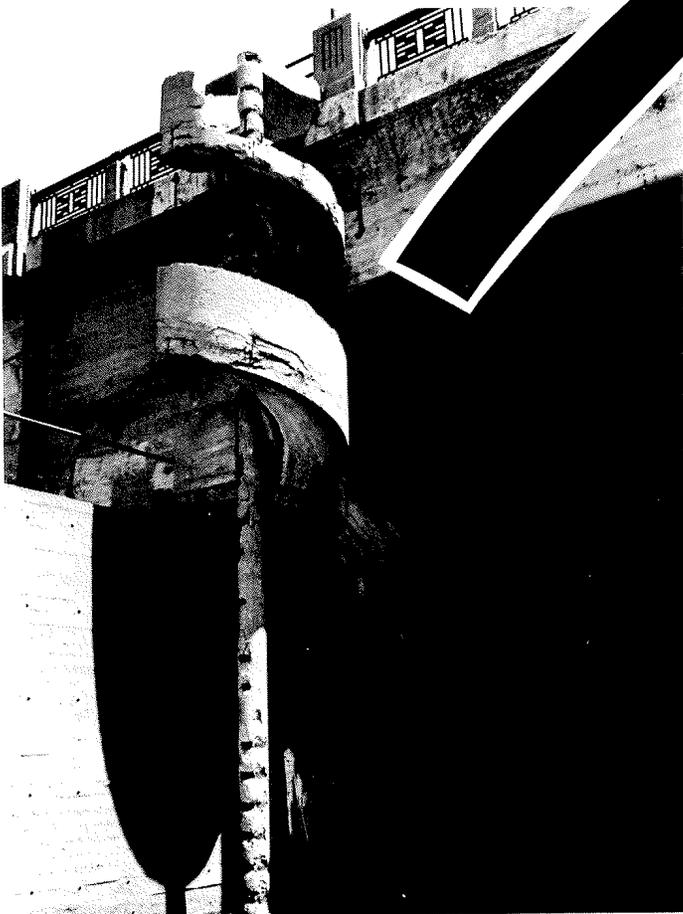
PEDESTRIAN MOVEMENT

Two kinds of pedestrian activity can be identified even though they quite often overlap. On the one hand, walking may serve the specific purpose of getting from point to point most efficiently. For example, walking from a parking area to a residential unit. When, on the other hand, one is hiking, strolling or walking for physical and aesthetic satisfaction, the trip itself can, and often does, become more important than getting somewhere.

While these two purposes may exist in other forms of transportation or movement they are perhaps more prevalent in walking. People now walking in areas along the river for either of the above reasons encounter many obstacles. Only in a few locations, most notably along the parkway area, is it possible to get to the river on foot, and once there to walk for extended distances without experiencing difficulties. In a great many areas along the river, walking for enjoyment is not possible at all. Oil trucks and rock piles, equipment, parked trucks, non-negotiable bluffs, and fences block the way. And in many places, though walking may be physically possible, enjoyment cannot really be found due to the visually deplorable condition of the environment.

INTERRELATIONSHIPS

Many of the problems of movement within the river corridor are caused by conflicts between one mode of movement and an-



Access to the river is now blocked by train tracks, fences, unsafe paths, and poorly designed pedestrian bridge access.

other. At-grade rail lines inhibit both auto and pedestrian movement. Though train velocities are not always such as to pose serious safety threats, the routes to the river are often blocked by switching operations.

Conflicts also occur at bridge locations. All autos, trucks, buses, bicycles, and pedestrians that need to move north to south or east to west across the river must use the thirteen vehicular bridges. It is thus imperative that each bridge function well, that multiple use be employed to the greatest extent and that access to the bridges be unhampered.

To be able to move along the river edge on foot, passing either under or over bridges without conflict or great inconvenience, is desirable. Yet in many locations the transition from the river edge to the bridge level can often be accomplished only with great difficulty.

As mentioned previously, many aspects of movement within the river corridor cannot be viewed as major problems in relation to present uses. That is, the area is not at present super-congested, nor is there a serious lack of parking along most of its length. While people cannot reach many parts of the river on foot, in its present deplorable condition few would want to.

The future condition of movement in the river area is therefore directly affected by future land use, by a more desirable visual image, and by an integrated set of movement options which complement and promote the new use and new image.

Character

CLIMATE

The Upper Mississippi River Basin is characterized by hot summers and very cold winters. Far removed from the stabilizing effects of oceans, weather conditions often change rapidly over short periods of time.

The average annual temperature in Minneapolis is 44°. The month with the

March

Maximum Temp. 39°
Minimum Temp. 23°

SNOW 10 in.

Wind 12 MPH NW
Sunshine 54%

February

Maximum Temp. 27°
Minimum Temp. 9°

Snow 7 in.

Wind 11 MPH NW
Sunshine 57%

January

MAXIMUM TEMP. 23°
MINIMUM TEMP. 6°

Snow 6 in.

Wind 11 MPH NW
Sunshine 50%

December

Maximum Temp. 27°
Minimum Temp. 12°

Snow 7 in.

Wind 11 MPH NW
Sunshine 42%

April

Maximum Temp. 56°
Minimum Temp. 36°

Snow 2 in.
Rain 2 in.

WIND 13 MPH NW
Sunshine 56%

(Last Freeze April 30)

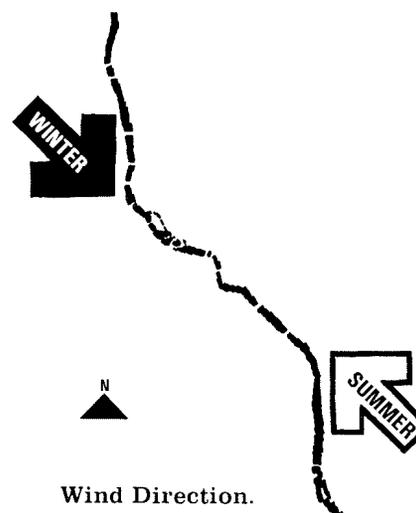
highest average temperature is July with a daily high of 83° and an evening low of 63°. The coldest month is January with a daily high of 22° and an evening low averaging 6°.

On the average the temperature does not fall below 32° for 167 days—roughly from the third week in April to the first week in October. And for about 140 of these days the temperature stays above a level where artificial heat is needed.

The average annual precipitation for the Twin Cities area is 27.8 inches. Most of the rainfall occurs during April, May and June or during heavy summer thunderstorms. The average annual snowfall is 42.2 inches, beginning the first week of November and ending mid-April, with the heaviest snows during March.

Seasonal prevailing winds blow from the northwest during fall and winter and the southeast during spring and summer. Average wind velocity ranges from 9 to 13 miles per hour, with the strongest winds blowing during April. The northwest wind is generally cold and dry while the southeast is generally warm and moist. Any great variance in these prevailing winds is usually a signal for a change in weather conditions.

The prevailing winds often follow the river corridor which makes the River-front somewhat cooler and more windy than the surrounding area.



Wind Direction.

Seasonal sun angles at mid-morning and mid-afternoon range from 21½° during winter to 68½° during the summer, with fall and spring sharing a 45° angle. The east bank of the Central area remains in the sunshine considerably longer each day than the Gateway or Downtown river edge, an important factor relative to building orientation and plaza use in these areas.

November

Maximum Temp. 41°
Minimum Temp. 25°

Snow 7 in.

Wind 12 MPH NW
SUNSHINE 40%

May

Maximum Temp. 69°
Minimum Temp. 48°

Rain 3 in.

Wind 12 MPH SE
Sunshine 58%

October

Maximum Temp. 60°
Minimum Temp. 41°

Rain 2 in.

Wind 11 MPH SE
Sunshine 58%

(First Freeze Oct. 13)

June

Maximum Temp. 79°
Minimum Temp. 58°

RAIN 4 in.

Wind 11 MPH SE
Sunshine 61%

July

MAXIMUM TEMP. 85°
MINIMUM TEMP. 63°

Rain 3 in.

Wind 10 MPH SE
SUNSHINE 70%

August

Maximum Temp. 82°
Minimum Temp. 61°

Rain 3 in.

Wind 9 MPH SE
Sunshine 66%

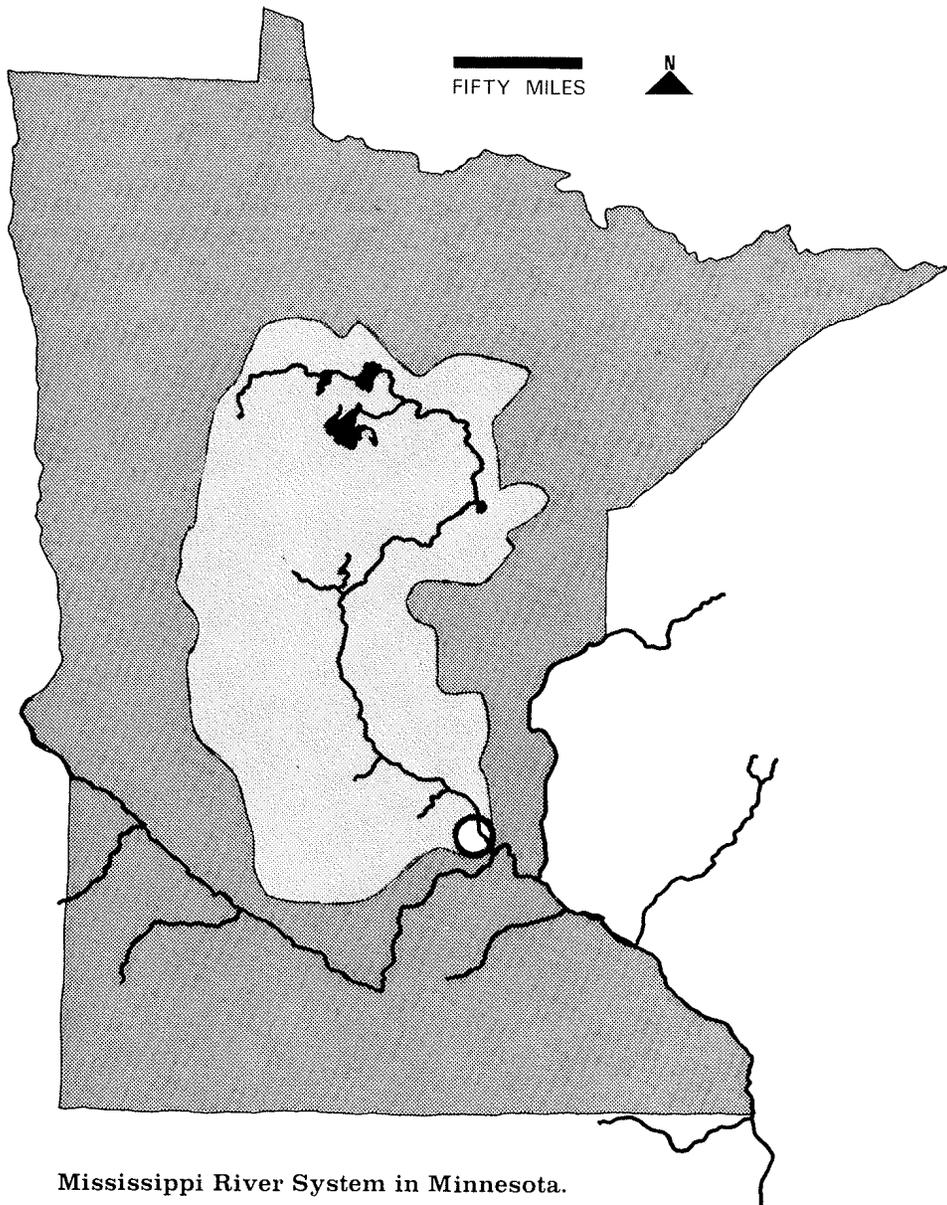
September

Maximum Temp. 73°
Minimum Temp. 52°

Rain 3 in.

