

MacKINNON RAVINE & GOVERNMENT HILL PARKS:
A Case Study in Edmonton's River Valley and Ravine System.

Prepared by:
Andre A. Schwabenbauer

A Practicum Submitted in Partial Fulfillment
of the Requirements for the Degree of
MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture
University of Manitoba
Winnipeg, Manitoba

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ABSTRACT

The North Saskatchewan River Valley and Ravine System is the most significant natural resource within the boundaries of the City of Edmonton, Alberta. The System has been protected for parks development through river valley area development by-laws. The recreation development of this resource, however, must consider the natural character and environment so that facilities are integrated into the System.

This study examines the application of an integrated approach to recreation planning, program development and conceptual landscape design for an undeveloped segment of the System. The 60 ha. study area includes Government Hill Park to Ramsey Ravine and the MacKinnon Ravine Park. The methodology identifies; policies established to guide planning for the remaining undeveloped segments of the System; existing recreation activities, regional and neighborhood recreational needs, and the capability and suitability of the study area to accommodate different types of recreation land use. The recreation activities as identified in the suitability analysis are evaluated to establish a design program and a framework for the development of a conceptual plan. A concept plan is prepared for the study area which illustrates a creative and perceptive design for the program activities.

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5.	The City of Edmonton Archives.
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19. - 51.	Author.

1. INTRODUCTION

Residents and visitors alike require very little time in appreciating the North Saskatchewan River Valley & Ravine System as the most significant natural resource within the boundaries of the City of Edmonton, Alberta.

As a youth living in a suburban community in the west end of Edmonton, my contact with the River Valley & Ravine System was initially limited to special occasions such as family outings to a park or programmed event such as the annual Sourdough Raft Race. Later trips followed as I ventured the 2 km from home to the System on a bicycle. These experiences in the System developed my appreciation of this open space as a resource requiring significant protection from any form of development.

This appreciation was significantly reinforced by the state of development in the area known as the MacKinnon Ravine. It disturbed me to see the amount of alteration that resulted in the valley bottom having been stripped of vegetation, levelled and a sub grade prepared for a roadway complete with manholes extending 2 m above grade at an interval of 30 - 50 m down the center of the ravine. About the same time that I experienced the destruction of the natural environment of the MacKinnon Ravine, the City of Edmonton was proceeding with the implementation of the Capital City Recreation Park. Sixteen kilometers of the River Valley and Ravine System was being retained as recreational open space and developed with parks, separate bicycle and walking trails, picnic areas, shelters, and pedestrian bridges across the North Saskatchewan River.

When I first toured the completed Capital City Recreation Park, I began to understand the potential for the remaining undeveloped sections of the System including those Ravines that I had experienced in my youth. This potential has been further enlightened through my studies in the department of Landscape Architecture at the University of Manitoba.

This practicum is intended to illustrate a comprehensive understanding of how those ideas can be developed, refined, and implemented. It begins by investigating the history that has shaped the existing System. It then explores the potential of a planning and development process on an undeveloped segment of the System. It results in the integration of a proposed development program with the art of landscape architecture in producing a concept plan for the study segment.

1.1 GOAL & OBJECTIVES

.1 GOAL

The goal of this practicum is to explore the practical application of existing knowledge and Landscape Architectural skills to the development of a recreational design program and concept plan for the open space within the MacKinnon Ravine, Ramsey Ravine and Government Hill Park segment of the North Saskatchewan River Valley and Ravine System.

.2 OBJECTIVES

The following broad objectives are developed to fulfill the study goal:

- [A] To inventory, and analyze the physical, biotic, cultural and political factors acting within the study area.
- [B] To identify existing River Valley and Ravine System recreational land use and standards.
- [C] To identify regional recreation needs.
- [D] To identify community recreation needs.
- [E] To develop suitability criteria that are based on current facility standards and River Valley and Ravine System policy.
- [F] To evaluate potential and existing recreational land uses against capability criteria.
- [G] To evaluate potential and existing recreational land uses against suitability criteria.
- [H] To develop a concept plan which is consistent with River Valley and Ravine System objectives.
- [I] To utilize computer software and hardware in the production of an integrated practicum document.

1.2 METHODOLOGY

The following methodology has been developed to guide the study. This methodology is comprised of four major components (refer to figure 1):

- [A] BACKGROUND
- [B] DATA ANALYSIS
- [C] PROGRAM DEVELOPMENT
- [D] DESIGN DEVELOPMENT

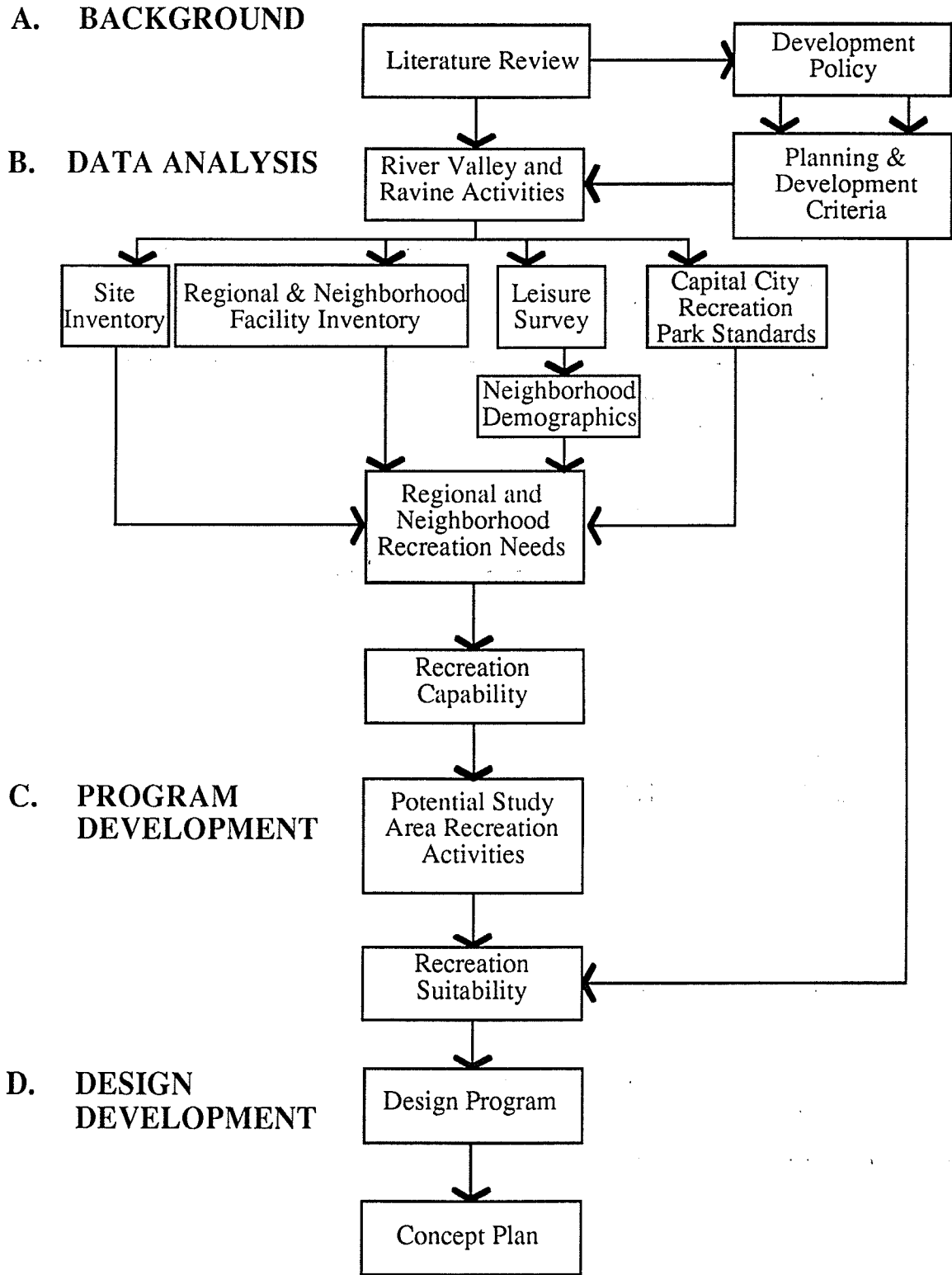


Figure 1. Methodology Diagram.

A BACKGROUND

The background stage of the study includes a review of pertinent literature in order to identify existing River Valley and Ravine recreation activities and development policies for the undeveloped segments of the system.

A.1 Literature Review

A review of related information on the North Saskatchewan River Valley and Ravine open space system, and the MacKinnon Ravine and Government Hill Parks segment. This will include a brief literature review of resource analysis and assessment methods related to the conservation, preservation and recreational development of urban river valley systems. More specifically, documents that direct development within the North Saskatchewan River Valley and Ravine System are to be reviewed.

A.2 Development Policies

The City of Edmonton has developed specific policies in order to manage and direct development within the North Saskatchewan River Valley and Ravine System. These policies control the type, relative location, and variety of recreation activities to be developed. This methodology recognizes the significance of these policies by formulating development criteria that will be used to determine suitable recreation activities for the study area.

B DATA ANALYSIS

Stage two of this methodology outlines the application of existing data in order to derive potential study area recreation activities. This data includes a facility and program inventory, leisure survey, site inventory, Capital City Recreation Park and Mill Creek Park standards, and a recreation capability analysis.

B.1 River Valley and Ravine Recreation Activities

A review of literature and examination of the North Saskatchewan River Valley and Ravine System will result in an inventory of existing recreation activities. This inventory of activities will be used to determine the potential recreation activities for the study area.

B.2 Facility Inventory

An examination of the recreational facilities developed within the River Valley and Ravine System is required to better understand the range and intensity of recreation use. This inventory will avoid the duplication of facility development in other parts of the system. It will also indicate expressed needs based on current leisure activity facilities. The facility inventory contained in the Resource Analysis Study represents the regional scope of recreation development. Planning Department "Neighborhood Fact Sheets" provide information for the neighborhoods adjacent to the study area. A written analysis of the inventory will accompany a table that lists facilities within the system. A plan that locates the facilities within the river valley and ravine system will be prepared. A plan and tables will also be produced for the adjacent neighborhood data.

B.3 Leisure Survey

In order to draw some conclusions to regional and neighborhood recreation needs, the 1981 City of Edmonton Leisure Survey contained in the Resource Analysis Study will be reviewed. A comparison of facilities noted in B.2 and activity and participation rates in the leisure survey will provide an indication of regional recreation needs. The comparison method is required in order to propose an equitable distribution of recreation resources throughout the system. Expressed needs were determined by current leisure activity patterns. The leisure survey also identifies a demographic relationship between participation and activity. This demographic organization will allow for a comparison of neighborhood demographics in order to determine potential neighborhood needs. A table of the 1981 leisure survey results as well as tables illustrating demographic relationships of the study area neighborhoods and leisure survey will be accompanied by written analysis.

B.4 Site Inventory

Historic resources, significant cultural features, and current recreation uses within the study area will be identified, mapped, and incorporated in the capability analysis.

B.5 Capital City Recreation Park Standards

A field review and documentation of trails, shelters, bridges, playgrounds, access routes, parking areas, viewpoints, picnic areas, boat docks, sliding hills and other recreational activity amenities within the Capital City Recreation Park and Mill Creek Ravine Park will be completed. This review will establish a 'standard' or desirable level of service

experienced by users of the existing system. It will also establish types and frequency of recreation development required to maintain that level of service throughout the system while avoiding the duplication of services. The standards will also be used in the development of suitability criteria to be used in determining the final proposed study area recreation activities.

B.6 Regional and Neighborhood Recreation Needs

A list of regional and neighborhood recreation needs identified in the facility and program inventory, leisure survey, site inventory and Capital City Recreation Park standards will be prepared for capability analysis.

B.7 Recreation Capability

The Resource Analysis Study defines recreation capability as; the ability of land to sustain recreation uses based entirely upon environmental criteria such as soil, vegetation, and topographic characteristics. All recreation activities identified in B.6 will be compared with the capability analysis process identified in the Resource Analysis Study. Only those activities are rated at a minimum capability level or higher will be considered in the program development.

C PROGRAM DEVELOPMENT

The design program for the study area will be derived from a suitability analysis of the recreation land uses identified in the data inventory stage.

C.1 Potential Study Area Recreation Activities

All recreation activities identified as regional and neighborhood needs and Capital City Recreation Park and Mill Creek Ravine Park standards having a minimum capability level or higher will be identified as potential study area recreation activities.

C.2 Development Criteria

Quantitative and Qualitative development criteria will be developed following a review of the development policies contained in The North Saskatchewan River Valley Area Redevelopment Plan, and Capital City Recreation Park Extension Position Paper, (A.2).

These criteria will be used to evaluate the potential study area recreation activities in the subsequent suitability analysis.

C.3 Recreation Suitability

Suitability is defined as the acceptability of a given parcel of land to accommodate different types of recreation land uses.¹ The suitability analysis of this study will include an application of the suitability analysis process in the Resource Analysis Study following the development of qualitative and quantitative requirements for each proposed recreation activity. A matrix will be used to evaluate potential recreation activities against development criteria. This matrix will prioritize the regional and neighborhood recreation activities suitable for development in the study area should their suitability overlap for any given area of the study segment.

C.4 Design Program

The proposed development activities that achieve the highest suitability rating and compatibility with development criteria will serve to form the design program for the MacKinnon Ravine, Ramsey Ravine and Government Hill Park.

D DESIGN DEVELOPMENT

The design development phase will explore the evolution of a concept plan based on the design program developed for the MacKinnon Ravine and Government Hill Parks segment. A rendered plan of the design will be produced at a scale of 1:1,000 metric. Appropriate sections and diagrams will accompany the plan in order to fully express the design concept conceived for the study area.

¹ Marshall Macklin Monaghan Western Limited, "North Saskatchewan River Valley and Ravine System Resource Analysis: Technical Report", 1983, p. 68.

1.3 PROJECT STATEMENT

The North Saskatchewan River Valley and Ravine System is the most dominant physical open space feature within metropolitan Edmonton. This significant natural resource has extensive regional recreation potential within its 7,425 ha. area. The development of Capital City Recreation Park and Mill Creek Ravine Park demonstrate the potential for sensitive integration of built form and natural environment in order to retain a high quality experience for users of the system. However, what does the future hold for the remaining undeveloped portions of this system?

To realize the goals of the North Saskatchewan River Valley Area Development Plan and the Capital City Recreation Park Extension Position Paper requires a creative and perceptive approach to recreation planning and design. A methodology must be developed which incorporates an understanding of leisure activities and trends, regional as well as community recreation needs, existing standards of service, jurisdictional policies, goals, and objectives, physical and cultural landscape features, and the capability and suitability of a site for recreation development.

The methodology presented in this study is focused on achieving the overall goal of determining the highest or best proposed recreational land use that provides for the preservation of the natural character and environment of the System. It will be tested on an undeveloped segment of the North Saskatchewan River Valley and Ravine System. The proposed recreational land use(s) will establish a design program from which a conceptual landscape plan can be prepared. The concept plan will illustrate the recreation potential of the study area within the primary context of the River Valley and Ravine System, and the secondary context of its adjacent communities.

1.4 CASE STUDY, SCOPE & LIMITATIONS

The segment of the North Saskatchewan River Valley and Ravine System selected for this practicum study is approximately 60 ha., (150 acres) in size (refer to figure 2 & 3). It extends from Government Hill Park at Groat Road on the east to 149 Street (the western edge of the MacKinnon Ravine). It also includes the Ramsey Ravine to the north and the North Saskatchewan River forms the southern boundary. This segment of the System has been selected as its edges are well defined. The central location, the historical development within and adjacent to the site and the combination of River Valley and Ravine lands were also desirable factors in the author's selection of the study area.

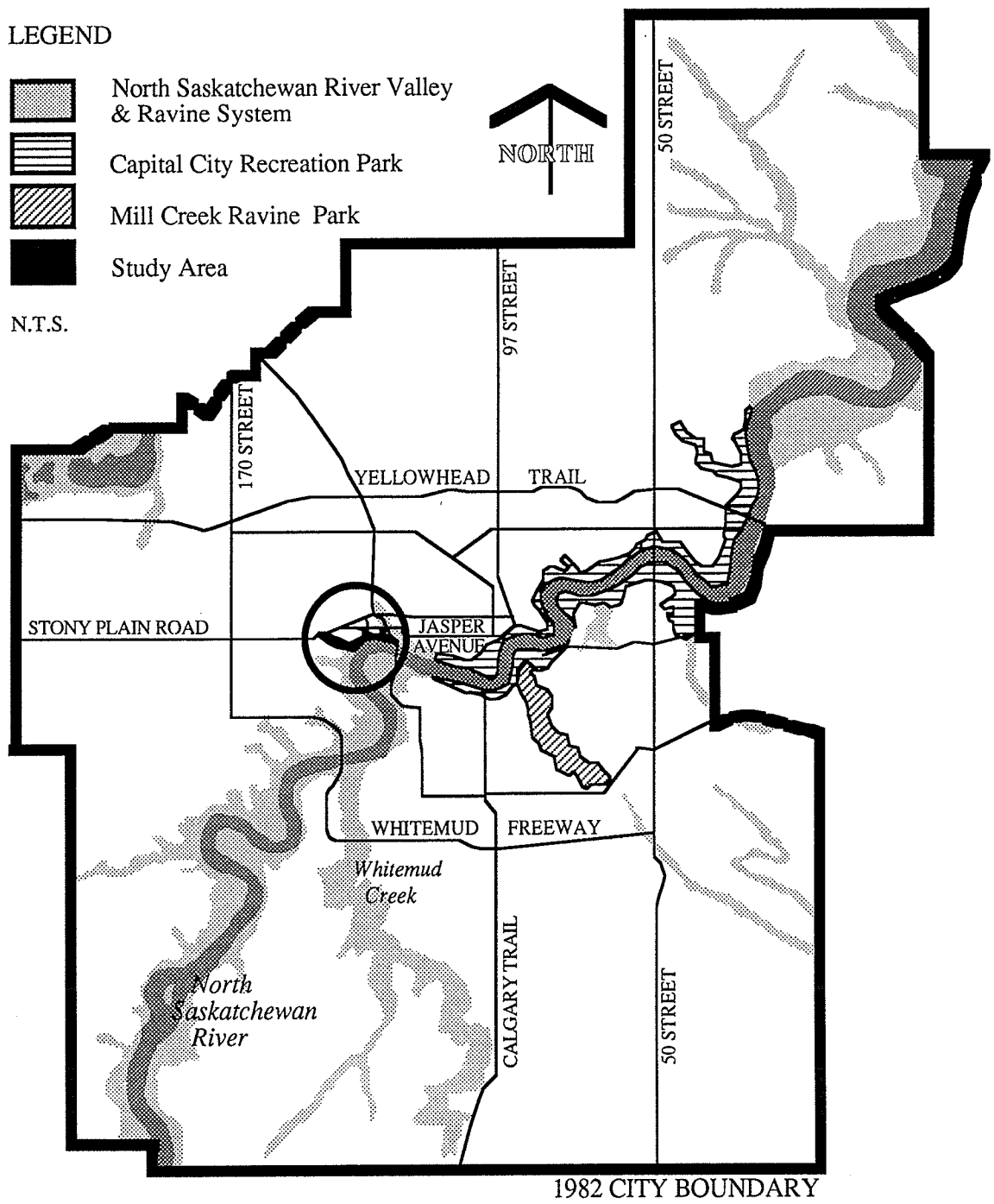


Figure 2. Study Area Location Plan.

The edges of the study area are defined by the river and creek valley top-of-bank limits of "The North Saskatchewan River Valley and Ravine System Biophysical Study". The western edge provides access to the system for the suburban residential neighborhoods of Crestwood, West Jasper Place, Canora, and Grovenor where the MacKinnon Ravine terminates (refer to figure 3). The boundaries of these neighborhoods and that of adjacent Glenora and Westmount are defined by the City of Edmonton Planning Department West, and Northwest district "Neighborhood Fact Sheets" (September, 1983).

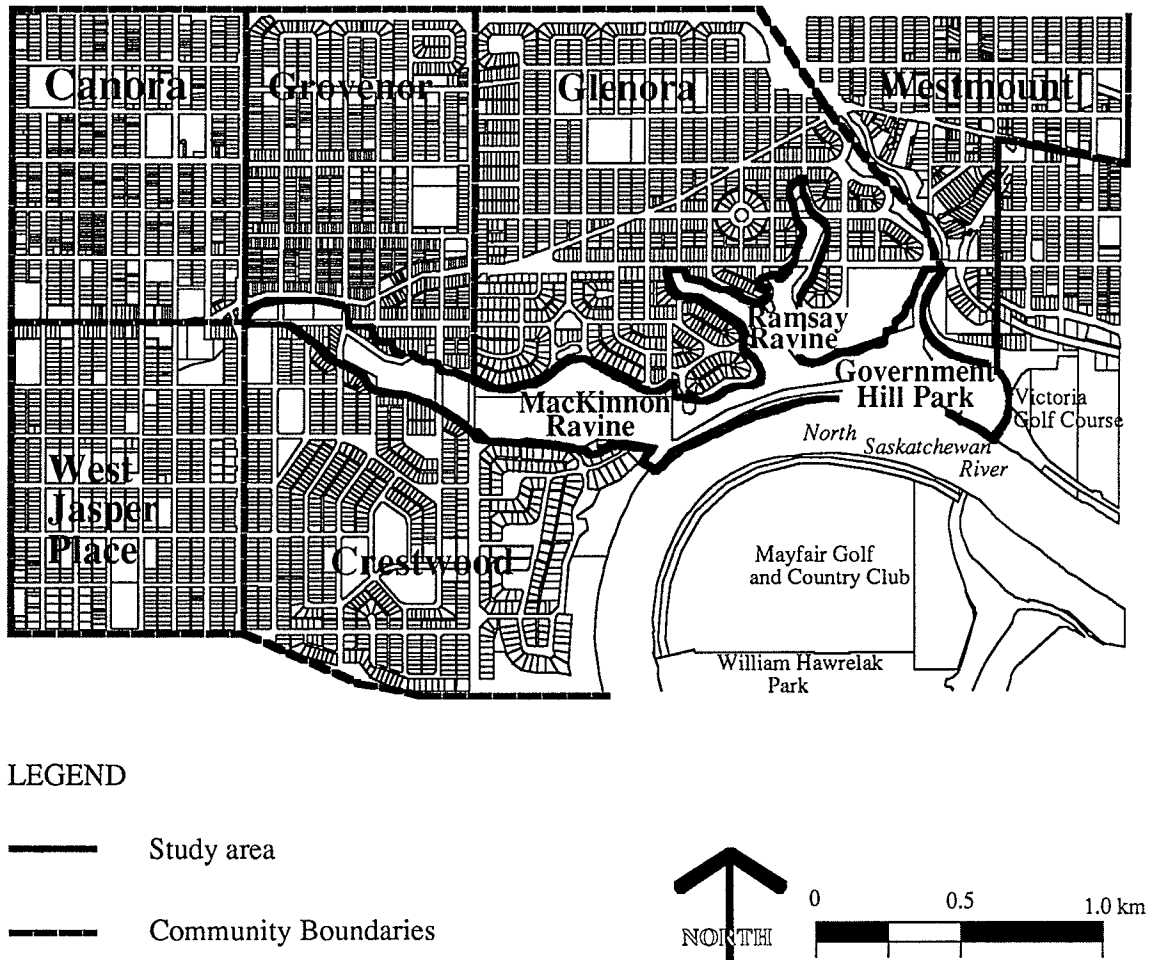


Figure 3. Study Area and Adjacent Community Boundaries.

The historical development of this site can be traced back to the 1883 registered survey plan of the Settlement of Edmonton (refer to Figure 14). The western edge of this plan illustrates the Groat, Ramsey and MacKinnon Ravines. The first two and a portion of MacKinnon Ravine are located within River Lot #2 which was registered to Malcolm Alexander Groat. Mr. Groat was an employee of the Hudson's Bay Company and among the first to settle outside of Fort Edmonton. The development of Groat's land in Glenora produced one of the more exclusive communities in the City of Edmonton. In addition, the official residence of the Lieutenant - Governor of the Province of Alberta (completed in 1913) was constructed at the top of the river bank between the Groat and Ramsey Ravines.

A search in the City of Edmonton Archives established 1924 as the first available year for air photographs of this area. Sequential plans were generated which reveal the pattern of development from 1924 - 1978, and the study area boundaries (refer to figures 4 through 11).

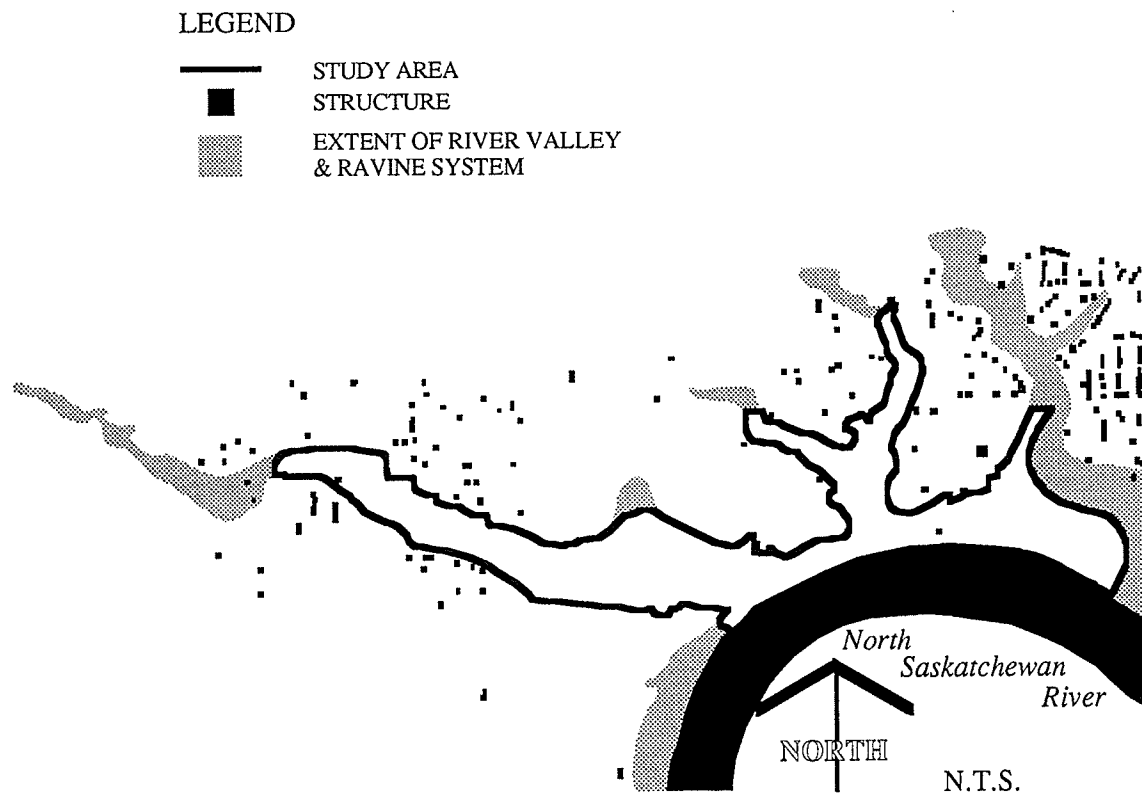


Figure 4. Residential Development Adjacent to the Study Area, 1924.

The plan for 1924 (refer to figures 4 & 5) indicates that the extent of growth in the City has moved westward and reached the subdivision of Glenora on Malcolm Groats River Lot #2. All three Ravines are relatively unspoiled and extend to their full watershed lengths. All of the ravines have been bridged to provide access to the adjacent lands which appear to have been surveyed for residential development. The fairway and green layout is evident across the North Saskatchewan River of the Mayfair Golf and Country Club (opened it's first nine holes in 1921).² One can also identify the original rail line that climbed the bank from the east and reached the top within the Groat Ravine. This line was in operation over it's entire length until 1952.



Figure 5. Air Photograph of the Study Area, 1924.

² Dennis Person, and Carin Routledge, EDMONTON Portrait of a City (Edmonton: Reidmore Book, 1981), p. 68.

The 1944 air photographs begin to illustrate the growth of residential development on the western end of MacKinnon Ravine (refer to figures 6 & 7). Streets begin to fill in and divide the head of the ravine and numerous residences have been built in the adjacent neighborhoods of Grovenor, Crestwood, Canora and West Jasper Place. The development of the east end of Glenora has also divided the heads of Ramsey Ravine as the number of residences has increased over the 1924 plan.

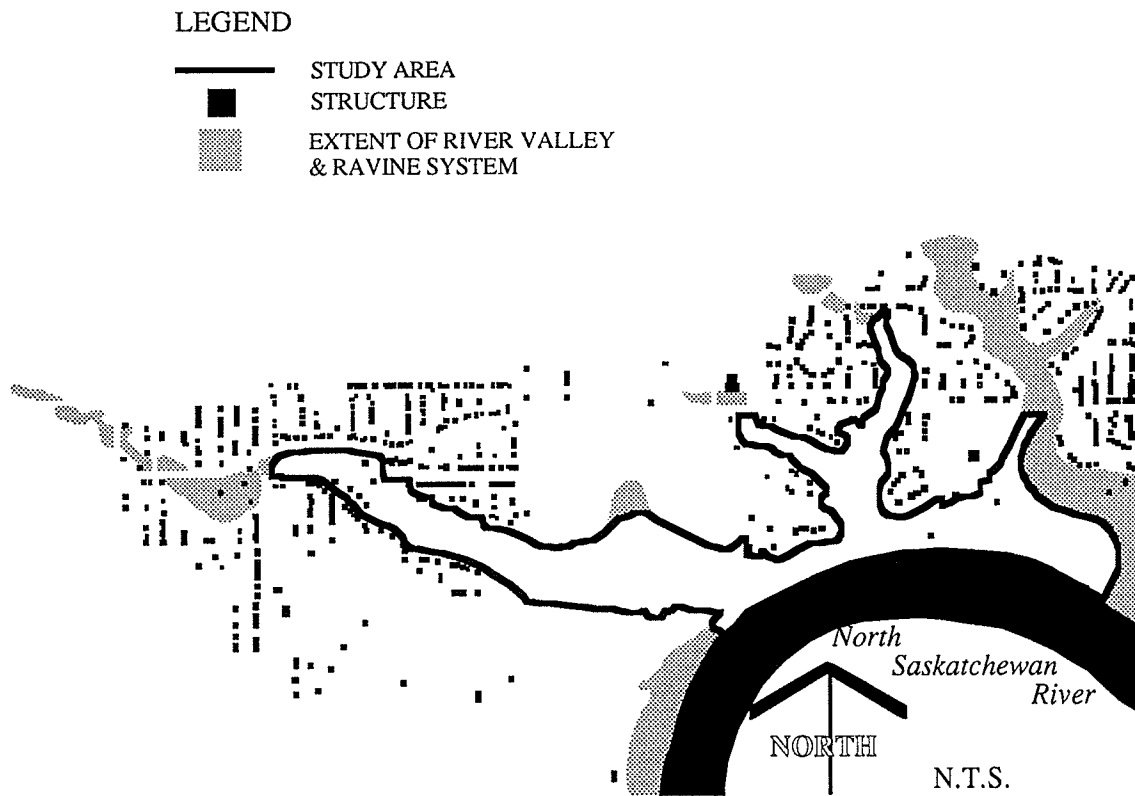


Figure 6. Residential Development Adjacent to the Study Area, 1944.

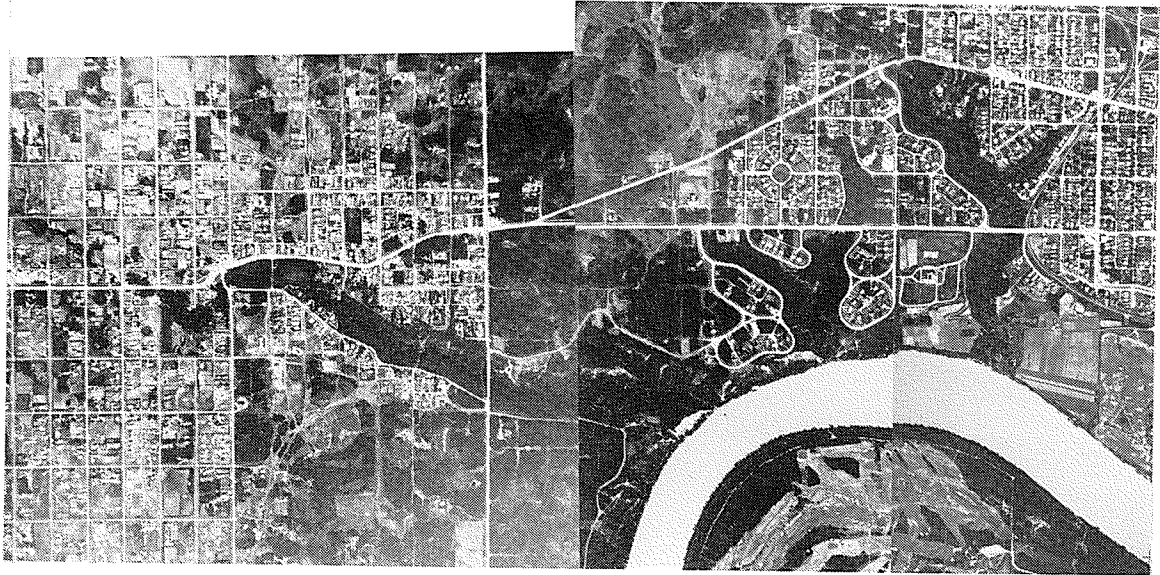


Figure 7. Air Photograph of the Study Area, 1944.

With the exception of the neighborhood of Crestwood, residential development adjacent to MacKinnon Ravine has been completed by 1954 (refer to figures 8 & 9). The current edges of the study area have been or are being defined by urban development up to 1954. The construction of residences and roadways adjacent to the study area has been substantially completed in the neighborhoods of West Jasper Place, Canora, Grovenor, and Glenora. A remnant portion of the Ramsey Ravine existed within the school yard in the community of Glenora and a larger portion of the MacKinnon Ravine was still evident across 149 Street to the West. Construction has begun on the Groat Bridge and clearing has begun in the Groat Ravine in preparation for the construction of Groat Road. Storm sewers appear to have been installed within the Ravine and an above-ground outflow channel that will direct the storm water runoff to the river is under construction. The historical rail line on the east side of Groat Ravine has been removed however the level railbed remains.

