NOSE HILL PARK

Nose Hill Trail and Pathway Plan

Prepared by:
O2 Planning + Design Inc.

Prepared for:
The City of Calgary Parks
April 20, 2005

Approved by City Council:
July 25, 2005

O2 PLANNING + DESIGN INC.

THE CITY OF CALGARY PARKS

EXECUTIVE SUMMARY

The goal of the Nose Hill Trail and Pathway Plan (NHTPP) is to perpetuate the natural character of the Nose Hill landscape while providing compatible, quality recreational opportunities. This plan has been developed to address a variety of major longstanding park routing, environmental and visitor use issues. This plan has been created through a comprehensive and extensive public and stakeholder engagement process. Once implemented, the NHTPP will effectively balance the protection of the natural environment while providing compatible, quality leisure opportunities.

Fifteen recommendations have been provided in the NHTPP. A summary of the park use and routing, park amenity and parking lot upgrade, and implementation and management recommendations are listed below.

Park Use and Routing Recommendations:

- Modify the configuration of the multi-use and escarpment zones.
- Establish an upper plateau route that clearly defines the modified multi-use and escarpment zone boundary.
- Require all users to stay on designated pathways and trails while outside of the multi-use zone.
- Remove the current Council approved perimeter pathway identified for Nose Hill Park and establish two cross-park pathways to provide connections to existing pathways in adjacent communities.
- Adopt the proposed designated routing plan that provides for primary, secondary, upper plateau, cross-park, and maintained track routes, as well as the pre-existing barrier free interpretive pathway.
- Apply specific route surfacing materials (stabilized tread, granular and asphalt with special stone aggregate) and widths to each designated route type to accommodate the variety of park visitor experiences.
- Close and rehabilitate all informal routes not included in the designated routing system.
- Close the Charleswood Drive entrance to the park upon completion of the Brisebois Drive pedestrian overpass.
- Request City of Calgary Transportation to examine the safety of the 19th Street entrance.
- Examine the possibility of creating an on-street bikeway along MacEwan Glen Drive and an additional north/south pathway along the east side of 14th Street.

Park Amenity and Parking Lot Upgrade Recommendations:

- Develop major and secondary entry features, trail markers, interpretive and orientation signs to provide interpretive, orientation, bylaw, safety and/or educational information for users.

- Provide site specific upgrades at five parking facilities; including Edgemont Drive, Berkley Gate, Brisebois Drive, 64th Street and 14th Streets, which include, but are not limited, to the addition of washrooms, trees, fencing, garbage cans, trail-head re-alignment, entrance gates, and parking lot resurfacing and/or line resurfacing.
- Install park benches in select locations throughout the park.
- Calgary Parks to continue discussions with the Calgary Winter Club regarding the development of an agreement to designate parking for Nose Hill Park users, and discuss opportunities for expanding the parking at this location.

Implementation and Management Recommendation:

- Calgary Parks to commence recommended implementation and phasing strategy.

The Nose Hill Trail and Pathway Plan has been prepared for Calgary Parks by O2 Planning + Design Inc. The plan is presented in two parts. Part 1 provides a comprehensive overview of the planning process used to develop the plan and describes, detail, the 15 plan recommendations. Part 2 summarizes the supporting technical information that was compiled throughout the planning process to support the development of the NHTPP.

ACKNOWLEDGEMENTS

The Nose Hill Trail and Pathway Plan (NHTPP) was prepared by O2 Planning + Design Inc. under contract to Calgary Parks. Many people contributed to the completion of the NHTPP. We wish to acknowledge the assistance, support and contributions provided by the Planning Team comprised of:

City of Calgary staff, including Jennifer Symcox, Dave Elphinstone, Harold Pinel, Bashir Jamal, Rob Biegen, Doug Marter, Christine Wood, Melanie Haugen, Candy Lannan, Stephanie Won, Sheldon David;

O2 Planning + Design Inc. staff, including Douglas Olson, Graham Gerylo, Serene Ho, Bobbie Olson and Peter Miles;

and Duncan Daniels of Kardun Associates.

Additionally, the planning team would like to thank the individual members of the stakeholder input group for their valuable input provided throughout the duration of the planning process. The following groups were involved:

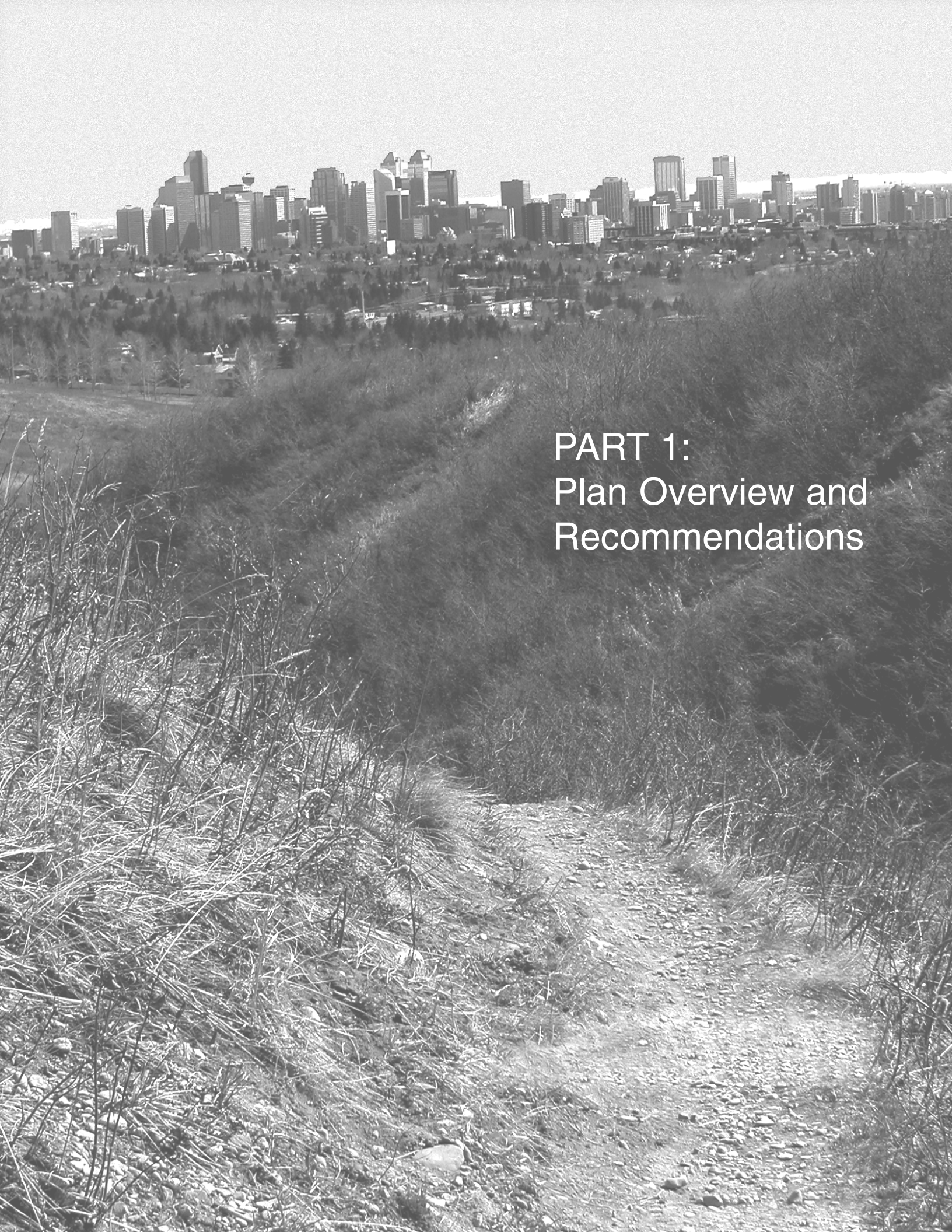
Advisory Committee on Accessibility	Beddington Community Association
Brentwood Community Association	Calgary Aboriginal Urban Affairs
Calgary Field Naturalists' Society	Calgary Mountain Bike Alliance
Calgary Parks and Wilderness Society	Calgary Pathways and Bikeways Advisory Council
Calgary Road Runners	Calgary Winter Club
Cambrian Heights Community Association	Dalhousie Community Association
Edgemont Community Association	Elbow Valley Cycling Club
Federation of Calgary Communities	Foothills Wanderers
Friends of Nose Hill	Huntington Hills Community Association
North Haven Community Association / Ward 4 Liaison	MacEwan / Sandstone Community Association
Off-Leash Calgary	Seniors Outdoor Recreation Group
Triwood Community Association / Ward 7 Liaison	Ward 2 Liaison

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF MAPS



PART 1:
Plan Overview and Recommendations

1.0 INTRODUCTION

Nose Hill Park is a highly valued resource, both from a recreational open space perspective and as urban ecological infrastructure. It is used by thousands of Calgarians and its importance to local residents and the City as a whole cannot be overstated. Over the years, the park has suffered due to a proliferation of informal routes and other uses. As a result, the park has experienced direct vegetation loss, wildlife habitat fragmentation and, in some cases, loss of soil fertility due to compaction and erosion. In addition, the aesthetic qualities of the park are deteriorating due to the ever expanding informal routes. Efforts have been made to rehabilitate the park, but they have not been successful for many reasons. The Nose Hill Trail and Pathway Plan (NHTPP) responds to these concerns through the development of a designated trail and pathway infrastructure that meets the needs of users of the park, while at the same time protects ecological resources. The plan has undergone extensive public and stakeholder engagement and represents a balanced response to the multiple and often conflicting values of different user constituencies.

1.1 Overview of the Nose Hill Trail and Pathway Plan (NHTPP)

The goal of the Nose Hill Trail and Pathway Plan (NHTPP) is to *perpetuate the natural character of the Nose Hill landscape while providing compatible, quality recreational opportunities*.

The NHTPP is required to address a variety of major longstanding park issues, which include:

- Declining park health due to extensive trail proliferation (+300 km) and high densities of informal trail use,
- Lack of proper trail surfacing leading to widening of routes, soil erosion and compaction,
- Impacts of informal trail use on native vegetation communities and important wildlife habitat,,
- Limited effectiveness of restoration efforts, including informal trail closures,
- High volumes and diversity of park users,
- Limited accessibility for mobility impaired users,
- Lack of an easily understood and user-friendly trail and pathway network,
- Poor compliance with park bylaws and policies,
- The need for peripheral infrastructure upgrades, including parking facilities and washrooms, and
- The lack of appropriate within-park infrastructure, such as benches and park signage (e.g. orientation, interpretive and bylaw).

The NHTPP provides 15 key recommendations that address the above issues; which include a designated trail and pathway network, route surfacing upgrades, designated on-trail use, informal trail and trailhead closures, park signage improvements, parking lot upgrades, and an

implementation strategy. When implemented, the NHTPP will effectively balance the need to protect the natural environment with the need to provide compatible, quality recreational opportunities.

1.2 NHTPP Report Organization

The NHTPP has been organized into two parts. Part 1 provides a comprehensive overview of the planning process used to develop the plan and describes, in detail, the various plan recommendations. Part 2 summarizes the supporting technical information that was compiled throughout the planning process to support the development of the NHTPP. While Part 1 can be treated as a stand alone document, readers are encouraged to refer to the background technical information provided in Part 2 to better understand the various details that influenced the development and rationale for the 15 recommendations.

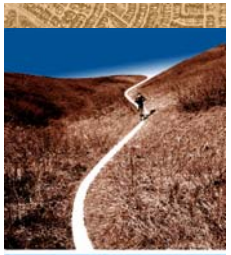
1.3 Park at a Glance

Nose Hill Park, located in Calgary's northwest, is a unique urban park that covers approximately 1,129 hectares (ha) of land. The park is located approximately 5 km from the Calgary city centre, and is only a few minutes walk from neighbouring communities. The park has been dubbed an '*ecological island*', since it is a large area of grassland that is completely surrounded by residential communities and bordered by three major expressways; including John Laurie Boulevard along the south, Shaganappi Trail along the west, and 14th Street N.W. along the east (Map 1.1). Nose Hill Park contains some of the largest reserves of native fescue grasslands in Calgary.