Wind 11 MPH SE
Sunshine 62%

FIFTY MILES



RIVER ELEMENTS

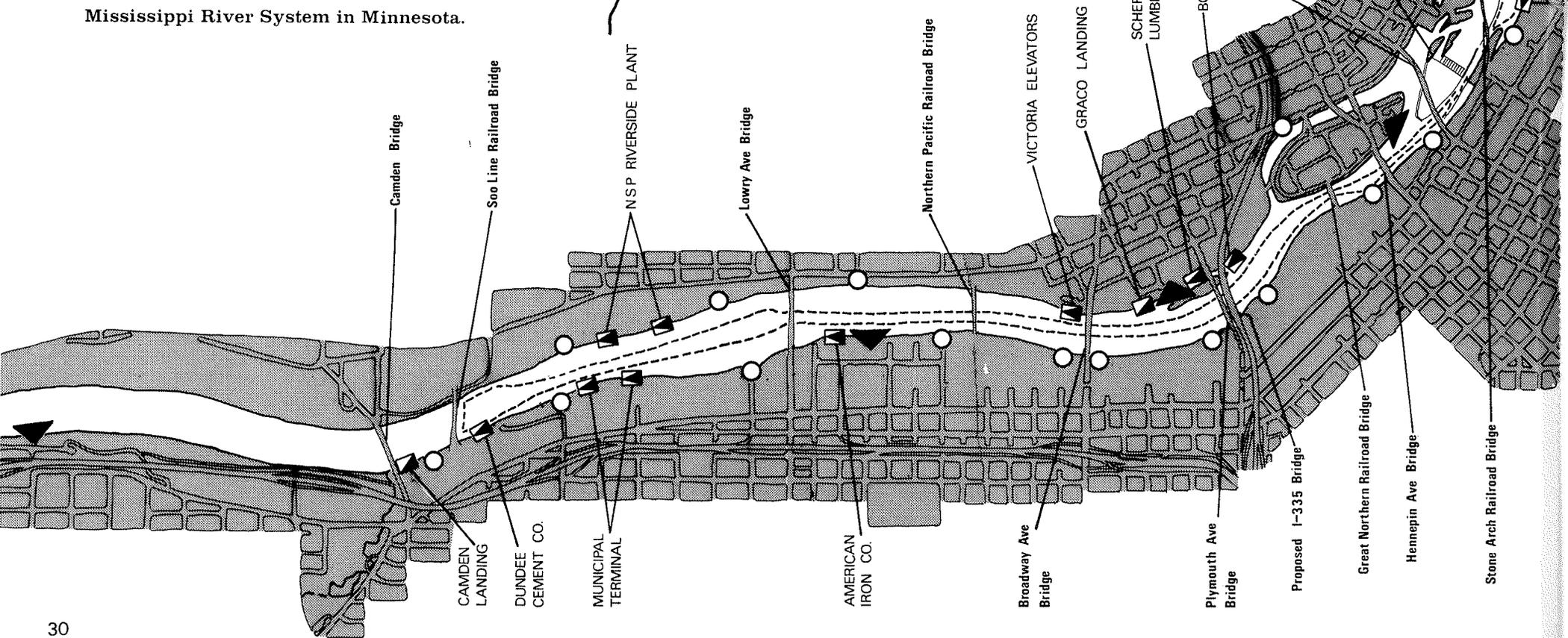
The Mississippi River rises in the lake and forest country of north-central Minnesota. Flowing north, east and then south through the rolling landscape, the river reaches Minneapolis. The watershed area above the Twin Cities consists of approximately 19,670 square miles.

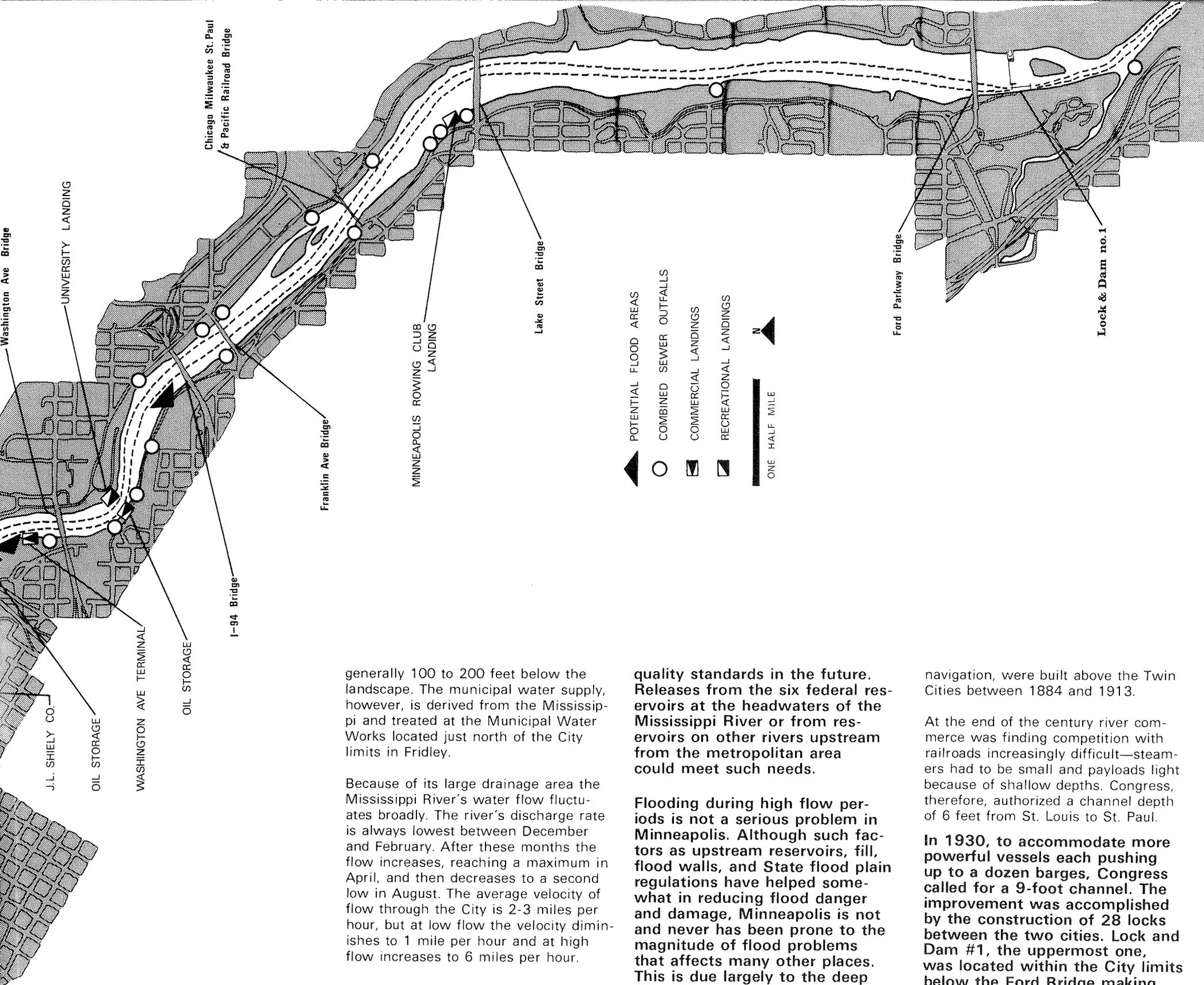
Below Minneapolis, the Mississippi meanders southward past fertile prairies and many villages and cities. From its headwaters at Lake Itasca the Mississippi flows 1,366 miles to its confluence with the Ohio River and another 1,186 to its delta in New Orleans. The Twin Cities are situated 1,940 miles upstream from the Gulf of Mexico.

The topography of the Mississippi headwaters area reflects the effects of successive advances and retreats of glaciers which covered the area. In the vicinity of the Twin Cities the topography is irregular, varying from nearly level to gentle outwash plain with many lakes.

Underlying the Twin Cities is the sandstone and dolomite Jordan-Prairie du Chien aquifer. This bedrock aquifer is an excellent source of water and is used by many municipalities and industries in the Twin Cities area. Wells average 900 feet in depth into the aquifer, and the water level in wells is

Mississippi River System in Minnesota.





generally 100 to 200 feet below the landscape. The municipal water supply, however, is derived from the Mississippi and treated at the Municipal Water Works located just north of the City limits in Fridley.

Because of its large drainage area the Mississippi River's water flow fluctuates broadly. The river's discharge rate is always lowest between December and February. After these months the flow increases, reaching a maximum in April, and then decreases to a second low in August. The average velocity of flow through the City is 2-3 miles per hour, but at low flow the velocity diminishes to 1 mile per hour and at high flow increases to 6 miles per hour.

Low flows are critical to pollution control, because water quality standards are geared to the level of dilution during the ten-year, seven-day consecutive low flow. Forecasts of water volume needs for dilution based on present volumes of pollutants and sewage treatment plant effluents show that additional input will be required to meet

quality standards in the future. Releases from the six federal reservoirs at the headwaters of the Mississippi River or from reservoirs on other rivers upstream from the metropolitan area could meet such needs.

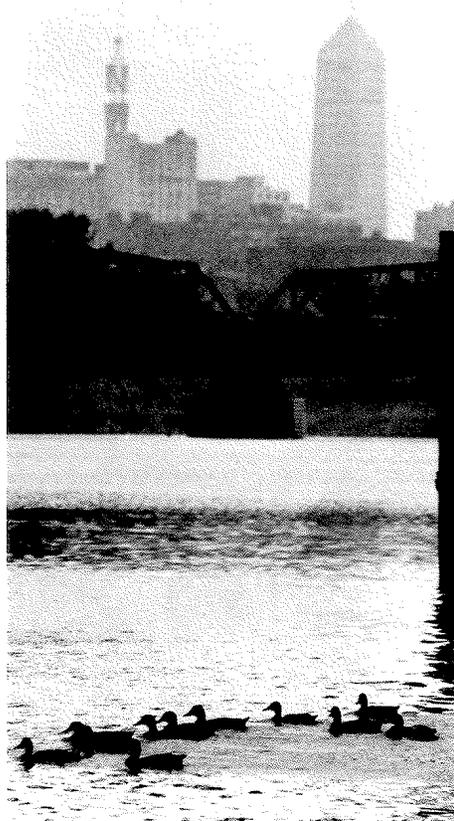
Flooding during high flow periods is not a serious problem in Minneapolis. Although such factors as upstream reservoirs, fill, flood walls, and State flood plain regulations have helped somewhat in reducing flood danger and damage, Minneapolis is not and never has been prone to the magnitude of flood problems that affects many other places. This is due largely to the deep gorge and high banks along the City's waterfront. The few danger points for potential flooding are illustrated.