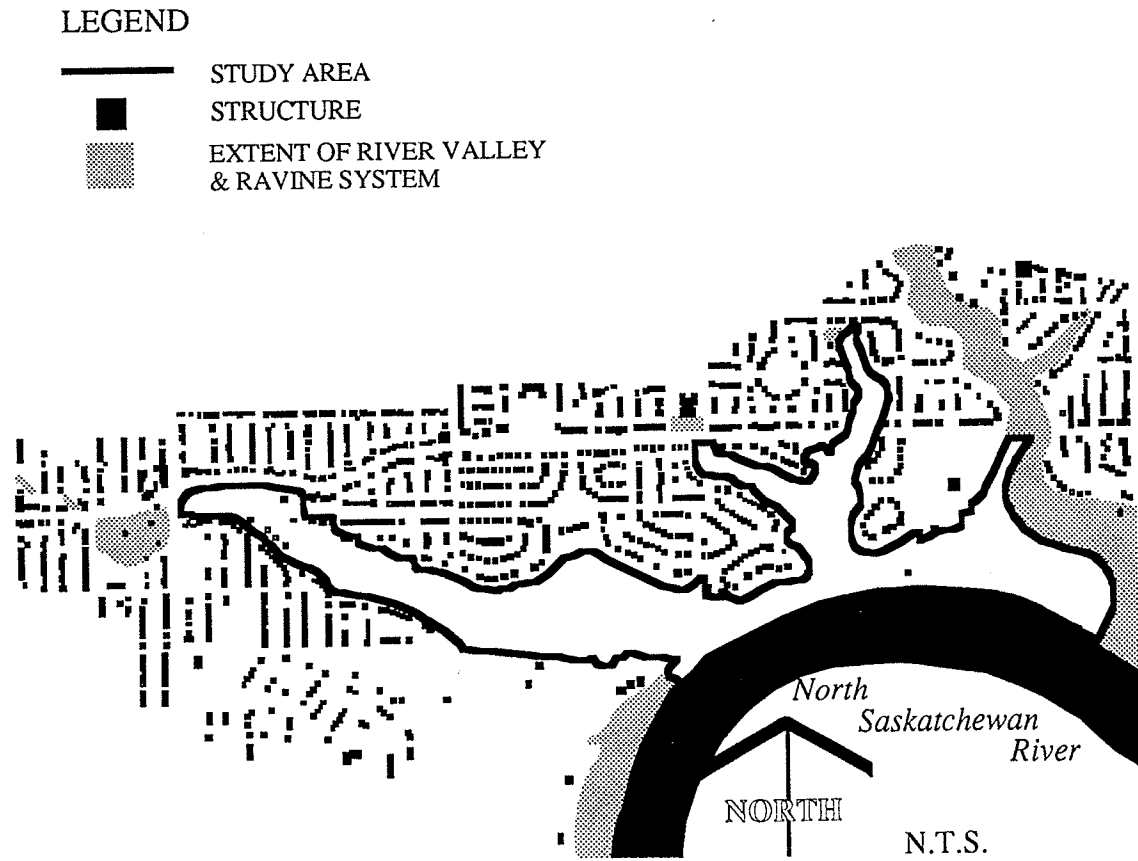


Figure 8. Residential Development Adjacent to the Study Area, 1954.

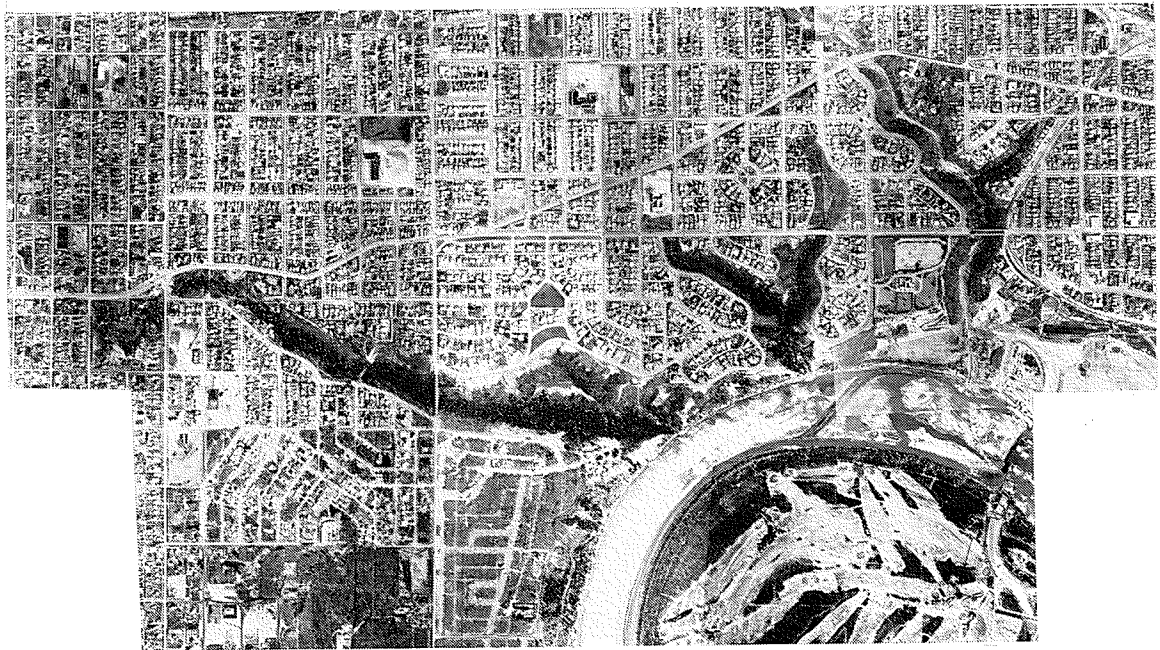


Figure 9. Air Photograph of the Study Area, 1954.

The 1965 air photographs of the study area illustrate how the completed developments have shaped the edges of the study area (refer to figures 10 & 11). The residential communities have been developed and the natural contours of the Groat Ravine have been converted into a roadway. River Valley road has been completed along the river's edge east of the Groat Bridge, and vehicular access to Government Hill Park has been provided from Groat and River Valley roads. The remnant portion of the Ramsey Ravine in the school yard has been cleared and leveled to create a play field and the remnant portion of the MacKinnon Ravine on 149 street has been reduced in size due to commercial development on the site. Across the river from the study area, William Hawrelak Park (originally Mayfair Park) was under construction and officially opened in 1967. This park was the first major metropolitan park space developed in Edmonton and also acts as the venue for the annual Heritage Days Festival.

LEGEND

- STUDY AREA
- STRUCTURE
- ▨ EXTENT OF RIVER VALLEY & RAVINE SYSTEM

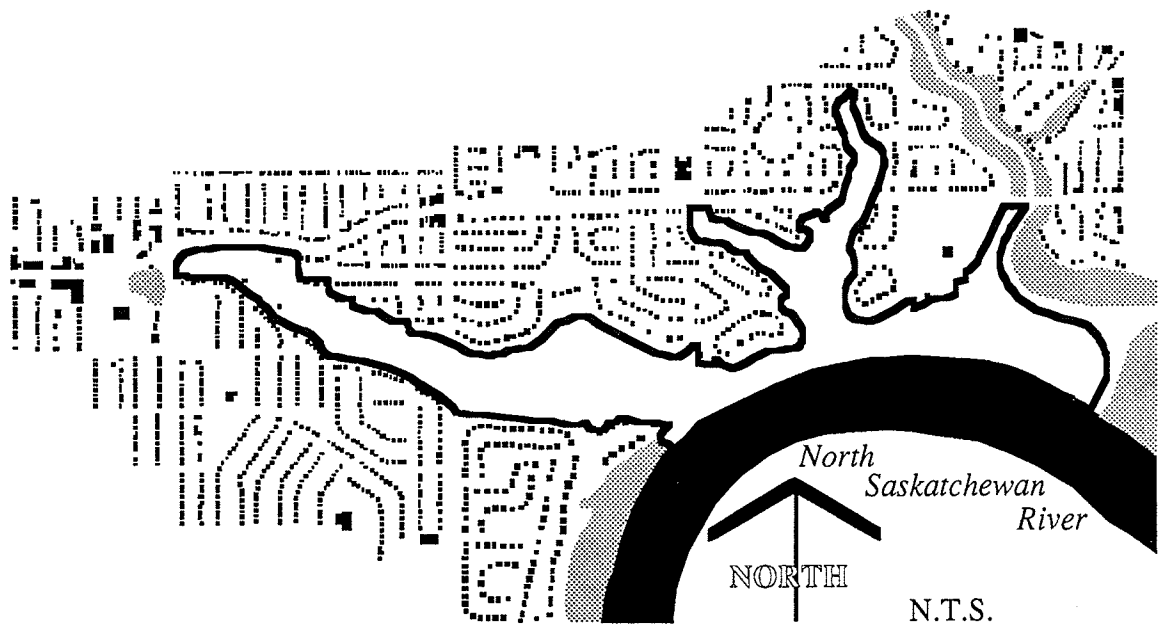


Figure 10. Residential Development Adjacent to the Study Area, 1965.

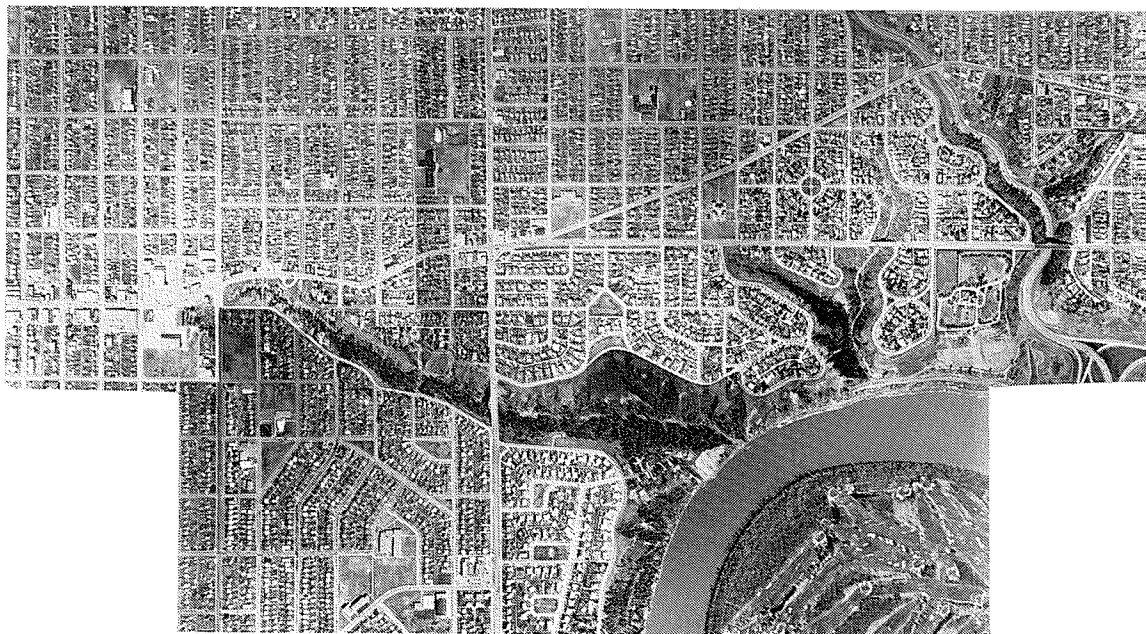


Figure 11. Air Photograph of the Study Area, 1965.

As a result of the 1963 Metropolitan Edmonton Transportation Study, MacKinnon Ravine was identified as a corridor for the development of the Jasper Freeway. This new freeway was to provide an east-west link with Downtown by allowing traffic to flow through the River Valley and MacKinnon Ravine. The development of the freeway would effectively eliminate 75 acres of parkland. Planning for the construction of the freeway continued despite the concerns raised in the 1974 "River Valley Study" where it was stated that ". . . the MacKinnon Ravine proposal is in complete conflict with the River Valley Public Parks policy".³

The valley bottom was cleared, graded and serviced with storm sewers in the early 1970's and fill was placed along the North Saskatchewan River from the mouth of the Ravine to Government Hill Park in order to accommodate the roadway development. The outflow of surface water runoff from within the Ramsey Ravine was contained in a culvert below the

³ Donald A. Pearson, Planner, The City of Edmonton, Planning Department, "River Valley Study" (Edmonton: Research & Long Range Planning Branch, 1974) p. 42.

fill area adjacent to the River. Although development did not proceed beyond this stage, the unique natural environment of the study area had been substantially altered (refer to figure 12). Despite the roadway preparations, the study area was included in the 1978 Parks and Recreation Master Plan for the River Valley and Ravine System (refer to figure 13).

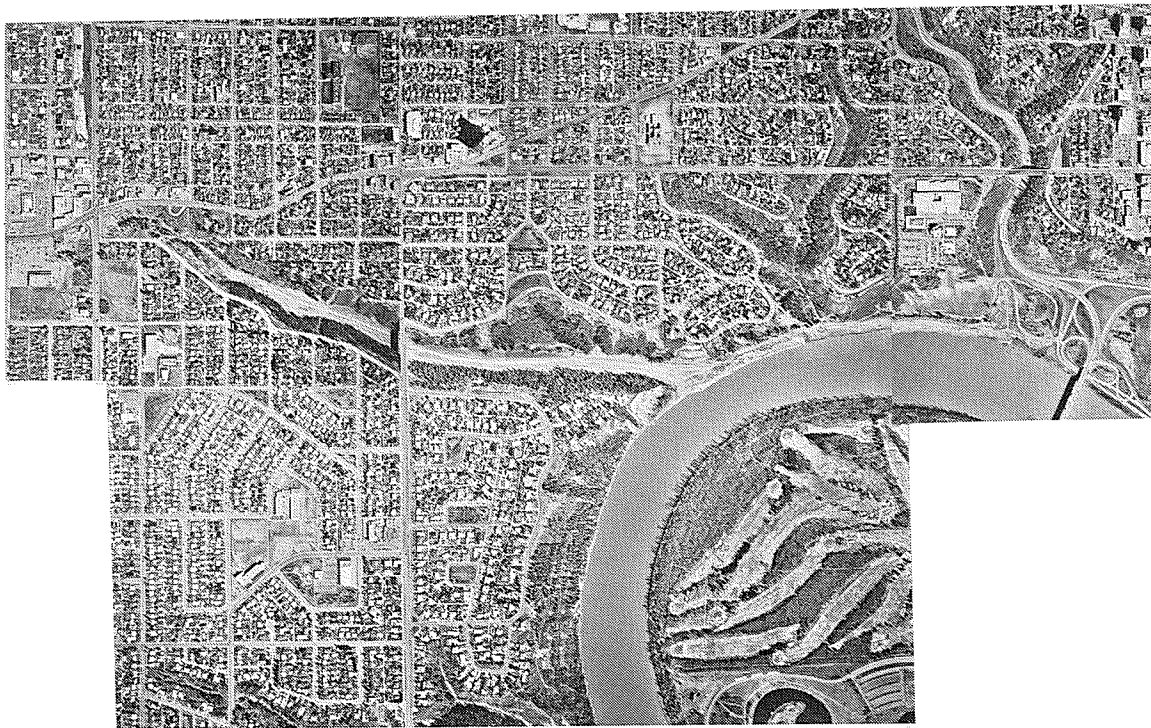


Figure 12. Air Photograph of the Study Area, 1978.

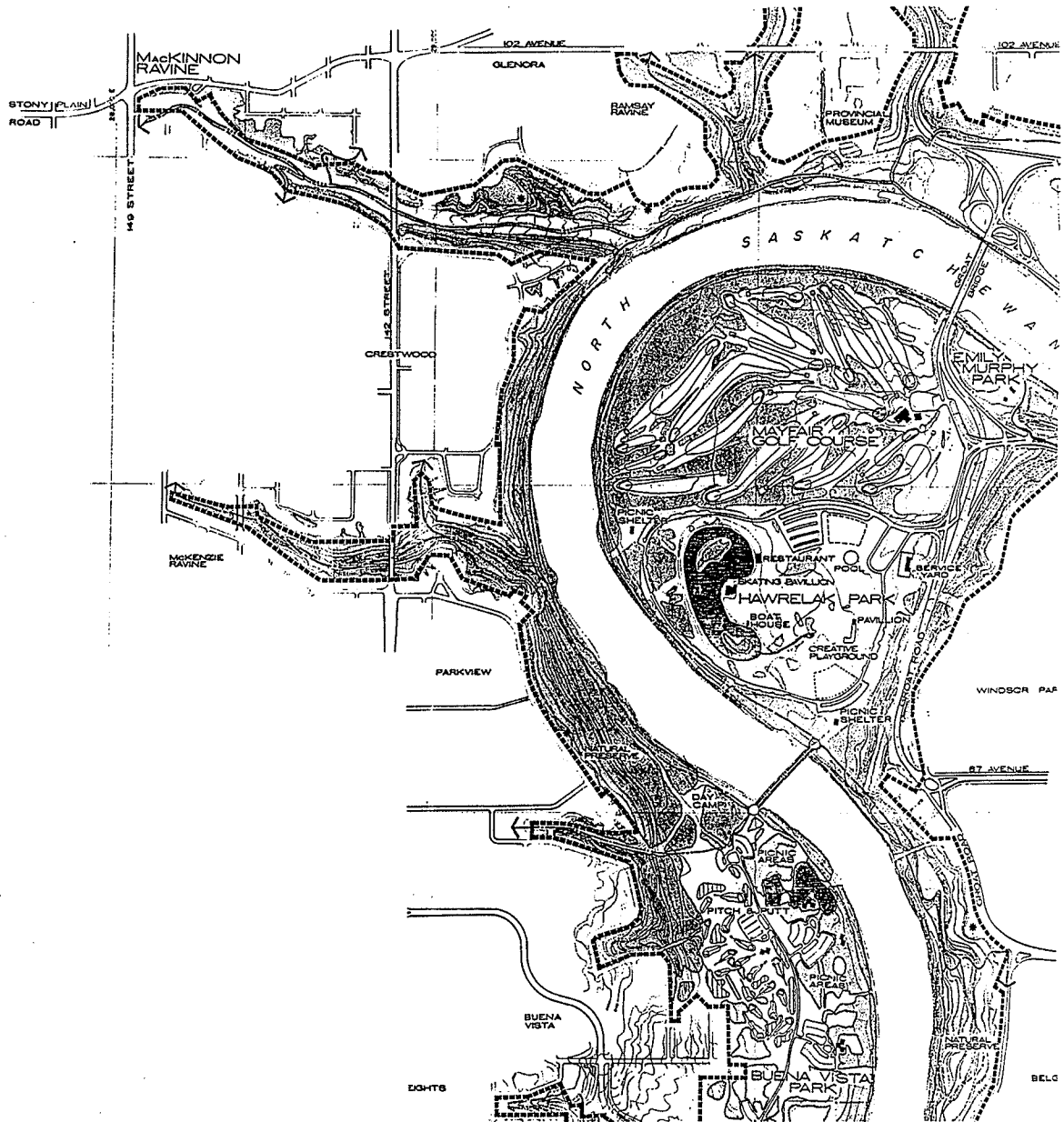


Figure 13. North Saskatchewan River Valley and Ravine System Master Plan, 1979-1983, Portion of Map 4.

City Council approved a significant directive in September, 1983 which stated "that all reference to the MacKinnon Road (Jasper Freeway) from Groat Road to 149 Street be deleted from Bylaw 6707 and the lands be transferred to the Parks inventory for Park Development". The study area was subsequently also included in the 1987 Position Paper on the extension of the Capital City Recreation Park (refer to figure 18).

The application of this case study is intended to examine the use of existing information in the development of a design program and concept plan for the study area that is consistent with River Valley and Ravine System policies, goals, and objectives and current professional practice. The design program and concept plan will be derived from an analysis of the collected data base that has been produced in order to direct development within the North Saskatchewan River Valley and Ravine System. While some components of the data base (i.e. leisure survey) may now be considered outdated, the author acknowledges these limitations within the context of this study.

Public review of and input into the planning process is another area of concern identified by the author that is not addressed in this study. The public's input with respect to testing the validity of the data base and generating the most responsive design program simply cannot be addressed within the scope and time limitations of this study.

**2. NORTH SASKATCHEWAN RIVER
VALLEY & RAVINE SYSTEM**

2.1 A BRIEF HISTORY OF SETTLEMENT IN THE SYSTEM

The North Saskatchewan River Valley and Ravine System has always been central to the morphology of the City of Edmonton. This system encompassed a parkland belt, fertile soils for agricultural development, and a transportation link to major centers in Eastern Canada. Permanent settlement of this area can be traced back to the 1802 erection of two trading posts owned by the Montreal based North West Company and the rival British Hudson's Bay Company. These forts were constructed adjacent to each other on the north side of the river, east of the present day Provincial Legislature building. The two trading companies merged in 1821 and Fort Edmonton (named after a London suburb, home of the Hudson's Bay Company's deputy governor) became the administrative center for the western prairies.

Carlton Trail was the main overland ox-cart route that linked Fort Edmonton with Fort Garry in the east (now Winnipeg, Manitoba). Large flat-bottomed "York" boats navigated the North Saskatchewan River and transported the Company's furs to York Factory on Hudson's Bay. While large numbers of boats were necessary to carry the furs east, only a few returned to Fort Edmonton filled with trade goods and supplies. The timber resources of the North Saskatchewan River Valley and Ravine System became an increasingly valuable commodity in the provision of construction materials and winter fuels for the residents of the Fort.

The H.B.C. received a large sum of money and title to considerable grants of land adjacent to its trading posts when it sold its rights to Rupert's Land and the North-Western Territory to the Dominion of Canada in 1870. With a H.B.C. Reserve created around Fort Edmonton, local settlers also staked claims to land along the North Saskatchewan River. The rich soils were cultivated, coal was extracted from the banks and fine gold dust was separated from the silt, sand and gravels of the River Valley and Ravine System. Lumber mills and brick yards were established and in 1875, the settlement of Edmonton anticipated a prosperous position on the proposed Yellowhead Pass route of the trans-Canada railway.

Steam-powered paddlewheelers made their first successful journey upstream on the North Saskatchewan River to the settlement of Edmonton in 1875. These flat-bottomed riverboats replaced cargoes transported by convoys of ox carts. In 1881, the first cable ferry was launched across the river and linked the settlements of north and south Edmonton.

"The C.P.R. reached Winnipeg in 1881, where the population mushroomed as settlers began to claim the land. While Edmontonians were rubbing their hands in anticipation of a similar boom, the C.P.R. announced that the route would be changed to traverse the southern prairies toward the Kicking Horse Pass. While Edmonton reeled in shock, the C.P.R. reached the NWMP Fort Calgary in 1883 and a rival town boomed and replaced Edmonton as the heart of the western prairies, while the railway replaced the North Saskatchewan River as the main trans-Canada route."⁴

The Dominion Land Survey reached Edmonton in 1882 and the first surveyed plan of the settlement was completed in 1883, (refer to figure 14). This initial survey plan set the direction for future land development adjacent to the North Saskatchewan River. It identified the river lot claims that fronted both sides of the North Saskatchewan River east and west of the expansive Hudson's Bay Company Reserve. It also illustrated the location of Fort Edmonton on the north side of the river within the H.B.C. land.

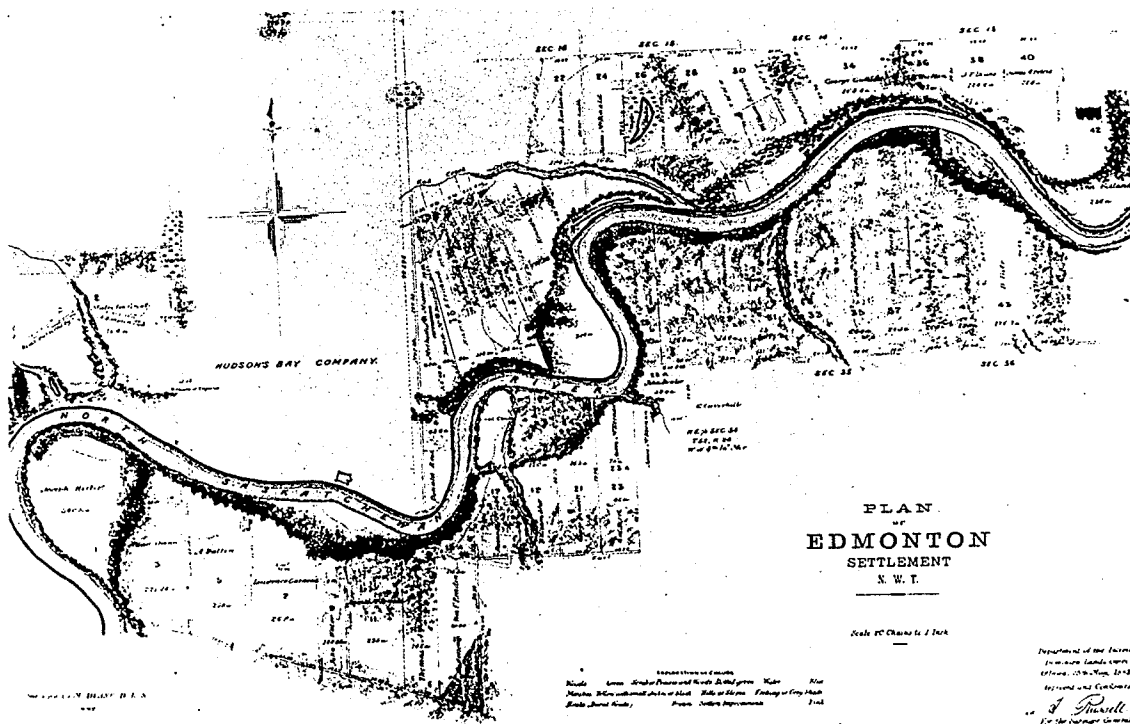


Figure 14. Land Survey of the Settlement of Edmonton, 1883.

⁴ Dennis Person, and Carin Routledge, EDMONTON Portrait of a City (Edmonton: Reidmore Book, 1981), p. 12.

The Settlement of Edmonton began to lobby for a branch line to connect to the completed C.P.R. mainline in Calgary. This effort was successful when in 1891 the Calgary and Edmonton Railway was completed as far as south Edmonton. The North Saskatchewan River was no longer considered the primary transportation link to the east as the railroad replaced the riverboats. However, it took nine more years before the low level bridge was completed and two more years before the first train crossed the North Saskatchewan River to the incorporated Town of Edmonton. The tracks on the north side were later extended west along the valley bank to Groat Ravine, and as they neared the top of the bank they circled back to the center of the Town of Edmonton.

With a population that had grown from 1,165 in 1885, to 8,350 in 1904, Edmonton had incorporated as a City. In 1905 the City of Edmonton was designated the capital of the Province of Alberta and thereby secured an economic base for it's future. In 1906, City Council appointed the first Streets and Parks Committee and authorized the purchase of land "for public parks, exhibition grounds, stock yards or other similar municipal public purposes."⁵ By 1907, the population had increased to 18,500, and the City began the process of planning for it's growth and establishing policies for development within the North Saskatchewan River Valley and Ravine System.

2.2 PREVIOUS PLANNING FOR THE SYSTEM

In 1907, Frederick G. Todd was commissioned to design a comprehensive set of plans for parks and boulevards in Edmonton. Todd was a landscape architect in the City of Montreal between 1900 - 1948 and was one of the few practicing consultants that was receiving commissions across the Dominion of Canada during the first quarter of the twentieth century. Among his early works are; a 1903 report on the parkway system for the capital City of Ottawa, the siting of Government buildings in Alberta, Saskatchewan, and Manitoba, and the initial plans for Assiniboine Park in the City of Winnipeg. He recommended that: "in evolving a comprehensive scheme of parks and boulevards for Edmonton, every advantage should be taken of the great natural beauty of the situation . . . by withdrawing for parks purposes, property . . . such as the River Valley and Ravines."⁶

⁵ The City of Edmonton, Parks and Recreation, "1985 - 1989 Management Plan" (Edmonton: 1985), p. 1.

⁶ Donald A. Pearson, Planner, The City of Edmonton, Planning Department, "River Valley Study" (Edmonton: Research & Long Range Planning Branch, 1974) p. 6.

This proposal initiated the development of a River Valley Policy for the North Saskatchewan River Valley and Ravine System.

Inspired by Todd's vision, several public spaces began to take shape in the system. In 1907, the City opened Municipal Golf Course. The course was constructed in the river valley, west of the old H.B.C. fort site, and continues to operate as a public facility. In 1910, Riverside Park (now Queen Elizabeth Park) was opened across the river from the almost completed Provincial Legislature building. Todd's recommendation for a River Valley Park system was accepted, and adopted into the 1915 City Plan.⁷

In 1933, the City of Edmonton introduced land use regulations in order to guide development within its boundaries. The Edmonton District zoning map (refer to figure 15) outlined the extent of the River Valley and Ravine System designated as a public park system. The Blande-Spence Sales Report was adopted in principle by City Council in 1949. This report reaffirmed the concept of retaining the River Valley System as a comprehensive system of public parks, introducing a system of development control in the River Valley System, and commencing a long-term acquisition plan for private land within the River Valley.⁸

The physical limits of the North Saskatchewan River Valley and Ravine System were defined by the Top-of-the-Bank Policy adopted by City Council on July 22, 1970. This policy also introduced principles concerning development in proximity to the River Valley and Ravine System, and prescribed regulations for development permits and zoning certificates in areas adjacent to the limits of the System.⁹ The following year, City Council adopted the General Plan Bylaw which contained policies for; retaining the River Valley and Ravines as a system of public parks; environmental protection for the River Valley and Ravines; designating in bylaw form lands for long-range future acquisition and park development; prescribing a set of objectives and principles upon which decisions concerning development in the River Valley should be based; and, for the first time, gave legal authority to River Valley policy objectives.¹⁰

⁷ Ibid.

⁸ Ibid. p. 7.

⁹ Ibid. p. 9.

¹⁰ Ibid. p. 10.

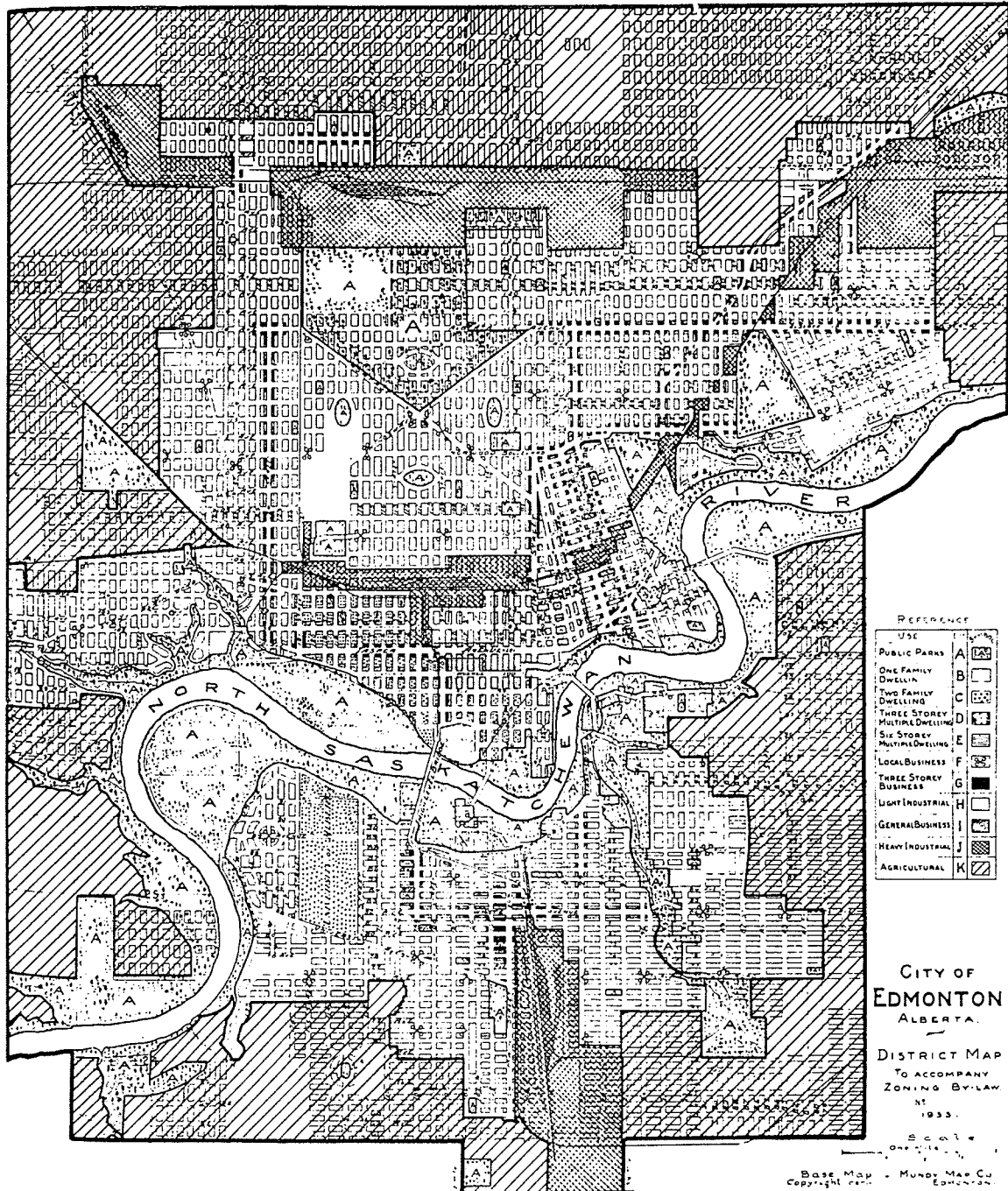


Figure 15. City of Edmonton District Zoning Map, 1933.