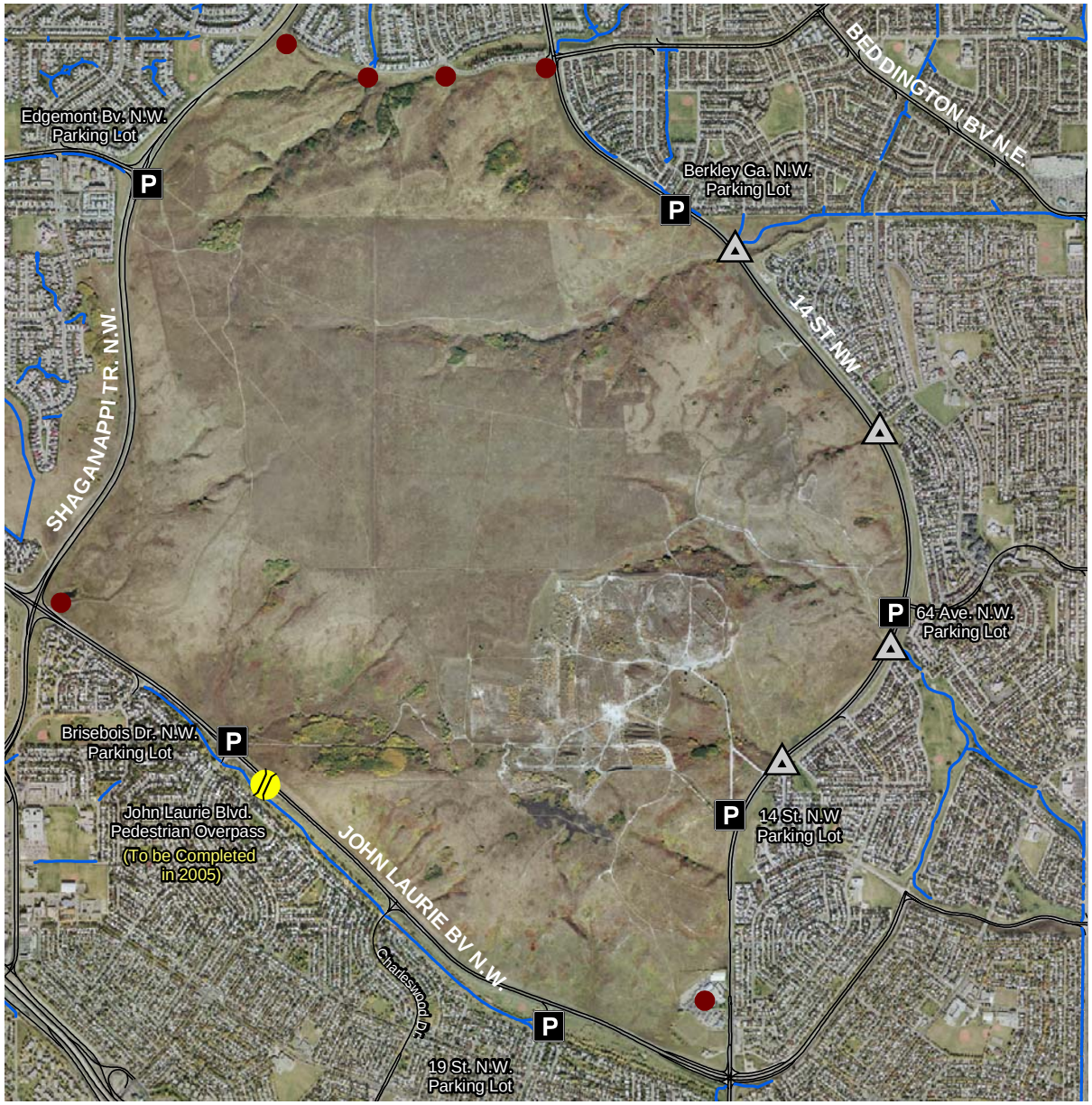
Calgarians enjoy Nose Hill Park's unique landscape for a variety of reasons. The recent Nose Hill Park User Study (Calgary Parks & Recreation 1997) identified the most common uses of the park, which include walking, dog walking, cycling, running/jogging and sightseeing. In addition, there is a barrier free interpretive pathway that accessible from Shaganappi Trail at Edgemont Boulevard. Currently, most users access the park through 6 perimeter parking lots, 4 tunnels located along 14th Street, and access points located at the Calgary Winter Club, and along John Laurie Boulevard and the north end of the park (Map 1.1). A new barrier-free pedestrian overpass is currently under construction at John Laurie Boulevard, east of Brisebois Drive, which will provide an additional access point to the park in spring/summer 2005.

Currently, there is relatively minimal infrastructural development in the park, with development limited to the outside periphery. Six parking lots provide access to the park (Map 1.1). All parking lots are stable asphalt surfaces with the exception of the 14th St. lot, which is old and in

poor condition (e.g. crumbled asphalt, potholes). There is one washroom facility in the park, which is located at the Shaganappi parking lot.



NOSE HILL PARK



Map 1.1
Nose Hill Park
Existing Context Map

Map Legend

Trail Heads

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)

Base Information

- Existing Regional Pathways
- Major Roads

Data Source: Base data digitized by O2 Planning + Design Inc. March 2005. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

2.0 NEED FOR THE NHTPP

The following sections provide an overview on the need for the NHTPP, including a summary of existing route conditions and park issues. Existing route conditions and key park issues were compiled through consultations with park stakeholders, information meetings with City administration, as well as numerous field surveys and observations conducted during the summer, fall and winter of 2005. A brief summary of the existing conditions of the parks trails and pathways, as well as the many issues currently faced by the park are described in the following sections. Additional details on the information provided in this Chapter are described in full detail in Part 2, Chapters 9.0 and 10.0.

2.1 Park Routing Issues

The goal of the Nose Hill Trail and Pathway Plan is to perpetuate the natural character of the Nose Hill landscape while providing compatible, quality recreational opportunities. Historical use of the park by vehicles and agricultural practices, and current unrestricted and ad hoc usage of the park has led to linear disturbances, increased levels of trail proliferation, landscape fragmentation and damage to the natural environment. Key issues associated with the current route network, which have been addressed by the NHTPP recommendations, are described below:

Route Density:

- Currently, there are over 300 km of informal routes on Nose Hill (equivalent to approximately 285 m of trail per hectare).
- The high density of informal routes has created significant visual and ecological impacts on the Nose Hill landscape.

Route Conditions:

- A lack of proper route surfacing, heavy traffic along the park's steep slopes and concentrated use of soft surface routes during wet periods (e.g. snowmelt, rainfall) has led to significant soil erosion and compaction, both on and alongside the routes, which has led to widening of routes, reduced native vegetation health, and non-native species encroachment.
- A comprehensive field survey undertaken throughout the NHTPP planning process demonstrated the following route conditions:

a. Dirt Tread and Granular Surface Trails:

- Many trails display multi-tracked, rutted and braided erosion patterns (examples shown in Figure 2.1 and Figure 2.2).

- The majority of trails documented are approximately 1.5 m wide. Less used (minor) routes are smaller in width (0.3 m to 0.6 m), while more heavily used (major) routes have widths that vary up to 4 m wide (Figure 2.3).

b. Asphalt Surface Pathways:

- The asphalt with imbedded aggregate pathway is generally in good condition (Figure 2.4).
- The asphalt pathway located along Porcupine Valley is in poor condition, which is expected since this pathway is at the end of its' lifecycle (Figure 2.5).
- Generally, the widths of asphalt pathways vary from 1.5 m – 2.5 m.

Figure 2.1 Example multi-tracked trail

Figure 2.2 Example rutted and braided trail

Figure 2.3 Example trail with wide route width

Figure 2.4 Existing asphalt with aggregate stone pathway is in good condition

Figure 2.5 Current asphalt pathway is in poor disrepair

2.2 Environmental Issues

The high density of trails in the park, informal trail use and associated erosion on many popular routes has led to the degradation of the Nose Hill physical environment. Significant environmental issues that the NHTPP aims to address include:

Physical Landscape:

- Erosion of trails along steeper slopes has led to landscape degradation, including soil loss and rutting, introduction of weedy (non-native) vegetation, widening of routes, and impacts on park aesthetics.
- Disturbances in the native vegetation, such as soil erosion and compaction, facilitate the invasion of non-native vegetation in the park, which is a significant concern in the native communities along the park's escarpment.

Vegetation Communities and Wildlife Habitat:

- Trail proliferation and ad hoc trail use is disturbing native grassland communities and associated wildlife habitat.
- Use of informal trails through the parks key vegetation communities (forest, shrub and native grassland communities) disturbs key wildlife habitat features, including forage, breeding and nesting areas.

- Dogs off leash in on-leash zones disturb native vegetation communities and important wildlife habitat, such as breeding and nesting areas (Figure 2.6).

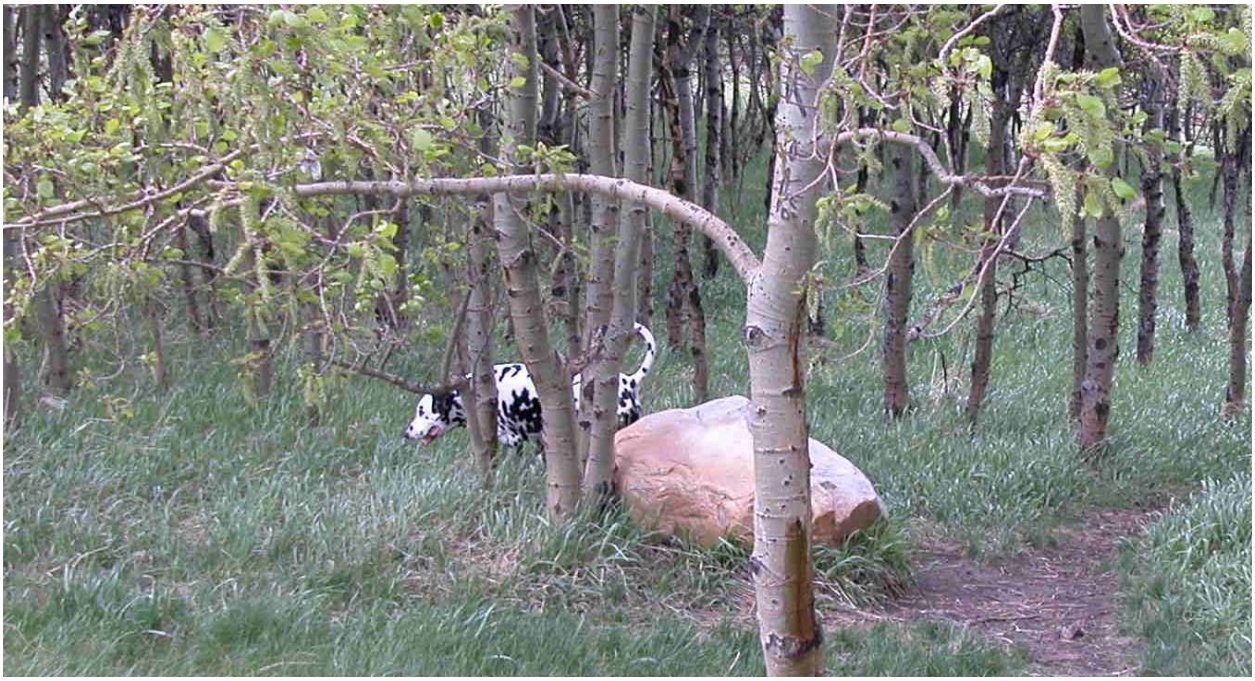


Figure 2.6 Off-leash dogs outside of the multi-use zone.

2.3 Visitor Use Issues

A variety of visitor use issues regarding park use, interpretive and educational opportunities, travel options and park infrastructure have been raised throughout the planning process. Many of the NHTPP recommendations have been developed to address these issues, including:

Park Use:

- Park users on undesignated trails are reducing the effectiveness of rehabilitation processes.
- Park users are unclear on the locations of currently designated and closed trails.
- It is difficult to balance park preservation objectives and human usage in the park.

Public Education:

- There is a lack of public knowledge and awareness of the sensitivity of the park's significant features (e.g. wildlife habitat, native grasslands) and the need for their protection.
- There is a lack of public understanding and compliances on the park's bylaws and regulations, which is contributing to the proliferation of trails in the park.
- The multi-use zone (off-leash dog and off-trail use permitted) is insufficiently distinguished.

- There is a lack of educational information identifying the purpose and objectives for closing trails.