In 1878, Congress authorized the first dredging project on the Upper Mississippi, directing the U.S. Army Corps of Engineers to provide a channel 4½ feet deep as far as St. Paul. Six storage reservoirs, acting as safeguards for

navigation, were built above the Twin Cities between 1884 and 1913.

At the end of the century river commerce was finding competition with railroads increasingly difficult—steamers had to be small and payloads light because of shallow depths. Congress, therefore, authorized a channel depth of 6 feet from St. Louis to St. Paul.

In 1930, to accommodate more powerful vessels each pushing up to a dozen barges, Congress called for a 9-foot channel. The improvement was accomplished by the construction of 28 locks between the two cities. Lock and Dam #1, the uppermost one, was located within the City limits below the Ford Bridge making possible the development of the Washington Avenue Terminal. Minneapolis capitalized on the channelization of the river by constructing the lower and upper St. Anthony Falls Locks and Dams, completed in 1963. The 9-foot channel now extends to the Soo Line Bridge just above the Northern States Power River-side plant on the Upper River.



Ducks are abundant along the river.

FAUNA AND FLORA

Sport fishing occurs to a limited degree at random spots along MISSISSIPPI/MINNEAPOLIS. The majority of fish caught are rough fish, such as carp and bullheads. Approximately 20-40% of the catch is in game fish, however, including walleyes, perch, northern pike, and trout. Fish taste tests performed by the University of Minnesota reveal the palatability levels of Mississippi river fish as generally good.

Within the major migration corridor east of the Rocky Mountains, diving and dabbling ducks, Blue, Snow and Canada geese pass along the Mississippi during their fall migration. And other game birds can sometimes be observed along the river—mourning doves, pheasant, and snipe.

Fresh beaver cuttings are occasionally observed along the Lower River. Rabbits, fox squirrels, muskrats, raccoons, and foxes have been noted by both naturalists and hikers within the corridor.

Although the wildlife along the Riverfront is surprisingly varied for an urban setting, the foliage along the river tends to be blandly uniform. Deciduous trees which have spread

naturally along the bluff include primarily cottonwood, elm, oak, and linden. Few blossoms or evergreens can be found to give variety to the scene.

WATER QUALITY

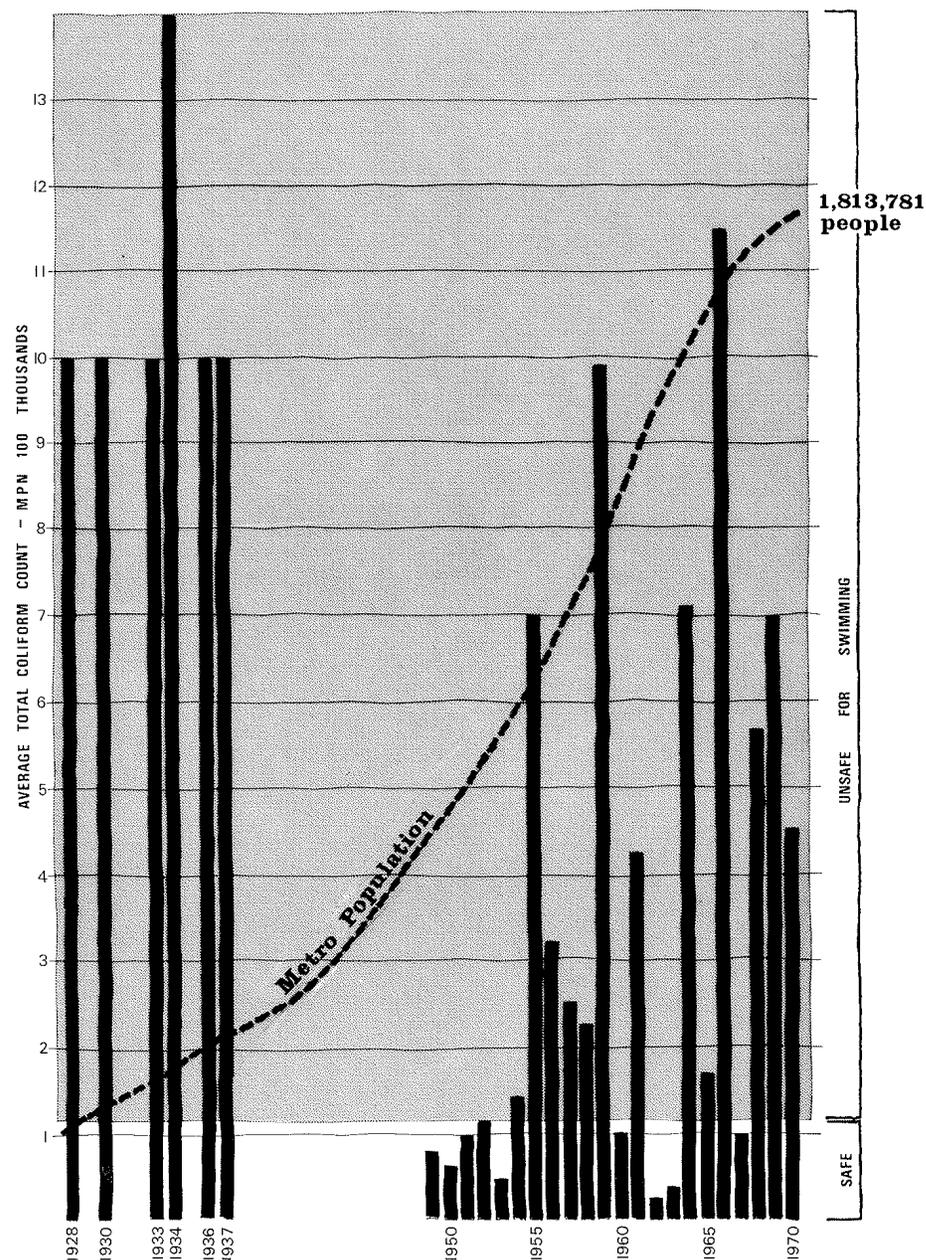
Mississippi River water quality is central to comprehensive Riverfront planning. Raw data on the quality of the river is relatively clear-cut, but conclusions drawn from the figures are as ambivalent as the opinions of local experts who may conclude that the river is filthy in comparison to pure water, or that the river is clean in comparison to its condition of 40 years ago. We may state that the Mississippi as it runs through Minneapolis is polluted because most of the time its count of bacterial organisms does not meet health standards, but, on the other hand, that the Mississippi is twice as clean as any river running through a metropolitan area the size of the Twin Cities.

Water quality may be objectively defined by analysis of water samples, by analysis of river bottom organisms, or by the effects of pollution on water uses. The real significance of water quality relative to this plan is reflected in water uses. Some water uses are obviously not compatible—like sewage disposal and swimming. Increasing pollution decreases the range of potential activity—or the converse—if high water quality is maintained, the greatest opportunity will be offered to all people to use and enjoy the river.

Following the course of the Mississippi through Minneapolis we can relate existing water uses to water quality, pointing out pollution levels and sources.

Water quality as the Mississippi reaches the City's water supply intake, located in Fridley, is generally good, with the exception of bacteria count. During brief periods in the summer months the average coliform count (the standard indicator of pollution levels) is low enough (1000) to permit swimming, but it varies throughout the year (1969) from 330 to 4900 in this area.

The Water Works Department now provides 100% of the Minneapolis water supply. Approximately 70 million gallons of water a day are purified in its filtration plant. The plant's practice of



River water quality has improved since 1938 when the first City sewage treatment plant was built, but recent counts of standard pollution indicators still prohibit body contact sports.

sending its sludge back into the river was found to violate quality standards by the federal Upper Mississippi River Conference begun in 1965. The City is now building a sludge treatment plant next to the filtration plant scheduled to begin operating in November of 1972.

Pollutants reaching the water supply intake derive from a total watershed area of approximately 20,000 square miles. They come largely from agricultural waste—nutrients from chemical fertilizers, traces of pesticides and herbicides, fecal coliforms from feedlot manure washings, and suspended solids from natural land erosion.

Thirty-five miles above Minneapolis, Northern States Power's Monticello nuclear generating plant produces thermal and radioactive pollution. By the time the river flows to the City's limits, no thermal pollution and less than 1 millirem of radioactive substance are present in the water. A possible accident in Monticello operations, however, would drastically alter the river's quality.

The Anoka Sewage Treatment plant to the north produces the only treated sewage affecting the quality of the Mississippi in Minneapolis since the Twin City plant is south of St. Paul at Pig's Eye Island. The Anoka plant was upgraded from primary to secondary

treatment in 1969. The facility removes 90% of organic and inorganic pollutants from 1 million gallons of waste each day.

Coliform density increases as the river flows through Minneapolis. Comparing samples first at the water intake, second at Washington Avenue Bridge, and third at the Ford Dam reveals that the average yearly coliform count progressively increases from 1,800—to 6,500—to 17,500.

Combined sewer overflows, urban runoff, heat discharge from industry and discharge from creeks flowing into the river pollute the Mississippi within our City limits.

COMBINED SEWER OVERFLOWS.

Minneapolis first installed storm sewers to dispose of water runoff from rain or thaws around 1880. As the problem of disposal of household water supplies and wastes grew, the easiest solution was to dump the household wastes into the river by way of existing storm sewers, creating serious pollution of the river.

In 1938 Minneapolis started building a sewer treatment plant to treat and clean domestic sewage. Instead of separating sanitary wastes from runoff and treating only the sanitary wastes, the City installed a system of interceptor sewers. The interceptors run parallel with the river to collect the flow from existing combined sewers just above their outflows. The interceptors and treatment plant were designed for normal flows only. Built-in bypasses and diverters were installed into the interceptor sewers so that when heavy rains occurred, additional volumes of

storm water which could not be held in the sewers were bypassed directly to the river. Every time a substantial amount of precipitation entered the sewers a direct overflow into the river of up to 95% of raw sewage carried in storm water resulted.

Two attacks have been made on the combined sewer problem—a sewer separation program and in-system storage.

All sewers built since 1932 have been separated—sanitary from storm—and a slow and costly program of segregating existing combined sewers, with an MPCA-ordered completion date of 1979, progresses. Theoretically, a 1979 total separation date is possible with about a 7 million dollar a year cost to the City. At the present time, however, only about 2 million dollars of the City's budget goes into separation.

In 1969, estimates stated that 3.5% to 5% of all raw sewage collected in the sewer system never reached the treatment plant, representing a suspended solid load of approximately 9.5 million pounds annually. This percentage figure on sewer overflows may have been cut down by as much as 50%, however, with the 1969 installation of a dispatch system utilizing, to the fullest potential, storage space available in the larger interceptor sewers.