In order to conform to the new General Plan Bylaw, City Council also amended the City's Zoning Bylaw in 1971. Through this Bylaw, the River Valley and Ravine lands were primarily designated as A - Metropolitan Recreational. The Zoning Bylaw now included regulations for the control of development in the River Valley and Ravine System; and provided development controls for slope protection along it's banks.¹¹

Another component of the General Plan Bylaw was the Parks and Recreation Master Plan adopted by City Council in 1971. The 1970-80 Parks Master Plan recommended a policy of eventual acquisition of lands, for parks and recreation purposes; prescribed a set of regulations for set-back requirements at the System boundary; and introduced a River Valley Parks Development Plan.¹²

The 1974 "River Valley Study" report prepared by the Research & Long Range Planning Branch of the City of Edmonton Planning Department called for the boundary of the River Valley System be defined by a legal survey line. This boundary was to be established using environmental, economic and social criteria. Areas of land desirable for development as public parks or in need of environmental protection were identified for acquisition by the City. It also recognized that should the City not use Provincial legislation (by designating the River Valley as a Restricted Development Area) to control land use, ownership of land in the River Valley was the only means available to ensure its policy objectives were achieved. Since the System provides for regional parks and recreation functions, the Study suggested that financing of the acquisition, development and maintenance of the River Valley Parks System should be eligible for Provincial aid.¹³

In April of 1974, the Government of Alberta announced the approval of a \$34 million Urban Parks Grant for the development of Capital City Recreation Park in Edmonton. Funding for the Urban Parks program was to be made available through the Heritage Trust Fund of the Province of Alberta. The City approved the legal agreement with the Province in 1975 for the joint development of the 1214 ha. (3000 acre) park along sixteen kilometers of the North Saskatchewan River. The park was to begin below the Provincial Legislature Building, and continue northeast to Hermitage Park (refer to Figure 16). Development would proceed along both sides of the river and would include the construction of

¹¹ Ibid. p. 12.

¹² Ibid. p. 14.

¹³ Ibid. pp. 83 - 84.

pedestrian bridges, separate hard surfaced and nature trail paths, shelters, benches, picnic areas, and additional active and passive recreation facilities.

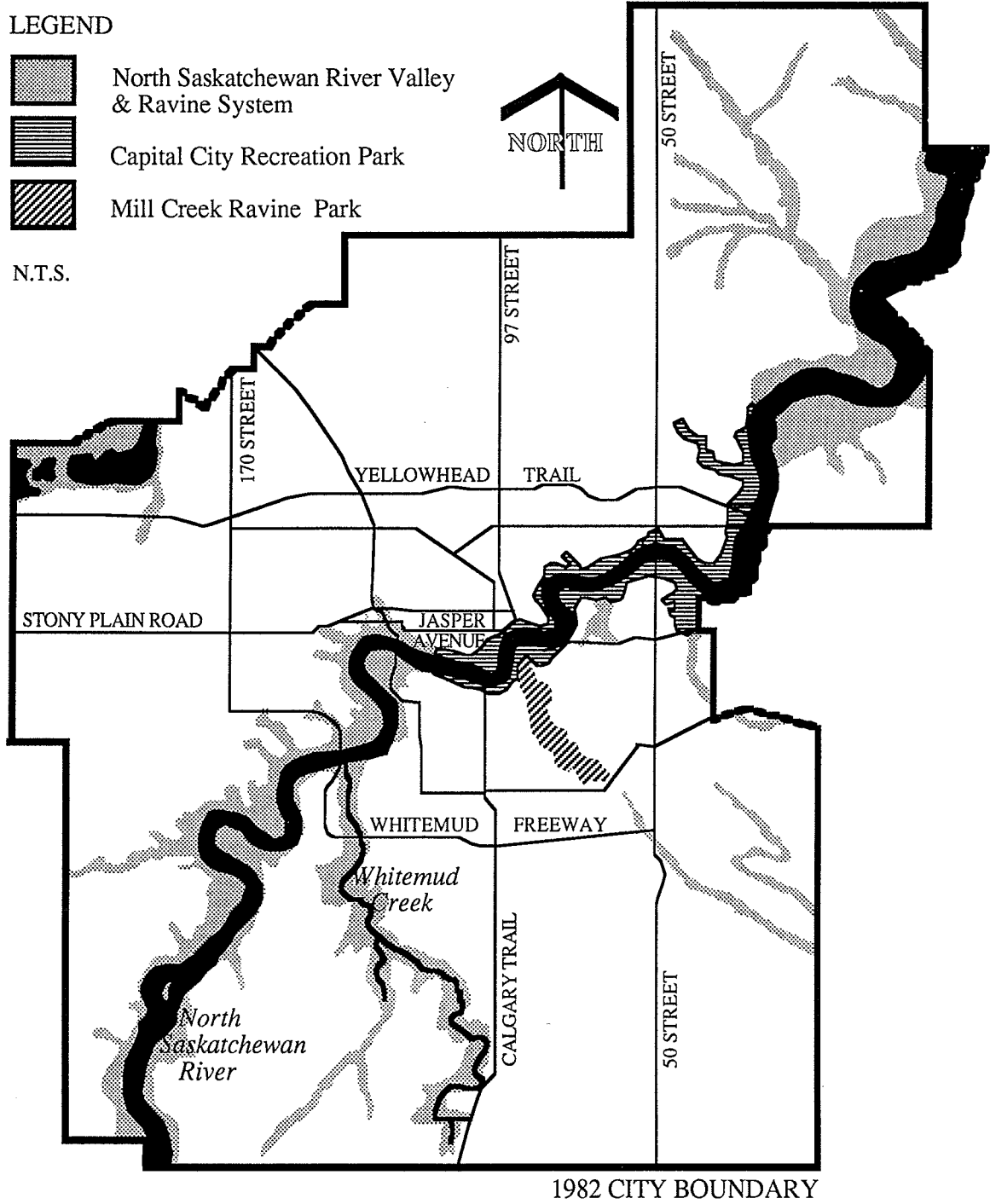


Figure 16. Extent of North Saskatchewan River Valley and Ravine System, Capital City Recreation Park, and Mill Creek Ravine Park.

City Council also approved the development of a City level park in Mill Creek Ravine in 1975. This ravine development area began in the central portion of the North Saskatchewan River Valley and Ravine System and extended four kilometers south to Argyll Road (refer also to Figure 16).

With rapid population growth, changes in recreation patterns and trends, and the development of parkland and major facilities, the 1970 - 80 Parks and Recreation Master Plan became outdated. The Parks and Recreation Master Plan 1979 - '83 was completed in 1978 and established new guidelines and recommendations for the provision of expressed and perceived needs for recreation programs, services and facilities in the City of Edmonton.

Section VII of the Master Plan focussed on the North Saskatchewan River Valley and Ravine System. The Master Plan confirmed the City's policy of acquiring private property in the River Valley in order to create a continuous open space system. The Capital City Recreation Park was officially opened in July of 1978 and established the standard of development envisioned for the entire System. The Master Plan also called for further negotiation with the Province in order to extend the development of the System to the corporate limits of the City in the west. A conceptual development plan was prepared in order to guide long-range development of the North Saskatchewan River Valley and Ravine System (refer to Figure 17) which recommended the establishment of a bylaw to protect the long-range development of the System.

The Parks and Recreation Department initiated a multi-phased planning process for the remaining undeveloped open space segments of the North Saskatchewan River Valley and Ravine System. Phase one, completed in 1981, involved the preparation of a comprehensive resource data base. The "North Saskatchewan River Valley and Ravine System Biophysical Study" was prepared by a multi-disciplinary group of consulting firms and documented biological, physical, and some socio-economic characteristics of the System. Slope, Soils, Geology/Geomorphology, Hydrology, Vegetation, Wildlife, Aquatic Fauna, Microclimate, Land Use, and Historic Resources were researched and mapped at a scale of 1:5,000.

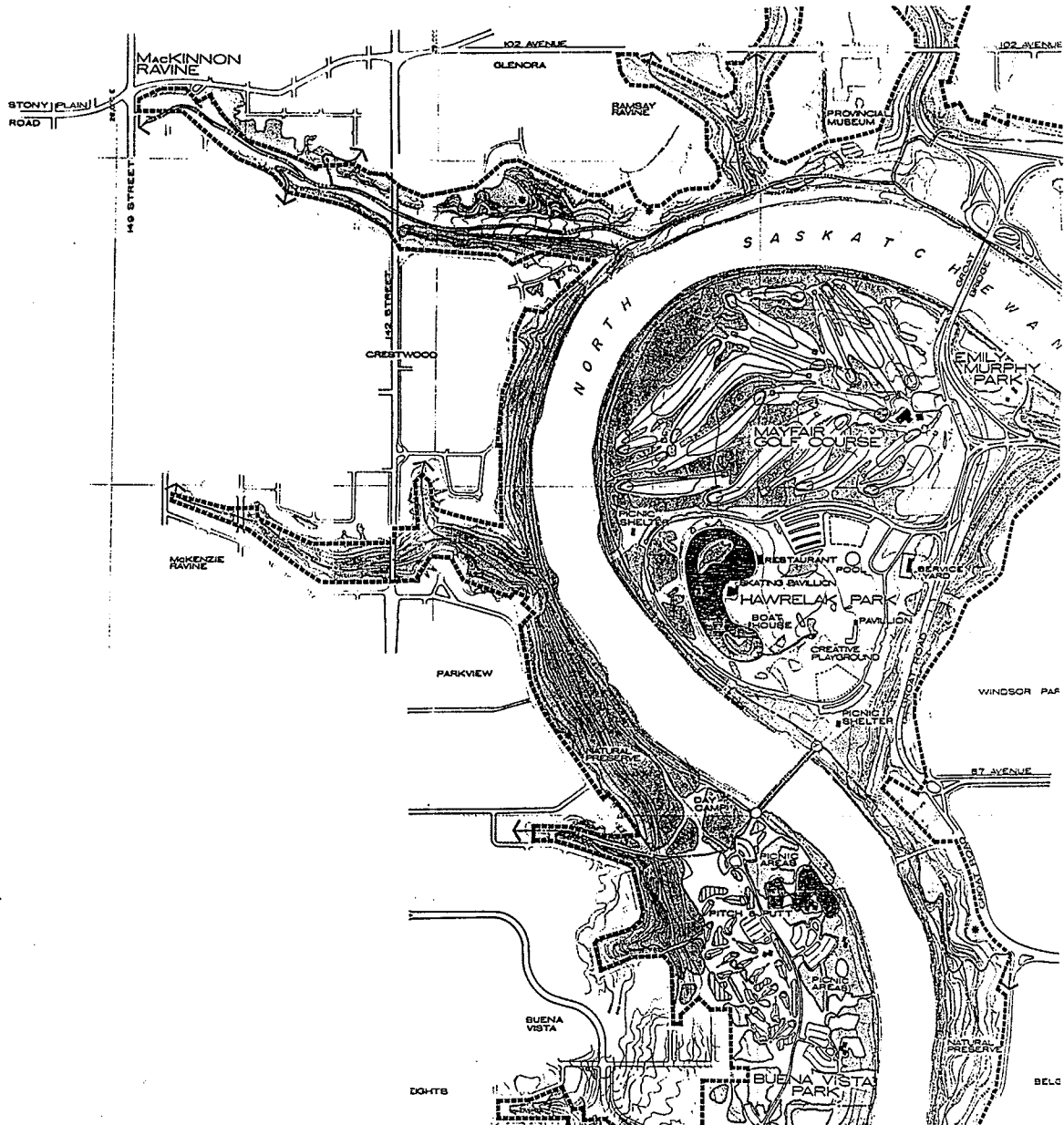


Figure 17. North Saskatchewan River Valley and Ravine System Master Plan, 1979-1983, Portion of Map 4.

This resource base was intended to provide a reference document for the planning of recreation facilities within the System. Phase two of this process was completed in 1983 by another private consulting firm. The "North Saskatchewan River Valley and Ravine System Resource Analysis: Technical Report" included an inventory of the recreational facilities, programs, use levels, recreation and leisure trends, ability to sustain various activities, and development problems within the System. It also utilized the data of the Biophysical Study in determining the capability and suitability of land within the System for the development of similar types of recreational activities.

In 1985, the Parks and Recreation Department received approval of the 1985-1989 Management Plan from City Council. This plan outlined the resource management and recreation goals, policies, objectives, and strategies of the Department. City Council also approved the "North Saskatchewan River Valley Area Development Plan Bylaw" in 1985. The purpose of this Bylaw is "to protect the North Saskatchewan River Valley and Ravine System as part of Edmonton's valuable open space heritage and to establish the principles for future implementation plans and programs for parks development."¹⁴

In 1987, the City of Edmonton prepared a Position Paper on the extension of Capital City Recreation Park. The paper outlined the concept of developing an integrated trail system which would make the river valley accessible to the public yet protect the natural landscape and wildlife habitat areas. The paper was presented to the Provincial Government of Alberta in order to solicit further funding for the preparation of design programs, concepts, and development plans for the remaining undeveloped segments of the System (refer to figure 18).

¹⁴ The City of Edmonton, Planning Department, "North Saskatchewan River Valley Area Redevelopment Plan Bylaw", (Edmonton, 1985), p. 1.

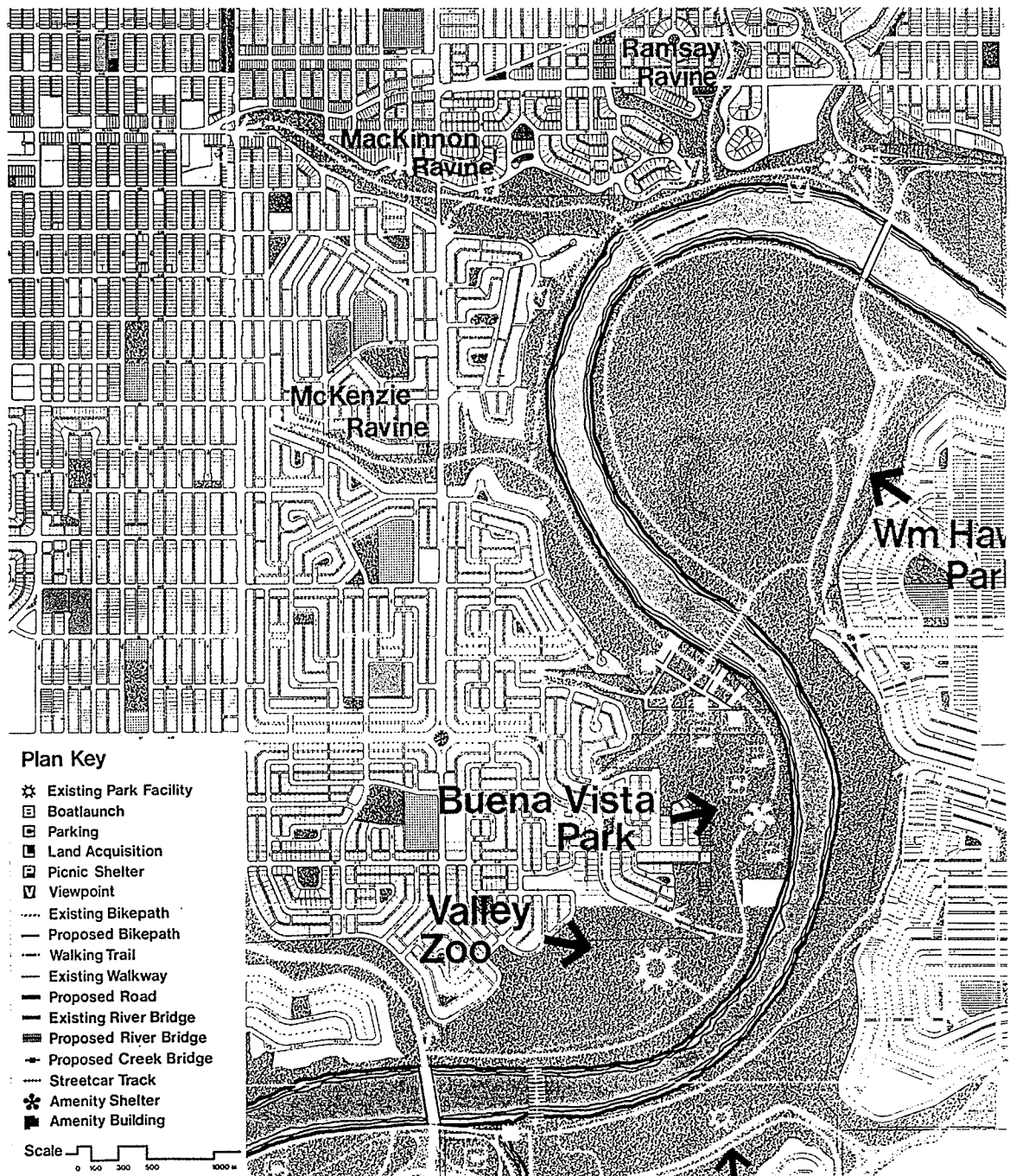


Figure 18. Capital City Recreation Park Extension Position Paper Master Plan for Victoria Park / Victoria Golf Course / McKenzie Ravine / MacKinnon Ravine / Ramsey Ravine / William Hawrelak Park, 1987.

2.3 DEVELOPMENT POLICIES

Two planning documents are currently used by the City of Edmonton to manage and direct the planning and development within the North Saskatchewan River Valley and Ravine System. The North Saskatchewan River Valley Area Redevelopment Plan, Bylaw No. 7188, was completed in 1985 and the Capital City Recreation Park Extension Position Paper was prepared in 1987.

The Redevelopment Plan suggests that the optimistic visions of the fathers of the City have been surpassed with respect to preserving the River Valley and Ravine System for Edmontonians to experience and enjoy. The system encompasses an area of 7,425 hectares, (18,340 acres). The concept of the Plan is to develop the River Valley and Ravine System as a continuous recreation open space system resulting in most of this area being dedicated for recreational use. The goals of the Plan that relate to this study are;

- [1] To ensure preservation of the natural character and environment of the North Saskatchewan River Valley and its Ravine System.
- [2] To establish a public metropolitan recreation area.
- [3] To provide the opportunity for recreational, aesthetic and cultural activities in the Plan area for the benefit of Edmontonians and visitors of Edmonton.

To implement this Plan and achieve these goals requires the completion of many action plans or policies. Policy is a governing principle or course of action and is the broad framework for guiding governmental action.¹⁵ Of the policies developed for the North Saskatchewan River Valley and Ravine System and identified in the Redevelopment Plan Bylaw No. 7188, twenty have been recognized as vital to the planning for the study area.¹⁶

A. Parkland Development Policies

A.1 Natural Conservation Area

Those areas which have significant vegetation, potential wildlife and waterfowl habitat, or other unique natural physical features shall be managed as nature conservation areas and may be used for outdoor education, interpretation or low intensity recreational activities.

¹⁵ Seymour M. Gold, Recreation Planning and Design (New York: McGraw-Hill, Inc.: 1980), p. 214.

¹⁶ The City of Edmonton, "North Saskatchewan River Valley Area Redevelopment Plan Bylaw No. 7188", (Edmonton: 1985), pp. 8 - 14.

- A.2 Intensity Range of Recreation Uses
A low to high intensity range of recreational activities will be developed and managed within the River Valley.
- A.3 Location of Recreational Facilities
Locate the higher intensity recreational and cultural facilities in close proximity to major roadways, public transit routes and direct River crossings, except in the Central area.
- A.4 Ravines and River Edges
Ravines and river edge lands will be used for low intensity outdoor recreational use.
- A.5 Viewpoint Parks
Selected sites with existing and outstanding view potential will be encouraged to be developed as "viewpoint" parks.
- A.6 Accessory Land Uses
Accessory land uses such as cafes, restaurants, bicycle rentals or other commercial establishments which are complementary to recreational and open space opportunities and harmonious to the natural environment will be encouraged where land use districting permits.
- A.7 Capital City Recreation Park
The City will support the concept of the extension of the Capital City Recreation Park to the City's Northeast and Southwest boundaries.
- A.8 Trail System
To establish pedestrian and other non-motorized vehicular movement systems; which includes bicycles, cross-country ski-trail developments and equestrian trails in selected areas; as the primary modes of movement along and through the River Valley.
- A.9 River and Ravine Crossings
To develop and/or improve River and Ravine crossings for pedestrians and other non-motorized movement systems so as to connect recreational activity nodes and other park amenities.
- A.10 Minimize Land Use Conflicts
Land use conflicts between parks and non-parks uses will be minimized by appropriate facility siting, quality design, noise and visual buffering.
- A.11 Roadway Access and Parking
To develop a vehicular distribution and parking system in the River Valley that permits access to parking areas but restricts vehicular penetration through recreational and park areas. This policy does not restrict emergency vehicle access required for public safety.

- A.12 **Recreational Water Transportation**
To encourage and support recreational programs and facilities for water-borne modes of transportation in conjunction with detailed plans for parks and recreation development.
- A.13 **Historic Resources Inventory**
To continue to develop and maintain an inventory of all historic and archaeological resources and recognize those resources in planning or land use decisions.
- A.14 **Access for the Handicapped**
Recreational facilities will be designed, if feasible, to accommodate access and other requirements of the handicapped.

B. Environmental Protection Policies

- B.1 **Preservation of Natural Resource Areas**
To recognize the Plan Area as containing natural resource areas which will be preserved and enhanced for recreational, scenic, and ecological purposes.
- B.2 **Identification of Sensitive and Hazardous Lands**
To identify environmentally sensitive and hazardous lands through a detailed resource management approach.
- B.3 **Development on Environmentally Hazardous Lands - Unstable Slopes**
Development will avoid areas with unstable slope conditions. Where development in such locations is deemed to be essential or is permitted by existing regulation, the Development Officer may require, from a registered Professional Engineer, detailed construction techniques to ensure stability of land and buildings.

C. Transportation Policies

- C.1 **Direct River and Ravine Crossings by Major Transportation Corridors**
New transportation corridors will not be approved except for direct River and direct Ravine crossings which are deemed essential and approved by City Council.

D. Major Facility and Natural Resource Development Policies

- D.1 **Development of Major Facilities**
Major public facilities shall not be constructed or expanded unless their location within the River Valley is deemed essential and approved by City Council.
- D.2 **Storm Water Management**
To employ the use of storm water management techniques to reduce the adverse impacts of increased volume and rate of stormwater discharges, particularly along the River Valley edge and its tributary ravines.

This study will respect the Area Redevelopment Plan's definition of the intensity of recreational use. A low intensity use is a minimum level of recreational development with the possible existence of a minor amenity structure. An example is the trail and buffer system in Capital City Recreation Park. A high intensity of use is defined as recreational development which includes a major structure and substantial parking facilities and includes any site when used for a major public event. An example is the Kinsmen Fieldhouse complex.¹⁷

The City of Edmonton Capital City Recreation Park Extension Position Paper is based on a Concept of limited development to provide an integrated trail system that encourages year round use among natural preserve areas. The extension area is considered to be a sensitive environment that could sustain limited development that respects the natural landscape and wildlife habitat areas. The Paper defines two detailed land use policies that govern the development of the study area as part of the Capital City Recreation Park Extension concept;

- [1] To develop a pedestrian oriented, nature park which recreates a natural preserve area and re-establishes a viable ecology. This will be accomplished by using existing or restored resources to their best advantage.
- [2] To create a continuous and integrated trail system for hiking, jogging, bicycling, and cross-country skiing. The prime consideration of trail development will be to maximize access from all adjacent neighborhoods and provide accessibility to all areas of the River Valley.

As a planning tool these Redevelopment Plan and Position Paper policies are used to formulate criteria that determine the potential types of recreation activities for the system. The Criteria are also developed to measure the suitability of proposed recreation activities with System Development Policies following the capability analysis for the study area.

¹⁷ The City of Edmonton, "North Saskatchewan River Valley Area Redevelopment Plan Bylaw No. 7188", (Edmonton: 1985), p. 2.

2.4 PLANNING & DEVELOPMENT CRITERIA

The identified policies noted above establish the limitations and extent of development that can occur in the study area. The following criteria are derived from the development policies in order to determine which recreational activities are supported by policy for development within the system. The criteria are not prioritized. They are listed in the same order as the policies listed in stage 2.3 from which they are developed. These criteria determine potential River Valley and Ravine recreation activities to be considered in the planning for the remaining undeveloped segments of the system. They will also be used in the suitability analysis to prioritize those activities which are suitable for development in the study area.

- [1] Unique natural physical features shall be managed as nature conservation areas. They may be used for outdoor education, interpretation or low intensity recreation activities.
- [2] A low to high intensity range of recreational activities shall be developed and managed within the system.
- [3] High intensity recreational and cultural facilities shall be located in close proximity to major roadways, public transit routes and direct River crossings.
- [4] Ravines and river edge lands shall be planned for low intensity outdoor recreational use.
- [5] Sites with existing and outstanding view potential shall be planned as "viewpoint" parks.
- [6] Accessory land uses such as cafes, restaurants, bicycle rentals, etc. which are complementary to recreational open space opportunities shall be planned within the system.
- [7] Recreation activities that occur in the Capital City Recreation Park shall be expanded throughout the system.
- [8] The primary modes of movement along and through the system shall be non-motorized. Vehicular penetration shall be restricted to parking areas.
- [9] River and Ravine crossings for users of the system shall be developed or improved.
- [10] Land use conflicts between parks and non-parks uses will be minimized by appropriate facility siting, quality design, noise and visual buffering.
- [11] Recreational facilities for water-borne modes of transportation shall be planned in the system.

- [12] Historic and archaeological resources shall be identified and incorporated as land use options within the system.
- [13] Recreational facilities and amenities must, where feasible, accommodate access and other requirements of the handicapped.
- [14] Natural resource areas in the system shall be preserved and enhanced for recreational, scenic, and ecological purposes.
- [15] Environmentally sensitive and hazardous lands within the system shall be identified. Development shall not be planned on unstable slopes.
- [16] Only essential direct River and direct Ravine transportation corridor crossings shall be planned within the system.
- [17] Major public facilities shall not be planned for locations within the system.
- [18] Storm water management techniques shall be employed to reduce the adverse impacts of increased volume and rate of stormwater discharges.
- [19] Planning shall include a continuous and integrated trail system for hiking, jogging, bicycling, and cross-country skiing.
- [20] Access from all adjacent neighborhoods shall be maximized.

2.5 RIVER VALLEY & RAVINE RECREATION ACTIVITIES

Section 2.2 identified a multi-phased planning process initiated by the Parks and Recreation Department of the City of Edmonton. This process was intended to guide the development of the remaining undeveloped open space segments of the North Saskatchewan River Valley System. The "North Saskatchewan River Valley and Ravine System Resource Analysis: Technical Report", completed in 1983 forms the basis for the next stage of this study.

Chapter two of the Technical Report included a Recreation Inventory of recreational activities located in the system. To augment the list of activities identified in the Technical Report, a review of Capital City Recreation Park and Mill Creek Ravine Park recreation activities was completed. The inventory of activities was then divided into the following categories: Sports Fields, Nature Enhanced - Non Linear, Nature Enhanced - Linear, Nature Dependent, Structural Elements, Water Oriented, and Specialty Activities, (refer to Appendix I).

A policy of the North Saskatchewan River Valley Area Redevelopment Play Bylaw No. 7188 (refer to 2.3.A.2) stipulates the River Valley & Ravine System is to be developed and managed from a low to high range of intensity recreational activities. The inventory of activities in Appendix I have been assessed as low, moderate and high intensity levels.

In order to determine those activities identified in Appendix I that are to be considered for development within the study area, a review of the planning & development criteria elaborated in section 2.2 identified two criteria that immediately eliminated several potential activities. Table 1 itemizes the criteria and recreation activities eliminated.

Table 1. Recreation Activities Eliminated by Planning & Development Criteria.

Criteria No.	Criteria	Eliminated Recreation Activities
8	The primary modes of movement along and through the system shall be non-motorized. Vehicular penetration shall be restricted to parking areas.	Snowmobiling Motorcycle / Motocross Trails Off Road Vehicles
17	Major public facilities shall not be planned for locations within the system.	Horse Arenas Lawn Bowling Shooting Range (skeet, riffle, trap) Individual Camping (tent & vehicle) Group Camping (tent & vehicle) Curling Clubs / Facilities Entertainment / Sports Pavilion Historic Interpretation Facilities (i.e. Fort Edmonton) Exhibit Pavilion (i.e. Zoo) Swimming Pool Recreation Complex (racquetball, squash, handball, volleyball, basketball, etc.) Hockey Arena Sports Stadiums Golf Downhill Skiing

In addition the planning and development criteria suggest all existing recreation facilities that include high intensity recreation activities will be maintained and managed within the system. This will ensure the system provides a low to high intensity range of recreational activities as called for in Parkland Development Policies (refer to 2.3.A.2). The study area does not encompass any existing high intensity recreation activities, hence, this policy does not apply directly to the study segment of the System.

3. RECREATION INVENTORY

3.1 N.S.R.V. & R. SYSTEM FACILITY INVENTORY

Beginning with Frederick G. Todd's recommendation in 1907 (refer to 2.2) the City has pursued the development of a River Valley and Ravine Regional Park System that serves the metropolitan recreation needs of residents and visitors. This process has resulted in the construction of many major recreation facilities in the System.

The facility inventory in the Resource Analysis: Technical Report itemized the first detailed inventory and assessment of existing recreational facilities in the System (refer to Appendix II). Although it was not a complete inventory, it did illustrate that the facilities served city-wide needs as well as adjacent community needs. The locations of these facilities are mapped below (refer to figure 19) to illustrate their relative location in the system to the study area. The planning and development criteria (refer to 2.4.2) designate all existing recreation facilities that include high intensity recreation activities are to be maintained and managed within the System. This will ensure the System provides a low to high range of recreational intensity activities as called for in the Parkland Development policies (refer to 2.3.A.2).

A review of the technical report facility inventory tables indicate that picnicking, hiking/jogging trails and nature and wildlife study areas are among the most numerous activities served by the existing facilities in the System. Water bourne activities, sports fields and viewpoints appear to be among the less developed facilities. Facilities developed within Capital City Recreation Park and Mill Creek Ravine Park will be elaborated in section 3.6.

LEGEND

- | | |
|---|---|
| 1. TERWILLEGAR PARK | 18. JOHN DUCEY BALL PARK |
| 2. RAINBOW VALLEY CAMPGROUND / SKI HILL | 19. MUTTART CONSERVATORY |
| 3. FORT EDMONTON | 20. CONNORS SKI HILL |
| 4. JOHN JANZEN NATURE CENTRE | 21. BENNETT ENVIRONMENTAL
EDUCATION CENTRE |
| 5. WHITEMUD PARK | 22. GALLAGHER PARK |
| 6. WHITEMUD EQUESTRIAN CENTRE | 23. MILL CREEK RAVINE PARK |
| 7. LAURIER PARK | 24. ARGYLL VELODROME |
| 8. VALLEY ZOO | 25. ARGYLL PARK |
| 9. BUENA VISTA PARK | 26. FOREST HEIGHTS PARK |
| 10. WILLIAM HAWRELAK PARK | 27. CAPILANO PARK |
| 11. PROVINCIAL MUSEUM, ARCHIVES
& GOVERNMENT HOUSE | 28. GOLD BAR PARK |
| 12. VICTORIA PARK | 29. RUNDLE HEIGHTS PARK |
| 13. ALBERTA LEGISLATURE BUILDING | 30. RUNDLE PARK FAMILY
RECREATION CENTRE |
| 14. HIGH LEVEL BRIDGE | 31. A.C.T. RECREATION CENTRE |
| 15. JOHN WALTER HISTORIC PARK | 32. STRATHCONA SCIENCE PARK |
| 16. KINSMEN PARK, FIELD HOUSE
& AQUATIC CENTRE | 33. HIDDEN RIDGE SKI AREA |
| 17. QUEEN ELIZABETH PARK | 34. HERMITAGE PARK |

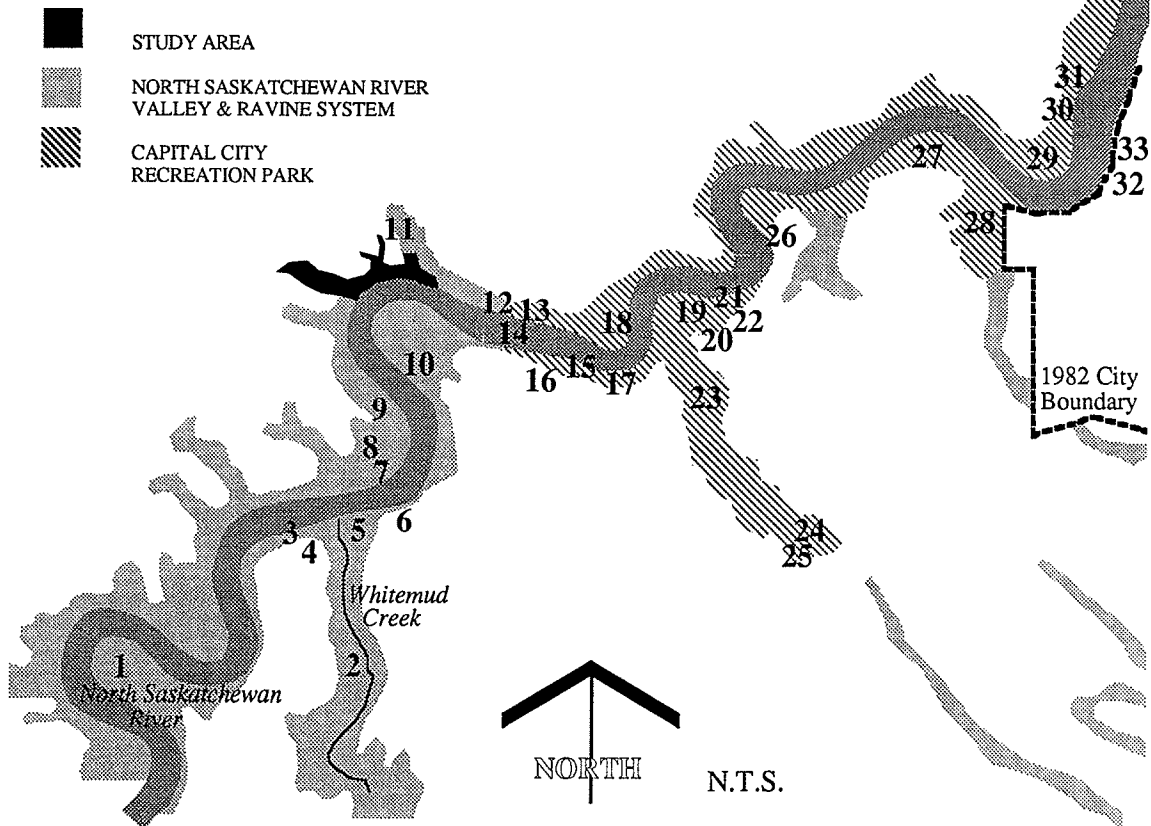


Figure 19. Existing Recreation Facilities in the System.