Travel Options:

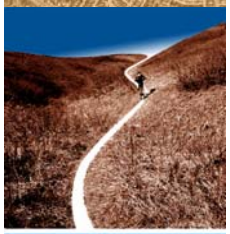
- There is a lack of designated routes for mobility impaired users.
- There is no route connection that accommodates mobility impaired users to the new barrier free John Laurie Boulevard pedestrian overpass.
- There is a lack of continuous designated routing opportunities.
- There is a lack of clearly indicated “loop” travel options for park users.
- There is a lack of regional pathway connections through or around the park.

Within Park Infrastructure:

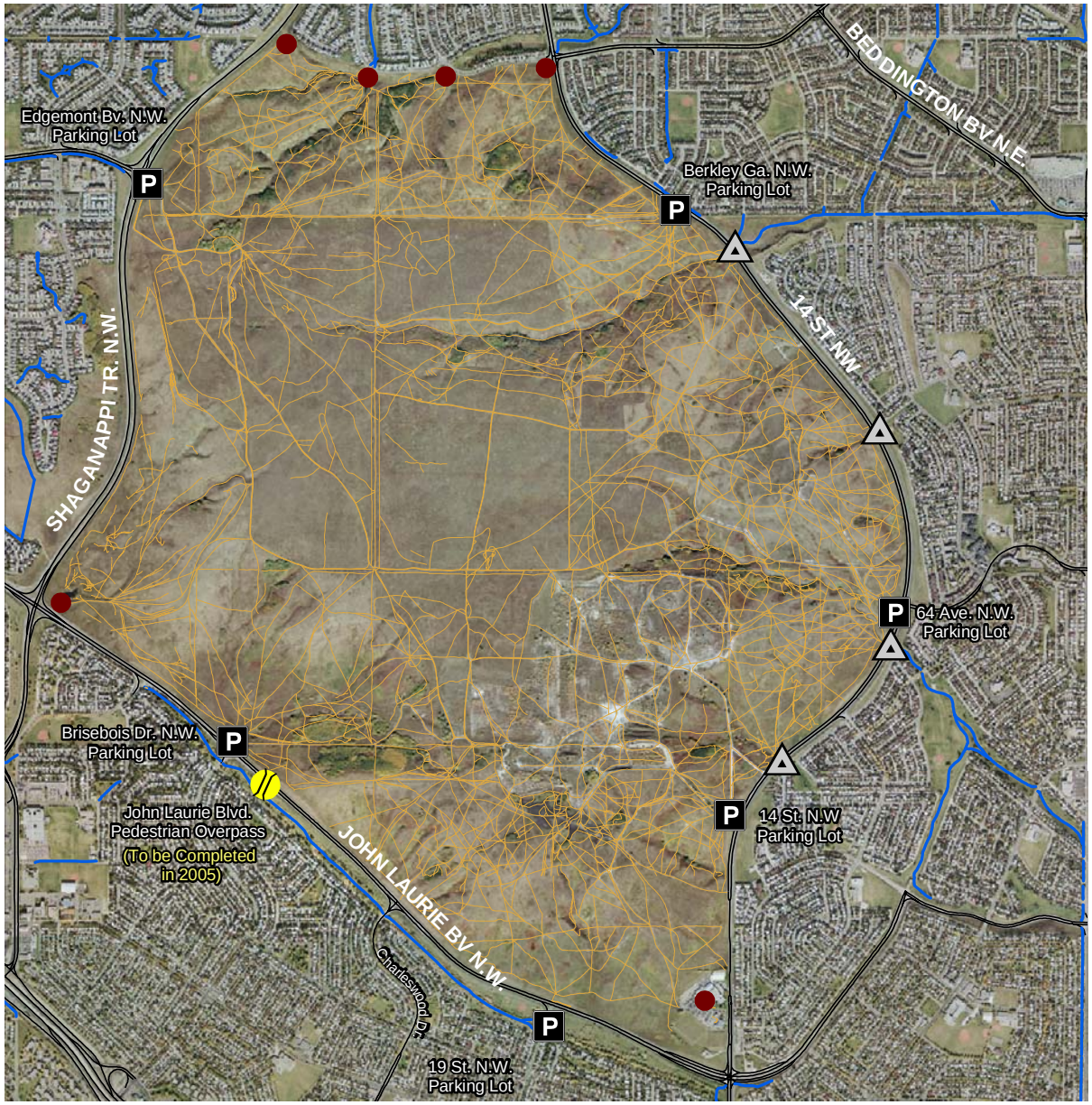
- Orange snow fences currently used to indicate a closed trail have not held up over time as many have become damaged or vandalized, as demonstrated by (Figure 2.7 and Figure 2.8).
- There is a lack of signage explaining current park policies and bylaws.
- There is a lack of direction and route signage, leading to increased ad hoc trail use.
- There is a lack of adequate education / interpretive opportunities within the park.
- There are insufficient park benches and rest locations throughout the current designated trail system.
- There is a lack of sufficient public amenities, including washrooms and refuse containers, at each parking lot.
- The current asphalt surface of the 14th Street parking lot is in poor condition (e.g. heavily eroded and crumbled asphalt, potholes) and does not provide easy turn-around movement for automobiles.

Figure 2.7 Snow fences, indicating closed trails, have been inappropriately moved or vandalized.

Figure 2.8 Users are ignoring snow fences, which indicate closed trails, and are continually using closed trails



NOSE HILL PARK



Map 2.1
Existing Route Network

Map Legend

Trail Network
- Existing Route Network (321km)

Trail Heads
- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)

Base Information
- Existing Regional Pathways
- Major Roads

Data Source: City of Calgary, Parks, trail data (Provided May 2004). Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

3.0 THE PLANNING PROCESS

A comprehensive planning process was follow to develop the NHTP, which is outlined in Figure 3.1. This planning process included background research and analysis on Nose Hill Park studies and reports; a review of public use patterns; an examination of current park conditions and issues; field assessments; a perimeter pathway feasibility study; development and evaluation of preliminary routing and facilities concepts; revision and evaluation of potential routing and facilities; and selection and refinement of preferred concepts and NHTPP recommendations.

Public participation was integrated into all levels of planning, and was utilized at all stages of the plans development. This participation included contributions from stakeholder input groups and public meetings. Figure 3.1 identifies specific areas of the planning process that involved stakeholder involvement (shown using thin dashes) and public input (shown using thicker wide dashes). Field surveys were also integral to the development to the NHTPP, and as indicated on Figure 3.1, were undertaken at almost all levels of planning. These surveys were integral to the decision making process and validation of the NHTPP recommendations. This Chapter provides a brief summary of the various steps undertaken to develop the 15 NHTPP recommendations.

3.1 Background Research and Analysis

Comprehensive background research and analysis was required to ensure that the trail and pathway design team could make the best-informed recommendations for the NHTPP. Research was undertaken to explore and summarize the following:

- The state of the park's environmental and historical resources,
- Previous recommendations for maintaining and protecting significant park resources,
- City Council approved policies and directions for Nose Hill Park,
- City of Calgary policies, plans and regulations,
- Park user survey results and park use patterns,
- Current and historical park conditions, and
- Park issues and concerns.

In order to complete the background investigation, a detailed literature and policy review was undertaken to summarize previous studies, plans, policies and recommendations; as well, a comprehensive field survey program was undertaken to assess the current state of the park and observed current park use patterns. The following sections briefly summarize the background investigation process, which has been described in full detail in Part 2 of this report, in Chapters 5.0 through 10.0.

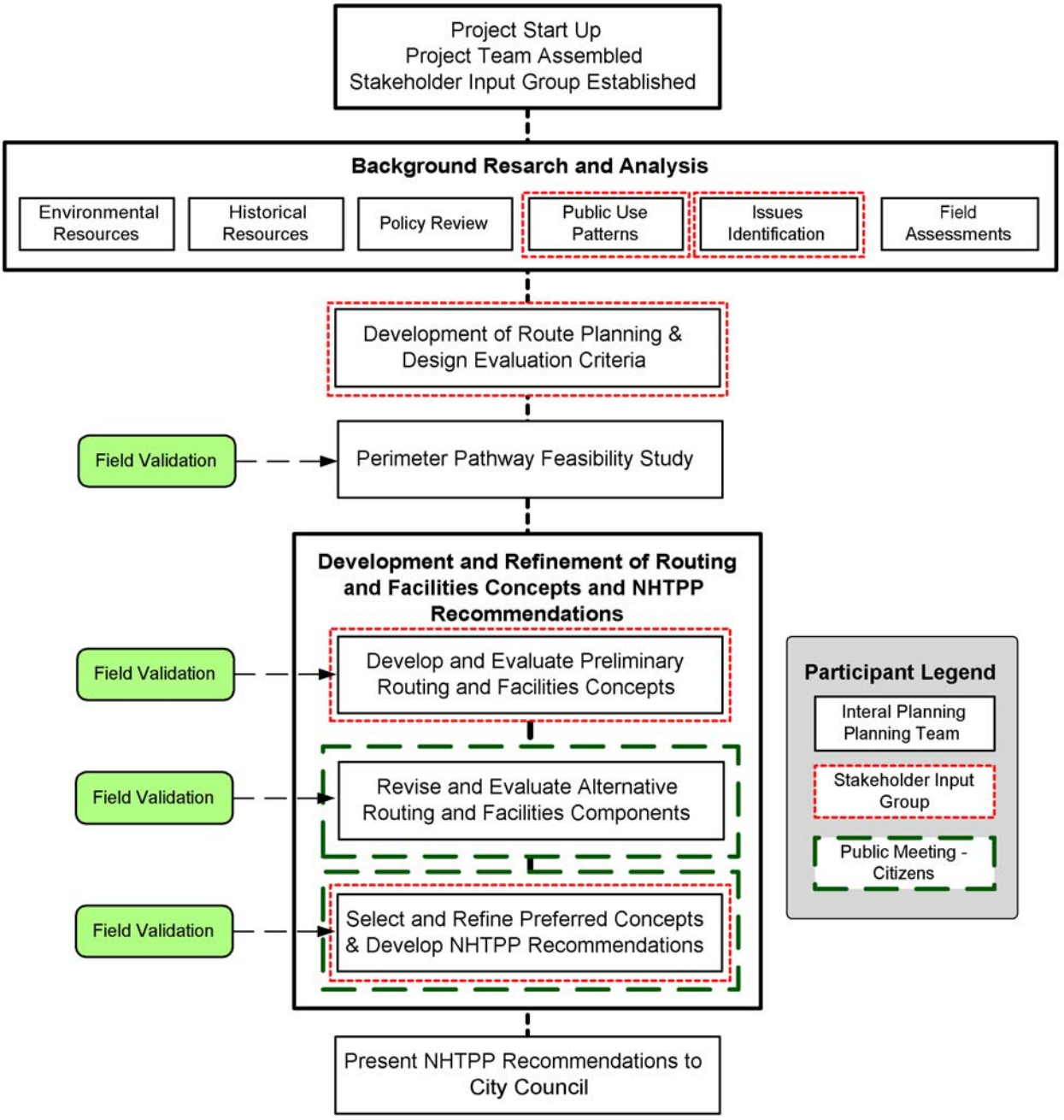


Figure 3.1 Summary of NHTPP Planning Process

3.1.1 Environmental, Historical Resources and Policy Review

An investigation was undertaken to: (a.) review the current state of the park's environmental and historical resources; and (b.) summarize Council approved policies and plans. This investigation involved an examination of previous City plans and regulations, resource evaluations and studies, and City Council policies and directions; as well as an analysis of key geographic

information system (GIS) data for the park. Table 3.1 lists the various data sources incorporated into the background research and analysis.

A written and graphical summary was prepared to describe the park's natural environment (vegetation communities, wildlife, soils and topography) and historical resources, summarize natural environment and historical resource features significant to the park, and list previously identified recommendations to preserve the significant features. This background information is presented in Part 2 of this report, in Chapters 6.0 and 7.0.