URBAN RUNOFF. Even separated storm sewers pollute the river as rainfall flushes out the City and carries with it solid waste. Rags, paper, disintegrated paving, yard refuse, pesticides, herbicides, fertilizers, salt spread on streets to melt ice and snow—all find their way to the river. In

effect, urban runoff pollution is a reflection of the cleanliness practiced by a city.

There are two ways of reducing the polluting effects of urban runoff. First would be to attack the pollutants at the source—prevent littering, cease salt and chemical applications. Such preventive measures must be accomplished in large part by a strong public education program. Second is to treat the wastes. Treatment means improved street cleaning before rains occur, or treatment of the storm sewer's flow. The irony of the urban runoff problem is that total river cleanup would mean treatment of storm sewer water—which would cancel out the time and money spent on a sewer separation.

INDUSTRIAL POLLUTION. Heat waste is the major source of industrial water pollution on the Minneapolis stretch of the river. The Northern States Power Riverside steam-electric generating plant takes in water for cooling at a peak period rate of 411,500 gpm. The water at full load rises some 20° F. and eventually, when it reaches the Mississippi, raises the river's temperature some 3° to 5° directly downstream from the plant. Within one mile of the plant, however, the temperature drops by almost 2.5° F.

All of the other one thousand industrial establishments in Minneapolis dispose of their wastes into the City's municipal sewer system. Not until the river reaches St. Paul does any industry dispose wastes other than heat into the river.

DISCHARGE FROM CREEKS. Bassett's Creek introduces polluted water

into the river about a mile above the St. Anthony Falls. At the point of discharge, the creek's flow of 10 to 50 cubic feet per second of water is usually five to ten times higher in bacteria count than the Mississippi at that same point.

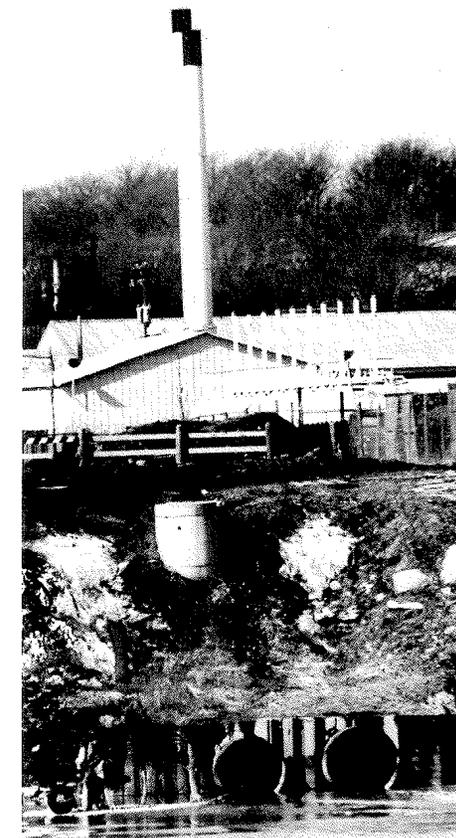
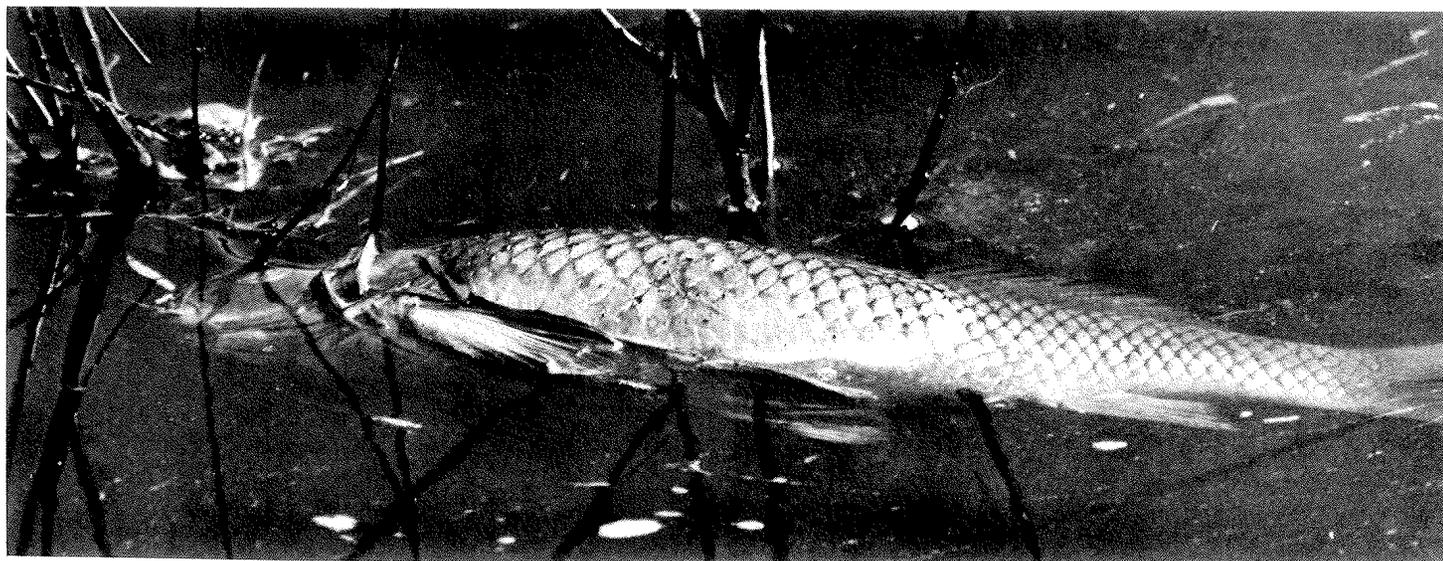
Mississippi River water has, in the past, been diverted to flow through the Minneapolis lakes system to maintain their levels. Late summer lake pollution shows up when Minnehaha Creek flows into the main river. The creek like others is a major vehicle for urban runoff.

The quality of the Mississippi River in Minneapolis is far better than in St. Paul. Industrial pollution, a greater number of combined sewer outfalls, and the existence of the Metropolitan Sewage Treatment Plant at Pig's Eye result in oxygen depletion, huge coliform counts, septic odors, depleted fish life and 16,000 bottom sludge worms per cubic foot a few miles past Pig's Eye Island.

Water pollution severely limits recreational use and aesthetic enjoyment of the Mississippi in Minneapolis. Coliform counts prohibit body contact with the water; floating solids and River-front debris discourage pleasure

2. Remaining combined sewer outfalls are a major source of river pollution.

1. Dead from pollution or natural causes?





1. Air pollution is disguised by steam on the day of the City's first pollution alert, 1972.

boating and limit citizen participation in other Riverfront activities. Fish kills, damage to waterfowl, odors, and obnoxious vegetation growth all discourage aesthetic appreciation. Clean water on the other hand combined with scenes including boating, fishing, and the appearance of waterfowl enhance aesthetic appeal. A program to continue to improve water quality in the Mississippi is essential to the Riverfront's revitalization.

AIR, SOLID WASTE, AND NOISE POLLUTION

AIR QUALITY. Air pollution is not unique to the Riverfront as is water pol-

lution—nor are the resources to greatly improve air quality available to most agencies concerned with Riverfront development. But the fact that air pollution tends to collect in the river gorge requires that some attention be given to the problem.

Air quality standards have now been set for Minnesota with the approval of the federal government under the 1970 Clean Air Act. The first major step in local air pollution control came in 1971 when open trash burning was prohibited; all City trash is now removed to sanitary landfills. The City's Air Pollution Control Division now observes air conditions, investigates specific complaints, and inspects and issues permits to all buildings with fuel-burning equipment having more than 400,000 BTU capacities.

Despite state and local control programs, however, sulfur dioxide and particulate levels have exceeded health standards when high power demands during cold weather have combined with a temperature inversion. Under such climatic conditions, automobile exhaust emissions, and the stack emissions of old industrial plants, power plants, and space-heating units cannot realistically be controlled. Future pollution alerts and frequent air quality nuisance will, however, diminish as new "clean" power plants, new industrial plants, and improved auto engines replace the old.

Citizen action pressuring government agencies and councils to increase technological research, the enforcement power of each agency, and funding for comprehensive pollution control programs will determine the pace of progress toward clean air.

SOLID WASTE. Piles of trash and rubbish, junk autos, paper and debris from picnickers pollute the riverscape. Flip-tops from cans cover the flats and cut bare feet. Bottles and cans litter pathways along the river's edge.

Solid waste produces breeding grounds for insects and rodents. More than a nuisance, litter even now discourages many visitors from enjoying the Riverfront. This trash, whether dropped in its final resting place or floating down on the river's currents, is physically and psychologically unhealthy.

Cleaning up what's there, locating trash pickup areas, developing a regular pickup program and controlling floating debris entering the river is part of the solution. Enforcing a stringent anti-litter ordinance with an accompanying public education campaign is another. But the major cause of Riverfront litter is the lack of a Riverfront image—people will throw trash into the City's backyard, but will respond differently when the special integrity of the Riverfront's public spaces becomes apparent through development.

NOISE CONTROL. On the river flats of the Lower River a delicious quality of silence in the midst of the City prevails, with only faint sounds of bridge traffic descending into the gorge, cushioned by its depth.

Upstream, however, the noise of traffic on bridges close to the water level be-

comes more strident. Junkyards and other industries are often obtrusively noisy, but many are fortunately clearly separated from residential areas.

The Minneapolis Pollution Control Division tests noise levels at different points throughout the City in accordance with the local noise control law of 1971. Daytime hour limitations for use of construction equipment and outdoor implements exist, and maximum noise levels for motor vehicles including motorcycles have been adopted, establishing diminishing limits for new vehicles over the next three years.

Aside, however, from supporting legal control over "loud, avoidable, unnatural, unnecessary" noises, Riverfront plans must carefully separate residential, entertainment, quiet open space, and industrial uses so that noise levels will be appropriate to the character of each area. Where residential areas border major traffic arteries, the siting of buildings must take noise level into consideration.

VISUAL IMAGE

Despite the strong linear form of the river gorge, little Riverfront identity of a positive nature exists in Minneapolis except along the Lower River. Signs, bridges, and buildings have been constructed to serve individual purposes without being integrated parts of the environment. Historic landmarks are obscured in the midst of urban decay. Mixed uses blend into each other and into open space without clear definition or transition. Open space areas are segmented and frequently inaccessible to all but the most agile. The Downtown skyline is divided and distant from the river. The lack of a coordinated environment and the misuse and mislocation of environmental detail combine to deny MISSISSIPPI/MINNEAPOLIS a positive identity.