3.2 NEIGHBORHOOD FACILITY INVENTORY

Five neighborhoods have been developed adjacent to the study area. The boundaries of these communities is defined by the Planning Department of the City. The neighborhoods of Glenora, Grovenor and Crestwood are in the Northwest Planning District while Canora and West Jasper Place are found in the West District. The Planning Department produces neighborhood fact sheets for all planning districts that illustrate land use, population statistics, community services and recreation facilities (refer to Appendix III). A review of these fact sheets for the neighborhoods adjacent to the study area identified the recreation facilities found there (refer to figures 20 - 24).

The Parks and Recreation Master Plan 1979 - '83 classified all neighborhoods in the City into groups with similar population characteristics. A comparison of the neighborhood fact sheets population statistics with the Master Plan indicated the composition in these five neighborhoods had not changed significantly. The Master Plan had indicated the neighborhoods of Grovenor, Glenora, and West Jasper Place had a total of 0.97, 1.42, and 0.57 ha. deficiencies in open space.¹⁸ The Plan indicated that the cost of acquiring the land to provide the deficient open space was considered prohibitive.

The Master Plan also illustrated the location of District parks that serve the recreational needs of up to ten communities. Two such parks are located within a 2 km distance of these communities, however several major arterial roadways must be crossed by individuals travelling to them by foot or bicycle. A more desirable proposal would include the development of the MacKinnon Ravine which currently serves as open space for the adjacent communities. This development should include a pedestrian/bicycle bridge spanning the River to link the study area with William Hawrelak Park, a major regional open space. This connection would provide a direct route for the communities of Glenora, Grovenor, and Crestwood. West Jasper Place and Canora residents would have to cross one major arterial roadway.

The only vacant land adjacent to three of the communities is the MacKinnon Ravine site. In the community of West Jasper Place, however, there appears to be a significant amount of

¹⁸ The City of Edmonton, "Parks and Recreation Master Plan 1979 - '83, (Edmonton: 1978), p. 123.

vacant land. A significant parcel is located in the northeast corner of this neighborhood. This land was once connected to the Ravine prior to the construction of 149 Street (refer to figure 4). The roadbed for this street was created on fill material which terminated the ravine in this location.

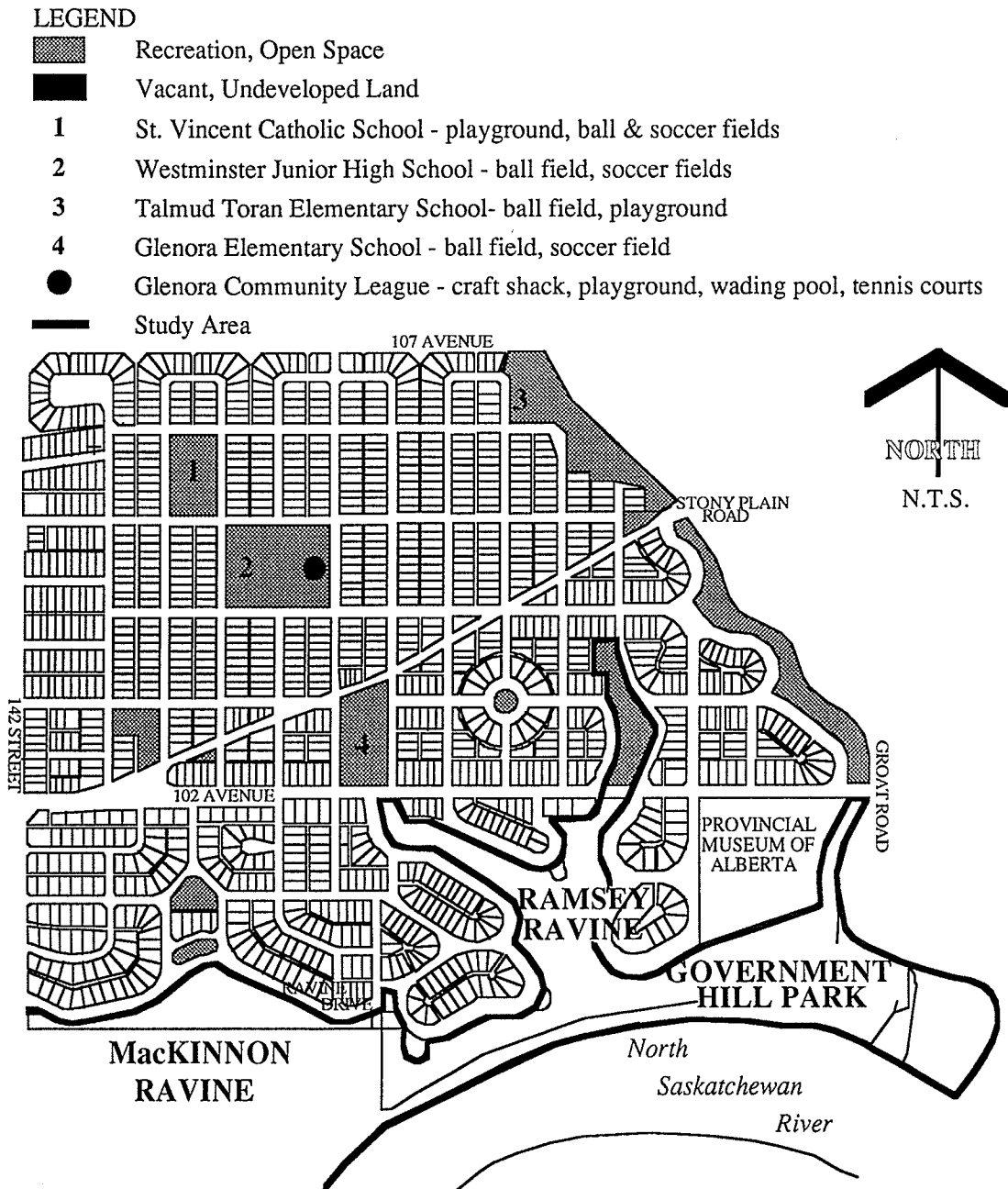


Figure 20. Glenora Open Space and Vacant Land.

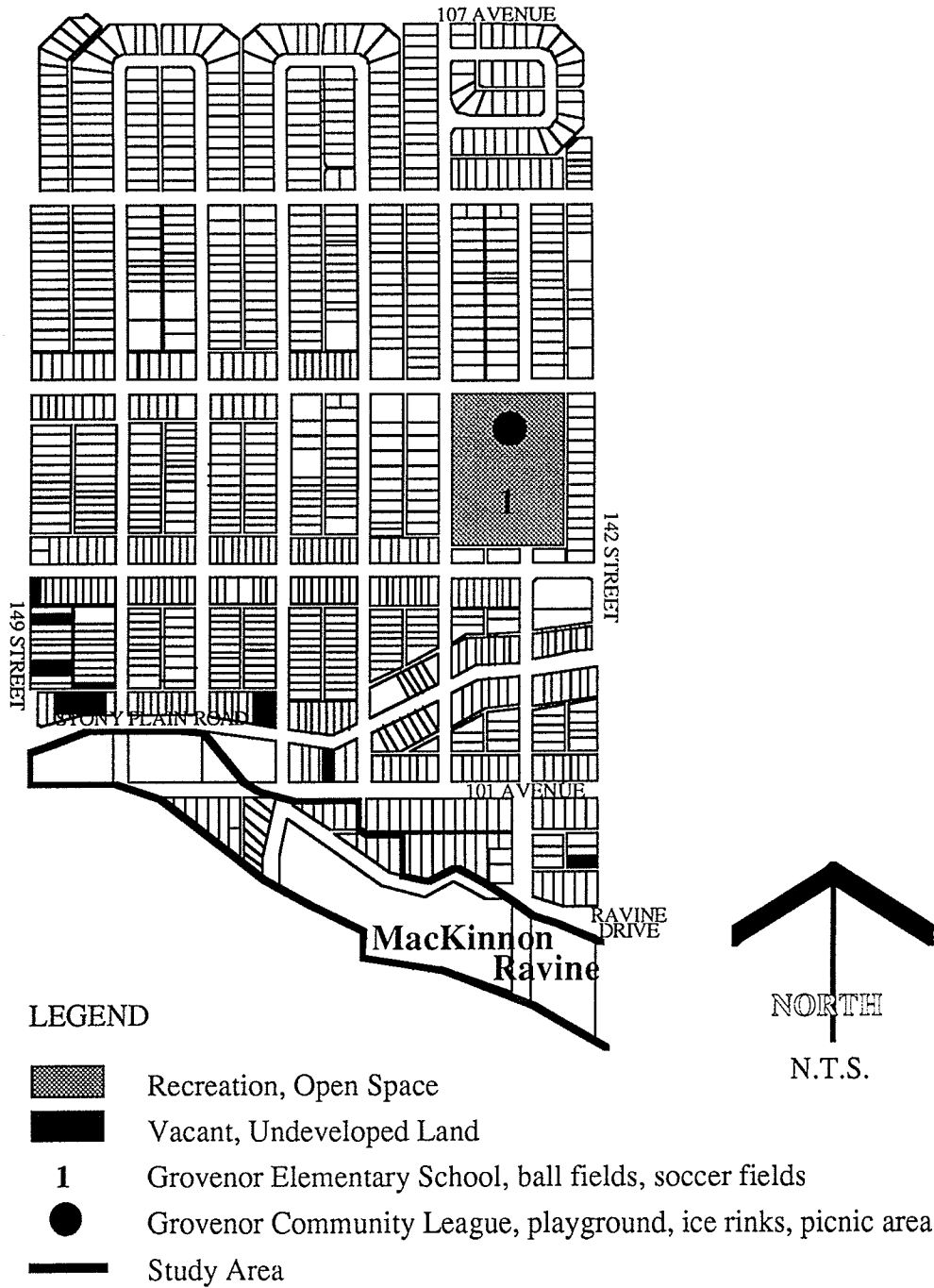


Figure 21. Grovenor Open Space and Vacant Land.

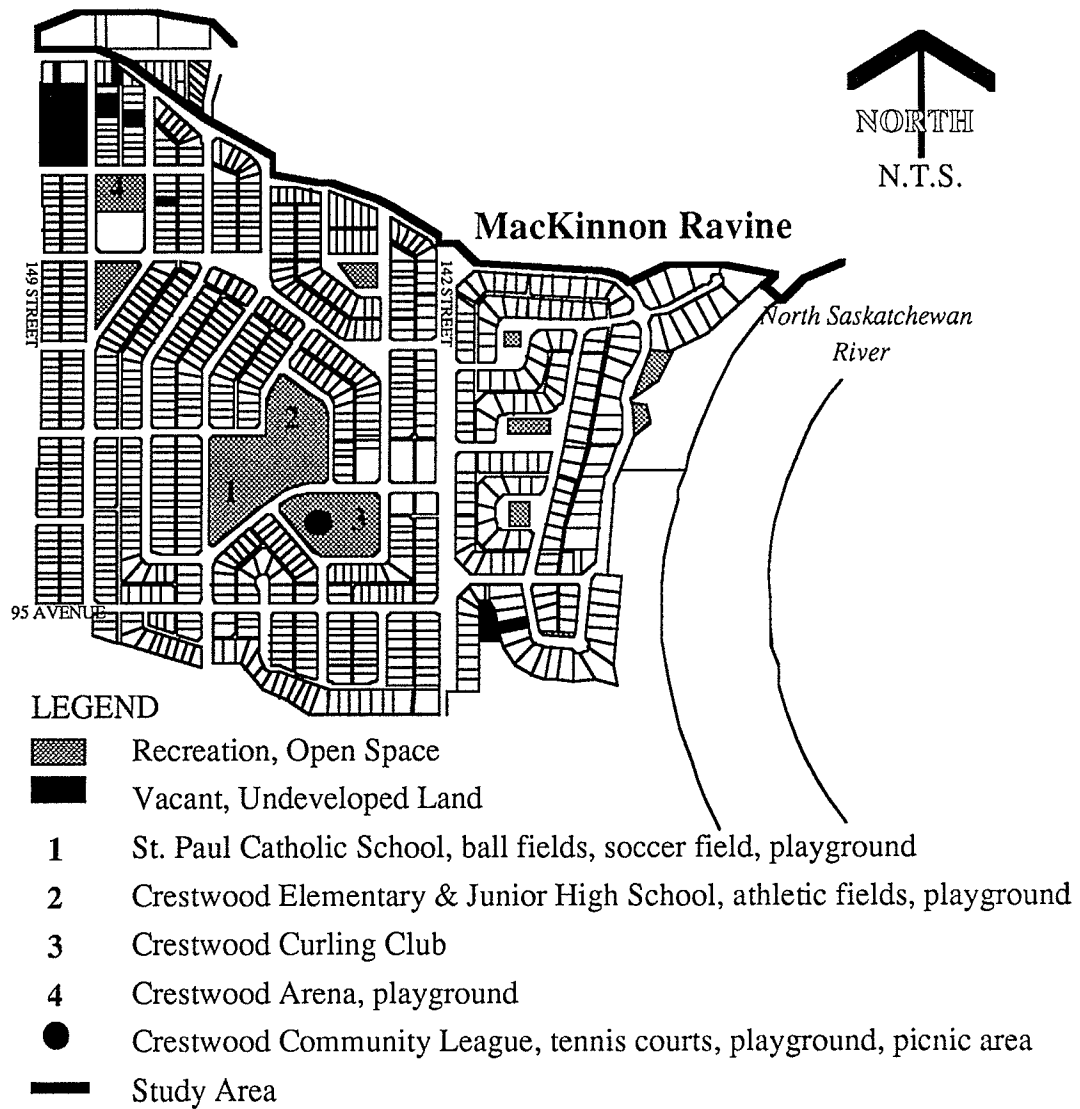
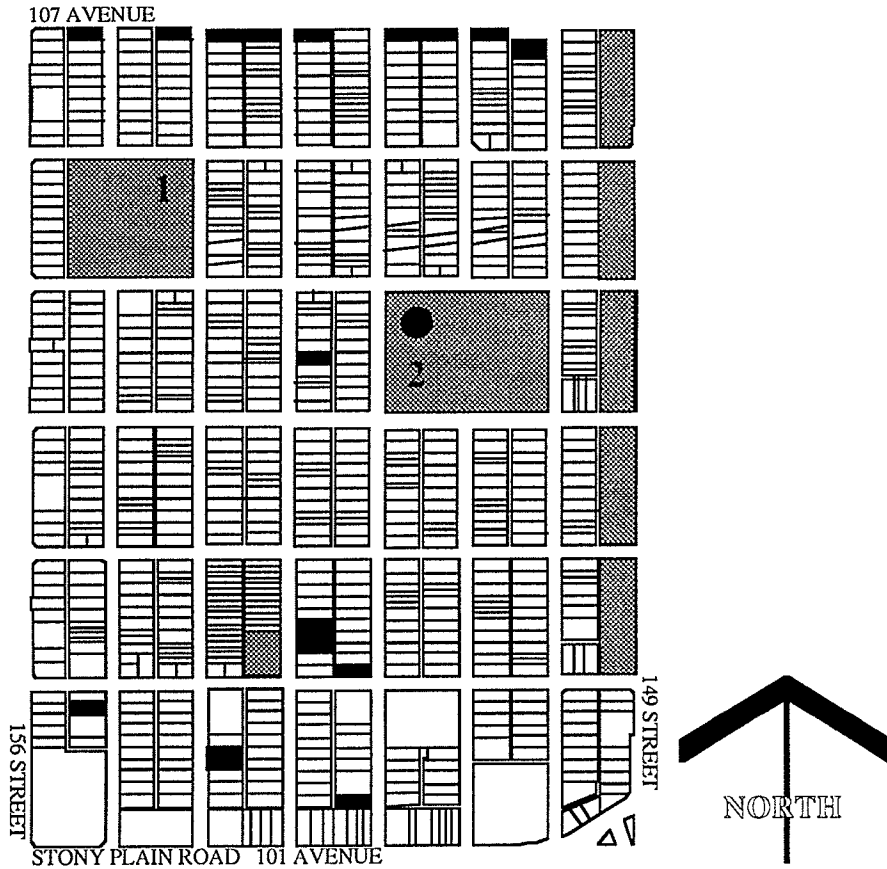


Figure 22. Crestwood Open Space and Vacant Land.



LEGEND




-  Recreation, Open Space
-  Vacant, Undeveloped Land
- 1** Brightview Elementary School, ball fields, soccer, playground
- 2** Holy Cross Elementary Junior High School, ball fields, soccer
-  Canora Community League, ball field, ice rink, playground

Figure 23. Canora Open Space and Vacant Land.

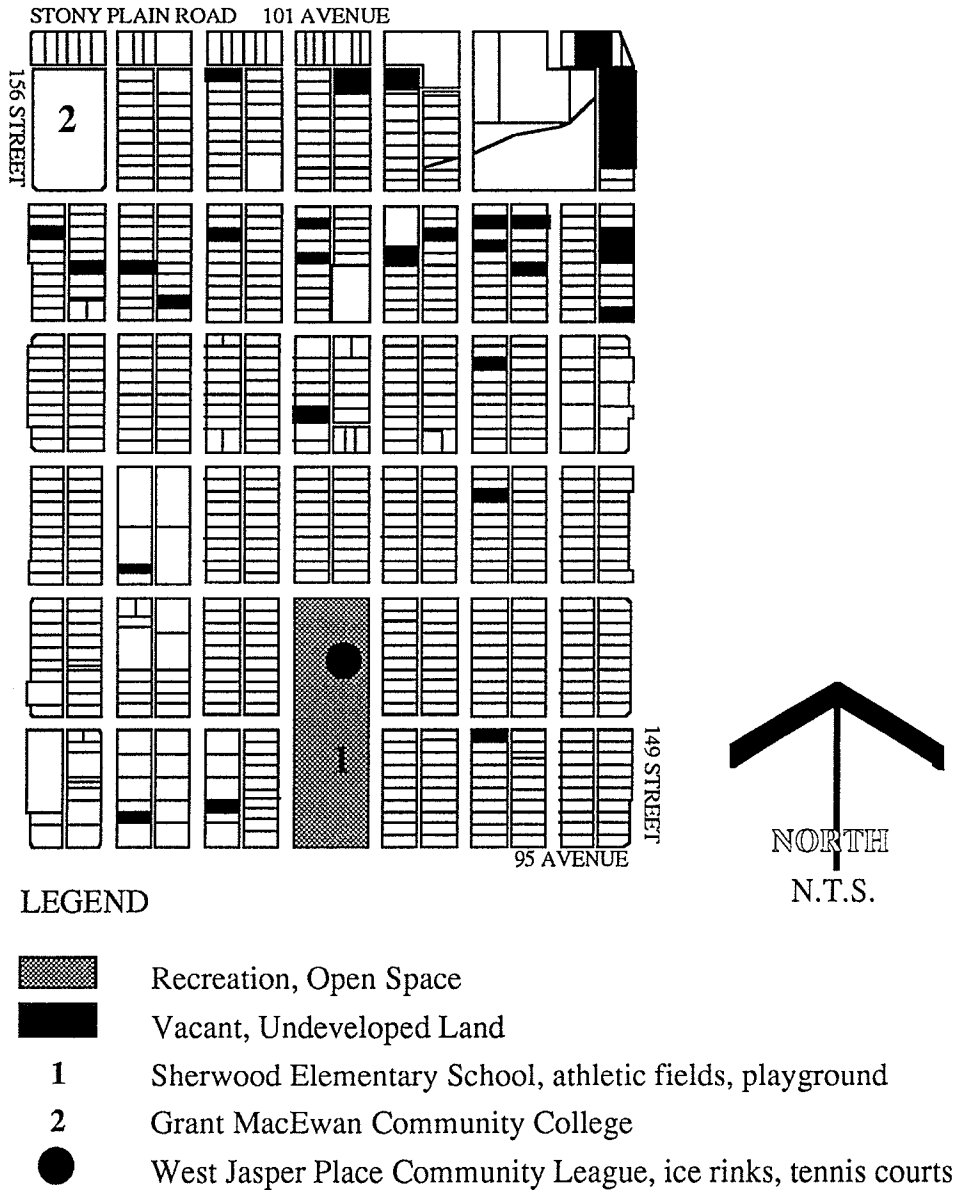


Figure 24. West Jasper Place Open Space and Vacant Land.

3.3 LEISURE SURVEY

A city-wide leisure survey was conducted by the City of Edmonton in October of 1980. The results of this survey were included in the River Valley & Ravine System Resource Analysis: Technical Report. The purpose of the survey was to gain an understanding of city-wide participation in leisure activities. The results of this survey are included in Appendix IV. Given that the survey was city-wide, it is possible to apply these results to this study focussed on a segment of the System which is intended to serve city wide recreation needs.

Many of the activities listed in the results are primarily served by existing System facilities. These include downhill skiing, camping, canoeing, boating, cross-country skiing, nature study, hiking and golf. Of the participation rates examined, the twenty most popular recreation activities were as follows:

Table 2. Twenty Most Popular Recreation Activities.

Activity	Total City Participation Rate
Walking	12.66 %
Calisthenics	11.44
Swimming	8.39
Jogging / Running	8.21
Bicycling	7.53
Camping	5.52
Picnicking	5.04
Ice Skating	4.79
Hiking	4.24
Weight-Training	4.17
Squash / Racquetball / Handball	4.03
Boating	3.98
Golf	3.65
Fishing	3.50
Baseball / Softball	3.34
Tennis	3.01
Volleyball	2.79
Hockey	2.65
Football	2.61
Downhill Skiing	2.46

For comparison, the following are the twenty most popular activities for participation in city facilities and Table 4 illustrates the twenty activities with the highest percentage of total participation occurring on city facilities.

Table 3. Twenty Most Popular Recreation Activities - City Facilities.

Activity	City Facility Participation Rate
Swimming	4.59 %
Jogging / Running	4.33
Ice Skating	4.20
Walking	4.15
Bicycling	2.38
Baseball / Softball	2.18
Tennis	2.16
Picnicking	1.68
Football	1.56
Golf	1.33
Soccer	1.18
Calisthenics	1.12
Hockey	1.02
Cross - Country Skiing	0.94
Hiking	0.93
Squash / Racquetball / Handball	0.71
Tobogganing	0.68
Curling	0.65
Volleyball	0.57
Badminton	0.41

Table 4. Twenty Most Popular Recreation Activities - City Facilities.

Activity	Percentage of Total on City Facilities
Ice Skating	87.7 %
Tennis	71.9
Baseball / Softball	65.3
Soccer	62.1
Football	59.7
Swimming	55.0
Jogging / Running	52.7
Tobogganing	48.3
Cross - Country Skiing	40.0
Hockey	38.5
Walking	38.2
Golf	36.5
Picnicking	33.4
Bicycling	31.6
Curling	28.0
Hiking	22.0
Snowshoeing	21.5
Volleyball	20.3
Badminton	19.0

3.4 DEMOGRAPHICS

A comparison of the resident demographics of Grovenor, Canora and West Jasper Place with the city-wide statistics indicate these communities values are very similar to the mean for the entire City. The neighborhoods of Glenora and Crestwood, however, have a higher percentage of 40 - 65 + age groups. This would indicate the recreation participation and therefore recreation needs of these communities may be different than the norm.

A review of the Leisure Survey has determined the ten activities with the highest participation rates for the previously noted age groups (refer to Table 5).

Table 5. Ten Most Popular Recreation Activities for 40 - 65+ Age Group - City Facilities.

<u>Activity</u>	<u>Percentage of Total City Participation</u>
Walking	32 %
Golf	32
Nature Study	29
Picnicking	28
Curling	27
Fishing	26
Boating	24
Hiking	24
Camping	23
Swimming	21

3.5 SITE INVENTORY

The undeveloped areas of the site currently provide open space opportunities to the adjacent communities. Service routes and remnant paths provide access to the area. In addition, an access drive and parking is provided on the eastern edge of Government Hill park from Groat and River Valley Roads. The land use regulations introduced in the 1930's (refer to 2.2) and subsequent planning has resulted in residential setbacks around a considerable portion of the MacKinnon and Ramsey Ravines. Government House and the Provincial Museum & Archives are located at the top of the riverbank above Government Hill Park. This allows for significant public access to the System throughout the study area.

Table 6 defines the recreational activities that have been documented within the study area.

Table 6. Existing Study Area Recreational Activities

Kite Flying
Picnicking
Group Picnicking
Cross-Country Skiing
Nature / Wildlife Study
Photography
Viewpoints
Hand Gliding
Day Camping
Hiking / Jogging
Walking
Bicycling
Rafting Viewpoints
Tobogganing
Motorcycle / Motocross / All Terrain Vehicle

3.6 CAPITAL CITY RECREATION PARK STANDARDS

Capital City Recreation Park was opened on July 8, 1978. Approximately 35 million dollars was spent in the development of this 16 km stretch of the North Saskatchewan River. Twenty-five km of gravelled hiking trails and 29 km of paved bicycle trails were integrated in the open space along both sides of the river. Four pedestrian bridges were constructed to span the river and other developed amenities included shelters, benches, picnic areas, parking and view points to take advantage of significant vantage points.

The Mill Creek Ravine Park was completed in 1984 and maintains the same standard of development as C.C.R. Park. The following plans have been developed to illustrate the type and frequency of facilities developed in these two parks (refer to figures 25 - 30). The facilities have been arranged in the same groups identified in the "N.S.R.V. & R. System Resource Analysis: Technical Report". Amenities developed on the sites adjacent to the study area have also been documented.

LEGEND

- A ATHLETIC FIELDS
- B TENNIS COURTS
- C HOCKEY RINK
- D LEISURE SKATING RINK
- E ADVENTURE PLAYGROUND

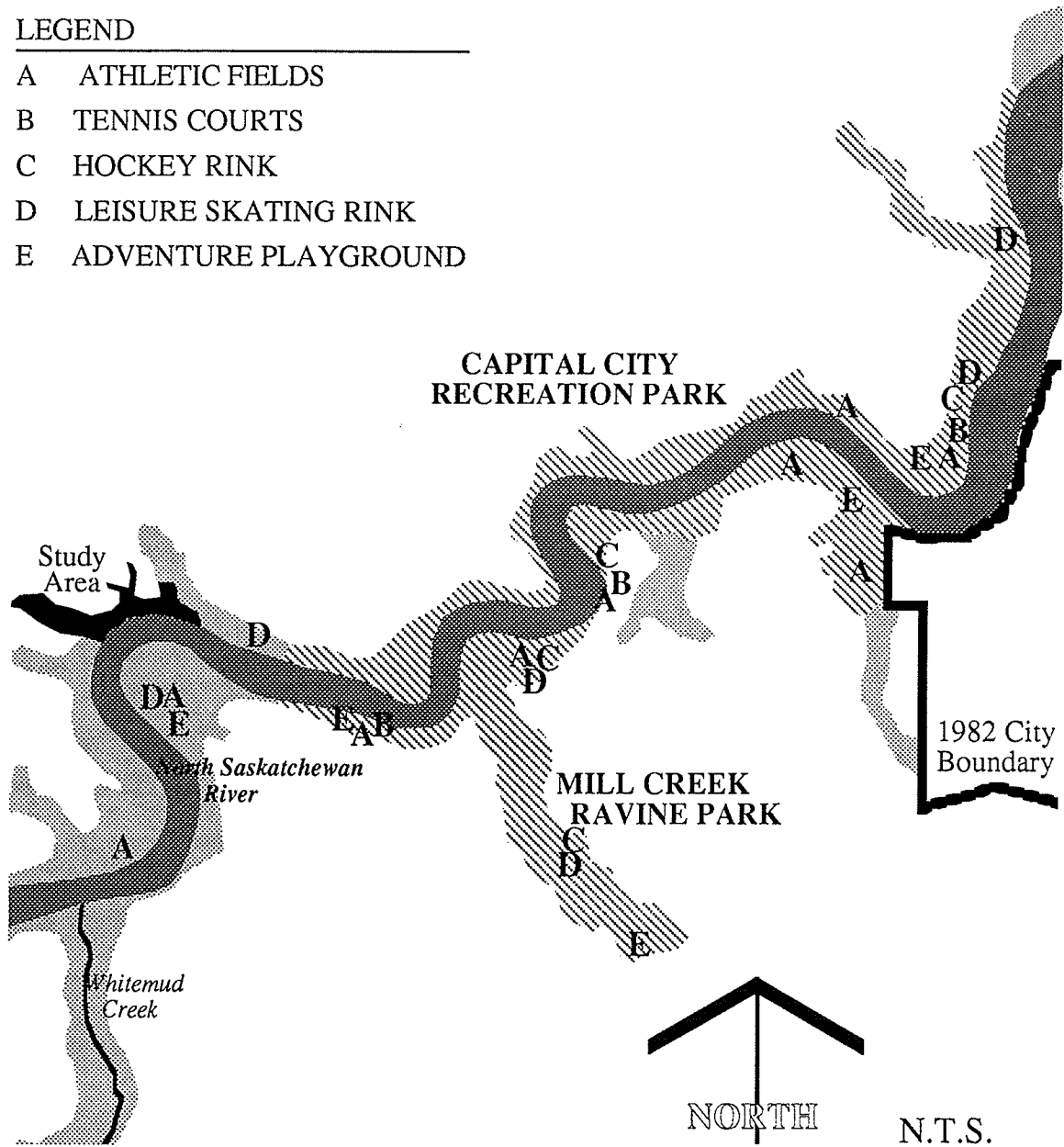


Figure 25. Sports Fields Developed in the Capital City Recreation Park, Mill Creek Ravine Park and Open Spaces Adjacent to the Study Area.

LEGEND

- A PICNIC AREA
- B FIRE PIT
- C REST SPOT

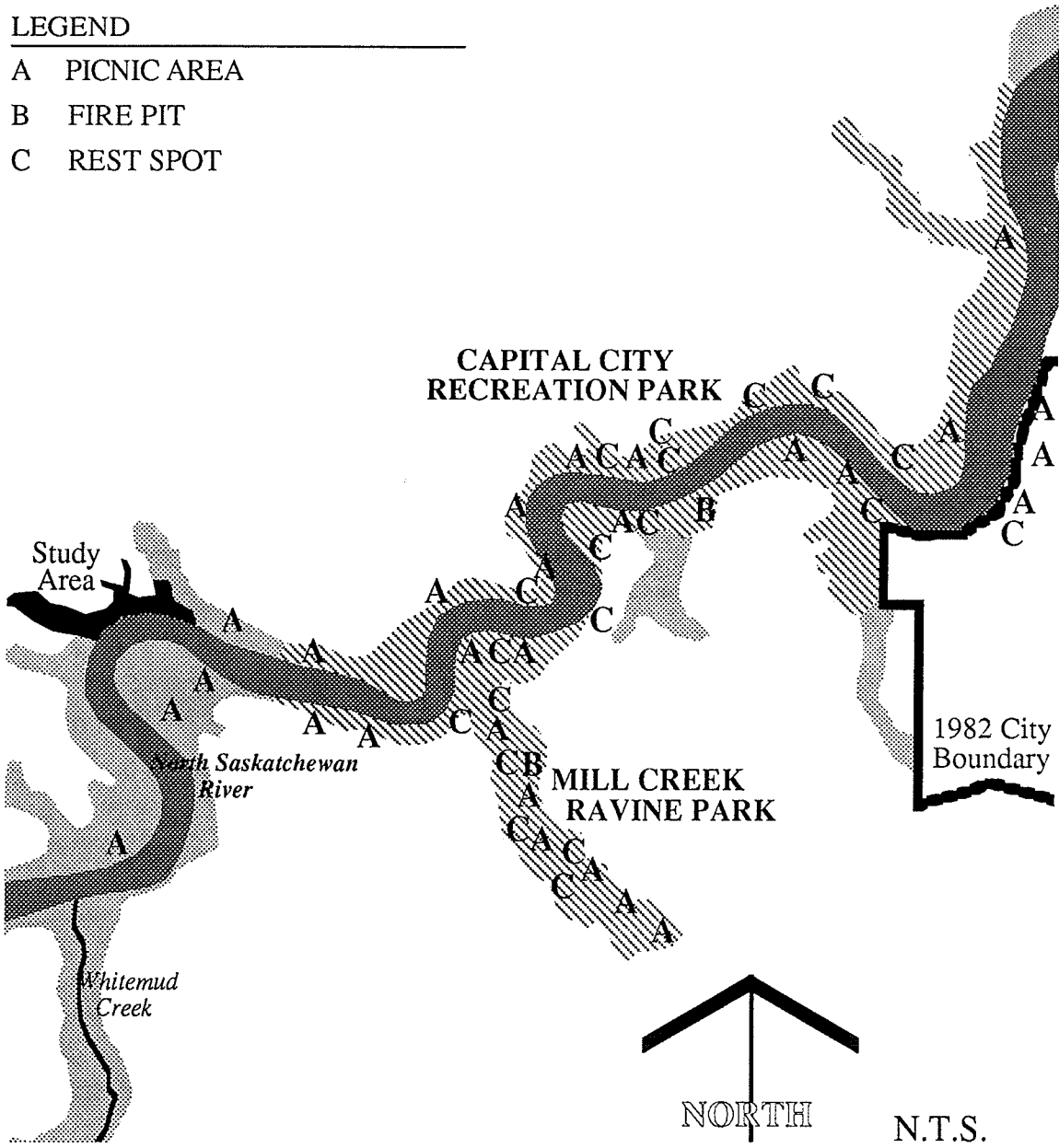


Figure 26. Nature Enhanced - Non Linear Amenities Developed in the Capital City Recreation Park, Mill Creek Ravine Park and Open Spaces Adjacent to the Study Area.