Table 3.1 Data sources incorporated into the background research to support the NHTPP

City of Calgary Plans and Regulations:
Open Space Plan (The City of Calgary Parks 2003a)
City of Calgary Parks and Pathways Bylaw (The City of Calgary Parks 2003b)
Development Guidelines and Standard Specifications: Landscape Construction (The City of Calgary Parks 2004)
Calgary Pathway & Bikeway Plan: North Report (IBI Group 2001)
Natural Area Management Plan (Calgary Parks and Recreation 1994)
Nose Hill Park Natural Area Management Plan (EnviResource Consulting Ltd. 1994a)
Nose Hill Park Natural Area Management Plan: Technical Report (EnviResource Consulting Ltd. 1994b)
Nose Hill Park Master Plan Review (Calgary Parks & Recreation 1992)
Resource Evaluations & Studies:
Nose Hill Park User Study – 1997: Volume 1 – Final Report (Calgary Parks & Recreation 1997)
Exploring Nose Hill Park: A Hands on Field Guide (Kirker and Kary 1996)
Biophysical and Land Use Inventory and Analysis of Nose Hill Park (Kansas *et al.* 1993)
Nose Hill Park, City of Calgary, A Review of Archaeological Data (Van Dyke 1993)
City Council Policies and Directions:
Update on Nose Hill Undesignated Trails Policy and Multi-Use Pilot Trail (CPS2003-40. May 7, 2003)
Paved Pathways within Nose Hill Park (TTP2002-17. April 16, 2002)
Biophysical Impact Assessment – Nose Hill Trail 5.8 (CPS2000-49. July 19, 2000)
Nose Hill Undesignated Trails Policy (CPS2000-14. March 15, 2000)
Cycling Policy on Undesignated Trails in Parkland (CPS97-85. April 6, 1998)
Key GIS and Remote Sensing Data:
Nose Hill Park Archaeological Resources (Compiled from Van Dyke 1993 and EnviResource Consulting Ltd. 1994b)
Nose Hill Park Biophysical Ecosites: Detailed 1:5,000 Scale (GAIA Consultants 1993)
Digital Elevation Model (DEM) (1 m Resolution) (City of Calgary, Parks)
Nose Hill Parks Informal Trail Network (City of Calgary, Parks)
Nose Hill Park Designated Trail Assessment (City of Calgary, Parks)
Orthorectified 2003 colour aerial photography (City of Calgary, Parks)
Scanned 1982 colour aerial photography (City of Calgary, Parks)
Scanned 1948, 1959 and 1971 aerial photography (University of Calgary, Maps & Airphoto Collection)

Additional research of this background investigation involved a comprehensive review of previously approved Council policies, reports and plans that influence or affect the development of the NHTPP recommendations. This review was required since many Council directions for the park supersede or build off of previous directions, and therefore, a thorough understanding of the most recent directions was required. The policy and plan review is summarized in Part 2 of this report, in Chapter 7.0.

3.1.2 Public Use Patterns

Additional background research was undertaken to build a strong understanding of park use patterns, areas of special interest and park attractions. This information was used to better understand where park users prefer to go, and where the heaviest traffic areas are within the park. This research was undertaken by reviewing the following:

i. Input and results of the *Nose Hill User Study* (1997), including visitation levels, trailhead frequency counts, and summaries of park activities and areas visited,
ii. *Natural Area Management Plan* (1994) special places,
iii. Areas of attraction mapped by stakeholder input groups,
iv. Stakeholder mapped routing suggestions,
v. GIS analysis of the current informal park trail network, and
vi. Field visits conducted in the summer, fall and winter of 2004.

The results of the public use patterns research are described in full detail in Part 2 of this report, in Chapter 8.0.

3.1.3 Assessment of Park and Trail Conditions

Three extensive assessments of the condition of Nose Hill Park trails have been undertaken over the past 15 years. Two assessments were undertaken prior to the development of the NHTPP. The first study was undertaken by Kansas et al. (1993), where the majority of the park's informal trail network was mapped, and a general assessment of the conditions of these trails was completed. In 1998, a second assessment was undertaken on many of the trails mapped by Kansas et al. (1993). This assessment identified the current condition (e.g. surface type, erosion present) of each trail segment, and the results were used to develop the Nose Hill Undesignated Trails Policy (CPS2000-14), which identified a network of closed, pedestrian and multi-use trails.

An extensive assessment of approximately 60 km of trails in Nose Hill Park was undertaken by O2 Planning + Design Inc. to support the development of the NHTPP recommendations. Field

assessments were undertaken in the summer, fall and winter of 2004 by walking and cycling along individual route segments. Individual assessments were made for each segment to record the route type, condition, surfacing types and width. Additionally, initial recommendations were made to include or exclude the route segment from the preliminary routing concepts based on a set of trail and pathway design criteria. As well, initial suggestions were made for the most appropriate surfacing required to stabilize the route surface and to support the level of traffic expected on the route. A summary of the results from this assessment are described in Part 2 of this report, in Chapter 9.0.

3.1.4 Identification of Park Issues

Prior to the development of the NHTPP, City Administration presented to City Council specific concerns and issues about the current state of the park and routing network. Based on the initial issues raised, Council directed the Administration to develop this NHTPP (CPS2003-40) to address the issues facing the park. A complete list of issues was compiled throughout the stages of the planning process in order to ensure that the plan effectively addressed the key park issues. A complete listing of issues and concerns were compiled through:

i. Comprehensive field surveys,
ii. Air photo interpretation, including qualitative comparisons of aerial photographs dating back to 1948,
iii. A review of previous park reports (e.g. Kansas et al. (1993) Biophysical Report) and Council directions (e.g. Undesignated Trails Policy),
iv. Stakeholder input group contributions,
v. City Administration internal workshops,
vi. Geographic information system (GIS) analyses of existing routes, including trail density and potential impacts of routes on significant park features (e.g. significant vegetation communities and wildlife habitat), and
vii. A review of the public comments provided through the 1997 Nose Hill User Study.

A summary of the key park routing, environmental and visitor use issues are presented in Part 1, Chapter 2.0 of this report, while a more comprehensive listing of the issues identified throughout the planning process are outlined in Part 2, Chapter 10.0.

3.2 Development of Route Planning & Design Evaluation Criteria

Route planning, design and evaluation criteria were developed to guide the NHTPP decision making and recommendation development, and to evaluate the feasibility of the Council approved conceptual perimeter pathway system. Criteria were developed from: (a.) key

recommendations and policies identified in the environmental, historical resources, policy and plan review; and through (b) Nose Hill Stakeholder Input Group feedback.

Route planning and design evaluation criteria were organized according to three categories: (i.) vulnerability, (ii.) attractiveness and (iii) logistical criteria. Vulnerability criteria are those related to the avoidance of vulnerable areas (e.g. key wildlife habitat, significant native vegetation communities), while attractiveness criteria relate to where routes should go (e.g. based on current desire lines, areas of attraction). Logical criteria are related to how well individual routes meet trail and pathway construction guidelines, while also incorporating cost considerations. The full listing of route planning and design evaluation criteria used to develop the NHTPP routing recommendations and to assess the perimeter pathway feasibility are outlined in Part 2, Chapter 11.0 of this report.

3.3 Perimeter Pathway Feasibility Study

As part of the NHTPP planning process, a feasibility analysis was conducted on the proposed perimeter pathway identified in the Council-approved Calgary Pathway and Bikeway Plan – North Report (TTP2001-41). This pathway was identified as a missing-link in Calgary's pathway and bikeway network, however, the feasibility of the route was never assessed. This analysis was based on route planning and design criteria, and was undertaken through a GIS analysis that determined how well the conceptual perimeter pathway met the various criteria.

The feasibility analysis concluded that the perimeter pathway is not feasible due to a variety of ecological, topographical and construction constraints; as well as user considerations and cost estimates. Alternative routing concepts were identified and evaluated to address the resulting missing link in the pathway and bikeway network, while also improving within-park accessibility. The NHTPP incorporated the recommendations from this feasibility report by excluding the perimeter pathway from the trail and pathway route plan, and by including the two suggested north/south and east/west cross-park pathways. Additional details on the perimeter pathway feasibility study methods, results and recommendations are described in Part 2, Chapter 12.0 of this report.

3.4 Development and Refinement of Routing and Facilities Concepts and NHTPP Recommendations

The development and refinement of Nose Hill Park routing and facilities concepts and NHTPP recommendations was possible once the comprehensive background research and analysis was completed, the route planning and design evaluation criteria were established, and the results of the perimeter pathway feasibility study were complete. Figure 3.1 outlines the general

process undertaken to select and refine the routing and facilities concepts and NHTPP recommendations presented in this report, which is described in more detail in the following sub-sections.

3.4.1 Preliminary Routing and Facilities Concepts

Preliminary routing and facilities concepts for Nose Hill Park were developed throughout the summer and fall of 2004. Preliminary concepts were prepared based on the results of the background research and analysis, the perimeter pathway feasibility assessment, and a field assessment program undertaken in July and August, 2004. Preliminary concepts were prepared by following the planning and design evaluation criteria to ensure that all resources and use objectives for the park were met through the concept. In total, one draft facilities concept and four different routing concepts were prepared for Nose Hill Park.

In September, 2004, a stakeholder input group workshop was held to present the preliminary routing and facilities concepts. Stakeholders were requested to provide input on the preliminary concepts through a questionnaire, which would be used to revise and refine the concepts for presentation to the general public in January, 2005. Stakeholders requested that, in addition to the questionnaire, another input group workshop be held in October, 2004, to provide organizations with the opportunity to provide a presentation on the likes, dislikes and suggested improvements for each concept.

In October, 2004, stakeholders presented their feedback on the preliminary routing and facilities concepts. Through this feedback, planning team members re-visited the park and undertook additional field surveys to analyze the suggestions presented by stakeholders. Suggestions were incorporated, where feasible (i.e. if suggestions met route planning and design evaluation criteria), into a new series of alternative components for Nose Hill Park.

3.4.2 Alternative Routing and Facilities Components

Alternative routing and facilities components for Nose Hill Park were developed throughout November and December of 2004. These alternatives were developed based on input received from the stakeholder input group workshops in September and October, 2004, through internal planning team workshops, application of route planning and design evaluation criteria (described in Chapter 3.2), and additional field assessments and validations. These alternative components included:

- Four multi-use and escarpment zone configurations,
- Suggested requirement for users to stay on-route outside of the multi-use zone,

- Three routing concepts, which varied in the route type (e.g. primary, secondary) and the number and density of park routes,
- Surfacing options for each route type, including stabilized tread, granular, asphalt with special aggregate and plain asphalt,
- Two potential cross-park routes (east/west and north/south pathway),
- Signage concepts (e.g. trail markers, entry feature signs),
- Park amenities (e.g. picnic tables, benches), and
- Potential parking lot upgrades (e.g. washrooms, trees, re-surfacing).

The intent in developing the various components was to provide the general public at Public Meeting # 1 with the opportunity to provide input on what they felt were the most appropriate components for the park, thereby providing the planning team with valuable feedback in developing a preferred concept for the park. The various components were presented to the general public during Public Meeting # 1 in January, 2005. During this meeting, questionnaires were distributed to the public asking for feedback on each of the various components. This feedback was used as one of the key inputs in selecting the preferred routing and facility concepts for Nose Hill Park.

3.4.3 Preferred Concepts and NHTPP Recommendations

Following Public Meeting # 1, the planning team reviewed the questionnaire responses submitted and began to select and refine a preferred routing and facilities concept. While the public meeting input provided an important source of information that helped contribute to the development of the preferred concepts, it should be highlighted that public preference was not the only factor that was applied in the development of the NHTPP recommendations. Recommendations were also developed through the application of route planning and design evaluation criteria (described in Chapter 3.2) and by applying planning judgment in determining what is in the best interest of park users (including visitor experiences and safety) and the Nose Hill physical environment. The public information was most useful when it demonstrated a high degree of consensus; when there was no clear public agreement, planning criteria and planning judgment played a much stronger role in the development of the NHTPP recommendations.

Draft routing and facilities concepts and NHTPP recommendations were prepared in early February. These draft concepts and recommendations were presented to the stakeholder input group for review on February 8, 2005. Comments were provided to improve and refine the draft concepts, some of which required additional field work to validate suggestions. A final series of

concepts and recommendations were developed near the end of February, which were presented to the general public at Public Meeting #2.
The intent of Public Meeting # 2 was to present the draft NHTPP recommendations, including routing and facilities concepts, and to provide clarity to citizens on the recommendations. Citizens provided written comments on the recommendations, which allowed the team to make final revisions during the month of March, 2005.