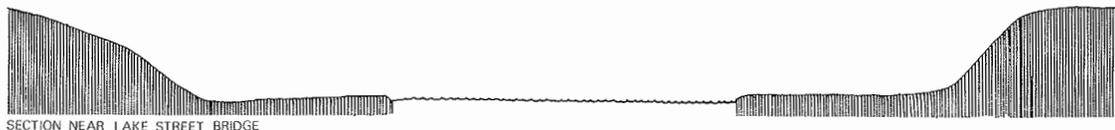
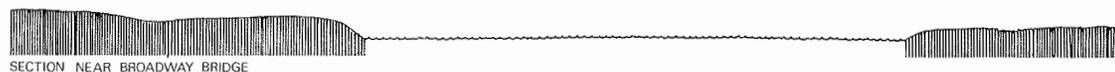
RIVER IDENTITY. The river is not a lake—its linear character resembles the trunk of a tree with roots spreading out through northern Minnesota. It ties the Twin Cities to each other, to the rest of the state, and to the lower valley of the Father of Waters. The river's constant flow and ever-changing nature can cultivate an atmosphere of excite-



2. Trash along the river's edge discourages visitors.



1. Greater advantage should be taken of views down the length of the river gorge.



Above Falls

Below Falls

2. Where the falls have cut their way through the rock, river bluffs contrast sharply to shallow banks above the falls.

ment—at the same time persuading river flat hikers, 80 feet below its bluffs, that they are in a natural open space cushioned from the noise and pressure of the City.

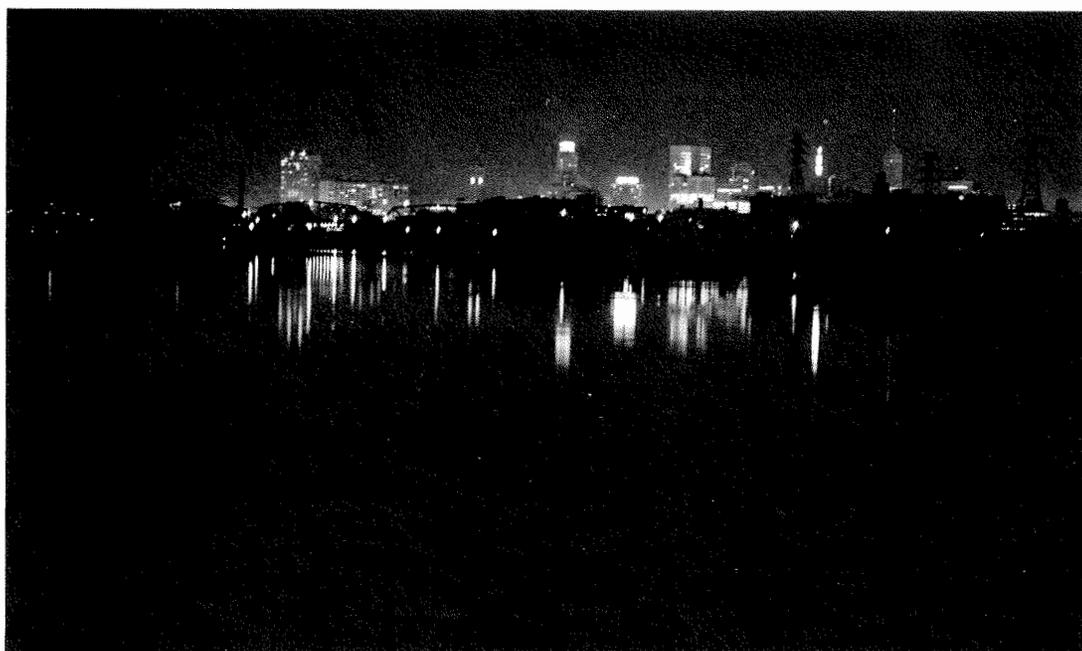
Yet even though it deserves the rich compliment of a coordinated environment, the inherent identity of the river is obscured through most of the City. The strong linear form of the gorge should be emphasized by sculpted architecture at the top of the bluffs and by protected and varied greenways edging the water. Notable structures serving cultural, educational, and residential needs would attract interest to the river area and provide a setting for many of the other activities which would occur there. These new buildings, flowing along the face and rim of the bluffs, interlaced by extensions of

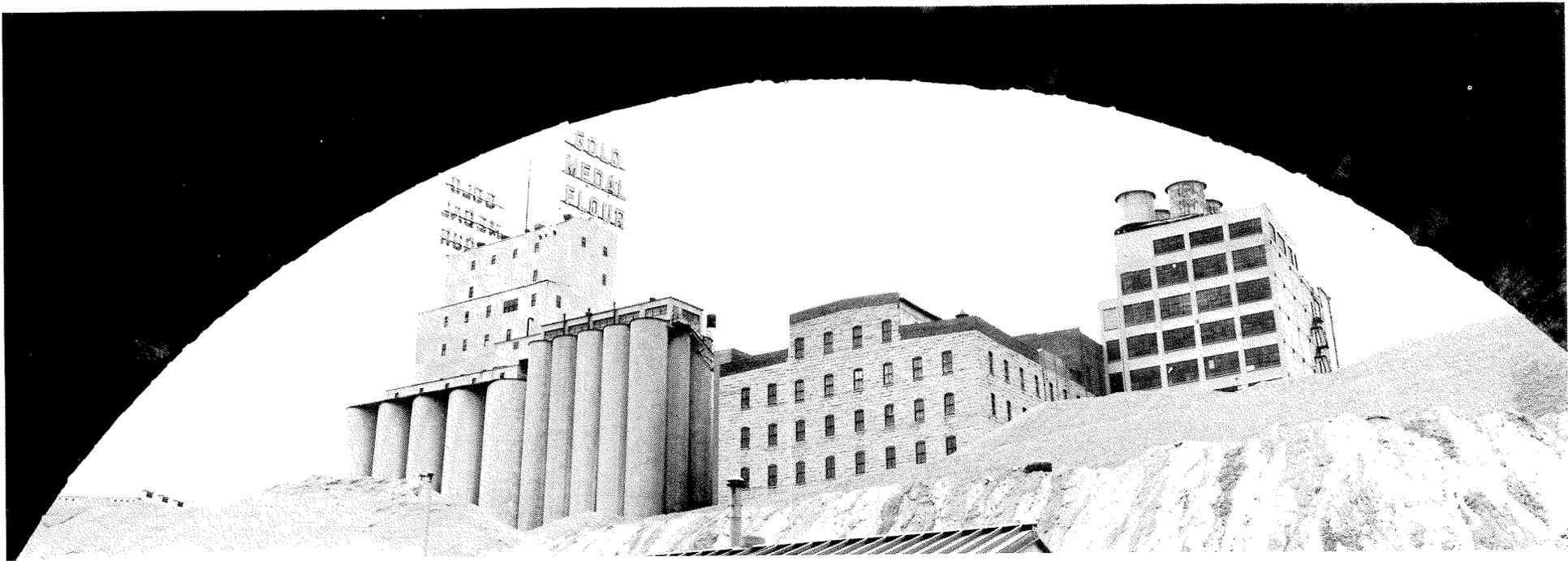
river edge greenery, could be shaped to pinpoint and complement existing landmarks—the historic structures of Main Street or the grain elevators which keynote the midwest skyline.

The Riverfront is pale and bland, especially during the long, white winter. More color should be introduced into Riverfront buildings, outdoor furniture, and other architectural detail. Much greater use of color might also be employed in river industry; cranes and derricks, barges and barge tows could be painted in a range of hues adding to the details providing for visual interest.

River area vegetation lacks variety as well. Additional color could be introduced in both soft and hard-edge areas by using more wild and cultivated flowers, fruit trees, evergreens,

3. The river reflects little light as it flows through the City at night.





1. Grain elevators, the hallmark of the Midwest, form a striking geometric image on the Central area skyline.

and trees and shrubs providing seasonal color variation.

Visual identity with the river is nearly non-existent for a motorist in the central or northern Minneapolis areas. A movement plan should provide facilitated and visually reinforced access to Riverfront activities.

Existing confusion of incompatibly mixed uses denies clear identification of Riverfront districts. This deficiency becomes most apparent after dark, when the Downtown skyline appears in the distance on the west bank without foreground detail, and when the only light on the east bank is on signs and buildings along major arteries unrelated to the river environment.

Two principles contributing to the creation of a dynamic, yet ordered river environment must be developed jointly. First, a higher degree of subarea or district identity must be created. Second, the transition from one district to another should be physically and visually comprehensible. This means that boundaries between districts should in many cases be reinforced, yet at the same time they should be penetrable to provide continuity.

Within each district a potential for individual identity exists. This can be created by the unique relationships between activities and the structures, spaces, and design detail that they require.

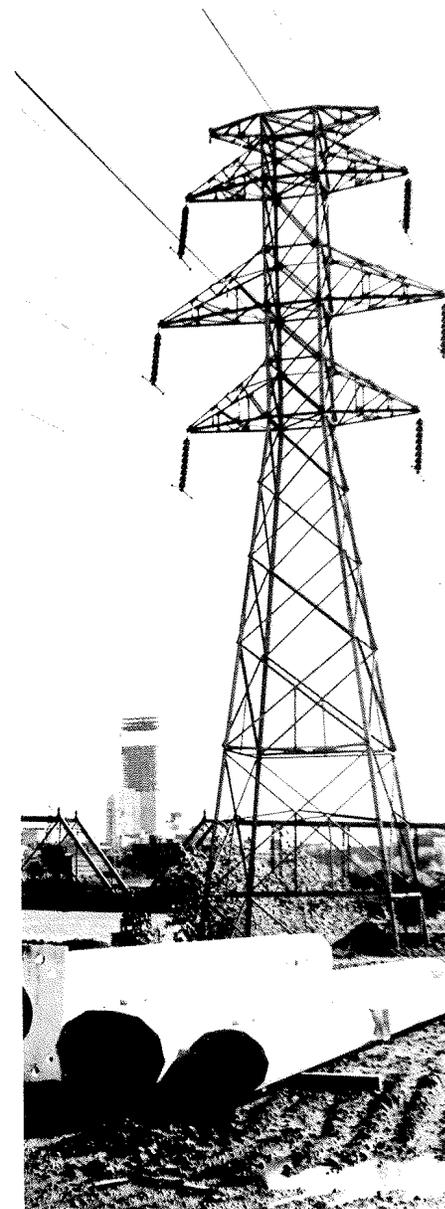
Design controls are required to achieve such organization, but should not be so rigid as to produce sterility. Coordination must be balanced by flexibility and opportunities for individual expression if the viewer is to encounter diversity of experience as he moves into and through the sequential spaces of the river area. A sense of balance and of visual harmony will foster personal harmony—creation of visual identity will offer personal identity.

VISUAL POLLUTION. Visual pollution does not disturb physical health as do air and water contaminants—but clutter and confusion do create psychological malaise.

A motorist crossing the river in the Central area on the Third Avenue Bridge, for example, is confronted by signs, billboards and buildings until, without notice, he is on the bridge, concerned with negotiation of traffic and little able to appreciate a river vista. During the crossing he faces more billboards mounted on buildings or standards on the opposite side. Billboards clearly do not belong on the Riverfront.