LEGEND

- BICYCLE/FITNESS TRAILS
- A SNOWSHOE TRAILS
- B CROSS-COUNTRY SKIING

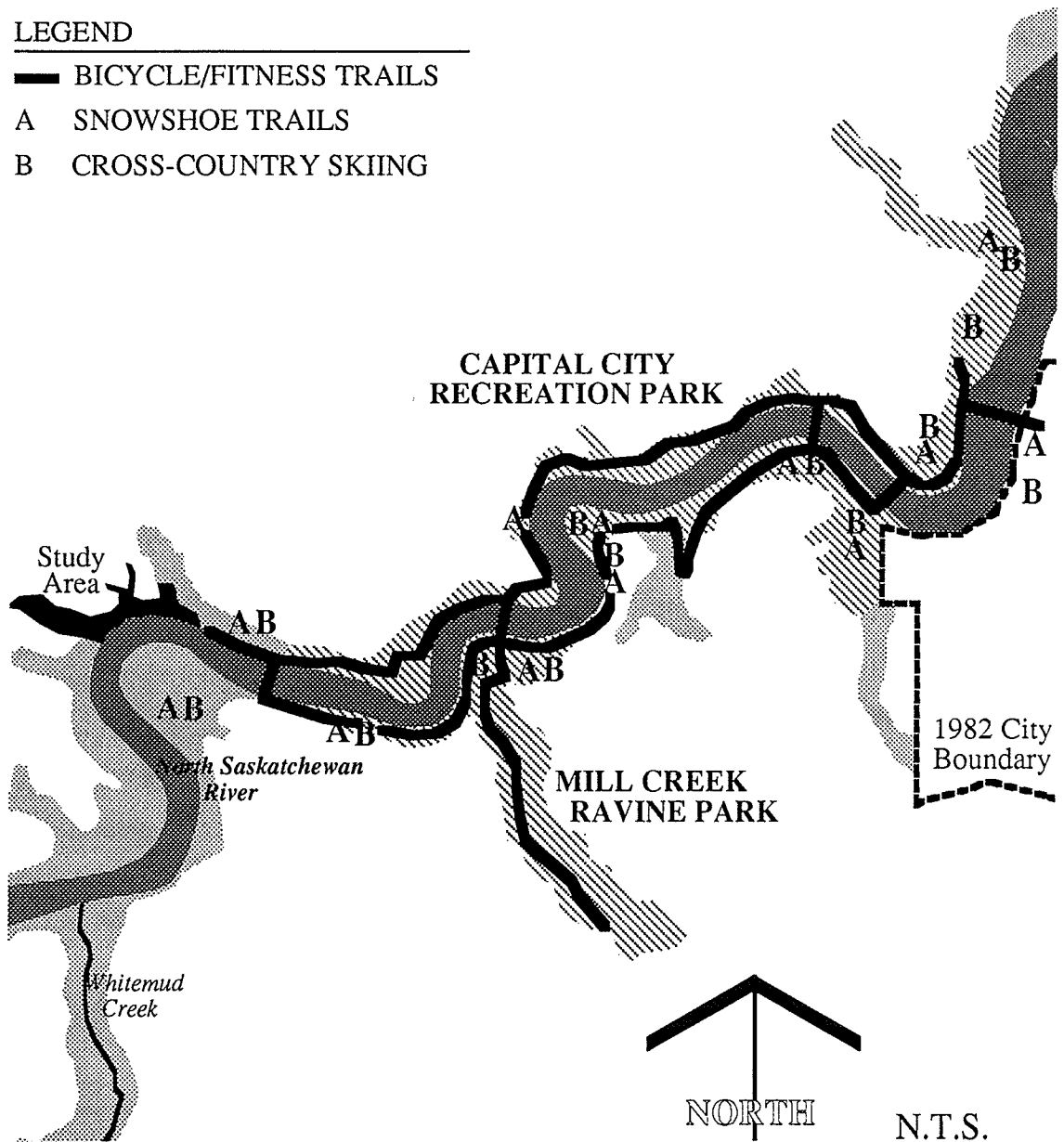


Figure 27. Nature Enhanced Linear Amenities Developed in the Capital City Recreation Park, Mill Creek Ravine Park and Open Spaces Adjacent to the Study Area.

LEGEND

- A VIEW POINT
- B NATURE INTERPRETIVE SITE

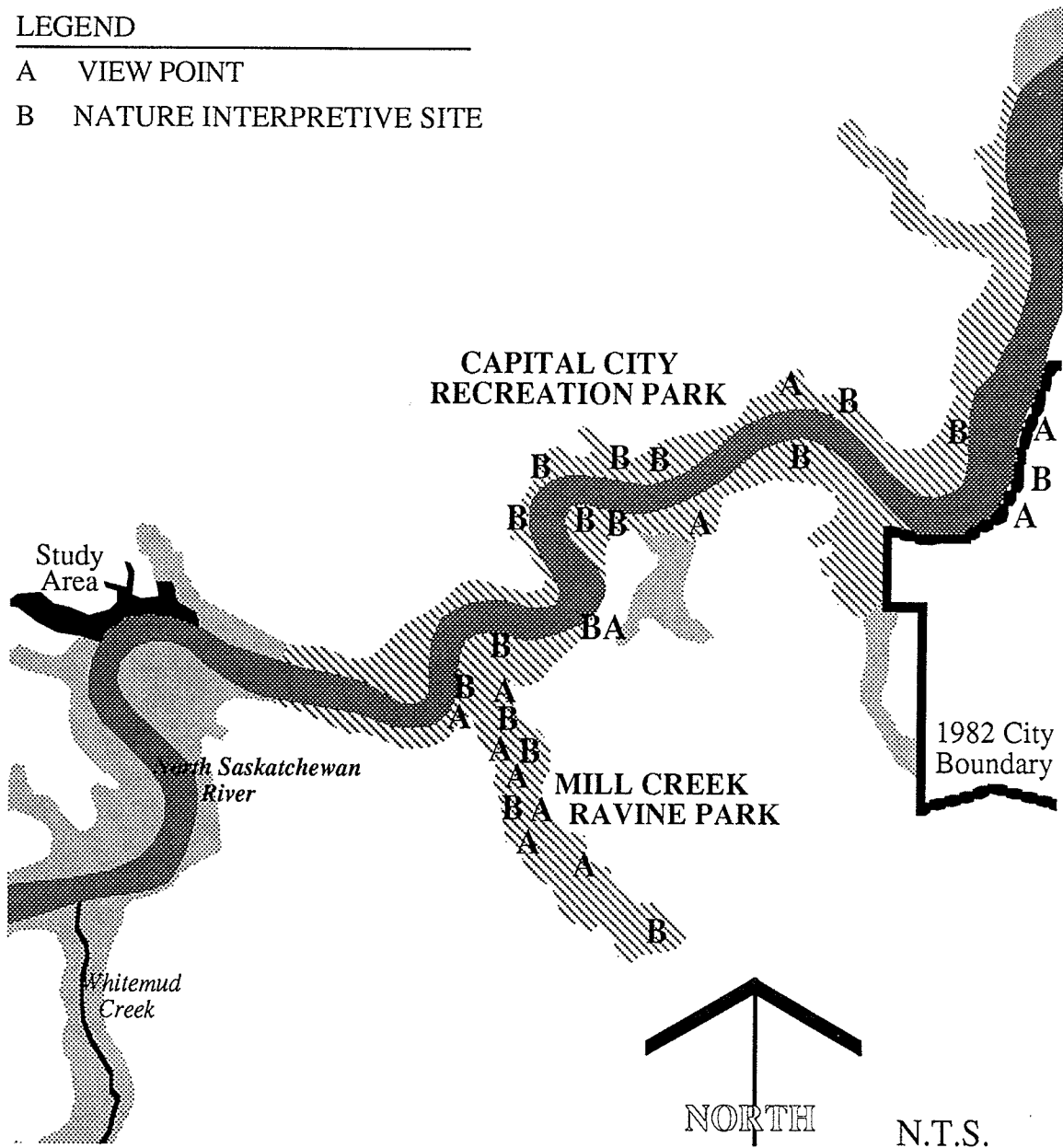


Figure 28. Nature Dependant Amenities Developed in the Capital City Recreation Park, Mill Creek Ravine Park and Open Spaces Adjacent to the Study Area.

LEGEND

- A WASHROOMS & TELEPHONE
- B PICNIC SHELTER
- C SKI PAVILLION
- D TRAIL SHELTER
- E SWIMMING POOL
- F PAVILLION
- G RECREATION CENTRE
- H HISTORIC/ARCHAEOLOGICAL INTERPRETIVE SITE
- K PARKING
- M PEDESTRIAN BRIDGE
- N PEDESTRIAN & VEHICULAR BRIDGE

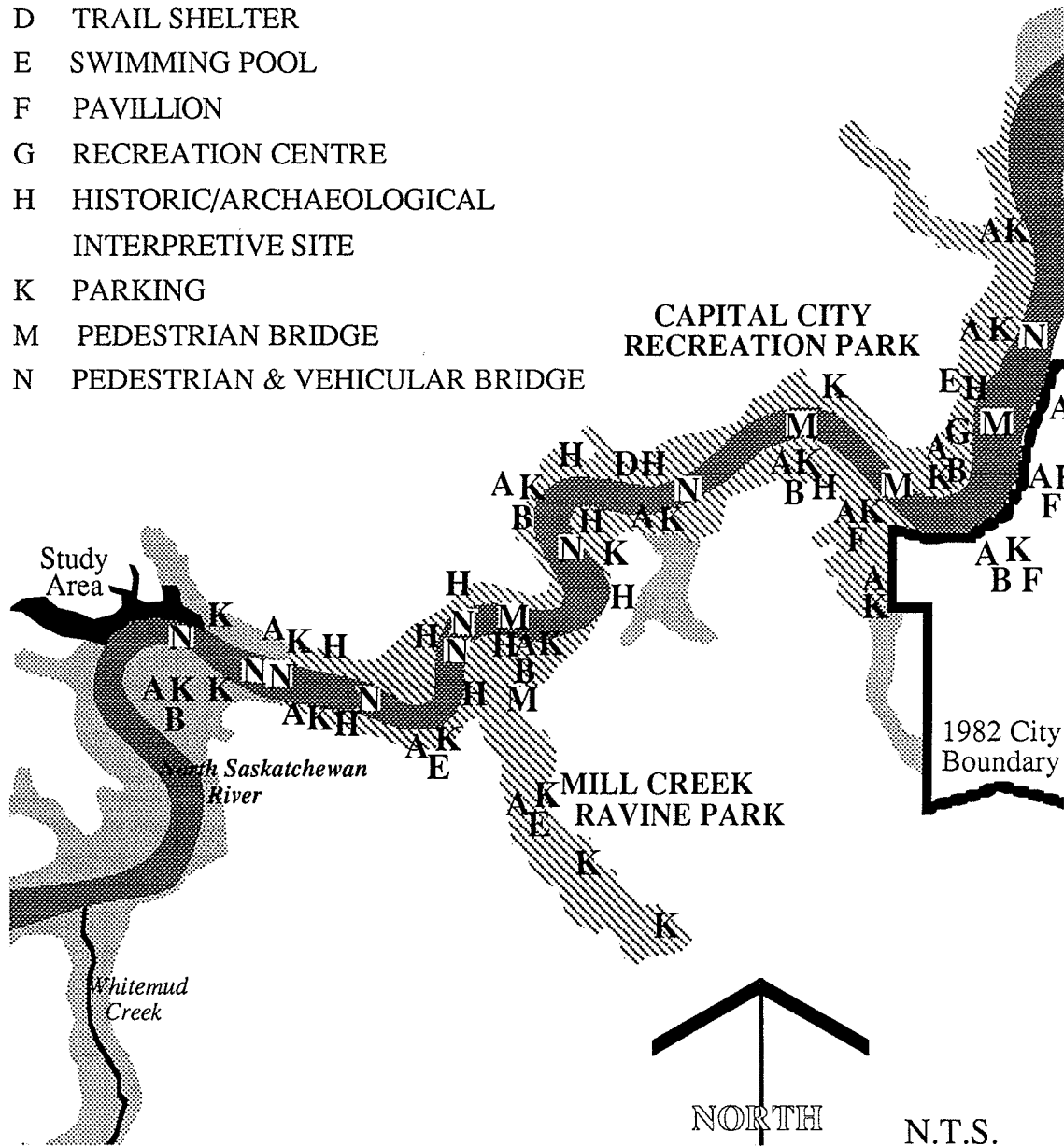


Figure 29. Structural Elements Developed in the Capital City Recreation Park, Mill Creek Ravine Park and Open Spaces Adjacent to the Study Area.

LEGEND

- A RAFTERS LANDING
- B FISHING POND
- C CANOE FACILITY
- D PADDLE BOATS
- E DOWNHILL SKIING
- F1 PUBLIC GOLF COURSE
- F2 PRIVATE GOLF COURSE

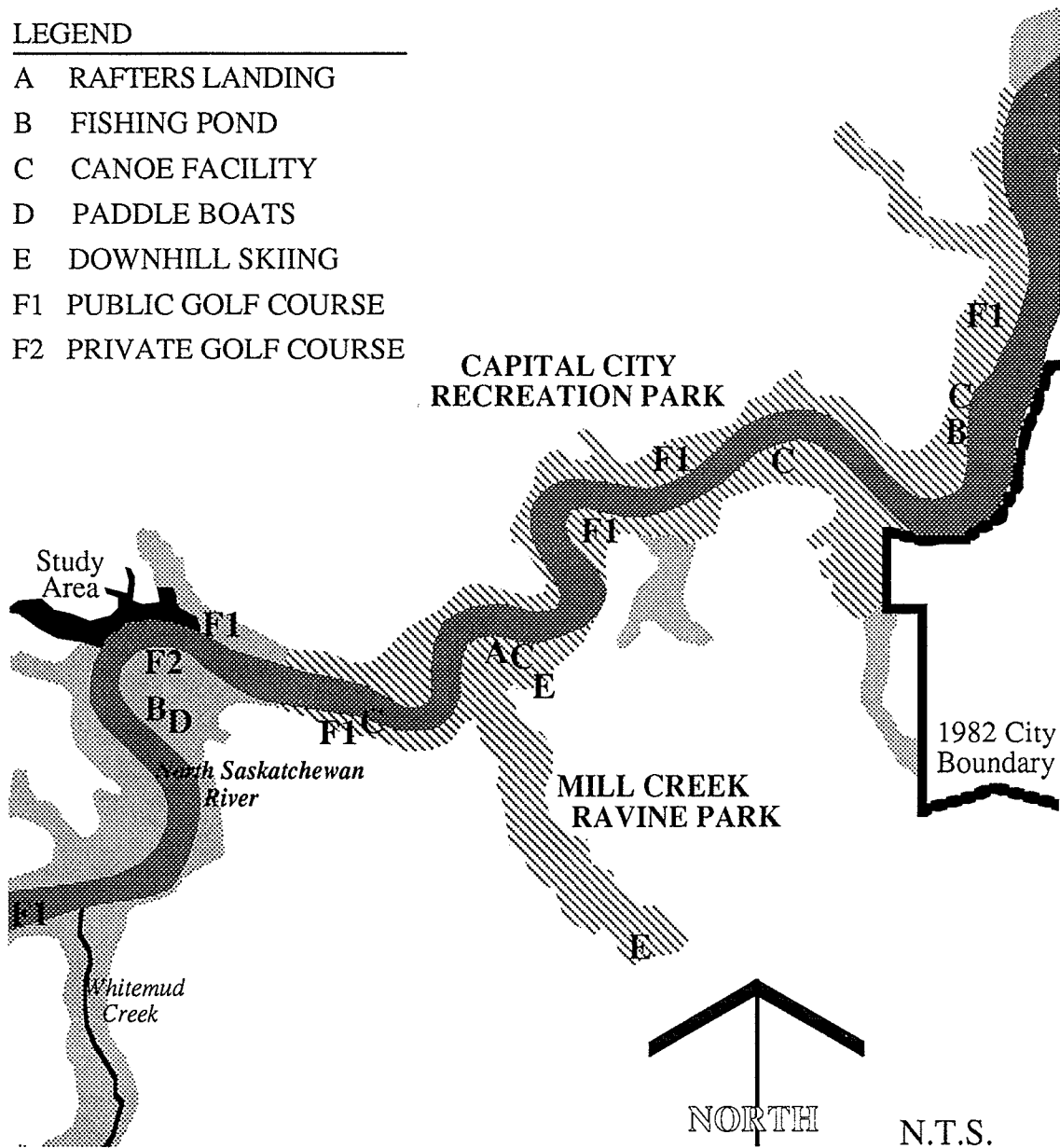


Figure 30. Water Oriented & Specialty Activities Developed in the Capital City Recreation Park, Mill Creek Ravine Park and Open Spaces Adjacent to the Study Area.

3.7 REGIONAL & NEIGHBORHOOD RECREATION NEEDS

The intent of the Recreation Inventory was to gain an understanding of the regional and neighborhood recreation needs as expressed by the existing level of facility development in the System and in the adjacent neighborhoods, the participation rates illustrated in the most current available leisure survey, a review of neighborhood demographics to determine relative similarity to the city-wide norm, an inventory of existing recreation use of the study area, and the existing standard of development within the Capital City and Mill Creek Ravine Parks.

The System facility inventory illustrated the high intensity recreation areas developed within the system. These sites are destination points for users of and visitors to the system.

The neighborhood facility inventory suggests that all five neighborhoods appear to be well served by their community hall or school ground sites. The major exceptions are Grovenor, Glenora, and West Jasper Place which had a total of 0.97, 1.42, and 0.57 ha. deficiencies in open space. The recreational development of the study area will be of most benefit to their needs. Access from these three neighborhoods should therefore be maximized. The potential of a cross-river pedestrian link should also receive strong consideration in order to provide closer access to a regional park for the five communities.

The most current leisure survey identified the recreation activities pursued by residents of the city. This information expressed city wide participation in recreation activities and city owned recreation facilities. This information is most expressive of regional recreation needs.

A review of the neighborhood demographics suggested that residents of the communities of Grovenor, Canora, and West Jasper Place would be consistent with the city-wide participation rates illustrated in the leisure survey. The demographics of Glenora and Crestwood included a greater percentage of elderly residents than the city average. The age group identified participated more frequently than the norm in such activities as Walking, Nature Study, and Picnicking. This suggested that recreational development of facilities that responded to these needs may receive a more favorable response from these communities.

A review of the site indicated that access points are readily available. All existing recreation uses were identified so that they may be included as potential program items. The only exception was Motorcross, Motorcycle, and All Terrain Vehicle traffic. This item was excluded (refer to table 1, page 40).

A review of the existing facilities developed within the Capital City Recreation and Mill Creek Ravine Parks illustrated the level of development users of the system have become accustomed to. The types of facilities and frequency of development must be considered for development in the undeveloped segments of the System as stipulated by development criteria number seven (refer to 2.4).

The recreation inventory section confirmed that the potential recreation activities identified in Appendix I should be considered as the list of regional and neighborhood needs. The only exceptions are those activities identified in Table 1, page 40. The next identified step in the methodology prepared for this study is a capability analysis that will determine the ability of the study area to accommodate the development of recreation facilities.

4. CAPABILITY ANALYSIS

4.1 POTENTIAL RECREATION ACTIVITIES

The following capability analysis is a review of the findings illustrated in the North Saskatchewan River Valley & Ravine System Resource Analysis: Technical Report applied to the potential recreation activities identified in Section 3. Recreation Capability is defined as the ability of land to sustain certain given recreation uses based entirely upon environmental criteria such as soil, vegetation and topographic characteristics.¹⁹

The list of potential recreation activities was grouped into seven broad categories as per the identified capability analysis. This grouping was necessary to efficiently assess the capability of a large number of activities with an extremely large data base of environmental characteristics. The aim of this grouping was to combine activities with similar environmental resource requirements. The categories, basic resource characteristics and activities were:

A. SPORTS FIELDS

Activities that require relatively large, open and level areas.

- Kite Flying
- Ballooning
- Calisthenics
- Croquet
- Horseshoes
- Baseball
- Soccer
- Football
- Rugby
- Hockey
- Ice Skating
- Track & Field
- Playgrounds
- Tennis
- Volleyball
- Basketball
- Badminton
- Field Archery
- Cricket
- Model Airplanes (remote and cable control)

¹⁹ Marshall Macklin Monaghan Western Limited, "North Saskatchewan River Valley and Ravine System Resource Analysis: Technical Report", 1983, p. 56.

B. NATURE ENHANCED LINEAR

The natural setting should be similar to the previous category however the activities are linear, hence, the facilities require different resource characteristics.

Hiking/Jogging Trails
Cross Country/Snowshoe Trails
Walking
Bicycle Trails
Equestrian Facilities
Fitness Trials/Paracourse
Roller Skating
Skateboarding
Archery Courses

C. NATURE ENHANCED NON-LINEAR

The setting established the value of the experience for these activities. An appropriate natural setting is the highest requirement.

Picnicking
Rest Spots
Gardens (formal & arboretum)
Concert/Amphitheater
Cultural/Craft Fairs
Group Picnicking
Day Camping

D. NATURE DEPENDANT

The entire focus of these activities is an individual or set of environmental characteristics where the natural setting is the "facility".

Nature and Wildlife Study
Orienteering
Photography
Scientific Study/Monitoring
View Points

E. WATER ORIENTED

These activities occur on or in water.

Rowing Crew
Model Boats
Fishing/Fly Casting (pond, river)
Canoeing
Kayaking
Paddle Boats
Row Boats
Boating
Rafting (sourdough raft race)

F. STRUCTURAL ELEMENTS

These recreation activities utilize buildings or permanent structures which require foundations or specific resource characteristics.

Trail Shelter

Maintenance Building/Yard

Picnic Shelter (public washroom)

Food Concessions/Cafeteria

(fast food, beer garden, tea house, waterfront facilities)

Pedestrian Bridges

G. SPECIALTY ACTIVITIES

This category includes those activities which, by their nature, do not fit into the other categories. Their resource requirements are specialized and / or the facility / development constitutes a significant capital investment; or long term operation and maintenance consideration.²⁰

Hang Gliding

Tobogganing

²⁰ Ibid. p. 61.

4.2 RESOURCE CAPABILITY CRITERIA

The "Technical Report" applied the resource base inventoried in the "Biophysical Study" as it defined the capability of system lands to sustain recreational development. The components of the resource base employed as capability criteria included; soil characteristics, slope, susceptibility to flooding, vegetation and aspect. In order to establish capability for the broad groupings of recreational activities, ranges of resource characteristics were identified as the defining capability criteria. Four ranges of capability that ranged from high, moderate, and low degrees of capability to no capability were established for each group of recreation activities (refer to tables 7 - 13).²¹

Table 7. Criteria used to Assess Sport Fields Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Flood Prone	No	Yes	Yes	Yes
Soils Series	CB1, CB4, FF1	CB2, Wr1, Wr2, DL1, DL3, MO1, MO2	CB5, Wr3, Wr4, Wr5, Rw1, DL2, DL4, CB3, DL5, DL7	DL6, DL8
Slope Class	0, 1	2	3	4 - 9
Vegetation Type	G, M, S1, S2	G, M, S1, S2	A1, A2, P1, P3	A3, P2, B1, B2, W1, W2, W3

Table 8. Criteria used to Assess Nature Enhanced Linear Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Soils Series	CB1, Mo1, Mo2, FF1	CB3, CB4, Wr2, DL1, DL3, DL5, DL7	CB2, Wr1,	CB5, Wr3, Wr4, Wr5, Rw1, DL2, DL4, DL6, DL8
Slope Class	0 - 3	4 - 6	7	8, 9
Vegetation Type	A1, A2, P1, P3	W3, A3, P2	S2, G, M	B1, W1, W2, S1, S2

²¹ Ibid. pp. 64 - 66.

Table 9. Criteria used to Assess Nature Enhanced Non-Linear Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Soils Series	CB1,CB4,FF1	Wr1,Wr2,Rw1, DL1,DL3,CB3, CB5	CB2,DL5,DL7, DL2,DL4	Wr3,Wr4,Wr5, DL6,DL8,Mo1, Mo2
Slope Class	0 - 3	4, 5	6	7 - 9
Vegetation Type	A1,A2,A3,P1 P2,P3	A1,A2,A3,P1 P2,P3	S1,S2,G	W1,W2,W3,B1 B2,M

Table 10. Criteria used to Assess Nature Dependant Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Soils Series	CB1,CB4,Wr2 FFL,Mo2,Rw1 DL1	CB2,CB3,CB5, Wr1,DL2,DL3, DL4,DL5,DL7	Wr3,Wr4,Wr5	DL6,DL8
Slope Class	0 - 5	6, 7	8	9
Vegetation Type	W1,W2,W3,B1, B2	A1,A2,A3,P1, P2,P3	S1,S2,G	M

Table 11. Criteria used to Assess Structural Element Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Flood Prone	No	No	Yes	Yes
Soils Series	FF1,Rw1	CB1,CB2,CB4, CB5,Wr1,Wr2, Wr3,Wr4,Wr5, DL1,DL2,DL3, DL4	CB3,Mo1,Mo2	DL5,DL6,DL7, DL8
Slope Class	0 - 2	3, 4	5, 6	7 - 9
Vegetation Type	G,M,S1,S2, A1	A2,P1,P3,A3, P2	W3,B2	W1,W2,B1

Table 12. Criteria used to Assess Hang Gliding Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Soils Series	CB1,Mo1,Mo2	CB3,CB4,Wr2, FF1,DL1,DL3, DL5,DL7	CB2,Wr1,Wr3, Wr5,Wr4,Rw1	CB5,DL2,DL4, DL6,DL8
Slope Class	5, 6	4, 7	8, 3	0 - 2, 9
Vegetation Type	G,M	G,M,S1,S2	A1,A2,P1,P3	A3,P2,B1,B2, W1,W2,W3

Table 13. Criteria used to Assess Downhill Skiing & Tobogganing Capability.

Factor	Degree of Capability			
	High	Moderate	Low	None
Flood Prone	No	No	Yes	Yes
Soils Series	CB1,CB4,FF1	CB2,CB3,Wr1, Wr3,Mo1,DL1, DL2,DL3,DL4, DL5,DL7	CB5,Wr5,Wr3, Wr4	DL6,DL8
Aspect	North	East	West	South
Slope Class	5 - 7	3, 4, 8	1, 2	9
Vegetation Type	A1,A2,A3,P1 P2,P3	S1,S2,G,M	W3,B2	W1,W2,B1

4.3 RECREATION CAPABILITY

Capability maps based on the criteria identified in section 4.2 were prepared for the entire System in the "Technical Report". These maps identified high, moderate and low capability lands at a scale of 1:5000. The following composite maps have been prepared for the study area in order to illustrate the inherent potential of the land to sustain recreational development (refer to figures 31 - 37).

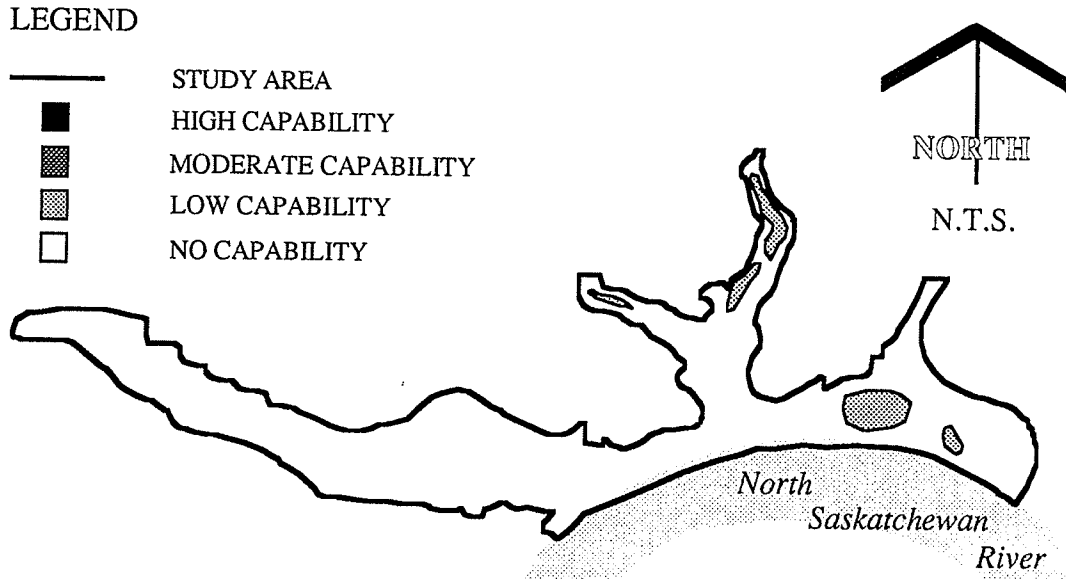


Figure 31. Sports Fields Capability.

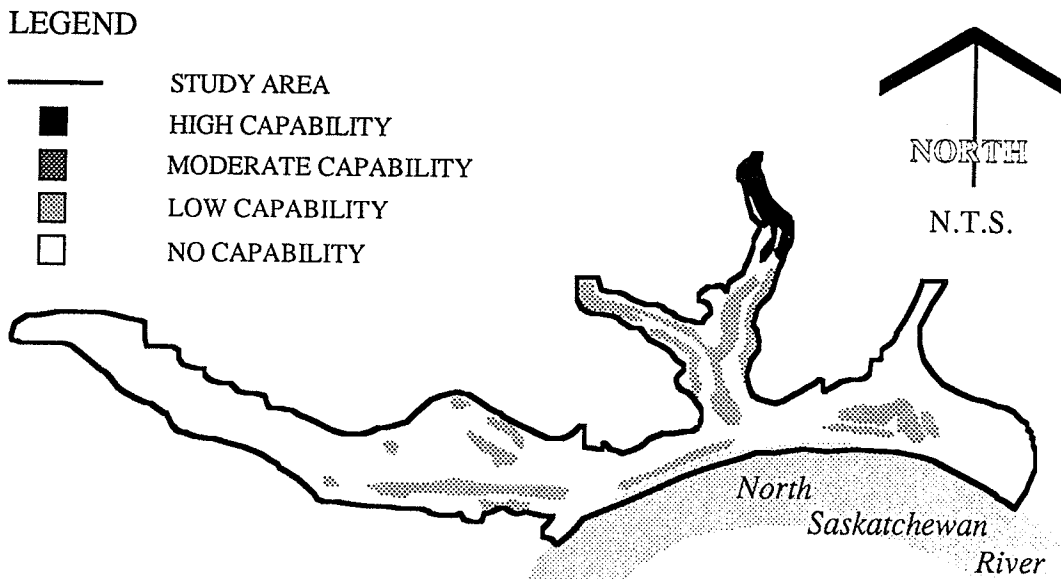


Figure 32. Nature Enhanced Linear Capability.

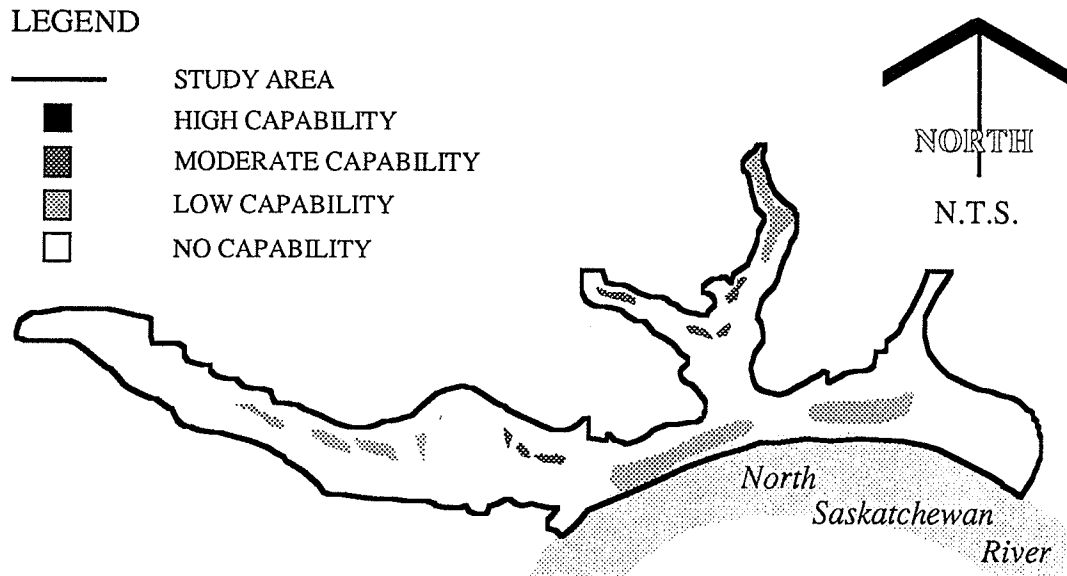


Figure 33. Nature Enhanced non-Linear Capability.

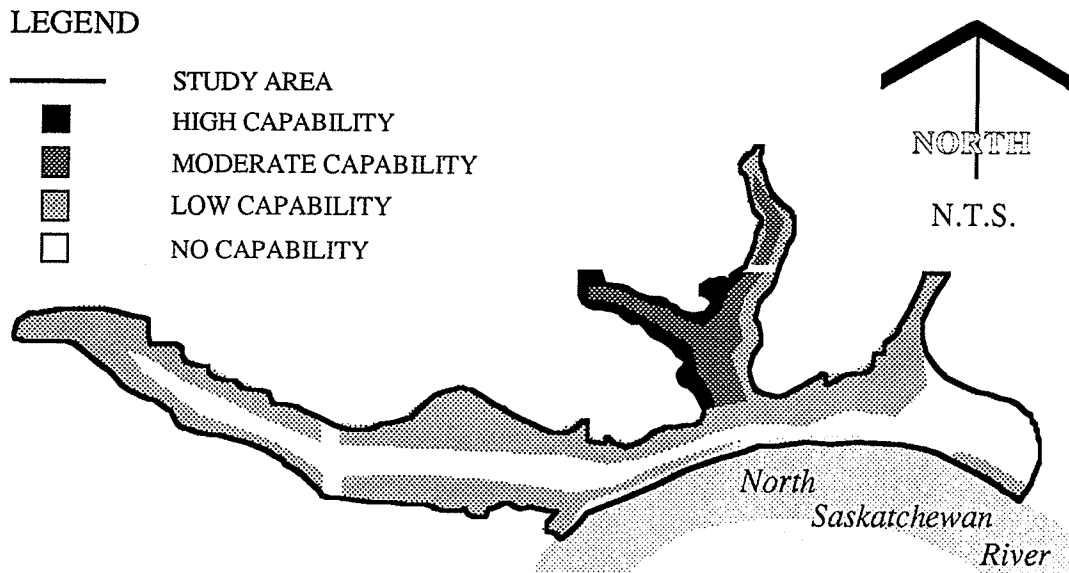


Figure 34. Nature Dependand Capability.