As a result of this planning process, 15 recommendations have been provided for the NHTPP, which include the suggested routing and facilities concepts. The next chapter of this report presents the 15 recommendations and provides the additional details and underlying rationale behind each recommendation.

3.5 Public Participation

As briefly discussed in the previous sub-section, the City's approved public engagement process was implemented as an integral part of the NHTPP development approach. Public participation was integrated throughout all stages of plan development; including background research and identification of park issues and routing criteria, development and refinement of routing and facilities concepts, as well the development of the NHTPP recommendations.

The public engagement process included significant stakeholder input group participation, which involved 24 organizations in six different meeting, and two well-attended public meetings. Table 3.2 provides a summary of the public participation process, which is described in more detail in Part 2, Chapter 13.0 of this report.

Table 3.2 Public engagement activities and purpose

Date	Engagement Activity	Engage Strategy	Purpose
June 10, 2004	Stakeholder Input Group – Meeting # 1	Inform Listen and Learn	Provide stakeholders with background information related the NHTPP project, including the planned stakeholder engagement process and need for the plan Obtain feedback from stakeholders related to park issues and concerns, including priorization of issues and concerns Obtain input on route planning and design evaluation criteria
June 24, 2004	Stakeholder Input Group – Meeting # 2	Consult	Share the information collected during meeting # 1 Consult with stakeholders in the identification and mapping of special features, park attractions, and suggested park travel routes and amenities
September 11, 2004	Stakeholder Input Group – Meeting # 3	Inform Listen and Learn	Consultant presentation of preliminary routing (4) and facilities concepts for stakeholder evaluation, which include route types and surface materials, multi-use zone configurations, as well as suggested amenity and parking lot upgrades (note, concepts developed based on input received from stakeholders during the previous two meetings and through a series of planning and evaluation criteria) Clarify questions and comments on the preliminary concepts Relate the concepts presented with a visit to key areas within Nose Hill Park
September 11 to October 14, 2004	Stakeholder Input Questionnaire	Consult	Stakeholders provided input in regards to the four concept plans Questionnaire was used to identify areas of support amongst stakeholders, to identify areas of disagreement amongst stakeholders, and to identify gaps in the concept plans
October 27, 2004	Stakeholder Input Group – Meeting # 4	Listen and Learn	Present the findings from the stakeholder questionnaire Provide stakeholder with an opportunity to make a brief presentation on their comments and suggestions for improvement of the preliminary routing and facility concepts Clarify areas of stakeholder support, differences and new ideas (by project team) Discuss dates and promotion of the upcoming public meetings

Table 3.2 Public engagement activities and purpose (cont'd)

Date	Engagement Activity	Engage Strategy	Purpose
January 15, 2005	Public Meeting # 1	Listen and Learn Consult	Review park issues, concerns and the need for a trail and pathway plan Present the alternative routing and facilities components for Nose Hill Park, including routing, surfacing, amenities and parking lot upgrades Answer technical questions related to the NHTPP and alternative components Obtain citizen feedback and preference for the alternative components through a design option feedback questionnaire Obtain citizen feedback on the effectiveness of the meeting
February 15, 2005	Stakeholder Input Group – Meeting # 5	Inform Consult	Provide the stakeholders with an overview of the findings from questionnaire distributed at the public meeting # 1 Present the preferred alternative components and the preliminary NHTPP recommendations Provide stakeholders with the opportunity to review and provide feedback on the preliminary NHTPP recommendations
February 26, 2005	Public Meeting # 2	Inform Listen and Learn Consult	Present the preferred concepts and the NHTPP recommendations Provide answers to questions asked by the public Receive feedback from the public related to the recommended plan
April 21, 2005	Stakeholder Input Group – Meeting #6	Inform	Present final NHTPP recommendations to stakeholders Thank the stakeholders for their contribution of time and energy associated with the extensive stakeholder consultation process

3.5.1 Stakeholder Input Group

Representatives from 24 organizations were invited to represent their organization in the planning process, which primarily included participation in six stakeholder meetings. Refer to Table 3.3 for a full listing of the 24 organizations involved. The intent of the stakeholder input group participation was to:

- Provide input towards the development of trail and pathway planning and design criteria,

- Identify park issues,
- Identify and map park destinations,
- Map potential park routes,
- Review and critique preliminary routing concepts,
- Review and comment on the recommended NHTPP, and
- Update the respective organizations on the results of the NHTPP development process and provide a means to provide feedback on the plan.

Table 3.3 Listing of stakeholder organizations involved in NHTPP

▪ Advisory Committee on Accessibility	▪ Beddington Community Association
▪ Brentwood Community Association	▪ Calgary Aboriginal Urban Affairs
▪ Calgary Field Naturalists' Society	▪ Calgary Mountain Bike Alliance
▪ Calgary Parks and Wilderness Society	▪ Calgary Pathways and Bikeways Advisory Council
▪ Calgary Road Runners	▪ Calgary Winter Club
▪ Cambrian Heights Community Association	▪ Dalhousie Community Association
▪ Edgemont Community Association	▪ Elbow Valley Cycling Club
▪ Federation of Calgary Communities	▪ Foothills Wanderers
▪ Friends of Nose Hill	▪ Huntington Hills Community Association
▪ MacEwan / Sandstone Community Association	▪ North Haven Community Association / Ward 4 Liaison
▪ Off-Leash Calgary	▪ Seniors Outdoor Recreation Group
▪ Triwood Community Association / Ward 7 Liaison	▪ Ward 2 Liaison

3.5.2 Public Meetings

Two public meetings were held on January 15, 2005 and February 26, 2005. The intent of the first meeting was to obtain citizen feedback on preliminary trail and pathway plan design options for Nose Hill Park; which included a suggested on-route requirement for travel outside the multi-use zone, trailhead closure, and various alternative multi-use zone configurations, routing concepts (varying from a lower to higher density of trails) and route surfacing materials. Citizens were also asked to identify the appropriateness of suggested park infrastructure improvements, such as parking lot, signage and park amenity upgrades.

More than 610 Calgarians attended the first public meeting, of which over 360 responded to the distributed design option feedback questionnaire. The feedback from the questionnaire indicated that an overwhelming majority of respondents agreed, or strongly agreed, that the information presented at Public Meeting #1 was informative (93%) and sufficient for them to provide input towards the development of the NHTPP (85%). Respondents also provided quantitative feedback on the appropriateness of the various design concepts presented at the meeting. The feedback provided through the questionnaire was incorporated into many of the NHTPP recommendations, most notably the feedback that demonstrated strong public consensus.

The recommendations of the NHTPP were presented to over 300 citizens at a second public meeting in February 2005. The intent of this meeting was to provide a detailed overview on the various recommendations, as well as provide a summary of the questionnaire feedback received during the first public meeting. Additionally, a formal question and answer session was held to provide clarity to citizens on the recommendations.

A comment form was distributed to meeting attendees during the second public meeting, of which the majority agreed, or strongly agreed, that the meeting was informative (86%) and provided enough information to understand the recommended NHTPP (82%). Of the 502 written comments received, less than 10% did not support any changes on the hill, while the remainder supported the NHTPP recommendations and/or provided suggestions for minor improvements.

4.0 NOSE HILL TRAIL AND PATHWAY PLAN (NHTPP) RECOMMENDATIONS

There are 15 recommendations provided to address the various park issues summarized in Chapter 2.0; which include a designated trail and pathway network, route surfacing upgrades, designated on-trail use, informal trail and trailhead closures, park signage improvements, parking lot upgrades, trail restoration requirements and an implementation strategy.

4.1 Park Use and Routing Recommendations

The first 10 recommendations of the NHTPP are directly related to park use and trail and pathway routing. These recommendations have been developed to address the park routing and environmental issues described in Chapters 2.0 of this report. This section outlines each of the park use and routing recommendations, and provides supporting details and rationale for each recommendation.

RECOMMENDATION: Modify the configuration of the multi-use and escarpment zones.

Details:
Currently, the existing multi-use and escarpment zone boundary does not follow existing desire lines and areas of disturbance. It is recommended that the zone boundary be re-aligned as described below, and shown on Map 4.1. The modified multi-use zone would be 349 ha in size, which is 17 ha larger than the existing multi-use zone.

- Follow existing desire lines located near the approximate interface of the multi-use and escarpment boundary,
- Extend the north-western boundary of the zone towards the park fence line at the Edgemont Drive entrance,
- Extend the north-eastern boundary of the zone to include the entire zone of disturbed grassland found north of Porcupine Valley, and
- Reduce both the northern edge of the multi-use zone and the portion of the zone that is located directly south of Porcupine Valley, both of which are currently located in native prairie vegetation. This reduction eliminates multi-use activities from all park native vegetation communities.

Rationale:

- New configuration allows for clear demarcation of the multi-use zone using existing desire lines, while closely following the approximate shape of the existing multi-use zone,
- Use of desire lines will help park users better determine the multi-use zone boundary,
- Better accommodates multi-use users on the eastern and western sides of the park,
- Provides new options to more easily and quickly access the multi-use zone on the eastern and western sides of the park, which will benefit users with reduced mobility requirements,
- Provides increased habitat protection along the south side of Porcupine Valley,
- Feedback from Public Meeting #1 indicated strong support to modify the boundary, and
- No clear public consensus on the most appropriate zone configuration, however, there was strong support to extend the zone towards the Edgemont entrance.

RECOMMENDATION: Establish an upper plateau route that clearly defines the modified multi-use and escarpment zone boundary.

Details:

Upper plateau route delineates and clearly defines the boundary of the multi-use and escarpment zones, and therefore better distinguishes where the multi-use zone (off-leash and off-trail uses permitted) is located.

Rationale:

- An upper plateau route that clearly distinguishes the multi-use zone will:
- Reduce the potential for user conflict,
- Increase compliance with park use policies, and
- Facilitate effective bylaw education and enforcement.
- Clearly separates acceptable multi-use activities (off-leash dogs and off-route use) from acceptable escarpment activities (on-leash dogs and on-route use),
- Provides a scenic and accessible loop around the popular areas of the park, as defined by existing desire lines, and contributes to a stacked loop trail system,
- Provides a barrier that will reduce the spread of non-native species from the disturbed area to the surrounding non-disturbed native environment and restoration areas,
- Enhances fire management activities by providing a fire break around the upper plateau, and
- High level of public support - 72% of Public Meeting #1 respondents agreed and strongly agreed with this route recommendation.

RECOMMENDATION: Require all users to stay on designated pathways and trails while outside of the multi-use zone.

Details:

The recommendation for on-trail use is required in order to ensure that the designated routing system is adopted by all users and, therefore, will help support the planned trail closure and restoration activities.

Rationale:

- Required on-route use in the multi-use zone is critical to the success of the NHTPP implementation and proposed informal trail reclamation activities,
- Helps to maintain the natural character of the park and promote habitat health improvements (i.e. reclamation and restoration activities),
- Promotes greater success of informal trail reclamation activities (closed trails, native vegetation restoration activities) and reduces the potential for increasing trail proliferation,
- Protects native vegetation communities and sloping topography from disturbance, erosion and invasion of non-native vegetation,
- Approach has been successfully implemented in a number of Calgary natural environment parks, including Inglewood Bird Sanctuary, Griffith Woods and Weaselhead, and
- High level of public support - 74% of the Public Meeting #1 respondents agreed with the recommended policy (33% agreed and 44% strongly agreed).

RECOMMENDATION: Remove the current Council approved perimeter pathway identified for Nose Hill Park and establish two cross-park pathways to provide connections to existing pathways in adjacent communities.

Details:

The perimeter pathway feasibility study concluded that a perimeter pathway around Nose Hill Park was not feasible due to a variety of ecological, topographical and construction constraints; as well as user and cost considerations. Alternative pathway routing concepts were identified through stakeholder and planning team input. The routes located within the park were examined against the route planning and design evaluation criteria to determine their feasibility and their ability to address the missing links in the pathway and bikeway network created by the removal of the perimeter pathway. The two within-park pathway concepts are shown on Map 4.3, and include (a.) north/south and (b.) east/west cross-park routes.