High voltage electrical transmission lines, and the poles and towers which support them, march up the river bank on Hennepin and Nicollet Islands, the North Loop, and both sides of the river above Plymouth Avenue. Service lines of lower voltages are found along

2. Electrical transmission towers and lines obstruct river views.



streets and alleys throughout the Central and Upper River areas.

Both the extreme height and erector-set character of the high tension towers disturb potential long-range vistas as well as the character of their immediate surroundings. The towers are 12-15 feet square at the base, making them difficult to handle both functionally and aesthetically. And the larger, 115,000 volt transmission lines pose a potential danger to increased public use of the river, as well as creating visual pollution. A program of burying all lower voltage lines as well as high voltage lines in the Central area should be coordinated with area redevelopment.

Added to the visual pollution created by signs and power lines is the whole mixed bag of inappropriate land uses and decaying buildings.

To eliminate visual pollution and to add visual distinction to the Riverfront area, a central focus of diverse and intensive activity, clear spatial differentiation of homogeneous districts and of historic landmarks, and strong visual connections between districts must be designed. Regulation of signs, clear definition of gateways to the river, elimination of large above ground transmission lines and towers, and variation within a harmonious whole of architectural and



landscape detail would set the pace for an aesthetically pleasing and ordered Riverfront environment.

HISTORIC SITES

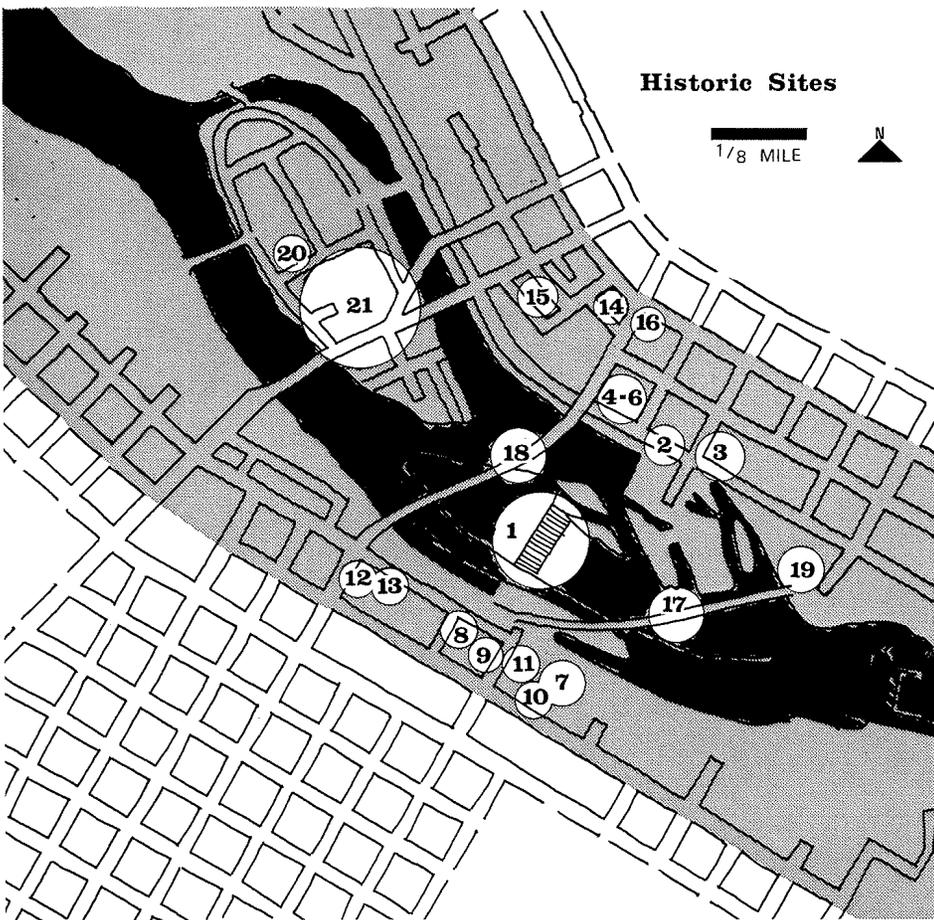
While every building and every space on the river has its place in the chronology of history, a clear line of distinction must be drawn between those of significance and those which have merely tagged along. Would that we could accurately forecast which of the more recent physical structures will in the future tell the story of this age. But can we?

The St. Anthony Historic District, recently accepted into the National Register, is described as: The area bounded by the proposed I-335 right-of-way, University Avenue, 6th Avenue S.E. extended to 10th Avenue S., and 2nd Street S. Below are listed sites that have, to date, been identified as being of major significance in this district:

1. **FALLS OF ST. ANTHONY**
First known for its natural beauty, the 35 foot high (approximately) waterfall was the most abrupt drop in the Mississippi's 2,200 mile course. The waterfall soon became the power source for the growing flour and lumber industries of Minneapolis and St. Anthony. Because erosion of the bottom sandstone and limestone layers caused the falls to retreat upstream, engineers in 1870 covered the waterfall with a wooden apron to control waterpower. When floodwaters destroyed this wooden structure in 1952, a concrete apron replaced it. The Upper Harbor project, completed in 1963, established locks along the side of the falls, making the river navigable through Minneapolis.

2. **OLD MAIN STREET**
Cobblestoned Main Street, fronting the east bank of the Mississippi, was a major thoroughfare in St. Anthony, since the street contained many businesses and the railroad station. It was also a well traveled route for the Red River oxcarts going from St. Paul to North Dakota.

3. **PILLSBURY "A" MILL**
(1881; 116 3rd Avenue S.E.). This mill is the most imposing structure on old Main. Built in 1880-81 by L. S. Buffington, the six story limestone structure was the largest mill in the world at the time of its completion. Fundamentally unchanged in appearance, the mill has a curved, slightly



concave principal facade—due probably to the settling of the building—and arched window groups. The “A” Mill more than any other building symbolizes the role of Minneapolis as a major U.S. flour milling center from 1880-1930. Alongside the mill stands a grain elevator constructed in 1910 from glazed tile blocks, a notable departure from the traditional construction material, poured concrete.

4. UNION IRON WORKS BUILDING (c. 1879; corner of Main Street S.E. and 2nd Avenue S.E.). The Union Iron Works was founded in 1879 and established its headquarters in this three story stone building. The foundry was located in the basement, with offices on the first floor and millwright and pattern offices on the second.

5. 127 MAIN STREET S.E. (c. 1880; 127 Main Street S.E.). This three story stone building, one of the first buildings of any importance in the City, was used for a post office, hotel, and offices. Architecturally the building is of interest because of the quality of its design and workmanship. The stones of the arches are perfectly fitted with a very fine joint. Interior details were unusually refined for the frontier period in which it was built.

6. PRACNA BUILDING (1890; 117 Main Street S.E.). This three story brick building originally served as a saloon and residence in old Minneapolis. The structure is typical of a facade type of architecture, with three panels that run the length of the structure and four heavy

sheet metal turrets across the building cornice. This building has been restored and renovated; its top two floors are a private residence and the first floor an office

7. WASHBURN “A” MILL (1878; 701 1st Street S.). Two Washburn mills have stood on this site. The first, erected in 1874 and quite prosperous, exploded in 1878, reducing the City’s milling capacities by one-third. The present structure was built to replace the original mill. The Washburns imported the best equipment and newest processes in milling, notably a European iron roller process and a middlings purifier. These innovations greatly improved Minnesota flour in quality, and, consequently, in price. A six story limestone structure, the mill’s walls are five feet thick at the base, tapering to twenty inches thick at the top. A small plaque set into one wall describes the 1878 disaster.

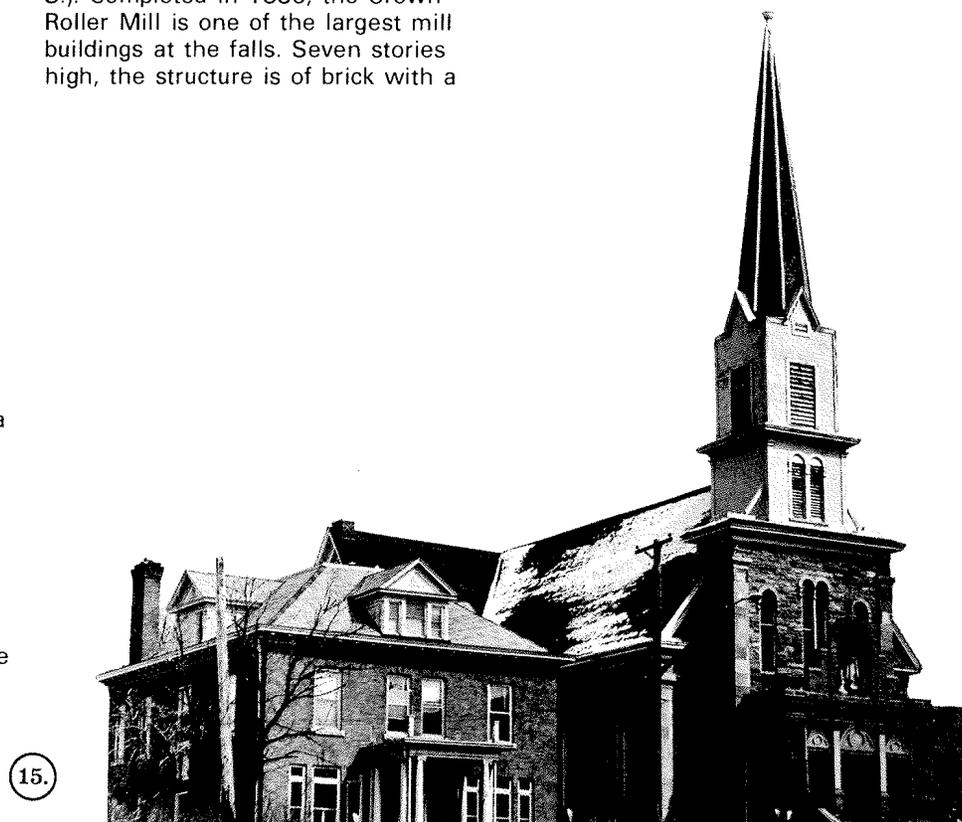
8. CROWN ROLLER MILL (1880; 507-09 1st Street S.). Completed in 1880, the Crown Roller Mill is one of the largest mill buildings at the falls. Seven stories high, the structure is of brick with a

heavy stone foundation. The mill had a daily capacity of 2,400 barrels of flour.

9. STANDARD MILL (1879; center of 6th Avenue S., between 1st Street S. and 2nd Street S.). This six story mill, brick with a stone foundation, was built in 1879. Its daily flour capacity was 1,200 barrels.

10. HUMBOLDT MILL (c. 1880; east side of 2nd Street S., between 7th Avenue S. and 8th Avenue S.). Built before 1880, the Humboldt Mill is a four story brick building which had a daily flour capacity of 700 barrels.