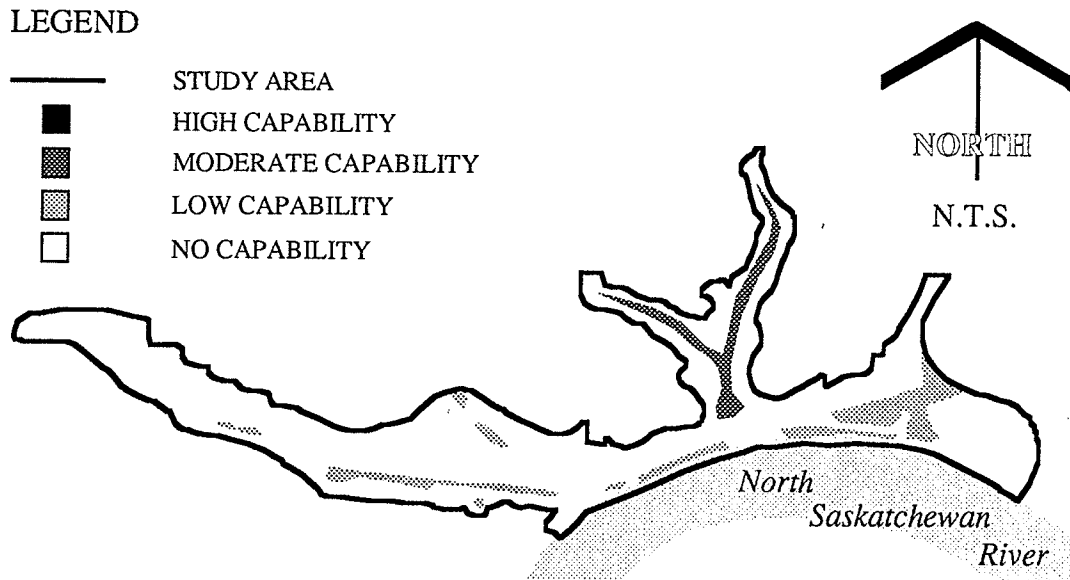


Figure 35. Structural Capability.

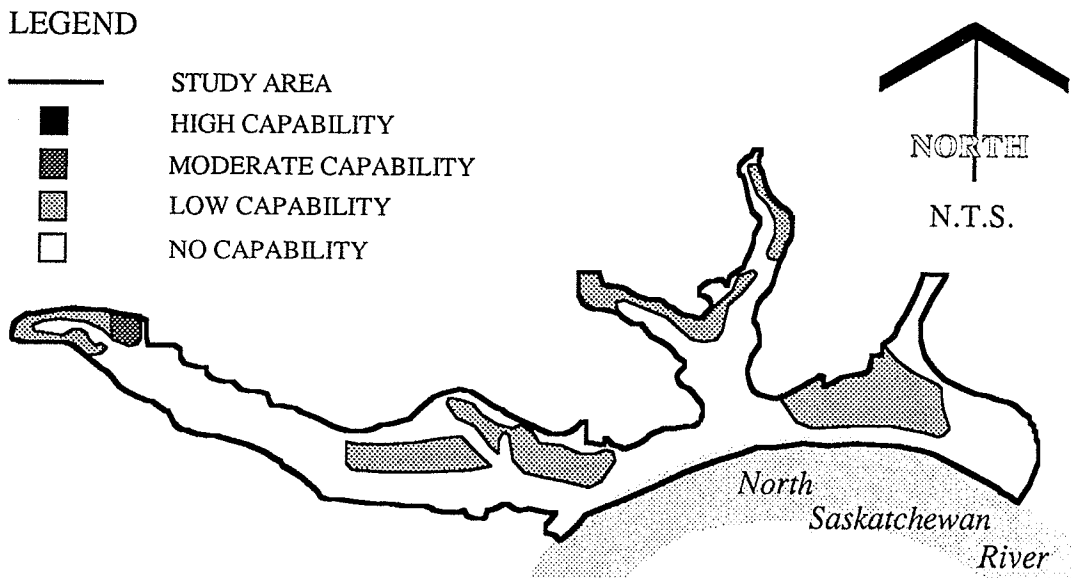


Figure 36. Hang Gliding Capability.

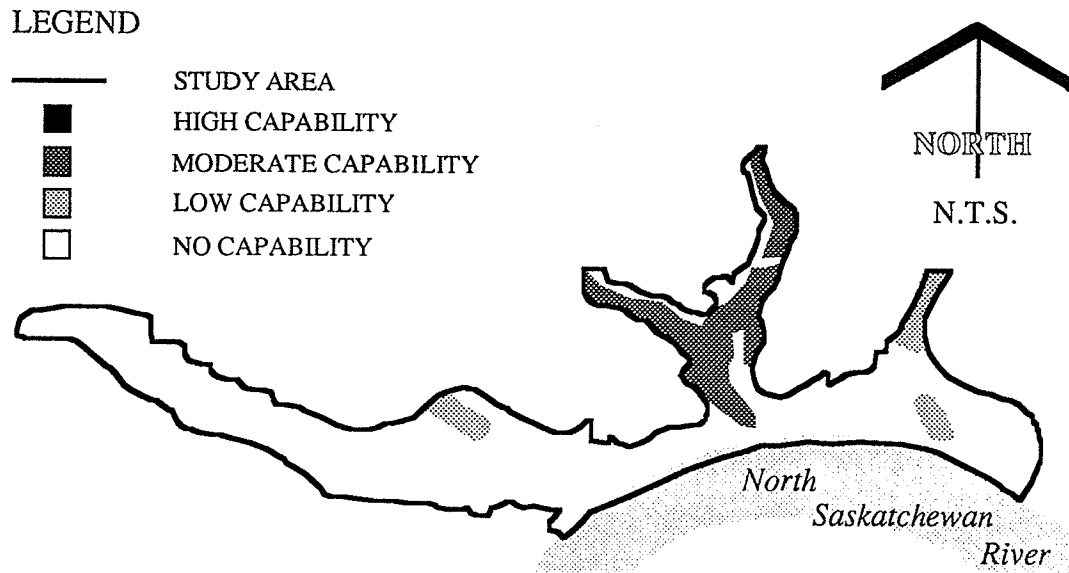


Figure 37. Downhill Skiing & Tobogganing Capability.

Those activities identified with a minimum low capability rating or higher will be further evaluated in the next stage. While land capability indicates the potential of the study area to accommodate development based entirely on environmental characteristics, its urban location requires further analysis that includes additional land use considerations. This detailed review has been defined as Suitability Analysis.

5. SUITABILITY ANALYSIS

5.1 POTENTIAL STUDY AREA RECREATION ACTIVITIES

The previous capability analysis illustrated the types of recreational facility development that the study area could accommodate. The categories that exhibited low capability or better included Sports Fields, Nature Enhanced Linear, Nature Enhanced Non-Linear, Nature Dependant, Structural Elements and two specialty activities; Hang Gliding and Tobogganing. For a detailed description of the specific activities of each category, refer to Section 4.1.

5.2 RESOURCE SUITABILITY CRITERIA

The North Saskatchewan River Valley & Ravine System Resource Analysis: Technical Report established criteria used to determine suitability which was defined as the acceptability of a given parcel of land to accommodate different types of recreation land use.²² The land use constraints used in the suitability analysis that were added to the various environmental capability criteria included land use designations, presence of municipal services and access.

Four categories were identified for analysis and evaluation.²³ They were:

High Suitability	Areas having at least a moderate resource capability with few, if any constraints associated with development.
Moderate Suitability	Areas having at least a low resource capability. Constraints are significant but proper planning and design will reduce their importance.
Low Suitability	Areas with low resource capability. Parcels of land with moderate or high capability have serious space or land use conflicts. If space is a limiting factor, developments can be only minimal. Use of such land will require considerable planning, mitigation and rehabilitation.
No Suitability	Areas with no capability. These areas may have severe size limitations, environment, or access constraints. Sites with unique resources which should be preserved, were considered Not Suitable for development.

²² Ibid. p. 68.

²³ Ibid. p. 69.

A total of fifteen factors were then identified, prioritized and used in the assessment of the recreation activities identified in Section 4.1. The suitability factors were:²⁴

1. Unique Resources.
 - U₁ Historical sites considered to have a high interpretive potential index. This index was derived from cultural significance and interpretative value rates as assigned in the "Bio-physical Study".
 - U₂ Historical sites considered to have a high preservation index. This index was developed from an interpretation of Preservation Status and Impact Sensitive rates assigned by Archaeological and Historical Site Inventory group which occurs in the "Bio-physical Study".
2. Potential Environmental Hazards.
 - H₁ Unstable areas subject to erosion.
 - H₁ Areas subject to accelerated surface erosion, if significantly disturbed.
3. Space Requirements.
 - S₁ Sufficient space for large area developments.
 - S₂ Space limited to medium sized spatial developments.
 - S₃ Space limited to substandard or small area activities.
 - S₄ Insufficient space or inappropriate shape for development.
4. Run Length (downhill skiing and tobogganing).
 - D₁ Sufficient length for beginner facilities.
 - D₂ Medium length runs for beginner facilities.
 - D₃ Minimal length runs for beginner facilities.
 - D₄ Insufficient length for beginner facilities.
5. Run - Out Zone (downhill skiing and tobogganing).
 - R₁ Sufficient for beginner facilities.
 - R₂ Medium sized zone for beginner facilities.
 - R₃ Narrow zone.
 - R₄ Insufficient space.
6. Slope Configuration (downhill skiing and tobogganing).
 - F₁ Concave.
 - F₂ Straight.
 - F₃ Convex.

²⁴ Ibid. pp. 70-72.

7. Relief (hang gliding).
 - Q₁ Greater than 35 meters.
 - Q₂ 25 - 35 meters.
 - Q₃ 10 - 25 meters.
 - Q₄ Less than 10 meters.

8. Landing Area (hang gliding).
 - P₁ Sufficient space for large areal development.
 - P₂ Space limited to medium-sized spatial developments.
 - P₃ Space limited to small spatial developments.
 - P₄ Insufficient space or obstructions present.

9. Take - off (hang gliding).
 - J₁ Sufficient space.
 - J₂ Medium-sized space.
 - J₃ Minimal space.
 - J₄ Insufficient space.

10. Audio Esthetics (nature dependant).
 - K₁ Vehicular traffic noise absent.
 - K₂ Vehicular traffic noise minimal.
 - K₃ Vehicular traffic or other noise sources notable.
 - K₄ Vehicular traffic or other noise sources unavoidable.

11. Access.
 - A₁ Vehicular access present.
 - A₂ No motorized vehicular access but developable.
 - A₃ Vehicular access limited by topographic constraints.
 - A₄ Vehicular access limited by topography and distance from main access.

12. Infrastructure.

Defined as power, sewer, and other complementary facilities.

 - B₁ Currently at or near site.
 - B₂ Not adjacent nor near site.
 - B₃ Potential conflict with infrastructure.

13. Land Use.
 - L₁ Complementary to existing use(s).
 - L₂ Conflicts with existing use.
 - L₃ Conflicts with proposed zoning or use.
 - L₄ Conflicts with adjacent land use or zoning.

14. Attraction Features (nature enhanced linear).
 - T₁ Attractions adjacent to site.
 - T₂ Site occurs between features.
 - T₃ Site isolated from attraction features.

15. Microclimate.
 - C₁ Cool and shady north slope.
 - C₂ Cool and sunny north slope.

5.3 RECREATION SUITABILITY

The previously generated capability maps were formed the bases for synthesizing the suitability factors. This data base was used as it had summarized the environmental constraints into discrete polygons. The suitability study then identified those sites, based on the sites indicated in the Biophysical Study, that had unique resources. This did not, however alter the degree of suitability analysis for the given polygons that contained such sites. It was suggested that such sites be considered at the site planning level when evaluating alternatives and their significance on the proposed land use(s) be evaluated at that time.²⁵

The Biophysical Study identified one historical resource site within the study area. This was the Chinese Market Gardens that were located in the river bottom terrace at the eastern edge of the study area (refer to figures 5 & 7). The market garden site is now the North approach to the Groat Bridge (refer to figure 12).

The suitability study process then eliminated all zones of potential erosion and unstable valley banks. In some cases, this modified the shape of several polygons identified in the capability analysis. Active unstable slopes exist on either side of the mouths of all three ravines within the study area. Numerous springs also were identified to exist within the study area in the Biophysical Study. The road bed created down the center of MacKinnon Ravine also displayed significant erosion potential due to the lack of established vegetation.

Insufficient development space was a common constraint within the entire system, and the most common constraint within the study area. However, all polygons that had at least a minimal capability rating were included in the suitability analysis.

The final suitability analysis stage was an evaluation of access, infrastructure and land use constraints. Land use conflicts were not considered a constraint in the study area as the entire site was zoned for recreational activities. Top of bank access was considered excellent around the perimeter of the study area, and at the east end of the Government Hill

²⁵ Ibid. p. 74.

Park site. The steep valley walls and lack of developed access routes resulted in poor accessibility to the internal sites of the study area.

The following are the suitability assessments of those recreation activities identified in the study area having a minimum Low Suitability rating. These assessments include the guides used in the Technical Report to assess suitability (refer to tables 14 - 19),²⁶

A. SPORTS FIELDS

The technical report divided the potential sports fields activities into three size groups. Group S₁ consisted of large areas such as sports stadiums and shooting ranges, S₂ included common field sports such as baseball, soccer, rugby, cricket, archery, football, track and ballooning fields, and S₁ included small area activities such as lawn bowling, croquet, horseshoe, tennis and ice skating. Minimum size estimates were based on existing facilities developed within the system and published standards for development (refer to table 14).

Table 14. Guide to Assessing Sport Fields Suitability.

Factor	Degree of Suitability			
	High	Moderate	Low	None
Unique Resources	-	-	-	U ₁ U ₂
Potential Environmental Hazards	-	-	H ₂	H ₁
Space Requirements	S ₁ >6 ha	S ₂ 3-6 ha	S ₃ 0.25-3 ha	S ₄ 0-0.25 ha
Access	A ₁	A ₂	A ₃	A ₄
Infrastructure	B ₁	B ₂	-	B ₃
Land Use	L ₁	L ₃	L ₄	L ₂

One site was identified in the study area as having a rating indicating suitability for sports field development (refer to figure 38). The site is located on the river valley terrace in Government Hill Park at the base of the valley bank below Government House and the Provincial Museum of Alberta (refer to figure 39). The low suitability rating of the site indicates that the size of the space limits the sports field development to the small area activities of kite flying, calisthenics, croquet, horseshoes, ice-skating, playgrounds, tennis,

²⁶ Ibid. pp. 76-91.

volleyball, basketball, badminton, and free play (i.e. individuals passing footballs, soccer balls, Frisbees, etc.)

LEGEND

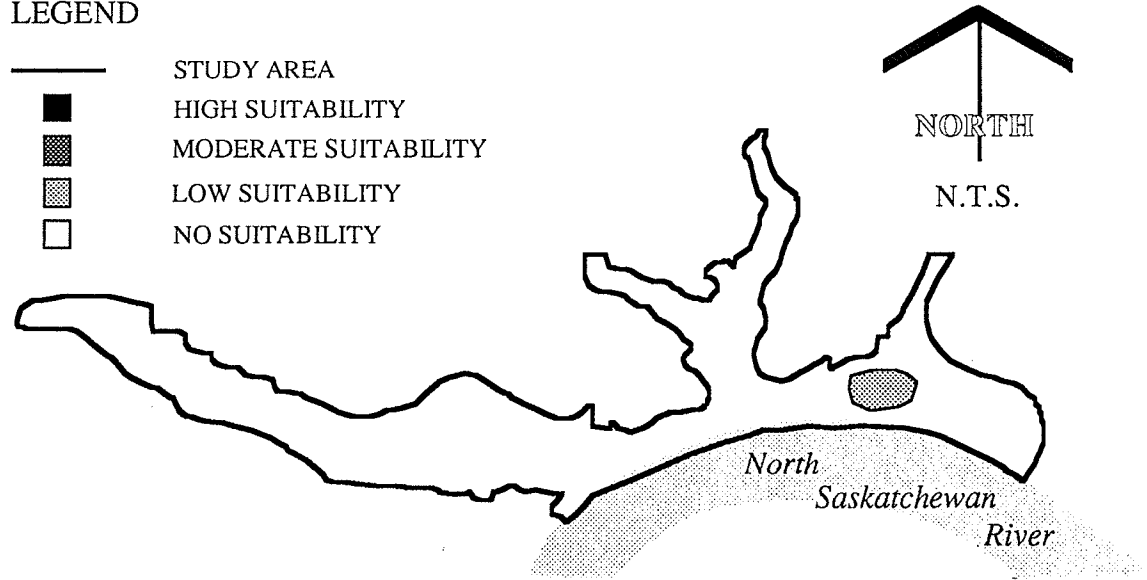


Figure 38. Sports Fields Suitability.

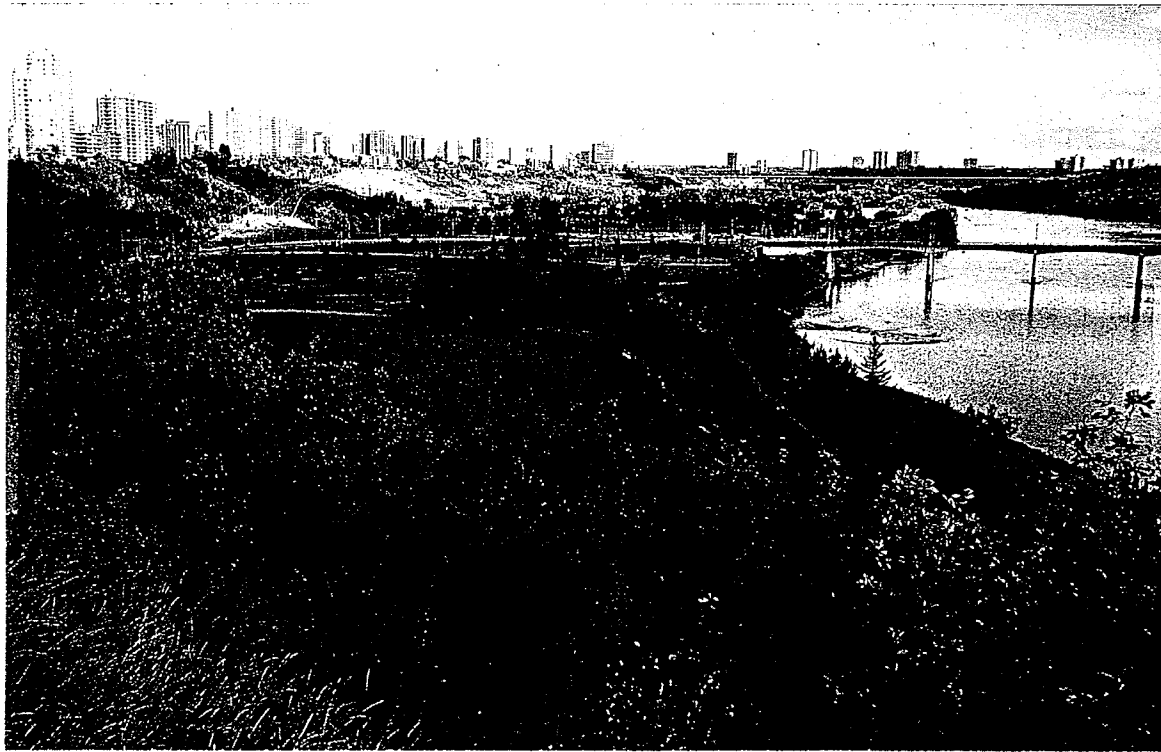


Figure 39. View of Government Hill Park (looking east).

B. NATURE ENHANCED LINEAR

Nature Enhanced Linear activities include such facilities as hiking, jogging, cross-country skiing, bicycle trails, equestrian trials and archery courses. The guide for assessing suitability is the same as the guide assessing Sports Field developments with the exception of space requirements (refer to table 15). It was acknowledged in the Technical Report that the above noted trail lengths assumed that any trail development would serve a variety of users, thus user requirements of maximum or minimum lengths may not be totally satisfactory.²⁷

Table 15. Guide to Assessing Nature Enhanced Linear Suitability.

Factor	Degree of Suitability			
	High	Moderate	Low	None
Unique Resources	-	-	-	U ₁ U ₂
Potential Environmental Hazards	-	-	H ₂	H ₁
Space Requirements	S ₁ >10 km trail	S ₂ 5-10 km	S ₃ 2.5-5 km	S ₄ > 2.5 km
Access	A ₁	A ₂	A ₃	A ₄
Infrastructure	B ₁	B ₂	-	B ₃
Land Use	L ₁	L ₃	L ₄	L ₂

As a result of the minimum length considered suitable for development being 2.5 km., no sites in the study area were considered suitable for linear recreation development. However, if the considerable number of sites that low to high capability ratings (refer to figure 32) are combined with the length of existing trails developed to the east of the study area, they would attain a low suitability rating. This rating would increase to moderate suitability if a pedestrian bridge crossed the North Saskatchewan River connecting the study area to the south bank and increasing its proximity and access to attraction features such as William Hawrelak Park.

²⁷ Ibid. p. 79.

C. NATURE ENHANCED NON-LINEAR

Nature Enhanced Non-Linear activities include day camping, picnicking, rest spots, and facilities for formal gardens, concert/amphitheaters and cultural fairs. Included in the Technical Report space constraints was a 1 ha requirement for parking (sufficient for 200 vehicles). As a result of this last requirement, only one site within the study area was considered suitable for development of nature enhanced non-linear activities (refer to table 16 and figure 39 & 40).

Table 16. Guide to Assessing Nature Enhanced Non-linear Suitability.

Factor	Degree of Suitability			
	High	Moderate	Low	None
Unique Resources	-	-	-	U ₁ U ₂
Potential Environmental Hazards	-	-	H ₂	H ₁
Space Requirements	S ₁ >6 ha	S ₂ 3-6 ha	S ₃ 0.25-3 ha	S ₄ 0-0.25 ha
Access	A ₁	A ₂	A ₃	A ₄
Infrastructure	B ₁	B ₂	-	B ₃
Land Use	L ₁	L ₃	L ₄	L ₂
Microclimate	-	-	C ₂ (North slope 15 % slope)	C ₁ (North slope 15 % slope)

Numerous sites were identified in the capability analysis having moderate to low capability for development of this type of facility. The majority of the sites are located in the MacKinnon Ravine (refer to figure 33). Should the roadbed be considered as a site for naturalized planting, the polygons of these sites would increase in size and they would therefore be more suitable for the development of non-linear activities. In addition, the smaller sites should be considered in the site planning process for development of such smaller scale non-linear activities as picnicking and rest spots.

LEGEND

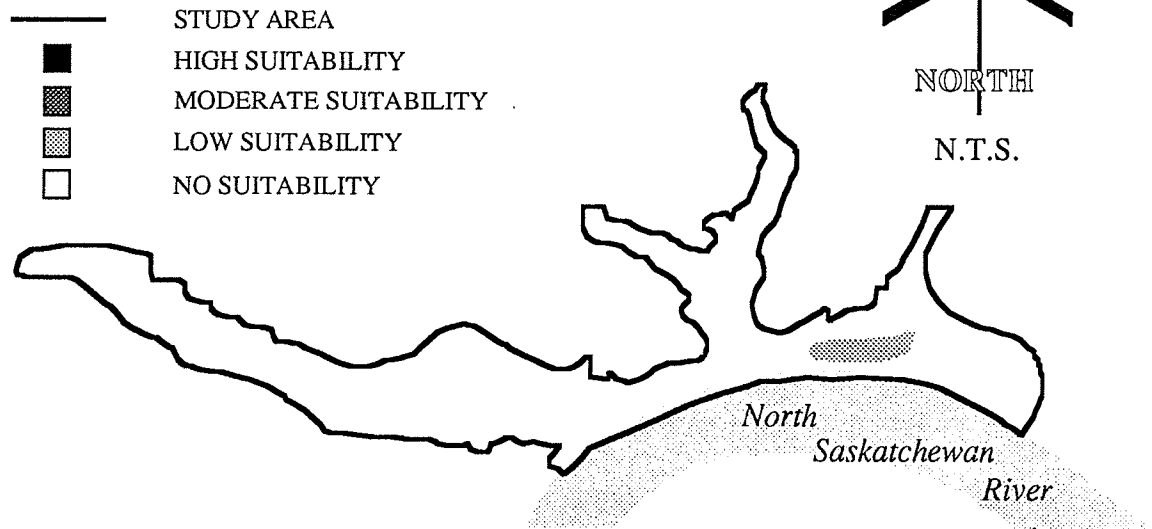


Figure 40. Nature Enhanced Non-Linear Suitability.

D. NATURE DEPENDANT

Nature Dependant recreation activities included nature and wildlife study, orienteering, photography and view point development for sight seeing. A major assumption of the suitability analysis in the Technical Report indicated that these activities were all oriented towards sites with native vegetation, a minimum of human disturbance and distractions from external activities such as road traffic (refer to table 17).²⁸

Table 17. Guide to Assessing Nature Dependant Suitability.

Factor	Degree of Suitability			
	High	Moderate	Low	None
Unique Resources	-	-	-	U ₁ U ₂
Potential Environmental Hazards	-	-	H ₂	H ₁
Space Requirements	S ₁ >6 ha	S ₂ 3-6 ha	S ₃ 0.25-3 ha	S ₄ 0-0.25 ha
Audio Esthetics	K ₁	K ₂	K ₃	K ₄
Land Use	L ₁	L ₃	L ₄	L ₂

²⁸ Ibid. P. 79.

The majority of the study area was found to have moderate suitability for nature dependant recreation development (refer to figure 41). These include the Ramsey Ravine (refer to figures 42 & 43) and the eastern half of the MacKinnon Ravine (refer to figure 44). The western half of the MacKinnon Ravine was identified as having unstable banks and was therefore not considered suitable for development.

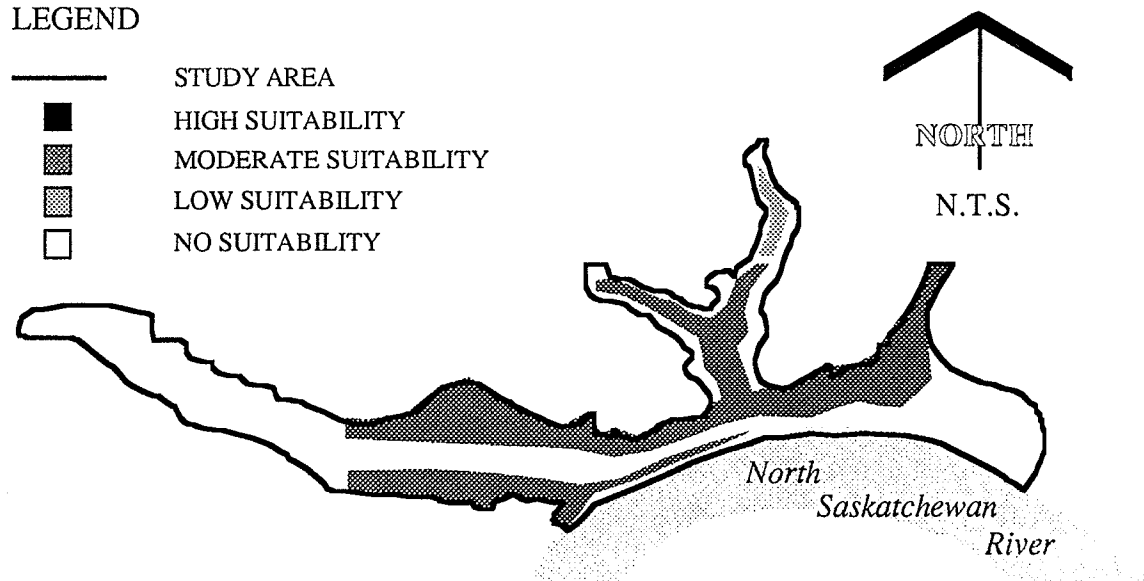


Figure 41. Nature Dependant Suitability.

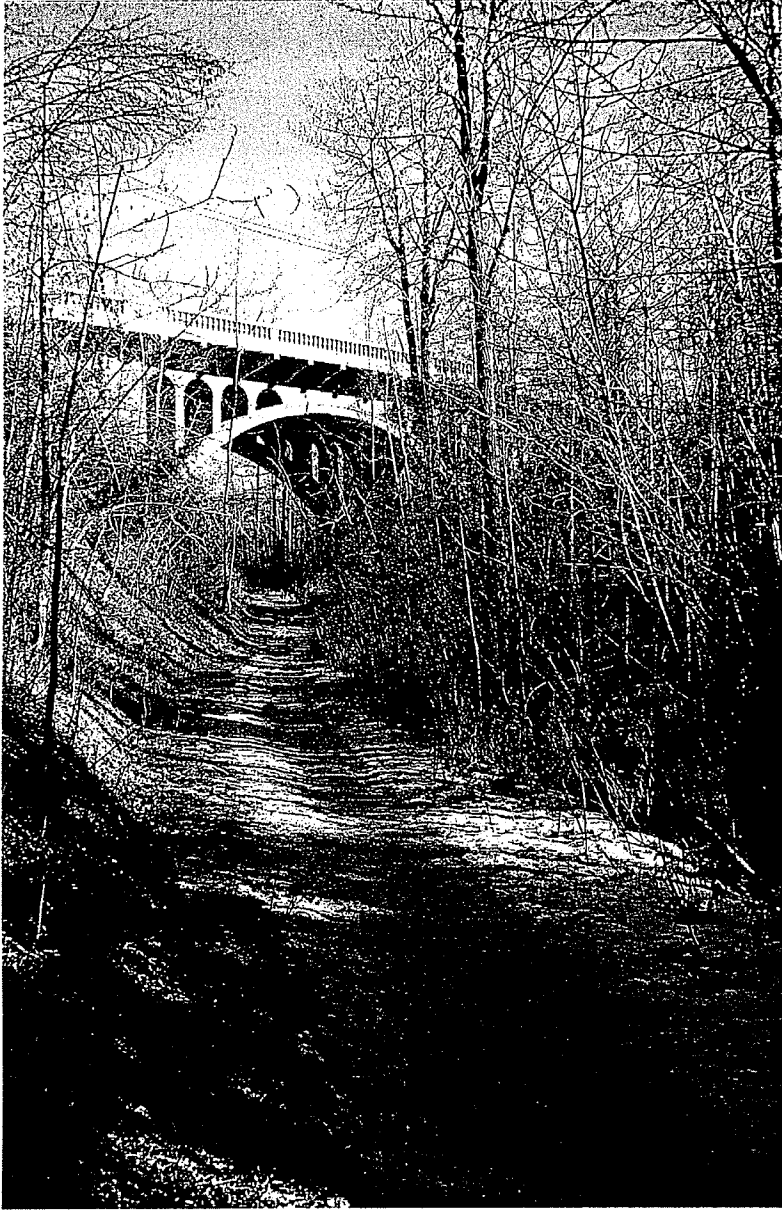


Figure 42. View of Eastern Valley & Remnant Path within Ramsey Ravine (below 102 street bridge).



Figure 43. View of Existing Vegetation in Western Valley of Ramsey Ravine.



Figure 44. View of Eastern Portion of MacKinnon Ravine (from 142 Street bridge to North Saskatchewan River).

E. STRUCTURAL ELEMENTS

Buildings and associated facilities considered in the Structural Element Suitability Analysis included trail shelters, maintenance buildings/yards, picnic shelters, food concessions and pedestrian bridges. Space requirements were based on the dimensions of existing facilities in the System and parking space requirements were not included (refer to table 18).

Table 18. Guide to Assessing Structural Element Suitability.

Factor	Degree of Suitability			
	High	Moderate	Low	None
Unique Resources	-	-	-	U ₁ U ₂
Potential Environmental Hazards	-	-	H ₂	H ₁
Space Requirements	S ₁ >1 ha	S ₂ 0.5-1 ha	S ₃ 0.25-0.5 ha (difficult slope)	S ₄ <0.25 ha
Access	A ₁	A ₂	A ₃	A ₄
Infrastructure	B ₁	B ₂	-	B ₃
Land Use	L ₁	L ₃	L ₄	L ₂

Sites within the study area exhibited both low and moderate suitability for structural element development (refer to figure 45). The river bottom terrace of Government Hill Park was found to have moderate suitability for structural elements (refer to figure 39) while the terrace adjacent to the North Saskatchewan River offers low suitability (refer to figure 46). Their relatively small sizes will limit the type of structures for which they are suitable for.