Rationale:

- Provides an alternative to the Council-approved perimeter pathway, which is infeasible due to ecological, topography and financial constraints,
- Reduces the total length of regional pathways in the park from approximately 13.5 km to 7.5 km, of which approximately 2.6 km (30%) are currently hard surfaced (asphalt and asphalt with stone aggregate),
- Minimal impact to native and sensitive vegetation communities since the pathway route follows existing pathways, roads and desire lines. This is a major improvement when compared to the approximately 3 km of perimeter pathway route (24%) that would impact native vegetation communities.
- Cross-park routes meet the majority of attractiveness routing criteria, which are described in Chapter 3.2 (i.e. provides high quality views, located along routes of heavy use, links users with areas/points of attraction),
- Good connection with the existing regional pathway network located northwest and northeast of Nose Hill park, the new John Laurie Boulevard barrier-free pedestrian overpass, located east of Brisebois Drive, and the regional pathway system running south of the park, and
- Minimal cut and fill would be required to install the cross-park pathways, in comparison to the substantial cut and fill that would be required to grade the perimeter pathway (i.e. approximately 9.8 km of the perimeter pathway would require cut and fill).

RECOMMENDATION: Adopt the proposed designated routing plan that provides for primary, secondary, upper plateau, cross-park, and maintained track routes, as well as the pre-existing barrier free interpretive pathway.

Details:

The proposed designated routing plan contains approximately 60.9 km of designated park routes. The locations of the various routes are outlined on Map 4.2, and descriptions and lengths for each route type are summarized in Table 4.1.

Rationale:

- Provides the greatest variety of travel options in the park, including the majority of currently well used routes, both along the escarpment and on the upper plateau, therefore addressing the needs of the majority of park users,
- The variety of routes will encourage park visitors to stay on designated routes,
- Provides access to many special places and areas of attraction in the park,
- Significantly reduces (80%) the informal trails that are located in many ecologically sensitive parts of the park (i.e. forested/shrubby area along Porcupine Valley, sensitive rough fescue grasslands and low deciduous shrub communities), and
- Public Meeting #1 respondents identified that this routing plan was the most appropriate to meet the current and future needs of Nose Hill Park users, wildlife and park health.

Table 4.1 Description and lengths (km) of designated routes

Route Type	Length (km)	Route Description
Primary Routes	16.3	▪ A popular and heavily used route of choice for many park users. ▪ Follows existing desire lines and connects trailheads with the upper plateau. ▪ All primary routes are located within the escarpment zone.
Secondary Routes	17.5	▪ A popular but moderately used route of choice for many park users. ▪ Follows existing desire lines and connects with primary routes and/or the upper plateau route. ▪ All secondary routes are located within the escarpment zone.
Upper Plateau Route		▪ Defines the boundary of the multi-use and escarpment zone. ▪ Intended to carry a large proportion of users around the park's plateau. ▪ Demarks the multi-use zone, and therefore provides clarity on where dog off-leash and off-route cycling and pedestrian activities are appropriate.
Maintained Track Routes	10.4	▪ A route located within the multi-use zone. ▪ The intent of the maintained track is to: o Reduce the impact of multiple parallel trails (vegetation trampling, exposed soil, etc.), and o Improve visitor way finding / orientation. ▪ Users may elect to travel on or off track.
Cross-Park Routes	7.9	▪ Provide a direct means to connect communities together and will provide a linkage with the new Brisebois Drive pedestrian overpass. ▪ Improves park accessibility for all users. ▪ Follows existing roads, pathways and desire lines. ▪ Note: approximately 2.6 km (30%) of the proposed routes are currently hard (asphalt) surfaced.

RECOMMENDATION: Apply specific route surfacing materials (stabilized tread, granular and asphalt with special stone aggregate) and widths to each designated route type to accommodate the variety of park visitor experiences.

Details:

Three surface materials have been recommended to upgrade the treads of all designated routes in the park, including a stabilized tread surface, granular surface, and asphalt with special stone aggregate surface. Details regarding the suggested surface materials and route widths to be applied to each route type are listed in Table 4.2 and outlined on Map 4.2. Descriptions for each of the three surface materials are provided in Table 4.3.

It is important to note that trail design and building techniques will be required to ensure that all routes are safe, durable and environmentally feasible. Therefore, other surfacing materials, route widths and route construction techniques may be required to provide additional surface stability in areas that are heavily eroded, prone to erosion or poor drainage, and/or to enhance public safety. Specific details for each route segment will be determined when the plan is implemented.

Rationale:

The rationales for recommending specific surfacing materials for each route type are listed below.

Stabilized Tread:

- The majority (57%) of Public Meeting #1 respondents felt that the stabilized tread was the most appropriate surfacing option for secondary routes,
- Upgrading the existing surface will help reduce trail proliferation and the accompanying disturbance of vegetation cover and soil degradation caused by disoriented users in the multi-use zone,
- Soft, natural soil surface,
- Narrower route width associated with stabilized tread supports low to moderate use levels, and
- Stabilized tread surface was selected for routes with anticipated low traffic volumes.

  Note: Under moderate to heavy use, trail erosion and proliferation may increase as users must walk off-trail to pass each other. Repetitive off-trail use, associated with higher use volumes, widens route width and increases soil erosion, compaction and non-native vegetation encroachment.

Granular Surface:

- Material clearly delineates the designated routes to reduce off-route use, which leads to trail proliferation,
- Granular surface allows for a wider route width that would accommodate the high volumes of users expected to make use of these routes,
- Granular material provides a stable all weather surface that facilitates on-route use under most weather conditions,
- Aesthetically, the natural stone colour surface has a low to moderate impact on the visual character of the park,
- Granular surface has been used successfully in other city parks, and
- Granular surface was selected for routes with anticipated variable traffic volumes.

Asphalt with Special Stone Aggregate Surface:

- Material clearly delineates the designated routes to reduce off-route use, which leads to trail proliferation,
- Public support for hard surfaces on east-west and north-south routes, as identified in the questionnaire results from Public Meeting # 1,
- Provides a stable and hard surface that is accessible to a great number and variety of park users,
- Provides a non-erodable and durable surface,
- Combined surface width and materials better accommodates two-way traffic and a higher concentration of park users,
- Hard surface enhances surface stability, particularly along the park's steeper slopes,
- Currently, the park's barrier-free interpretive pathway (1.65 km) is made of this material,
- Stone aggregate asphalt tread provides a more natural appearing and aesthetically pleasing surface than a plain asphalt surface, thereby minimizing the visual impact on the landscape, and
- Asphalt with special stone aggregate surface was selected for routes with anticipated moderate to heavy traffic volumes.

Table 4.2 Recommended surface materials and route widths to be applied to each route type

Route Type	Length (km)	Surface Material*	Surface Width*
Primary Route	16.3	Primarily granular surface	Variable 1.0 m to 1.5 m
Secondary Route	17.5	Primarily stabilized tread	Approximately 0.5 m
Upper Plateau Route	7.8	Primarily granular surface	Approximately 2.0 m
Maintained Track	10.4	Primarily stabilized tread	Approximately 0.5 m
Cross-Park Routes	7.9	Asphalt with special stone aggregate	Approximately 2.0 m

*** Note:** Other surfacing materials, route widths and route construction techniques may be required to provide additional surface stability in areas that are heavily eroded, prone to erosion or poor drainage, and/or to enhance public safety. Specific details for each route segment will be determined when the plan is implemented.

Table 4.3 Overview of recommended surface materials

Surface Material	Overview
Stabilized Tread 	▪ An upgraded dirt surface, stabilized to remove ruts (see surface examples in Figure 4.1 and Figure 4.2). Often soil is compact and erosion controls are put in place to achieve a dry and stable surface that will withstand most weather conditions. ▪ Tread width is approximately 0.5 m (note, if width is increased the potential for erosion increases). ▪ Narrow width stabilized tread surfaces can effectively support low visitor traffic. ▪ Surface is only accessible to pedestrian and cyclist use.
Granular 	▪ Surface comprised of fine granular chips compacted together and laid onto the route (see surface examples in Figure 4.3 and Figure 4.4). Often, a binder can be added to the mix to bond the material together more tightly. ▪ Granular chips can be made of various type of natural stone, including: limestone, gravel, sandstone, shale and slate. ▪ Granular surfaces can effectively support moderate to high visitor traffic ▪ To support higher traffic levels, granular surfaces should have a width that varies from 1.0 m to 1.5 m. ▪ Accessibility is generally limited to pedestrian and cyclist use. ▪ Accessibility on this surface is limited as some kinds of wheelchairs are excluded from the usage of this trail.
Asphalt with Special Stone Aggregate 	▪ Surface comprises a base of standard asphalt mix covered with a top layer of natural fine aggregate stone, which is hot rolled into the surface to form a textured surface (see photographic examples in Figure 4.5 and Figure 4.6). ▪ Asphalt with a stone aggregate surface can effectively support high volumes of visitor traffic. ▪ To support high traffic volume, asphalt with stone aggregate surface should be approximately 2.0 m in width. ▪ Surface is accessible to a variety of users, including pedestrians, cyclists, wheelchairs, strollers, etc.

Figure 4.1 Zoom view of stabilized tread surface

Figure 4.2 Nose Hill Park example of a stabilized tread surface

Figure 4.3 Zoom view of granular surface

Figure 4.4 Nose Hill Park example of a granular surface

Figure 4.5 Zoom view of asphalt with stone aggregate surface

Figure 4.6 Nose Hill Park example of the asphalt with special stone aggregate surface

RECOMMENDATION: Close and rehabilitate all informal routes not included in the designated routing system.

As directed by the Nose Hill Natural Area Management Plan (1994), a long-term goal of Calgary Parks has been to reclaim many of the previously disturbed areas in the park, including many of the parks informal routes. In the past, attempts have been made by Parks to close informal routes and rehabilitate the surface, stabilize soil and bring the site back to a natural vegetated state. These attempts, however, have largely been unsuccessful, in many areas of the park, since trail reclamation efforts were more focused on closing trails, and did not focus on re-directing use to appropriate areas and educating users on park use and management goals.

The NHTPP provides a comprehensive and integrated approach to park trail and pathway planning that will more effectively deal with trail closures. This integrated approach involves:

- Developing a comprehensive designated trail and pathway system for the entire park
- Providing well marked, formally constructed trails and pathways, which brings clarity to what is designated or not
- Developing a restoration strategy for the closure of informal trails
- Designation of appropriate trails and pathways to be used by all park uses
- Public awareness to inform users on the designated trail and pathway network and orient users while in the park, as well as user education on the rationale behind trail closures and, the goals for reclamation.

Once informal routes are closed and identified through the use of appropriate obstacles and educational signage; and designated routes are properly defined, through surfacing, trail markers, and orientation signs; rehabilitation of the disturbed areas can be achieved. In this way, the vast majority of users can be expected to avoid use informal trails making rehabilitation possible.

Rationale:

- Reclamation of undesignated trails will provide a great improvement to the ecological integrity of the park by decreasing, direct vegetation losses, habitat fragmentation and soil compaction.
- Re-vegetates disturbed native vegetation communities to increase biodiversity
- Controls soil erosion and re-vegetates disturbed native vegetation communities.
- A reduction in user impacts on wildlife will result.
- Restores the escarpment area of Nose Hill which is ranked as the primary goal of the park.

RECOMMENDATION: Close the Charleswood Drive entrance to the park upon completion of the Brisebois Drive pedestrian overpass.

Details:

There is currently no controlled crossing at John Laurie Boulevard and Charleswood Drive Since this expressway experiences high traffic volumes at high speeds, it is difficult and dangerous for park users to cross John Laurie Boulevard to access the park.

Rationale:

- User safety enhanced by eliminating the unsafe crossing of John Laurie Boulevard at Charleswood Drive,
- Public Meeting #1 respondents indicated support for closing the Charleswood entrance (54% of respondents agreed or strongly agreed with this recommendation),
- Part of progressive steps to enhance user safety along John Laurie Boulevard, and
- Further protects the southern portion of the park, which provides important wildlife habitat.

RECOMMENDATION: Request City of Calgary Transportation to examine the safety of the 19th Street entrance.

Details:

Major pedestrian safety issues have recently been addressed through the addition of the new John Laurie Boulevard barrier-free pedestrian overpass, just east of Brisebois Drive, and through the recommendation contained in this report that suggests closure of the Charleswood Drive entrance. The only remaining entrance with significant pedestrian safety concerns is the 19th Street entrance to the park. The plan has not recommended closure of the 19th Street entrance since it is an important entrance for users south of the park, especially those located east of Charleswood Drive. Since safety is a primary concern, it is recommended that City of Calgary Transportation examine the safety of the 19th Street entrance and identify potential alternatives to deal with this situation.