11. NORTH STAR WOOLEN MILLS (1864; center of 6th Avenue S., between 1st Street S. and 2nd Street S.). Begun in 1864, this was one of several woolen mills established at the falls as a result of a Minnesota sheep raising boom in the



1860's. Once bankrupt, new owners successfully reorganized the business, which became an important Minneapolis industry until the 1940's. The company manufactured scarves, flannels, yarns, and blankets in this five story limestone building.

**12. HALL AND DANN
BARREL COMPANY**

(1880; 3rd Avenue S. between 2nd Street S. and 1st Street S.). Completed in the fall of 1880, this four story brick structure was the largest barrel manufacturing establishment in the country at one time, turning out 6,000 barrels daily. The barrels were used for packing Minneapolis flour.

**13. OFFICE AND ENGINE
HOUSE (1878; 325 1st
Street S.).**

This one story brick building served as the office and engine house for the Minneapolis and Eastern Railroad. Completed in 1878, this railroad was one of those used

for switching and running cars to and from the mills over two miles of track.

**14. ARD GODFREY HOUSE
(1848; Chute Square).**

Ard Godfrey came to St. Anthony in 1847 to build a dam and sawmill for Franklin Steele at the falls. One year later, he constructed a frame cottage from lumber sawed at the mill. One of the first homes built in the new town, the 1½ story house represents the "Classic Revival" architectural influence reduced to its simplest terms. This influence can be seen in the design of the entrance, the pilaster strips at building corners, and in the simple frieze and cornice. The building was moved from its original location in the district and its kitchen removed. It now stands boarded up in Chute Square, the property of the City of Minneapolis.

**15. OUR LADY OF
LOURDES CHURCH
(1858; 21 Prince Street S.E.).**

scribed as the most elegant house of worship in the territory, this church was built in 1858 of native limestone. The owners, the First Universalist Congregation, sold the building to the Lady of Lourdes Congregation in 1877. Originally a rectangular building, the Lady of Lourdes Church was enlarged in the 1880's to include a transept, an apse, a sacristy, and a Gothic steeple. A new entrance was added and some interior redecorations made between 1914-1917. This church remains in use and is reported to be the oldest church in continuous use in Minneapolis.

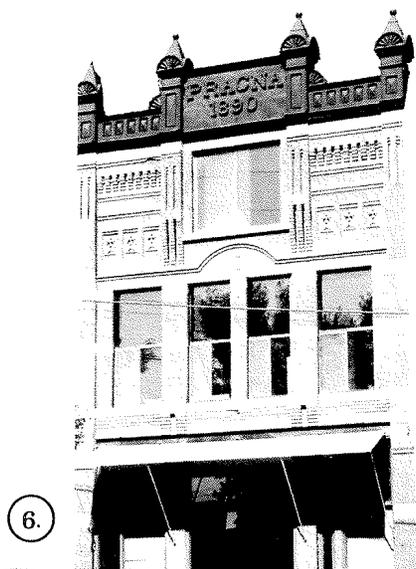
**16. PILLSBURY LIBRARY
(1904; 100 University
Avenue S.E.).**

"Built of Vermont marble, surrounded by spacious grounds, the new Pillsbury Library is considered one of the most beautiful public buildings in Minneapolis. The interior is furnished entirely in mahogany, even to the tables, shelves, and counters, and especially rich is the effect of the wide mahogany wainscoting."

(Minneapolis Times, Jan. 11, 1904.) The library closed in 1967 because of repair costs and the fact that the branch was no longer accessible to families living near the University.

**17. STONE ARCH BRIDGE
(James J. Hill Bridge)**

(1882-83). The Stone Arch Bridge is the oldest mainline railroad bridge in the Northwest. Built in 1882-83 by railroad magnate James J. Hill, it is believed to be the only stone arch bridge across the Mississippi and the second oldest railroad bridge across the river. Resembling a Roman viaduct, the bridge was so ambitious an undertaking for its time that residents called it "Jim Hill's Folly." Sweeping from bank to bank in a graceful curve below the falls, the bridge originally contained 23 limestone arches, measured 2,100 feet in length and carried double tracks. It stood unaltered until 1962, when two arches were replaced by a truss span to accommodate the passage of river craft.



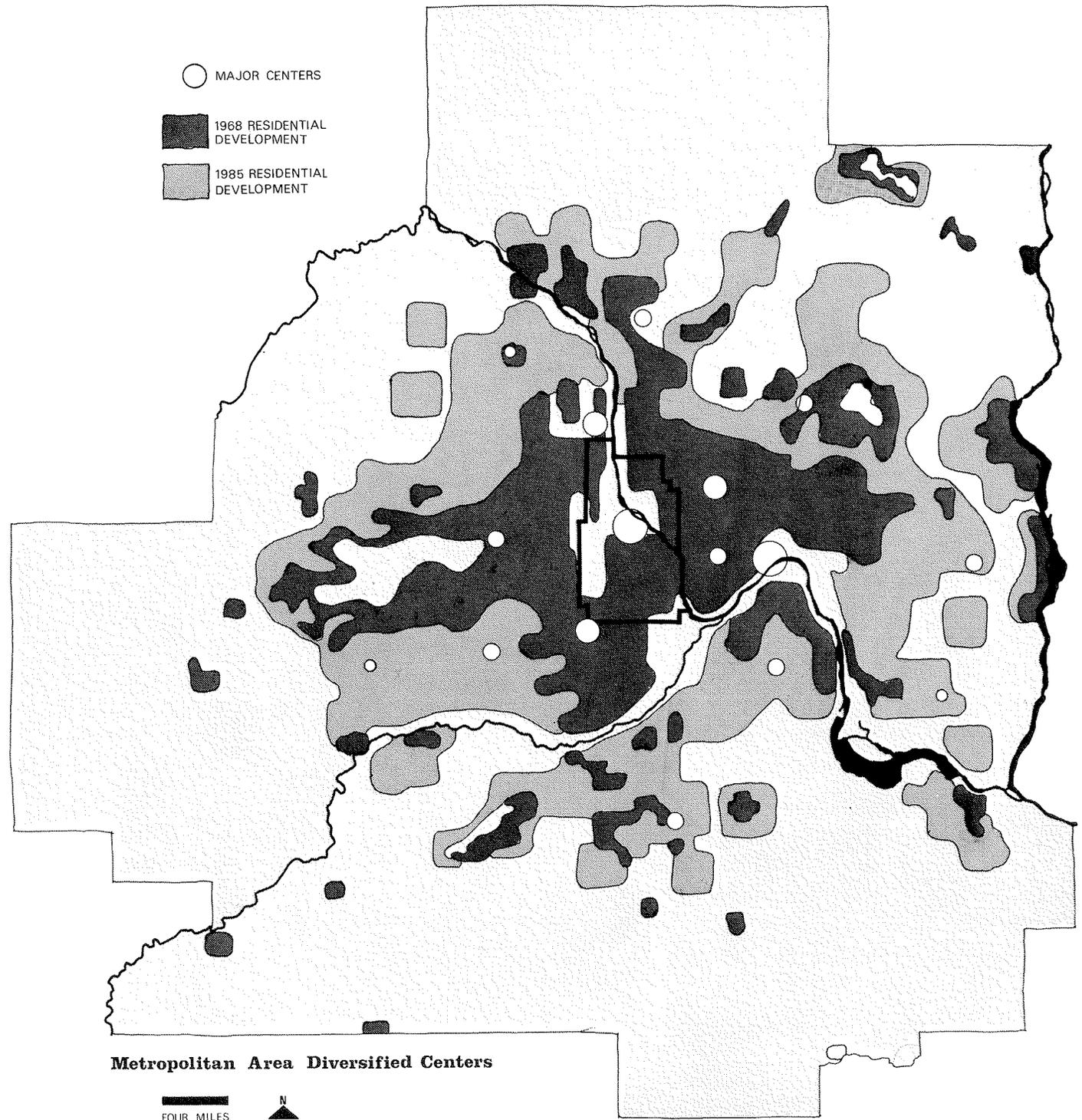
18. THIRD AVENUE BRIDGE (St. Anthony Falls Bridge) (1917-18). The Third Avenue Bridge spans the Mississippi in seven graceful catenary arches. Built in 1917-18 of reinforced concrete, this bridge exemplifies sound engineering principles combined with pleasing architectural design.

19. LUCY WILDER MORRIS PARK (On the river bank at 6th Street S.E.). This small river bank park marks the site from which Louis Hennepin first viewed St. Anthony Falls. The land here, part of the original claim of Franklin Steele, founder of St. Anthony, became the property of the St. Anthony Falls Water Power Company. Because of its historic import, the park ultimately was turned over to the Hennepin County Historical Society. Trees planted in 1927 honor three Minnesota educators (Folwell, Northrup, and Sanford), and a marker commemorates Hennepin's visit. Erosion has moved the waterfall from view.

20. EASTMAN FLATS (c. 1877; 2-16 Grove Street). At one time the island contained two long rows of fashionable dwellings built by William Eastman in 1877 at the "outrageous cost" of \$5,000 each. The residences were said to combine "convenience, comfort, elegance . . . and good taste." (Minneapolis Tribune, March 13, 1878) Although the two major sections of the flats have been razed, one short row of blue limestone buildings with cut stone trimmings and mansard roofs still remains.

21. NICOLLET ISLAND. Named after French scientist and geographer Joseph N. Nicollet, Nicollet Island has seen two types of development. The upper half of the island, once noted for its stand of maple trees, was a natural picturesque park. The lower half of the island was and still is used for industrial purposes because of its river frontage. Tunnels and tail races for mill exhausts still exist in the basements of riverfront dwellings. Today Nicollet Island is primarily a combination of industrial buildings and neglected dwellings.

These structures are the Riverfront's most important remnants of the past. Their existence provides merit for the creation of an historic district in the Central area. Their rejuvenation will accrue dividends in both visual impact and citizen education.



FUTURE

Throughout history, man has been confronted by an accelerating rate of environmental change. This change has, in countless instances, had dramatic effects on his way of life. Continuing environmental change will bring further alterations in personal and social needs, customs, and varieties of life-style.

While predictions of future change are essential to the planning process, they are extremely complex. Where, when, and how will such alteration take place, and what will these influences do to or for man? In planning and developing the future urban environment we must endeavor to better man's relationship to nature rather than to increase the existing disturbance of ecological balance. We must provide for a well-defined, yet flexible future context into which the unknown future man will fit.

In speaking of the danger of overpopulation, scientist-author Rene Dubos contends that the extreme adaptability of the human race may cause us to avoid solving problems until it's too late, and he warns that man will have to pay later for adjustments he makes to undesirable conditions.⁹ Plans must be effected now to design and guide the future. Such plans must recognize and further enhance the dignity of man in both his individual and social dimensions, and they must be based on a deep appreciation for all other forms of nature.

Imaginative assessment of broad socioeconomic trends combined with recognition of natural and historic assets provide the basic groundwork for effective Riverfront planning.

POPULATION GROWTH AND DISTRIBUTION

Twin Cities area growth matches nationwide patterns of metropolitan population growth and distribution according to results of the 1970 census.