LEGEND

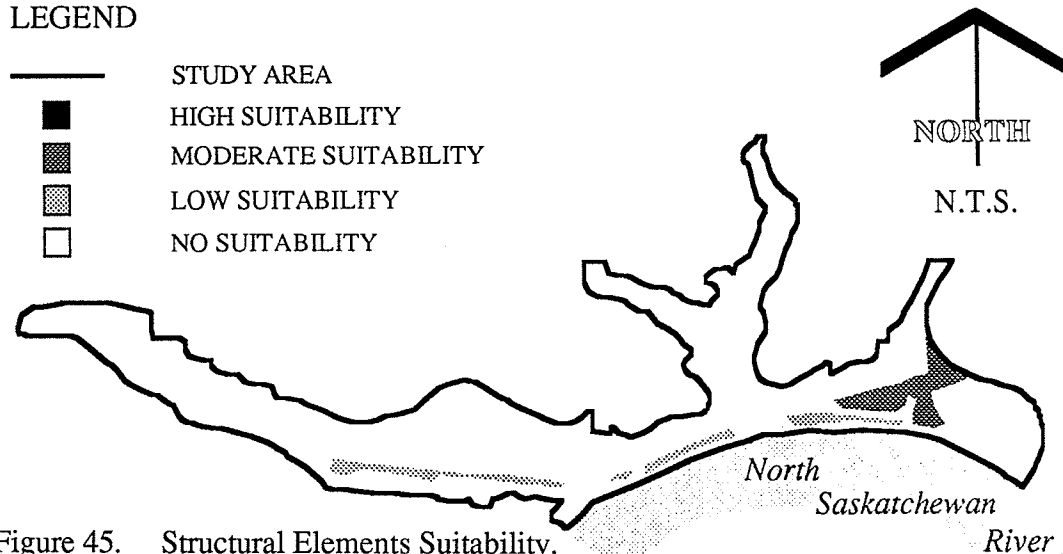


Figure 45. Structural Elements Suitability.



Figure 46. View of River Bottom Terrace (from Ramsey to MacKinnon Ravine).

F. HANG GLIDING

Three basic components are necessary for a suitable hang gliding site: a take - off area, landing area, and adequate topographic relief. An adequate landing area was considered the more important of the three components (refer to table 19).²⁹

Table 19. Guide to Assessing Hang Gliding Suitability.

Factor	Degree of Suitability			
	High	Moderate	Low	None
Unique Resources	-	-	-	U ₁ U ₂
Potential Environmental Hazards	-	-	H ₂	H ₁
Relief	Q ₁ >35 m	Q ₂ 25-35 m	Q ₃ 10-25 ha	Q ₄ <10 m
Landing Area	P ₁ >2 ha length of 100 m	P ₂ 1-2 ha length of 75 - 100 m	P ₃ 1-2 ha length of run 50 - 75 m	P ₄ <0.50 m or obstructions present
Take-off Area	J ₁ >1 ha 90 m wide	J ₂ 0.5-1 ha 50-90 m wide	J ₃ 0.25-0.5 ha 20-50 m wide	J ₄ <0.25 ha 20 m wide
Access	A ₁	A ₂	A ₃	A ₄
Infrastructure	B ₁	B ₂	-	B ₃
Land Use	L ₁	L ₃	L ₄	L ₂

Due to insufficient relief, only instructional beginner hang gliding sites exist within the system and the valley slope of Government Hill Park was assessed to have moderate suitability for this specialty activity (refer to figure 47). This south facing slope (refer to figure 48) is an existing site for hang gliding as noted in the site inventory of section 3.5 (refer to table 6).

²⁹ Ibid. p. 89.

LEGEND

- STUDY AREA
- HIGH SUITABILITY
- ▨ MODERATE SUITABILITY
- ▩ LOW SUITABILITY
- NO SUITABILITY

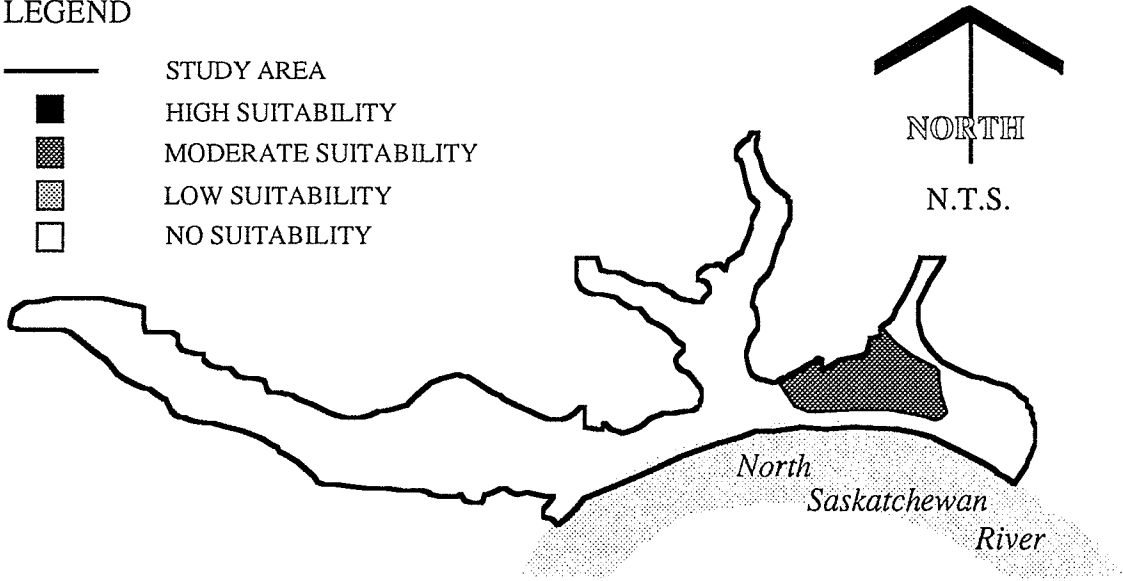


Figure 47. Hang Gliding Suitability.



Figure 48. South Facing Slope of Government Hill Park.

G. DOWNHILL SKIING AND TOBOGGANING SUITABILITY

The suitability analysis of the Technical Report found no suitable sites for development of these specialty activities. The site inventory indicated that the south facing slope of Government Hill Park (refer to figure 48) is a popular site for tobogganing. The south aspect, however contributed to it's no capability rating and resultant no suitability assessment.

5.4 PLANNING AND DEVELOPMENT CRITERIA

Planning and Development Criteria were derived (refer to section 2.4) from the development policies used by the city to manage and direct the development policies used by the city to manage and direct the planning and development of the system. Several of these criteria can be applied to the recreation activities identified in the suitability analysis of the study area. The criteria that are relevant to the development of sports fields, nature enhanced linear, nature enhance non-linear, nature dependant, structural elements, and hang gliding activities include the following:

- [1] Unique natural physical features shall be managed as nature conservation areas. They may be used for outdoor education, interpretation or low intensity recreation activities.
- [4] Ravines and river edge lands shall be planned for low intensity outdoor recreational use.
- [5] Sites with existing and outstanding view potential shall be planned as "viewpoint" parks.
- [7] Recreation activities that occur in the Capital City Recreation Park shall be expanded throughout the system.
- [8] The primary modes of movement along and through the system shall be non-motorized. Vehicular penetration shall be restricted to parking areas.
- [9] River and Ravine crossings for users of the system shall be developed or improved.
- [11] Recreational facilities for water-borne modes of transportation shall be planned in the system.
- [14] Natural resource areas in the system shall be preserved and enhanced for recreational, scenic, and ecological purposes.
- [15] Environmentally sensitive and hazardous lands within the system shall be identified. Development shall not be planned on unstable slopes.
- [19] Planning shall include a continuous and integrated trail system for hiking, jogging, bicycling, and cross-country skiing.

[20] Access from all adjacent neighborhoods shall be maximized.

The types of recreation activity development proposed for the study area must be supported by the criteria noted above. Their applicability to each group of recreation activities identified in the suitability analysis is illustrated below (refer to table 20). A design program will be established from the author's analysis of the recreation activities and suitable sites illustrated in Recreation Suitability (refer to section 5.3), the author's knowledge of the study area, and the planning and development criteria noted above.

Table 20. Planning & Development Criteria applicability to Suitable Study Area Recreation Activity Groups.

Criteria	Sports Fields	N.E. Linear	N.E. Non-Linear	Nature Dependent	Structural Elements	Hang Gliding
1	•	•	•	•	•	•
4	◊	•	◊	•	•	◊
5	◊	◊	◊	•	◊	◊
7	•	•	•	•	•	•
8	◊	•	◊	◊	◊	◊
9	◊	•	◊	◊	•	◊
11	◊	◊	◊	◊	•	◊
14	•	•	•	•	•	•
15	•	•	•	•	•	•
19	◊	•	◊	◊	◊	◊
20	◊	•	◊	•	◊	◊
Applies	•					
Does not Apply	◊					

6. DESIGN PROGRAM

For the purpose of establishing a design program, the study area will be divided into five sites. These sites represent types of landscapes with different recreation suitability values. They are as follows:

- A. **Government Hill Park**
- B. **Valley Bottom Terrace** (adjacent to the North Saskatchewan River from Government Hill Park to the MacKinnon Ravine)
- C. **Ramsey Ravine**
- D. **MacKinnon Ravine East** (from the River to 142 Street)
- E. **MacKinnon Ravine West** (from 142 Street to 149 Street)

The following is an analysis of the recreation suitability, the author's knowledge of the study area, and the applicable development criteria that results in the description of a design program for each site.

A. Government Hill Park

The suitability analysis illustrated that this site would be suitable for the following development:

Sports Fields	Kite flying, Calisthenics, Croquet, Horseshoes, Ice-skating, Playgrounds, Tennis, Volleyball, Basketball, Badminton, & Free Play.
Nature Enhanced Linear	Multi-purpose trails for hiking, jogging, cross-country skiing, bicycle, equestrian & archery.
Nature Enhanced Non-Linear	Day Camping, Picnicking, Rest Spots, Formal Gardens, Concert/Amphitheater & Cultural Fairs, 200 Vehicle Parking Lot.
Nature Dependant	Nature & Wildlife Study, Orienteering, Photography, View Points.
Structural Elements	Trail Shelters, Maintenance Building/Yard, Picnic Shelter, Food Concessions, Pedestrian Bridges.
Specialty Activity	Hang Gliding.

Table 20 illustrated that all of the planning and development criteria apply to the recreation activities noted above. The following is an analysis of their impact on the design program for this site.

- Criteria 1 - Suggests that all natural physical features such as the original mouth of the Groat Ravine (refer to figure 7) should be managed as a conservation area.
- Criteria 4 - Suggests that river edge lands shall be planned for low intensity outdoor recreational use. The only recreation activities to be considered for development along the river will be hiking trails, picnic & rest spots, and all nature dependant activities. A pedestrian bridge offering a direct river crossing may also be considered.
- Criteria 5 - The top of Government Hill shall be planned for viewpoint park development only.
- Criteria 7 - Sports field development including facilities such as ice-skating, tennis, playgrounds and athletic fields tend to be developed in large multi-purpose sports field areas (refer to figure 25). The space limitations of this site would preclude the development of such a facility, hence the base of Government Hill should be maintained as a free play space offering users that opportunity to pursue any type of activity the space will allow.
- A multi-purpose path should be developed through this site to connect it to the existing system to the east. This path should be for bicycles, hiking, jogging, and cross-country skiing only. The space is too small to add additional equestrian and archery trails (refer to Criteria 19).
- Picnic areas, rest spots, and perhaps fire pits should be included in the development of this site (refer to figure 26). The space is too small for developments such as formal gardens, concert/amphitheater & cultural fairs including the need for a 200 vehicle parking lot.
- Opportunities for Nature & Wildlife study and Photography should be maintained.
- A washroom/picnic shelter facility, maintenance building/yard and formal parking area should be developed on this site.
- A pedestrian bridge should be considered based on the frequency of occurrence in the system (refer to figure 30).
- Criteria 8 - Limited vehicular penetration will be permitted on this site. A parking lot should be developed on the east side of the site adjacent to Groat Road, only.

- Criteria 9 - Suggests that a pedestrian bridge should be considered. An alternate could be the upgrading of pedestrian access and path on the Groat Bridge, however spatial & structural limitations may prohibit this second option.
- Criteria 11 - Suggests that a boat launch/dock or canoe facility be considered at the rivers edge on the east end of the site. Vehicular access and parking requirements may limit the scale of development.
- Criteria 14 - Refer to Criteria 1.
- Criteria 15 - Development should not be proposed on any river bank slopes with the exception of access stairs. No vegetation should be removed from the banks.
- Criteria 19 - Refer to Criteria 7.
- Criteria 20 - At least one access route must be developed from the adjacent community of Glenora. Trail connections must be included to walks adjacent to Groat Road and River Road.

B. Valley Bottom Terrace

The suitability analysis illustrated that this site was suitable for the development of Nature Dependant activities and Structural Elements. The following is an analysis of the impact the criteria have on the design program for this site.

- Criteria 1 - Suggests that the river valley wall shall be managed as a conservation area. The mouth of the Ramsey Ravine may also be considered as a conservation area due to the continuous flow of ground water from this ravine to the River.
- Criteria 4 - Suggests that river edge lands shall be planned for low intensity outdoor recreational use. The only recreation activities to be considered for development along the river will be hiking trails, picnic & rest spots, and all nature dependant activities. A pedestrian bridge offering a direct river crossing may also be considered.
- Criteria 5 - The top of bank shall be planned for viewpoint park development only.

Criteria 7 - A multi-purpose path should be developed through this site to connect it to the existing system to the east. This path should be for bicycles, hiking, jogging, and cross-country skiing only. The space is too small to add additional equestrian and archery trails (refer to Criteria 19).

Picnic areas, rest spots, and perhaps fire pits should be included in the development of this site (refer to figure 26). The space is too small for developments such as formal gardens, concert/amphitheater & cultural fairs including the need for a 200 vehicle parking lot.

Opportunities for Nature & Wildlife study and Photography should be maintained.

A pedestrian bridge should be considered based on the frequency of occurrence in the system (refer to figure 30).

Criteria 9 - Suggests that a pedestrian bridge should be considered.

Criteria 11 - Suggests that recreation facilities for water borne modes of transportation be planned for the system, however this site is not suitable for such development due to the cut action of the river flow on this river bank.

Criteria 14 - Refer to Criteria 1.

Criteria 15 - Development should not be proposed on any river bank slopes with the exception of access stairs. No vegetation should be removed from the banks.

C. Ramsey Ravine

Nature Dependant activities were identified as suitable for development in this ravine. The following is an analysis of the impact the criteria have on the design program for this site.

Criteria 1 - Suggests that the western valley of this ravine shall be managed as a conservation area.

Criteria 4 - Only low intensity recreational use can be planned for this remaining portions of this ravine.

Criteria 5 - The top of bank at the mouth of this ravine shall be planned for viewpoint park development only.

Criteria 7 - A multi-purpose path should be developed through this site to connect it to the existing system to the east. This path should be for bicycles, hiking, jogging, and cross-country skiing only. The space is too small to add additional equestrian and archery trails (refer to Criteria 19).

Opportunities for Nature & Wildlife study and Photography should be maintained.

Criteria 14 - Refer to Criteria 1.

Criteria 15 - Development should not be proposed on any ravine valley slopes with the exception of access stairs. No vegetation should be removed from the banks.

Criteria 20 - At least one access route must be developed from the adjacent community of Glenora.

D. MacKinnon Ravine East

The suitability study illustrated that this site was suitable for the development of Nature Dependant activities. The following is an analysis of the impact the criteria have on the design program for this site.

Criteria 1 - Suggests that the ravine valley walls shall be managed as a conservation area.

Criteria 4 - Only low intensity recreational use can be planned for this ravine.

Criteria 5 - Only viewpoint park development shall be planned for top of bank of this ravine.

Criteria 7 - A multi-purpose path should be developed through this site to connect it to the existing system to the east. This path should be for bicycles, hiking, jogging, and cross-country skiing only. The space is too small to add additional equestrian and archery trails (refer to Criteria 19).

Opportunities for Nature & Wildlife study and Photography should be maintained.

Picnic areas, rest spots, and perhaps fire pits should be included in the conceptual development of the roadbed that runs down the center of this site.

Criteria 14 - Suggests that fill material vegetation should be imported back into this ravine to help restore the natural resource of this site.

Criteria 15 - Development should not be proposed on any ravine valley slopes with the exception of access stairs. No vegetation should be removed from the banks.

Criteria 20 - At least one access route must be developed from the adjacent communities of Glenora and Crestwood.

E. MacKinnon Ravine West

The unstable valley slopes of this site resulted in a no suitability rating. The following criteria, however contribute to the formation of a design program for the MacKinnon Ravine West site of the study area.

Criteria 1 - Suggests that the ravine valley walls shall be managed as a conservation area.

Criteria 4 - Only low intensity recreational use can be planned for this ravine.

Criteria 5 - Only viewpoint park development shall be planned for top of bank of this ravine.

Criteria 7 - A multi-purpose path should be developed through this site to connect it to the existing system to the east. This path should be for bicycles, hiking, jogging, and cross-country skiing only. The space is too small to add additional equestrian and archery trails (refer to Criteria 19).
Opportunities for Nature & Wildlife study and Photography should be maintained.

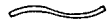






Criteria 14 - Suggests that fill material vegetation should be imported back into this ravine to help restore the natural resource of this site.

Criteria 15 - Development should not be proposed on any ravine valley slopes with the exception of access stairs. No vegetation should be removed from the banks.

Criteria 20 - At least one access route must be developed from the adjacent communities of Grovenor, Crestwood and West Jasper Place. Consideration should also be given to pedestrian only access from West Jasper Place in the form of a pedestrian bridge over 149 Street.

7. CONCEPT PLAN

LEGEND

-  Multi-purpose Trail
-  Hiking Trail
-  Picnic Site
-  Viewpoint Site
-  Bridge
-  Washroom / Shelter
-  Existing Vegetation

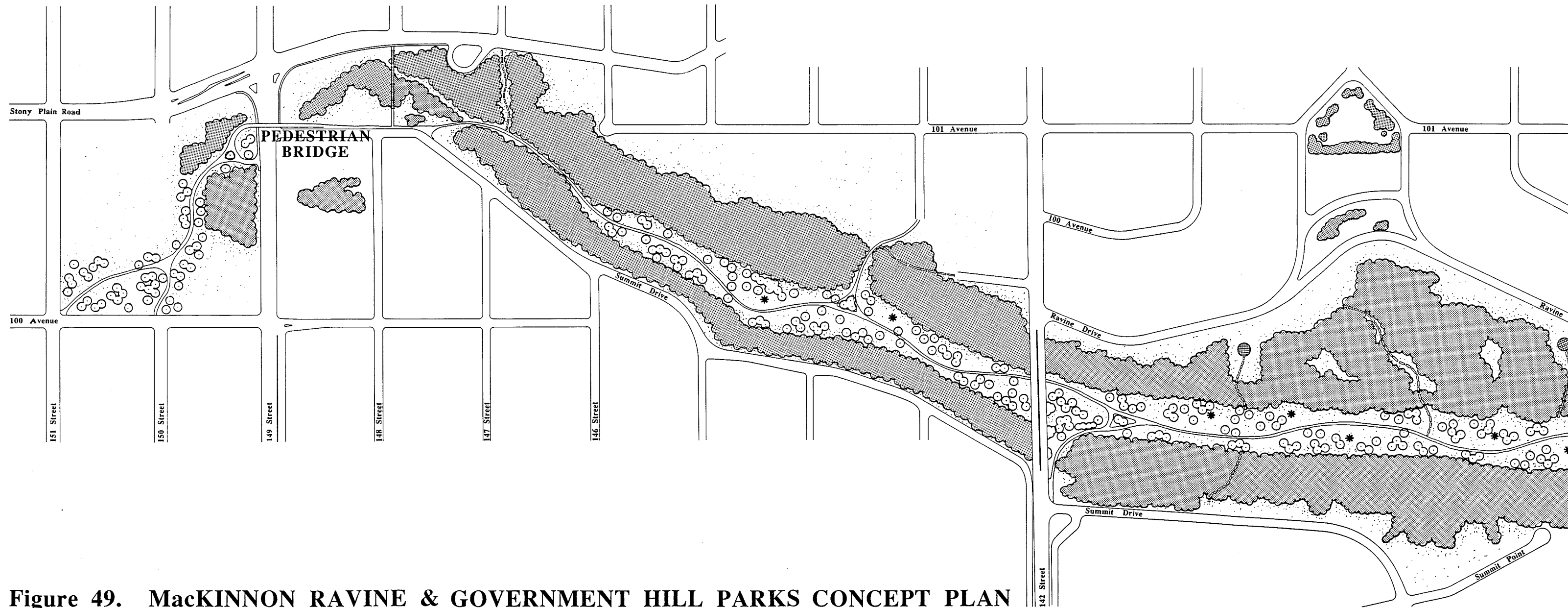
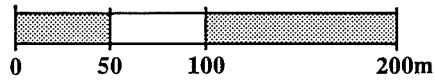
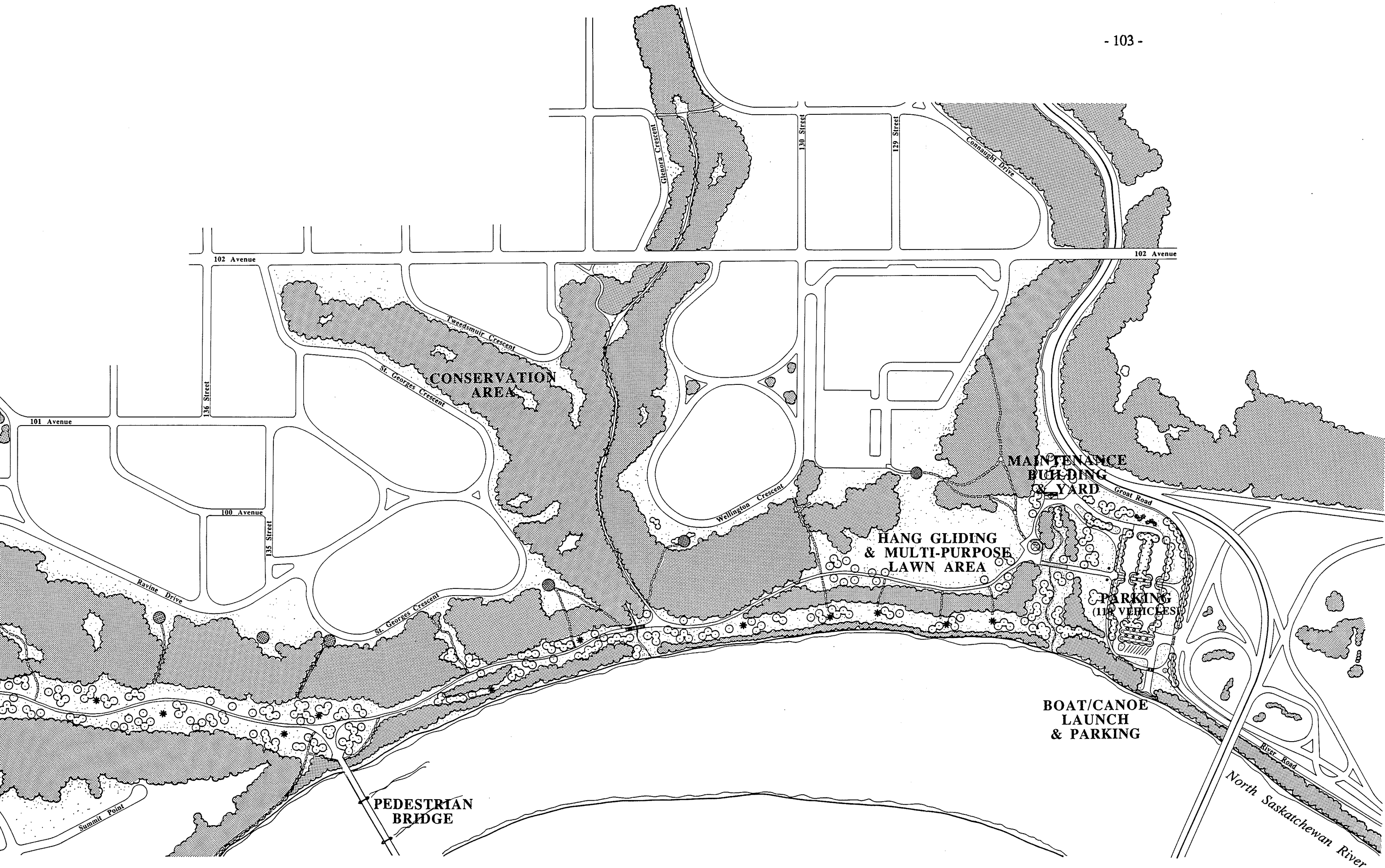


Figure 49. MacKINNON RAVINE & GOVERNMENT HILL PARKS CONCEPT PLAN



7.1 DESIGN CONCEPTS

The Concept Plan prepared for the study area (refer to figure 49) illustrates the conceptual layout of the design program identified in Section 6. Program items identified in the suitability analysis are integrated with the landscape of the study area to minimize land use conflicts and ensure the preservation of the natural character and environment of this segment of the System.

The Government Hill Park site serves as the eastern entrance to the study area. The existing vehicular route from Groat and River Roads is formalized and enhanced making it an identifiable access point to the river valley system. Integrated landscaping is proposed and a formal parking area is created where up to 110 vehicles may be accommodated. An additional car/trailer parking area is proposed to complement a boat/canoe launch at the rivers edge. A multi-purpose path is proposed to connect to similar paths along River Road and Groat Road. This will provide the necessary linkage to the existing Capital City Recreation Park.

The original mouth of the Groat Ravine Creek is to be restored as a natural feature on the site. This channel could accommodate some storm water, natural springs and surface runoff. Storm water management principles combined with naturalized planting and a pedestrian bridge would combine to create a natural gateway to this site from the parking area (refer to figure 50). A parks and recreation maintenance building and yard is proposed to the north of this creek area.

Adjacent to the proposed Groat Creek Channel is a washroom/picnic shelter facility similar in character to other structures constructed in the Capital City Recreation Park. These sites are often also combined with a fire pit to accommodate group picnics. The slope of Government Hills is proposed to be retained for Hang Gliding. The top of the hill is to be developed as a viewpoint site while the base of the hill is to be a multi-purpose lawn area fulfilling a range of passive recreation needs.

A continuous multi-purpose paved trail will run through the site on the higher terrace adjacent to the River. Picnic spots are to be developed on the lower terrace adjacent to the river and informal trails will link them to the paved trail. Picnic spots should include a concrete pad with picnic table(s) and raised fire stove(s).

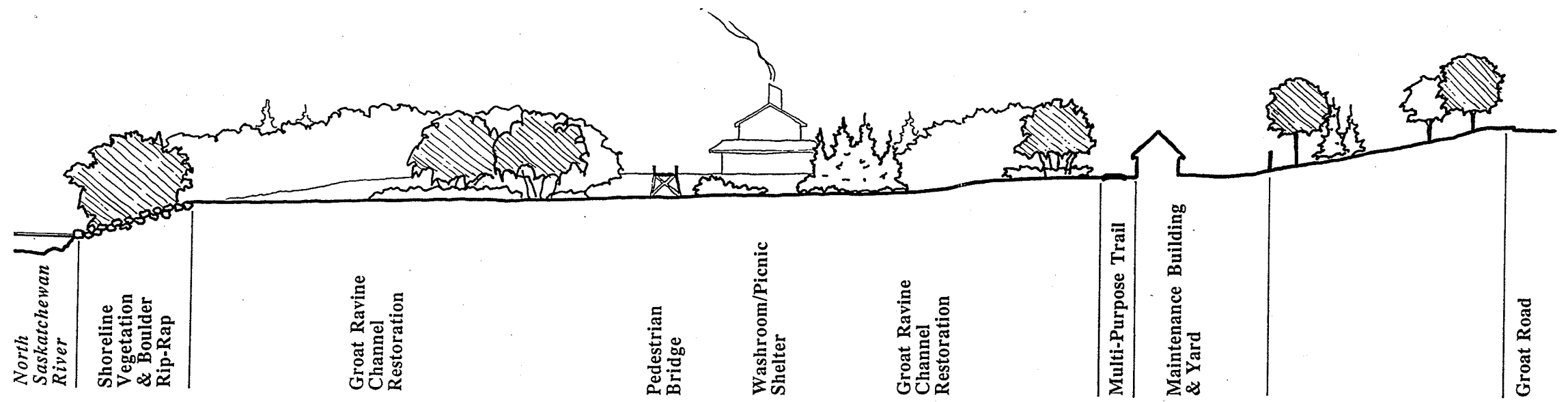


Figure 50. Section Through Groat Ravine Channel.

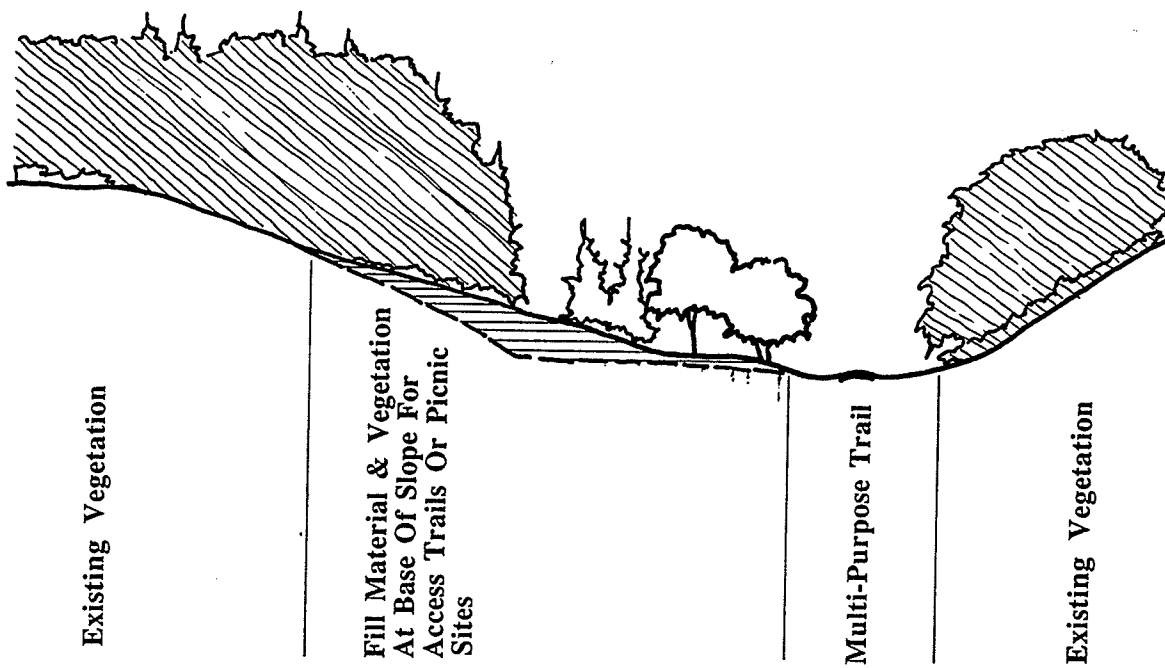


Figure 51. Typical Section Through MacKinnon Ravine

As the paved trail approaches the Ramsey Ravine, it will divide as a trail is proposed for the eastern valley of the ravine. The western valley is to be retained as a conservation area. At the mouth of this ravine a channel is proposed that can accommodate the underground spring and surface run-off from this ravine to the river. A bridge over the channel will continue the paved trail to the west. View point sites are proposed on either side of this ravine and existing hiking trails will be maintained to link these sites to the trail below. Detailed site planning would identify those areas where stairs are required.

A new pedestrian bridge is proposed for the junction of the river and the MacKinnon Ravine. This bridge would link trails developed on both sides of the river and should be similar in character to others constructed in Capital City Recreation Park. The multi-purpose trail is proposed for the entire length of the MacKinnon Ravine. The placement of fill material combined with naturalized planting is intended to restore the natural character of this ravine. Random picnic spots are to be developed on site along the trail and access routes are proposed to each adjacent community (refer to figure 51).

In order to provide direct access to the System for the community of West Jasper Place, a pedestrian bridge is proposed to span 149 street. Recreational Development of the open space west of 149 street between Stony Plain Road and 100 Avenue would address this communities need for open space (refer to Section 3.2) and provide a trail linked to the MacKinnon Ravine via the proposed pedestrian bridge.

8. IMPLEMENTATION

The implementation of a conceptual design such as this would require two separate reviews. The first would be a general circulation to all departments of the City of Edmonton. This review would confirm support for the process and concepts. It would also provide the various departments the opportunity to input into the design process and identify long-term management issues, and potential long-term development concerns (i.e., transportation development in the area of the proposed pedestrian bridge on 149 Street).

A second review would include a public review of the concept plan. Adjacent communities should be consulted and given the opportunity to review and provide input to the proposed concept plan and subsequent development plans. A review of the plan by the public would ensure that the proposal meets current recreation needs and addresses the growing awareness and current focus on environmental issues.

The planning process initiated by the Parks and Recreation Department and employed in this study is significant in identifying land capability and suitability to identify potential sites for recreation development. When these steps are combined with creative and appropriate design solutions, the System can be developed to meet metropolitan recreation needs while preserving the natural character and environment of this most significant resource.

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APPENDIX I

Current Recreation Activities located in the North Saskatchewan River Valley and Ravine System. This list of activities is taken from the "North Saskatchewan River Valley and Ravine System Resource Analysis: Technical Report" (Edmonton, 1983), and a field review of the Capital City Recreation Park and Mill Creek Ravine Park.

The intensity of recreational use levels were determined by the author. The level of intensity is based on the definition identified in the "North Saskatchewan River Valley Area Redevelopment Plan Bylaw No. 7188" (refer to page 39).