Rationale:

- User safety needs to be addressed at the park entrance located at 19th Street and John Laurie Boulevard.

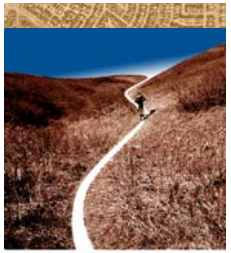
RECOMMENDATION: Examine the possibility of creating an on-street bikeway along MacEwan Glen Drive and an additional north/south pathway along the east side of 14th Street.

Details:

As described earlier, the perimeter pathway feasibility study concluded that a perimeter pathway around Nose Hill Park was not feasible. Alternative routing concepts were identified through stakeholder and planning team input. Two potential routing concepts were identified outside of the immediate park boundary, which require further examination. These concepts are shown on Map 4.3 and include (a.) on-street bikeway along MacEwan Glen Drive, and (b.) pathway located along the east side of 14th Street.

Rationale:

- Provides additional bikeway and pathway options for Calgarians,
- Makes use of existing desire lines and connects with existing pathways,
- Strong stakeholder input group support to examine these potential alignments,
- Addresses the shortfall of connections caused through the elimination of the perimeter pathway, and
- Cost effective way to enhance accessibility along the north and east sides of the park.



NOSE HILL PARK

North

Map 4.1
Recommended Use Zones Configuration

Map Legend

Zone Configuration

- Multi-Use Zone (Off-Leash and Off-Route Activities Permitted) (349 Ha)
- Escarpment Zone (On-Route Use) (775 ha)

Trail Heads

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)

Base Information

- Existing Regional Pathways
- Major Roads

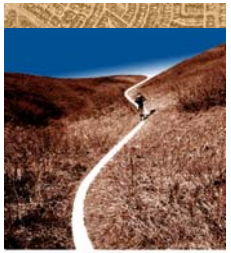
Data Source: Concept design by O2 Planning + Design Inc. March 31, 2005. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

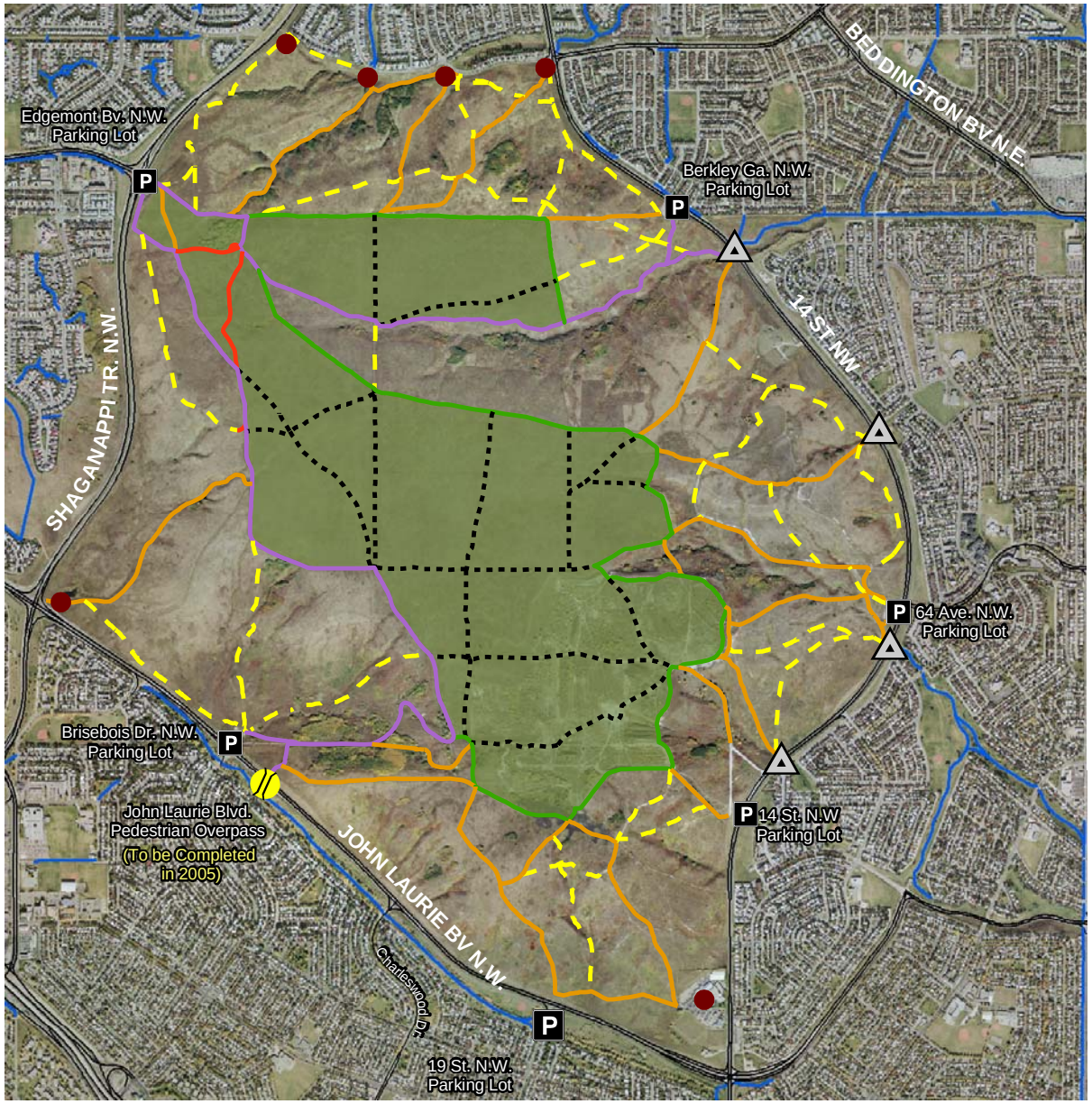
THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters



NOSE HILL PARK



North

Map 4.2
Recommended Park Routing Plan

Map Legend

Routing Concept

- Cross-Park Route (Asphalt with Aggregate*)
- Upper Plateau Route (Primarily Granular*)
- Existing Interpretive and Barrier Free Trail (Asphalt with Aggregate*)
- Primary Route (Primarily Granular*)
- Secondary Route (Primarily Stabilized Tread*)
- Maintained Track (Primarily Stabilized Tread*)
- Multi-Use Zone (Off-Leash and Off-Route Activities Permitted)

Trail Heads

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)

Base Information

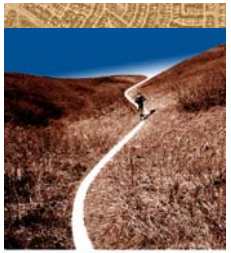
- Existing Regional Pathways
- Major Roads

Data Source: Concept design by O2 Planning + Design Inc. March 31, 2005. Aerial photography base map acquired in 2003 by Parks.

O2 PLANNING + DESIGN INC.

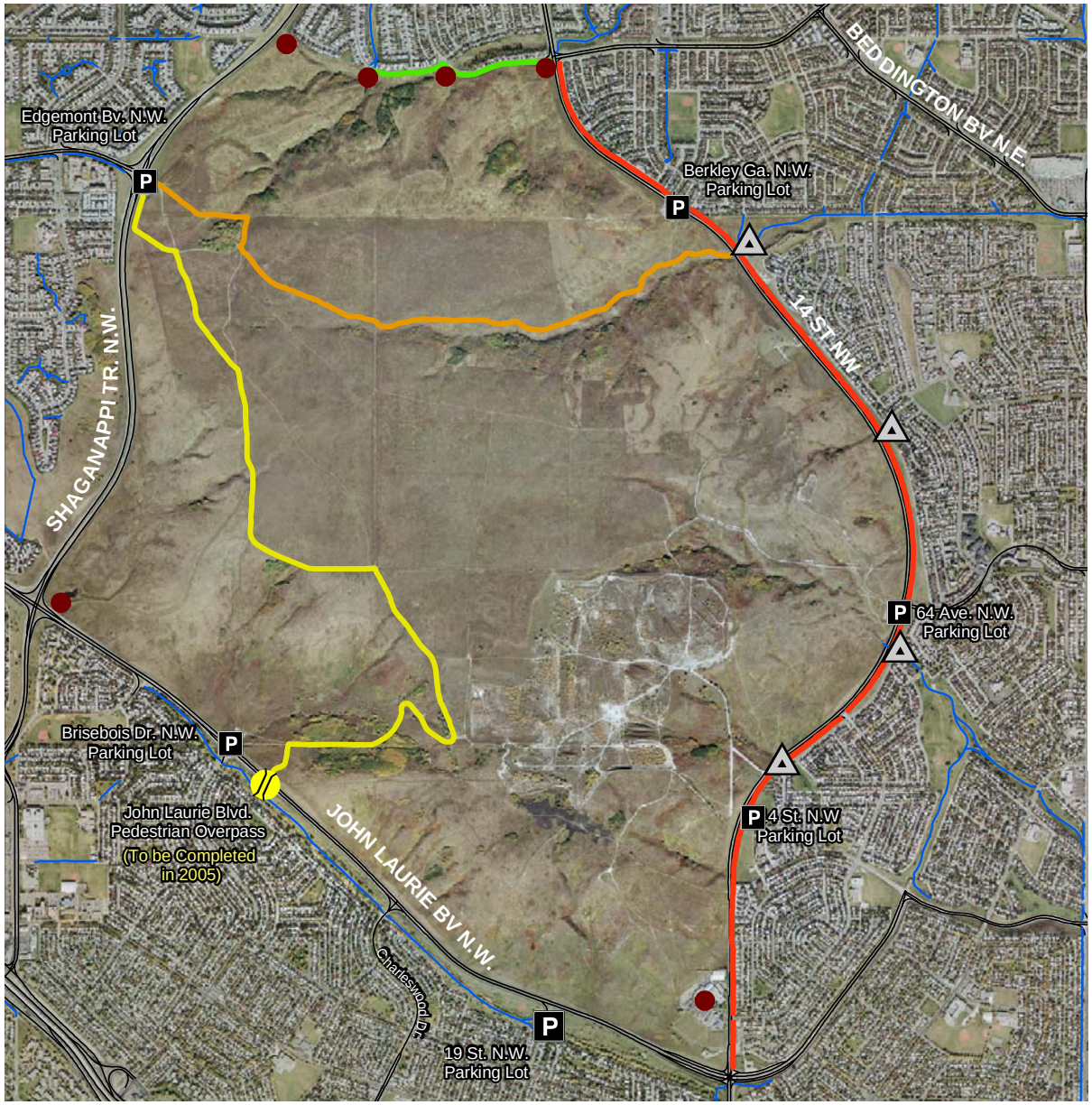
THE CITY OF CALGARY Parks

0 250 500 1,000 1,500
Meters



NOSE HILL PARK

North



Map 4.3
Additional Bikeway and Pathway Configurations

Map Legend

Recommended Pathways

- MacEwan Glen Drive Bikeway (0.85 km)
- 14th Street Pathway (5.4 km)
- Cross-Park East-West Pathway (3.1 km)
- Cross-Park North-South Pathway (4.4 km)

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Perimeter pathway feasibility and pathway recommendations by O2 Planning + Design Inc. Oct 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

4.2 Park Amenity and Parking Lot Upgrade Recommendations

The next four recommendations of the NHTPP have been developed to address many of the visitor use issues described in Part 1, Chapter 2.3 of this report. Specifically, these four recommendations are related to park amenities and parking lot upgrades. Details on these recommendations, as well as a summary of the supporting details and rationale for each recommendation, are described below.

RECOMMENDATION: Develop major and secondary entry features, trail markers, interpretive and orientation signs to provide interpretive, orientation, bylaw, safety and/or educational information for users.

Details:

Details regarding each of the signage and amenity recommendations are described in Table 4.4.

Rationale:

The rationales for recommending that new signs and trail markers be installed within the park are listed below.

Signage:

- The majority of Public Meeting #1 respondents agreed with the recommendations to provide new entry feature (83%) and orientation and interpretive (67%) signage,
- Well designed signs will improve user understanding of the designated routing system, wayfinding, and promote user compliance, and
- Signage will retain the natural character of the park by incorporating natural materials that could be found in a prairie grassland environment (i.e. stone and wood materials).