Population increases during the last decade occurred primarily in suburban rings of metropolitan areas. The Twin Cities area grew from 1,523,956 in 1960 to 1,874,093 in 1970, a 23% increase, and is predicted to reach 2½ million by 1990, if present rates of growth continue.

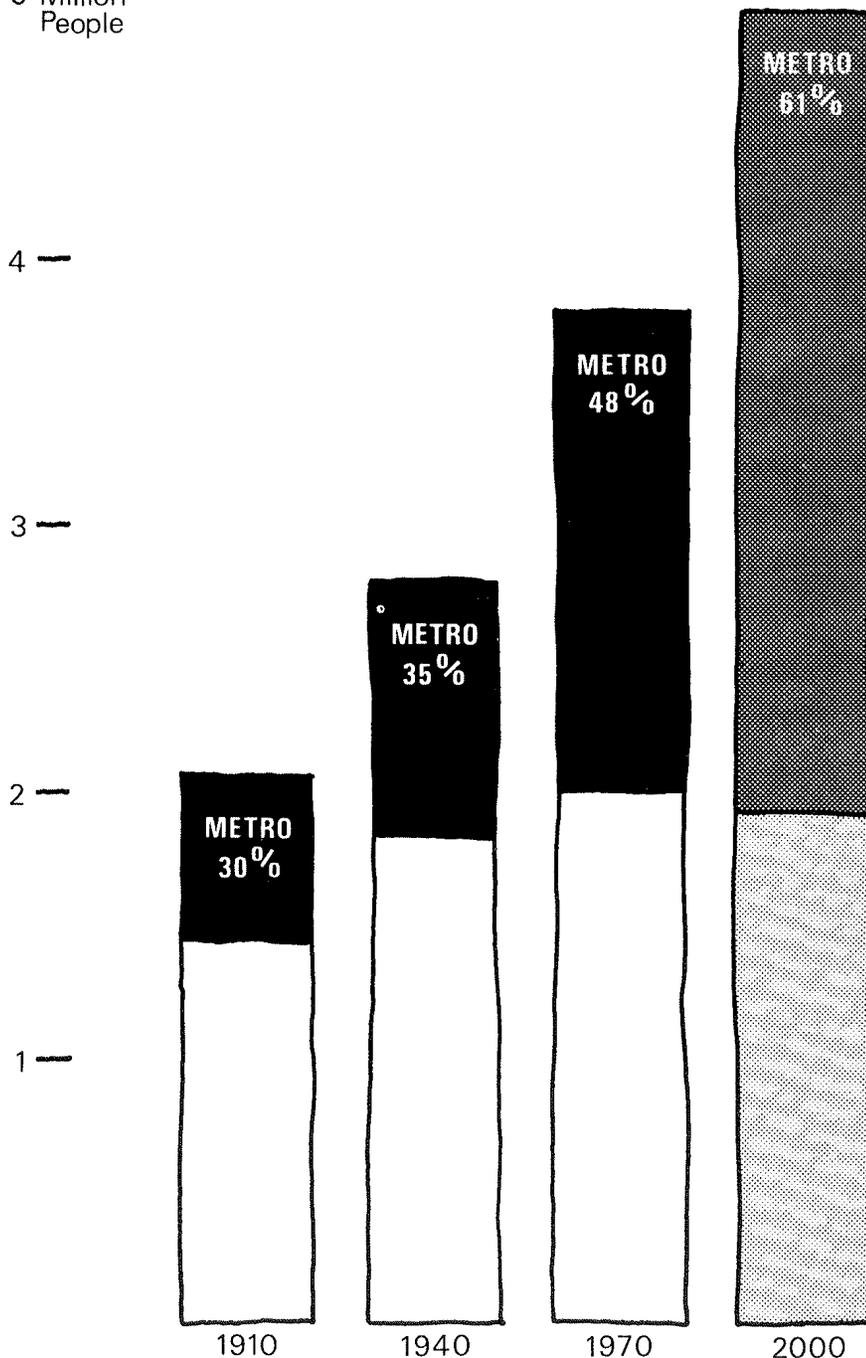
On the other hand, population has dwindled in the city cores of metropolitan areas. Minneapolis, like other central cities, lost population during the past decade.

Rural areas, likewise, have barely maintained or have lost population. Of Minnesota's total 391,000 population increase from 1960-70, 350,000 occurred in the Twin Cities metropolitan area.

The structure of population in Minneapolis has followed the national trends as well. Increased percentages of Central City residents have been either single 18-24 year-olds or over 65—are members of minority groups—and live in multiple housing units. And no major shift has occurred in the pattern of families with small children steadily moving to the suburbs.

As our population continues to spread across the 600 square miles of seven

5 Million
People



**Twin Cities / Minnesota
Population Growth**

counties, awareness is gradually developing among residents of the dispersed areas that they are all part of one large metropolis. Fostered by our Metropolitan Council, in the vanguard of U.S. urban planning, is a diversified centers plan for metropolitan development. According to the plan, the two Downtowns will become 1½ times as large as they are today. In addition, approximately 16 large, diversified suburban centers with 40 to 60 retail establishments like Har-Mar Mall and Brookdale will provide focus and identity for outlying communities. Freeways, along with improved mass transit, arranged along a radial pattern will connect the two Downtowns with the major suburban centers. Open spaces will contrast with and break up urban concentrations.

In the diversified centers growth pattern, Central Minneapolis will offer a compact variety of cultural and entertainment facilities as well as centralized commercial and economic services for the Upper Midwest. It will provide a vital hub for the dispersed elements of the sprawling metropolis.

The health of the metropolitan area must be led by healthy rebuilding of the core city, or growing social, economic, and racial disparities between city and suburb will become further polarized.

Riverfront development will assist in revitalizing the core city by attracting new tax-paying residents, by offering new cultural and entertainment facilities, by providing open space activity for urban residents, and by focusing interest and attention on the origins of the historic City.

In addition to population changes, other national trends build a case for transforming the Riverfront.

THE AFFLUENT SOCIETY

Technological development has created an affluent society in the United States. Luxuries have become necessities—work time has turned into leisure time—and material possessions have overflowed the market place.

An environmental crisis exists today—what of tomorrow? Recognition is coming from government and citizenry alike that the resource cycle must be closed—that technology can be harnessed to restore to nature the wealth that we borrow from it—that we must recycle waste products—that the social-economic organization of man must be brought into harmony with the ecosphere.

The Mississippi in Minneapolis has been misused. Polluted by upstream agricultural and sewage effluent, and within the City limits by urban runoff, electrical heat waste and combined sewer discharge—unused as it flows through the City except for water supply, navigation and as a carrier for effluent—its varied use potential and proper designation as a major resource for Twin Cities residents have been neglected.

The Riverfront Plan constitutes one step toward dealing with the environmental crisis by restoring to nature the wealth that we have borrowed from it.

WORK-LEISURE. The affluent society has also brought a multitude of advantages to the U.S. citizenry, among them increased leisure time.

U.S. INCOME GROWTH TO YEAR 2000

(A.I.A.: "CREATING THE HUMAN ENVIRONMENT")¹⁰.

	1955	1970	1985	2000
GNP, \$ billion	456	795	1,513	2,942
HOUSEHOLD INCOME, \$	6,400	9,000	13,500	24,700

Higher income, a 3-week vacation and a 38-hour work week have been predicted for 1985—and further adjustments to a 4-week vacation and a 36½-hour work week by the year 2000. Indications show that this is already a conservative projection. What difference will this mean in future life styles?

Outdoor Recreation Resources Review Commission (ORRRC) studies "show time as the major barrier to more indulgence in favorite outdoor activities—not money, health, or old age." By the year 2000, outdoor recreation demand is expected to triple, much of it within a short drive of people's homes.

Clearly the Riverfront plan is geared, in its activities and open space proposals, to making better use of the community's extended free time. Picnics, historic tours, bicycling, river boat tours, concerts—an enormous variety of leisure-time activities will welcome the Riverfront visitor.

Recent increases in boat and yacht sales have been dramatic. Provision on the river to accommodate new growth in boat ownership is necessary—as well as growth in the boat rental business—although increased boat usage may require increased regulation of boat traffic and pollution.

COMMUNICATION WITH NATURE.

The pressure of the pace and the numbers in urban life have precipitated for many a neo-Romantic desire to commune with nature. Urban residents are buying more personal property for country homes and lake cabins. Within the City, the parks provide release from city bustle, as well as more

free space for passive and active recreation.

HOUSING PATTERNS. A few of the contradictions in housing needs are summarized by architect Moshe Safdie: "We want to live in a small community and yet have all the amenities of a great metropolis; we want private dwellings with identity and yet the setting of a rich social life; we desire being near the open country and yet the city limits spread endlessly."¹¹ To realize such a "utopia" is to explore thoroughly the potential patterns of settlement in urban systems.

Another contradiction derives from the fact that technology has expanded man's mobility and consequently the sizes of city "limits" from a one-hour travel limit of 20 or 30 miles to 300 or 400 miles. But it can still take the hour to go the old 20 mile limit in a glut of city-suburban traffic. Even when one reaches the suburb, it still may be a project to reach open country.

Planners and architects must resolve the contradictions in providing for a full range of alternative personal choices. Among the choices available, Riverfront housing would provide a partial resolution to the contradictions—high-density housing surrounded by open space, close to mass transit or within walking distance of employment, in the midst of varied recreation, cultural, and entertainment facilities.

SOCIAL NEEDS. We face a crisis of decision. On the one hand we can allow a deteriorating central city to imprison the poor, the aged, the minorities, and the unemployed. Negro and white, well-to-do and poor, will move further apart both physically and

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socially. As a result, alienation, an absence of community and, consequently, of communal responsibility will be the shared burden of the populace.

Or we can seek a higher goal—a metropolis in which opportunities beyond those for mere survival are extended to the poor, in which minorities have an equitable share in the life and productivity of the community, and in which there is a general awareness and respect for the human condition.

What will be the physical image of such a place? The inescapable metropolitan sprawl will remain. But freedom of movement will replace congestion, pleasant open spaces and parks will erase blight, there will be a choice of housing for all income groups and, in total, a sense of order and variety. In this emerging metropolis, a revitalized central City will provide increasing job opportunities, an exciting focus of activity, and a strong link between the diverse elements of the metropolitan community.

Riverfront development, by providing improved locations for industry, open space access from existing low-income

housing areas, new mixed-income housing units, and attractions for visitors, is a natural and important part of the urban revitalization program.

POLITICAL REALITIES. Although it is essential, on the one hand, to look at our world in terms of the global economy and resources—it is equally essential to look the other way and share the planning process with individuals and small groups of people—community representatives who can mold a plan to their specific needs.

To avoid a society in 1990 which is regimented, overcrowded and maddening, people and planners must cooperate—to give the new image universal application. As Thomas Mann wrote: "We must define democracy as that form of government and of society which is inspired above every other with the feeling and consciousness of the dignity of man."¹²

Modern technology is creating a society of such rich and complex diversity that most people have a greater potential range of personal choice and wider experience than ever before. The common man now has the opportunity to establish his own identity.

Population pressure limits accessibility to privacy and to open spaces.

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