L = low, M = moderate, H = high

A	Sports Fields	Intensity
	Kite Flying	L
	Ballooning	L
	Calisthenics	L
	Croquet	L
	Horseshoes	L
	Baseball	M
	Soccer	M
	Football	M
	Rugby	M
	Hockey	M
	Ice Skating	M
	Track & Field	M
	Playgrounds	M
	Tennis	M
	Volleyball	M
	Basketball	M
	Badminton	M
	Field Archery	M
	Cricket	M
	Model Airplanes (remote and cable control)	M
	Horse Arenas	H
	Lawn Bowling	H
	Shooting Range (skeet, raffle, trap)	H
B	Nature Enhanced-Non Linear	
	Picnicking	L
	Rest Spots	L
	Gardens (formal & arboretum)	M
	Concert/Amphitheater	M
	Cultural/Craft Fairs	M
	Group Picnicking	M
	Day Camping	M
	Individual Camping (tent & vehicle)	H
	Group Camping (tent & vehicle)	H

APPENDIX I (cont'd)

C Nature Enhanced - Linear

Hiking/Jogging Trails	L
Cross Country/Snowshoe Trails	L
Walking	L
Bicycle Trails	M
Equestrian Facilities	M
Fitness Trials/Paracourse	M
Roller Skating	M
Skateboarding	M
Archery Courses	M

D Nature Dependent

Nature and Wildlife Study	L
Orienteering	L
Photography	L
Scientific Study/Monitoring	L
View Points	M

E Structural Elements

Trail Shelter	L
Maintenance Building/Yard	M
Picnic Shelter (public washroom)	M
Curling Clubs/Facilities	H
Food Concessions/Cafeteria (fast food, beer garden, tea house, waterfront facilities)	H
Entertainment/Sports Pavilion	H
Historic Interpretation Facilities (i.e. Fort Edmonton)	H
Exhibit Pavilion (i.e. Zoo)	H
Swimming Pool	H
Recreation Complex (racquetball, squash, handball, volleyball, basketball, badminton, weight training)	H
Hockey Arena	H
Sports Stadiums	H
Pedestrian Bridges	H

APPENDIX I (cont'd)

F Water Oriented

Rowing Crew	L
Model Boats	L
Fishing/Fly Casting (pond, River)	L
Canoeing	M
Kayaking	M
Paddle Boats	M
Row Boats	M
Boating	H
Rafting (sourdough raft race)	H

G Specialty Activities

Hang Gliding	L
Tobogganing	L
Snowmobiling	M
Motorcycle/Motocross Trails	M
Off Road Vehicles	M
Golf	H
Downhill Skiing	H











APPENDIX III

Neighborhood Fact Sheets, City of Edmonton Planning Department, (1983).

 **NEIGHBOURHOOD FACT SHEET**



LAND USE

<p> Single Dwelling</p> <p> Two Unit Dwellings</p> <p> Multiple Family Dwellings</p> <p> Apartments</p>	<p> Recreation, Open Space</p> <p> Commercial</p> <p> Industrial, Public Utilities</p> <p> Institutional</p>	<p> Transportation</p> <p> Vacant, Undeveloped</p>
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Source: 1982/1983 FIELD SURVEY
DISTRICT PLANNING PROGRAM

APPENDIX III (cont'd)

GLENORA

Neighbourhood Facts

Density: 23 people/hectare (gross)

Housing	No. of Units	%	Land Use	Land Area (Net)	%
Single Dwellings	1,149	70.5%	Residential	86.6ha.	86.3%
Two Unit Dwellings	44	2.7%	Institutional	15.8ha.	15.8%
Multiple Family Dwellings ¹	8	.5%	Recreation/Open Space	2.1ha.	2.1%
Apartments ²	423	26.0%	Commercial	.7ha.	.7%
Other Dwellings ³	5	.3%	Industrial/Transportation ⁴	.1ha.	.1%
Total Units	1,629	100.0%	Vacant/Undeveloped	-	-
			Total Land Area (Net)	95.3ha.	100.0%
			Total Land Area (Gross) ⁵	166.6ha.	

- 1 Includes triplex, fourplex, townhouse and rowhouse units
- 2 Includes walk-up, medium rise and high rise apartment units and all condominium units
- 3 Includes rooming, boarding, collective residential and combined commercial/residential units

- 4 Includes Public Utilities
- 5 Includes all roadways

Length of Residence - Lived at the same address:	Tenure
5 or more years	Homeowners
1 to 4 years	Renters
less than 1 year	

Age Groups	1978		1983		1983
	No.	%	No.	%	City of Edmonton %
0-4	163	4.2%	153	4.2%	7.6%
5-19	778	20.0%	622	17.1%	21.0%
20-39	1,150	29.5%	1,061	29.1%	42.4%
40-59	963	24.7%	843	23.1%	18.7%
60-64	269	6.9%	264	7.2%	3.3%
65+	573	14.7%	704	19.3%	7.0%
	<u>3,896</u>	<u>100.0%</u>	<u>3,627</u>	<u>100.0%</u>	<u>100.0%</u>

Schools	Enrollment		Capacity
	1972	1982	
Glenora Elementary School (Public)	209	189	175
Westminster Junior High School (Public)	304	349	690
St. Vincent Catholic School (Separate-Junior High)	365	126	250
Talmud Torah Elementary School (Public) Opened in 1976	185 (1976)	205	250

Recreation Facilities

Glenora Elementary School: ball fields and soccer fields
 Westminster School: ball field and soccer fields
 Talmud Torah School: ball field and playground
 St. Vincent Junior High School: ball field, soccer field and playground
 Government House Park: toboggan runs and open area
 Westminster Playground and Glenora Community Leagues: craft shack, playground, pool area, tennis courts and community league building

Community Services

Oliver Day Care 10530 - 138 Street
 Talmud Torah Day Care 13212 - 106 Avenue
 Edmonton Social Service - Westmount Centre 10993 - 124 Street 428-4967

Sources: 1978 - City of Edmonton Civic Census
 1983 - City of Edmonton Civic Census
 1982 - City of Edmonton Assessment Data
 1982/1983 - Field Survey, District Planning Program

SEPTEMBER 1983.



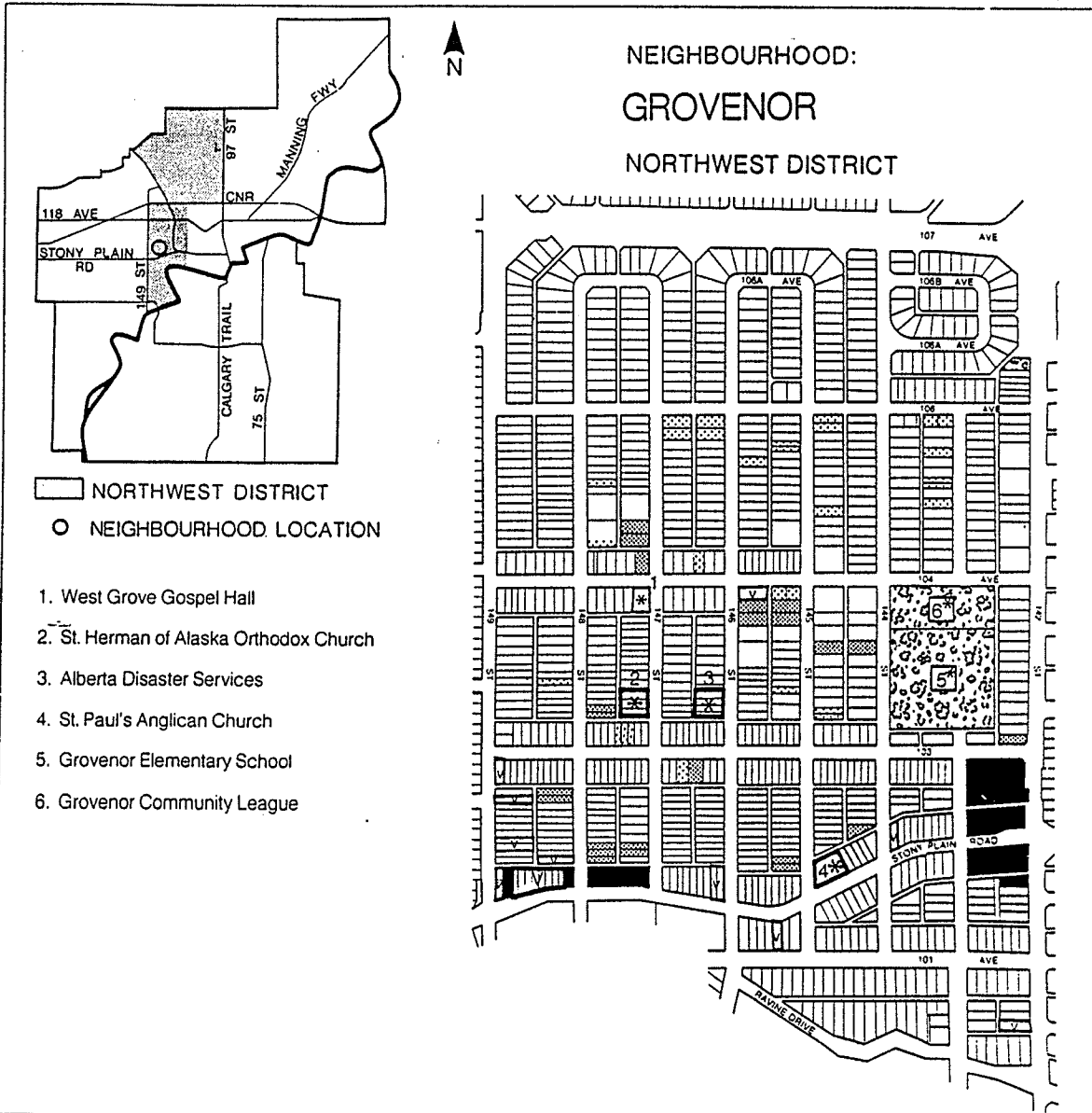
For information on Planning services, contact the Northwest District Planning Team at 428-8565.

For information on other Civic services, contact the Citizen Action Centre at 428-2600.

APPENDIX III (cont'd)



NEIGHBOURHOOD FACT SHEET



NEIGHBOURHOOD:
GROVENOR
NORTHWEST DISTRICT

- NORTHWEST DISTRICT
- NEIGHBOURHOOD LOCATION

1. West Grove Gospel Hall
2. St. Herman of Alaska Orthodox Church
3. Alberta Disaster Services
4. St. Paul's Anglican Church
5. Grovenor Elementary School
6. Grovenor Community League

LAND USE

- | | | |
|-----------------------------|--------------------------------|-----------------------|
| □ Single Dwelling | ▨ Recreation, Open Space | ▨ Transportation |
| ▨ Two Unit Dwellings | ■ Commercial | ▨ Vacant, Undeveloped |
| ▨ Multiple Family Dwellings | ▨ Industrial, Public Utilities | |
| ▨ Apartments | ▨ Institutional | |

Source: 1982/1983 FIELD SURVEY
DISTRICT PLANNING PROGRAM

APPENDIX III (cont'd)

GROVENOR					
Neighbourhood Facts					
Density: 25 people/hectare (gross)					
Housing	No. of Units	%	Land Use	Land Area (Net)	%
Single Dwellings	815	81.4%	Residential	56.1ha.	39.1%
Two Unit Dwellings	116	11.6%	Institutional	.7ha.	1.1%
Multiple Family Dwellings ¹	26	2.6%	Recreation/Open Space	3.3ha.	5.8%
Apartments ²	44	4.4%	Commercial	1.7ha.	2.9%
Other Dwellings ³	0	-	Industrial/Transportation ⁴	-	-
			Vacant/Undeveloped	.9ha.	1.3%
Total Units	1,001	100.0%	Total Land Area (Net)	60.7ha.	100.0%
			Total Land Area (Gross) ⁵	95.3ha.	
1 Includes triplex, fourplex, townhouse and rowhouse units			4 Includes Public Utilities		
2 Includes walk-up, medium rise and high rise apartment units and all condominium units			5 Includes all roadways		
3 Includes rooming, boarding, collective residential and combined commercial/residential units					
Length of Residence - Lived at the same address			Tenure		
5 or more years	56.8%		Homeowners	66.1%	
1 to 4 years	29.7%		Renters	33.9%	
less than 1 year	13.5%			100.0%	
	100.0%				
Population					
Age Groups	1978		1983		1983
	No.	%	No.	%	City of Edmonton %
0-4	128	4.9%	143	6.0%	7.6%
5-19	537	20.7%	377	15.7%	21.0%
20-39	836	33.0%	940	39.2%	42.4%
40-59	364	21.7%	486	20.3%	18.7%
60-64	151	5.8%	134	5.6%	3.3%
65+	358	13.9%	320	13.2%	7.0%
	2,594	100.0%	2,800	100.0%	100.0%
Schools					
			Enrollment		Capacity
			1972	1982	
Grovenor Elementary School (Public)			230	102	230
Recreation Facilities					
Grovenor School and Community League: ball fields, soccer fields, natural ice rinks, picnic area and playground					
Community Services					
Edmonton Social Services - Westmount Centre 10993 - 124 Street 428-4967					
Sources: 1978 - City of Edmonton Civic Census					
1983 - City of Edmonton Civic Census					
1982 - City of Edmonton Assessment Data					
1982/1983 - Field Survey, District Planning Program					

SEPTEMBER 1983.

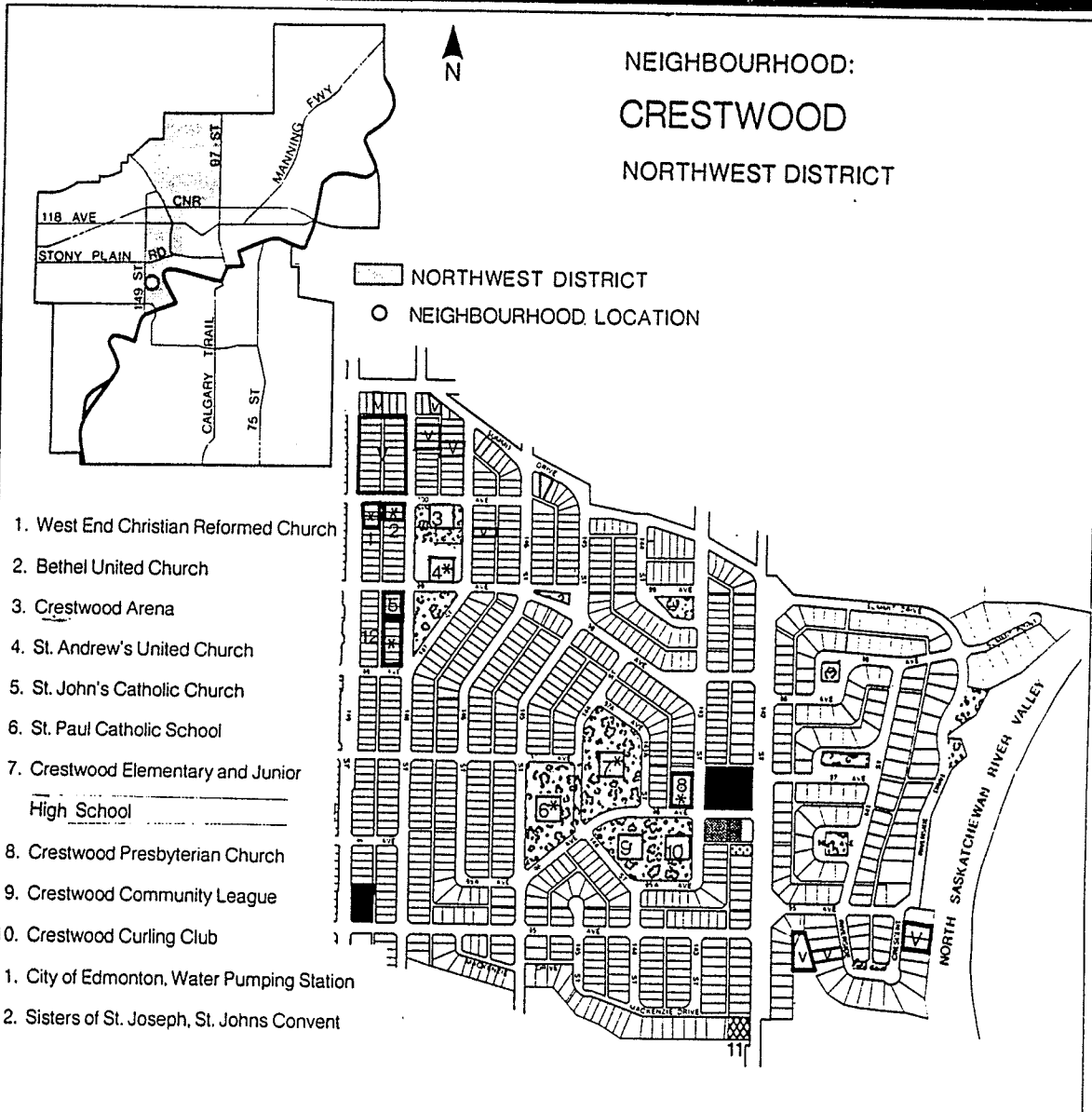
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









For information on other Civic services, contact the Citizen Action Centre at 428-2600.

APPENDIX III (cont'd)


NEIGHBOURHOOD FACT SHEET



LAND USE

 Single Dwelling	 Recreation, Open Space	 Transportation
 Two Unit Dwellings	 Commercial	 Vacant, Undeveloped
 Multiple Family Dwellings	 Industrial, Public Utilities	
 Apartments	 Institutional	

Source: 1982/1983 FIELD SURVEY
DISTRICT PLANNING PROGRAM

APPENDIX III (cont'd)

CRESTWOOD

Neighbourhood Facts

Density: 20 people/hectare (gross)

Housing	No. of Units	%	Land Use	Land Area (Net)	%
Single Dwellings	766	96.1%	Residential	66.8ha.	84.7%
Two Unit Dwellings	11	1.4%	Institutional	.6ha.	.8%
Multiple Family Dwellings ¹	0	-	Recreation/Open Space	7.2ha.	9.0%
Apartments ²	11	1.4%	Commercial	1.2ha.	1.5%
Other Dwellings ³	9	1.1%	Industrial/Transportation ⁴	.2ha.	.3%
			Vacant/Undeveloped	2.9ha.	3.7%
Total Units	797	100.0%	Total Land Area (Net)⁵	78.9ha.	100.0%
			Total Land Area (Gross)⁵	118.1ha.	

1 Includes triplex, fourplex, townhouse and rowhouse units
 2 Includes walk-up, medium rise and high rise apartment units and all condominium units
 3 Includes rooming, boarding, collective residential and combined commercial/residential units
 4 Includes Public Utilities
 5 Includes all roadways

Length of Residence - Lived at the same address:	Tenure
5 or more years	Homeowners
1 to 4 years	Renters
less than 1 year	
	90.1%
	9.9%
	100.0%

Population Age Groups	1978		1983		1983
	No.	%	No.	%	City of Edmonton %
0-4	96	3.8%	103	4.4%	7.6%
5-19	571	22.4%	484	20.6%	21.0%
20-39	677	26.6%	616	26.4%	42.4%
40-59	746	29.3%	620	26.4%	18.7%
60-64	169	6.6%	172	7.3%	3.3%
65+	287	11.3%	350	14.9%	7.0%
	<u>2,546</u>	<u>100.0%</u>	<u>2,345</u>	<u>100.0%</u>	<u>100.0%</u>

Schools	Enrollment		Capacity
	1972	1982	
Crestwood Elementary and Junior High School (Public)	308	280	350
St. Paul Catholic School (Separate - Elementary)	227	121	225

Recreation Facilities

Crestwood Schools: ball fields, soccer field and playground
 St. Paul Schools: ball fields, soccer field and playground
 Crestwood Community League: tennis court, curling arena, picnic area and playground
 Crestwood Hockey Arena and Tot Lots: artificial ice and playground

Community Services


West End Day Care Centre - 9915 - 148 Street
 St. Paul Montessori Nursery Day Care - 14410 - 96 Avenue
 Edmonton Social Services - Westmount Centre 10993 - 124 Street 428-4967

Sources: 1978 - City of Edmonton Civic Census
 1983 - City of Edmonton Civic Census
 1982 - City of Edmonton Assessment Data
 1982/1983 - Field Survey, District Planning Program

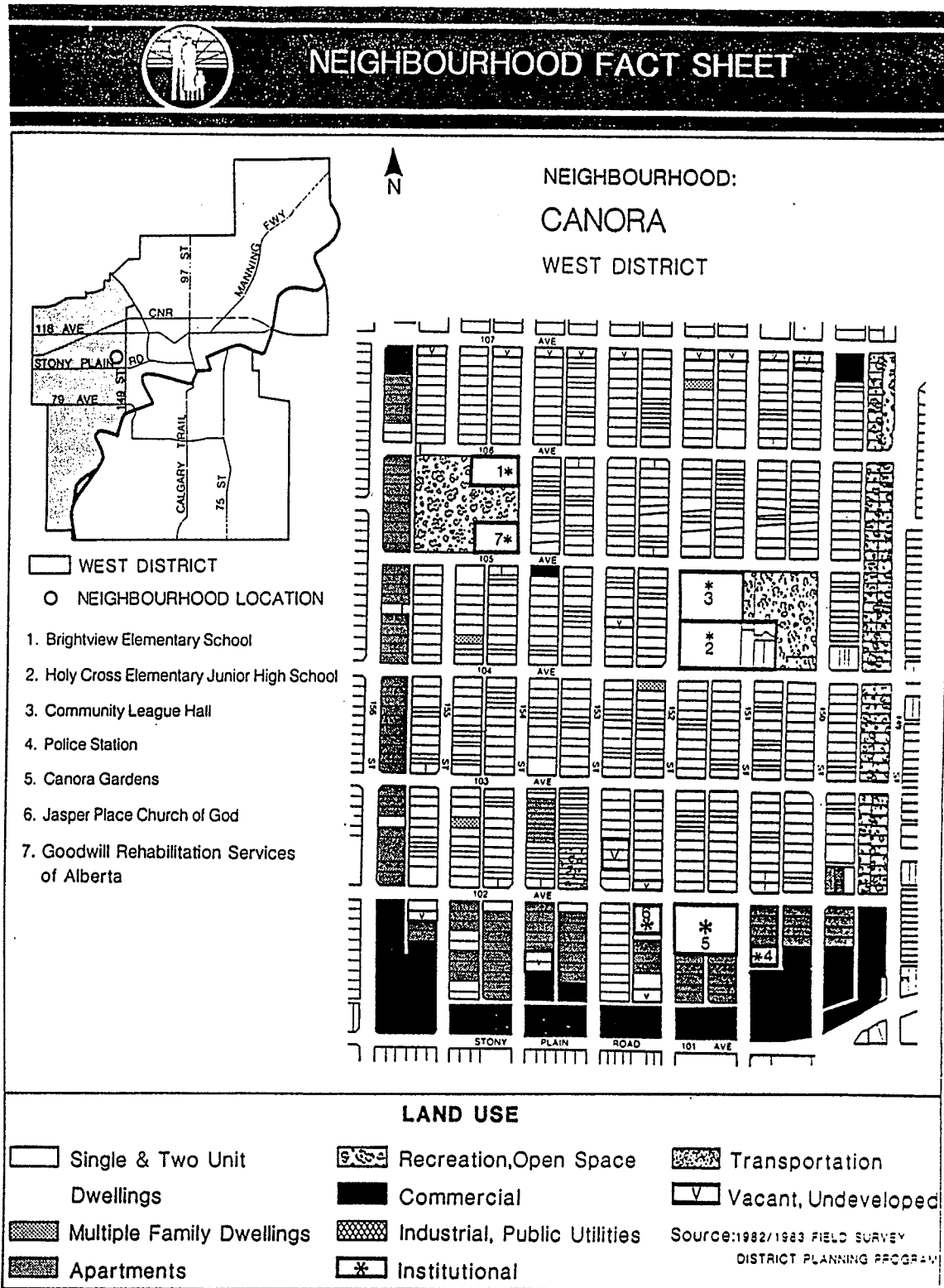
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APPENDIX III (cont'd)



APPENDIX III (cont'd)

Canora

Neighbourhood Character

Density - 42.3 people/hectare

Single Family Housing -	677 units	47%
Apartments	<u>763 units</u>	<u>53%</u>
	1440 units	100%

Population

Age Groups	No.	%	Total Areas		
0-4	241	6.4%	Residential	66.3 ha	75.0%
5-14	461	12.3%	Commercial	9.7 ha	11.0%
15-19	283	7.6%	Parks, Open Space	8.6 ha	9.7%
20-64	2513	67.2%	Institutional	<u>3.8 ha</u>	<u>4.3%</u>
Over 65	<u>243</u>	<u>6.5%</u>		88.4 ha	100.0%
	3741	100.0%			

Tenure

Homeowners	29%
Renters	71%

Length of Residence

more than 5 years	31%
1 to 4 years	38%
less than 1 year	31%

Source: Civic Census 1982

Schools

		Enrollment Sept. 1981	Capacity
Brightview Elementary (Public)	15425 - 106 Avenue	251	450
Holy Cross Elementary/ Junior High (Separate)	15120 - 104 Avenue	311	N/A

Recreation Facilities

Brightview Elementary athletic fields
Canora Community League hall

Community Services

Canora Gardens senior citizens housing 10160 - 151 Street
Bee Jay Day Care - 10316 - 152 Street
Kinder House Day Care - 15321 - 105 Avenue
Jasper Place Group Home - 10526/28 - 150 Street
Police Station - 10121 - 151 Street
Goodwill Rehabilitation Services of Alberta

SEPTEMBER 1983.

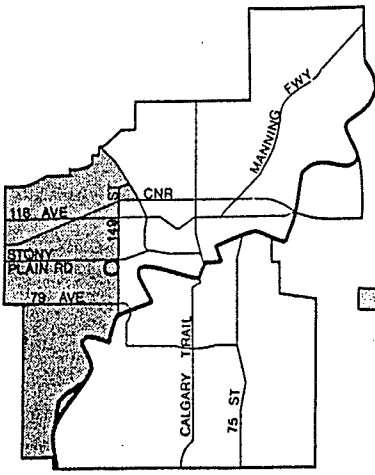
For information on Planning services, contact the
West District Planning Team at 428-8801.





For information on other Civic services, contact
the Citizen Action Centre at 428-2600.

APPENDIX III (cont'd)

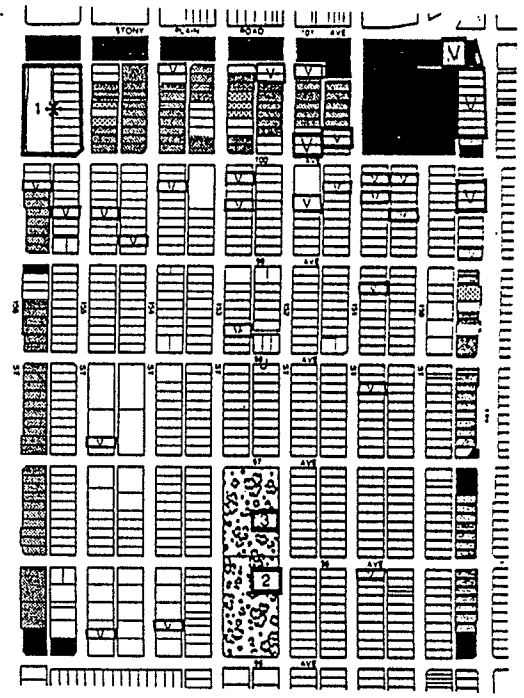

NEIGHBOURHOOD FACT SHEET












NEIGHBOURHOOD:
WEST JASPER PLACE
 WEST DISTRICT

 WEST DISTRICT
 NEIGHBOURHOOD LOCATION

1. Grant MacEwan Community College
2. Sherwood Elementary School
3. (West) Jasper Place Community League



LAND USE

 Single & Two Unit Dwellings	 Recreation, Open Space	 Transportation
 Multiple Family Dwellings	 Commercial	 Vacant, Undeveloped
 Apartments	 Industrial, Public Utilities	
 Institutional		

Source: 1982/1983 FIELD SURVEY
 DISTRICT PLANNING PROGRAM

APPENDIX III (cont'd)

West Jasper Place

Neighbourhood Character

Density - 28.3 people/hectare

Single Family Housing -	533 units	35.7%
Apartments	962 units	64.3%
	<u>1495 units</u>	<u>100.0%</u>

Population

Age Groups	No.	%	Total Areas		
0-4	211	6.5%	Residential	91.8 ha	80.4%
5-14	304	9.4%	Commercial	11.3 ha	9.9%
15-19	184	5.7%	Parks, Open Space	2.2 ha	1.9%
20-64	2259	70.0%	Institutional	8.8 ha	7.8%
Over 65	270	8.4%		<u>114.1 ha</u>	<u>100.0%</u>
	<u>3228</u>	<u>100.0%</u>			

Tenure

Homeowners	23%
Renters	77%

Length of Residence

more than 5 years	28%
1 to 4 years	37%
less than 1 year	35%

Source: Civic Census 1982

Schools

	Enrollment Sept. 1981	Capacity
Our Lady of Fatima Elementary (Separate) 9825 - 158 St.	107	N/A

Recreation Facilities

Our Lady of Fatima playground, athletic fields
 Jasper Place Community League hall, outdoor rink, tennis courts

Community Services

Providence Day Care - 9825 - 158 Street
 Residential Assessment Unit (physically handicapped) 15502 - 99 Avenue
 Jasper Place Health Clinic - 15626 - 100A Avenue
 Grant MacEwan Community College - 156 Street - 100 Avenue

SEPTEMBER 1983.



For information on Planning services, contact the
West District Planning Team at 428-8801.

For information on other Civic services, contact
 the Citizen Action Centre at 428-2600.

APPENDIX IV

1980 Leisure Survey Results from the "North Saskatchewan River Valley and Ravine Resource Analysis: Technical Report (Edmonton: 1983), p. 25.

TABLE 2.4
City of Edmonton Outdoor Recreation and Active Sports/Athletics Analysis

ACTIVITY	PARTICIPATION RATE		AGE/SEX COMPOSITION								YEARS OF EDMONTON RESIDENCY		MARITAL STATUS	
	CITY FACILITY	TOTAL CITY	M	F	14-19	20-29	30-39	40-49	50-59	60-64	65+	<4		>4
OUTDOOR RECREATION														
BOATING	2.3% 0.09	3.98	55% 47%	18 19	37 38	17 21	13 12	9 8	3 1	2 1		21	79	S 48 M 50
PICNICKING	33.4% 1.68	5.04	45% 55%	15 15	35 37	22 21	14 14	10 8	2 2	3 2		24	76	S 44 M 53
DOWNHILL SKIING	4.5% 0.11	2.46	57% 43%	29 30	44 42	11 12	9 13	5 3	0 0	1 1		23	77	S 67 M 30
CAMPING	1.6% 0.09	5.52	50% 50%	19 18	39 40	19 18	12 12	9 6	1 2	1 3		23	77	S 48 M 49
TBOGGAMING	48.3% 0.68	1.42	45% 55%	32 32	28 39	28 23	9 6	3 1	0 0	0 0		23	77	S 56 M 41
CANOEING	6.2% 0.07	1.17	54% 46%	23 30	41 43	18 15	12 7	5 2	1 1	0 1		24	76	S 58 M 40
HIKING	22.0% 0.93	4.24	48% 52%	19 20	39 39	18 19	14 12	8 7	1 1	2 3		23	77	S 51 M 45
WALKING	38.2% 4.15	12.66	43% 57%	13 14	35 36	20 19	14 14	11 9	3 3	4 4		22	78	S 44 M 54
SNOWSHOEING	21.5% 0.10	0.45	53% 47%	38 16	34 60	14 4	5 10	5 2	4 4	0 2		34	66	S 58 M 39
BICYCLING	31.6% 2.38	7.53	49% 51%	25 27	36 37	20 21	11 12	6 3	1 1	2 1		21	79	S 53 M 45
CROSS-COUNTRY SKIING	42.0% 0.94	2.23	48% 52%	22 17	30 36	20 22	12 14	1 10	1 0	1 1		23	77	S 50 M 48
NATURE STUDY	15.8% 0.24	1.50	43% 57%	20 16	30 31	21 25	15 14	9 8	2 2	3 4		19	81	S 46 M 51
FISHING	0.8% 0.03	3.50	62% 48%	19 19	35 36	19 21	12 12	10 9	3 1	3 2		21	79	S 47 M 51
ACTIVE SPORTS/ATHLETICS														
SQUASH, RACQUETBALL, HANDBALL	17.5% 0.71	4.03	58% 42%	22 27	49 47	20 19	6 6	2 1	0 0	0 0		25	75	S 47 M 40
BADMINTON	19.0% 0.41	2.14	45% 55%	40 41	31 35	11 12	12 7	6 4	0 0	0 1		26	74	S 64 M 34
SOCCER	62.1% 1.18	1.90	66% 34%	39 51	38 34	15 10	5 2	2 1	0 0	0 1		25	75	S 69 M 27
TENNIS	71.9% 2.16	3.01	54% 46%	30 36	43 38	13 12	8 11	5 4	1 0	0 1		26	74	S 63 M 34
JOGGING/RUNNING	52.7% 4.33	8.21	50% 50%	24 30	42 41	18 17	10 9	4 2	0 0	1 1		25	75	S 59 M 39
ICE SKATING	87.7% 4.20	4.79	51% 49%	23 27	42 37	18 20	10 10	7 4	1 1	1 1		21	79	S 48 M 50
VOLLEYBALL	20.3% 0.57	2.79	51% 49%	39 47	39 39	14 11	4 2	4 0	0 0	0 0		24	76	S 70 M 28
GOLF	36.5% 1.33	3.65	59% 31%	20 20	36 32	14 14	13 15	11 12	4 5	2 2		19	81	S 49 M 49
HOCKEY	38.5% 1.02	2.65	54% 16%	35 30	46 49	14 5	4 8	2 3	0 3	0 3		22	78	S 66 M 30
CALISTHENICS	9.8% 1.12	11.44	43% 57%	21 22	45 44	16 17	10 6	5 5	2 2	2 3		26	74	S 55 M 42
FOOTBALL	59.7% 1.56	2.61	72% 28%	43 53	46 42	8 3	1 2	1 0	0 0	0 0		21	79	S 80 M 18
WEIGHT-TRAINING	7.9% 0.33	4.17	74% 26%	35 40	47 46	10 7	5 2	2 2	0 0	0 0		26	74	S 70 M 26
BASEBALL/SOFTBALL	65.3% 2.18	3.34	56% 44	28 47	46 38	14 9	8 8	4 1	0 1	0 2		23	77	S 65 M 32
BASKETBALL	18.0% 0.38	2.09	62% 38%	47 60	35 30	13 7	3 4	1 0	0 0	0 0		24	76	S 80 M 18
CURLING	28.0% 0.65	2.30	56% 44%	14 23	38 33	23 15	12 16	9 8	3 5	1 0		20	80	S 49 M 50
RUGBY	40.0% 0.14	0.36	67% 33%	58 47	13 27	16 7	6 7	6 7	0 7	0 0		32	68	S 50 M 21
SWIMMING	55.0% 4.59	8.39	47% 53%	22 21	37 41	18 21	12 10	9 4	1 2	1 2		24	76	S 53 M 45