Trail Marker:

- Trail markers improve user wayfinding and identify designated routes,
- Clearly identifies designated routes to reduce user confusion, especially on routes with stabilized tread (soil surface),
- Encourages on-route use and enhances education and trail closure and re-vegetation efforts,
- Low profile design of the trail markers will not significantly impact the visual quality of the routes and the surrounding landscape, and
- The majority of Public Meeting #1 respondents agreed (74%) that is was appropriate to use boulders to identify designated trails within the escarpment zone.

Table 4.4 Summary of signage and amenity recommendations

Signage and Amenity Detail	Description
Major Entry Features	▪ Large entry feature signs that provide information on park routes and general park features and rules. ▪ Intended to replace the existing (large green) signs at all parking lots (except 19th Street). ▪ A prototypical example of a major entry feature is shown in Figure 4.7.
Secondary Entry Features	▪ Smaller entry feature signs that provide information on park routes and general park features and rules. ▪ Signs to be located at the pedestrian overpass, tunnel locations, minor entry points and the 19th Street entrance. ▪ A prototypical example of a secondary entry feature is shown in Figure 4.8.
Trail Markers †	▪ Boulders used to mark designated routes (routes located outside the multi-use zone) and the upper plateau route. ▪ Figure 4.9 outlines a prototypical example of the trail marker design.
Orientation and/or Interpretive Signage †	▪ Low profile signs used in select locations to provide general orientation, interpretive and/or bylaw information. ▪ Signage would be used to demark location of multi-use zone (where dog off-leash and off-route uses are permitted). ▪ An example design of the recommended orientation / interpretive signage is shown in Figure 4.10.
Regulation and Warning Signs †	▪ Regulation and warning signs to be evaluated on a site-by-site basis.

† **Note:** Locations of identified signs to be determined when the plan is implemented.

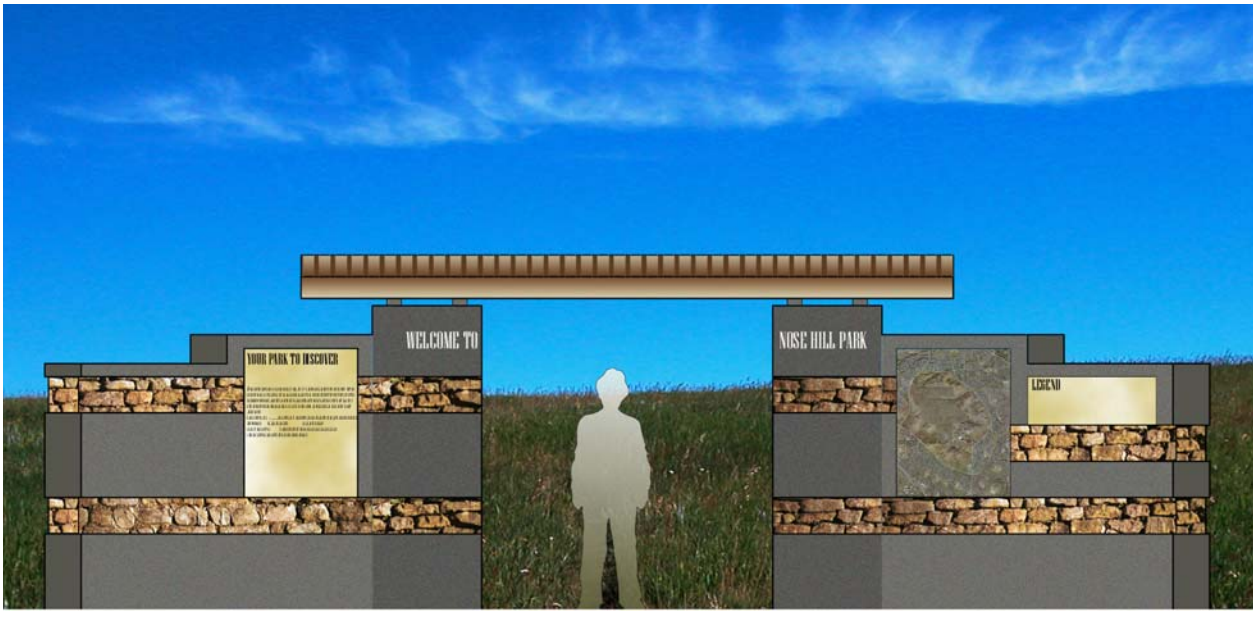


Figure 4.7 Prototypical example of major entry feature

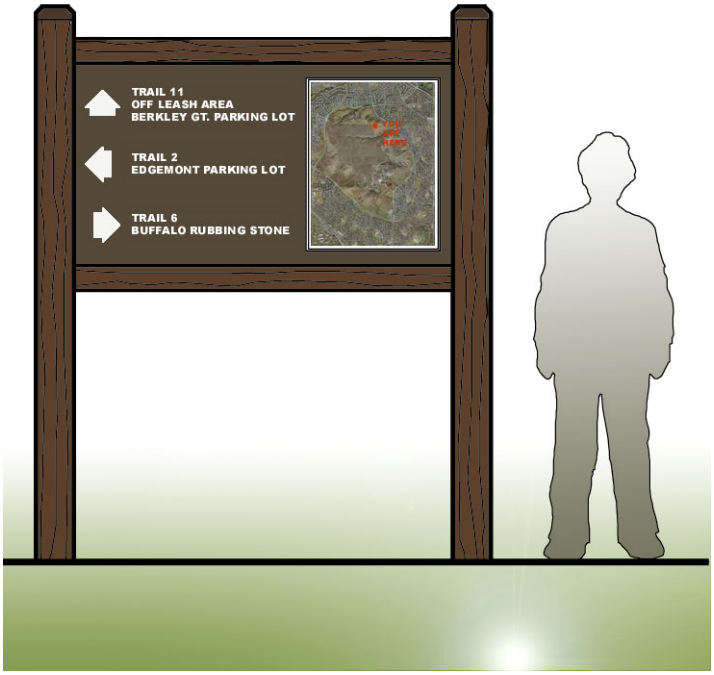


Figure 4.8 Prototypical example of secondary entry feature

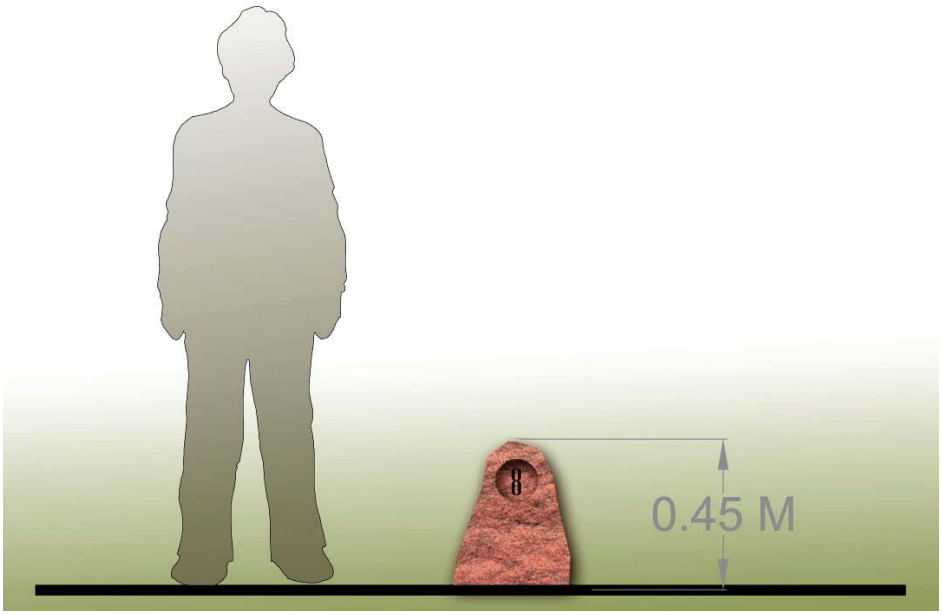


Figure 4.9 Prototypical example of designated trail route markers

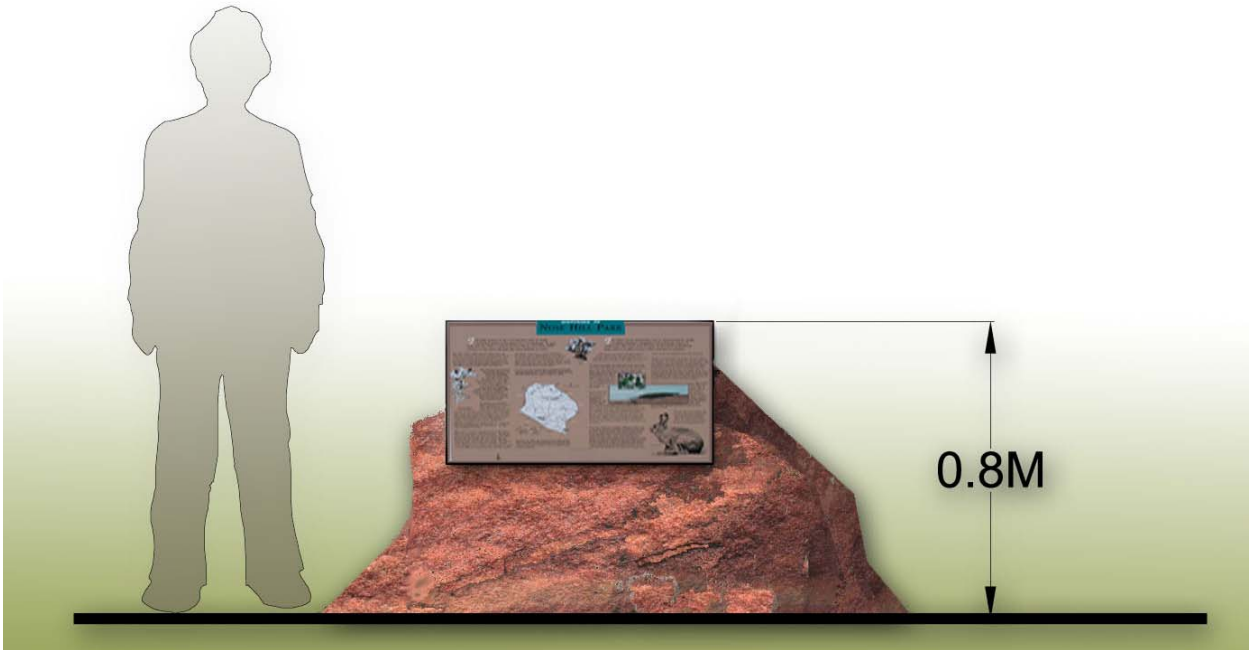


Figure 4.10 Prototypical example of recommended interpretive and/or orientation signage

RECOMMENDATION: Provide site specific upgrades at five parking facilities; including Edgemont Drive, Berkley Gate, Brisebois Drive, 64th Street and 14th Streets, which include, but are not limited, to the addition of washrooms, trees, fencing, garbage cans, trailhead re-alignment, entrance gates, and parking lot resurfacing and/or line resurfacing.

Details:

Specific details on the parking lot upgrades are summarized in Table 4.5 and shown in Figure 4.11 through Figure 4.15.

Table 4.5 Recommended parking lot upgrades

Upgrade	Description
General Parking Lot Upgrades	▪ Wood fencing, re-alignment of trailhead entry points, planting of native vegetation, garbage cans, entrance gates and line painting in select locations.
Trees	▪ Aspen planted at parking lots within existing islands. Additional aspen and/or low shrub will be used to demark boundary of parking lot and re-vegetate disturbed areas.
Washroom Facilities	▪ Washroom facilities to be installed at each parking lot. ▪ It is recommended that washrooms be built as small pump-out facilities to reduce the expenditure required to provide utility services to the site.
14th Street Parking Lot	▪ Pave the existing gravel parking lot, create a turn-around loop at the south end of the parking lot, and provide parallel parking spaces along the access road (recommended design for 14th St. shown on Figure 4.15).

Rationale:

- Parking lot upgrades encourage users to view park signage and use the designated routing network,
- Strong support from Public Meeting #1 respondents (74%) to provide washrooms at each parking lot,
- Parking lot garbage containers are necessary to encourage users to pack their garbage in and out of the park,
- Aspen enhance the aesthetics of parking lots and provide some shade opportunities, and
- 14th Street upgrades will improve traffic flow and parking opportunities, as well as provide easier and more stable access to the park.

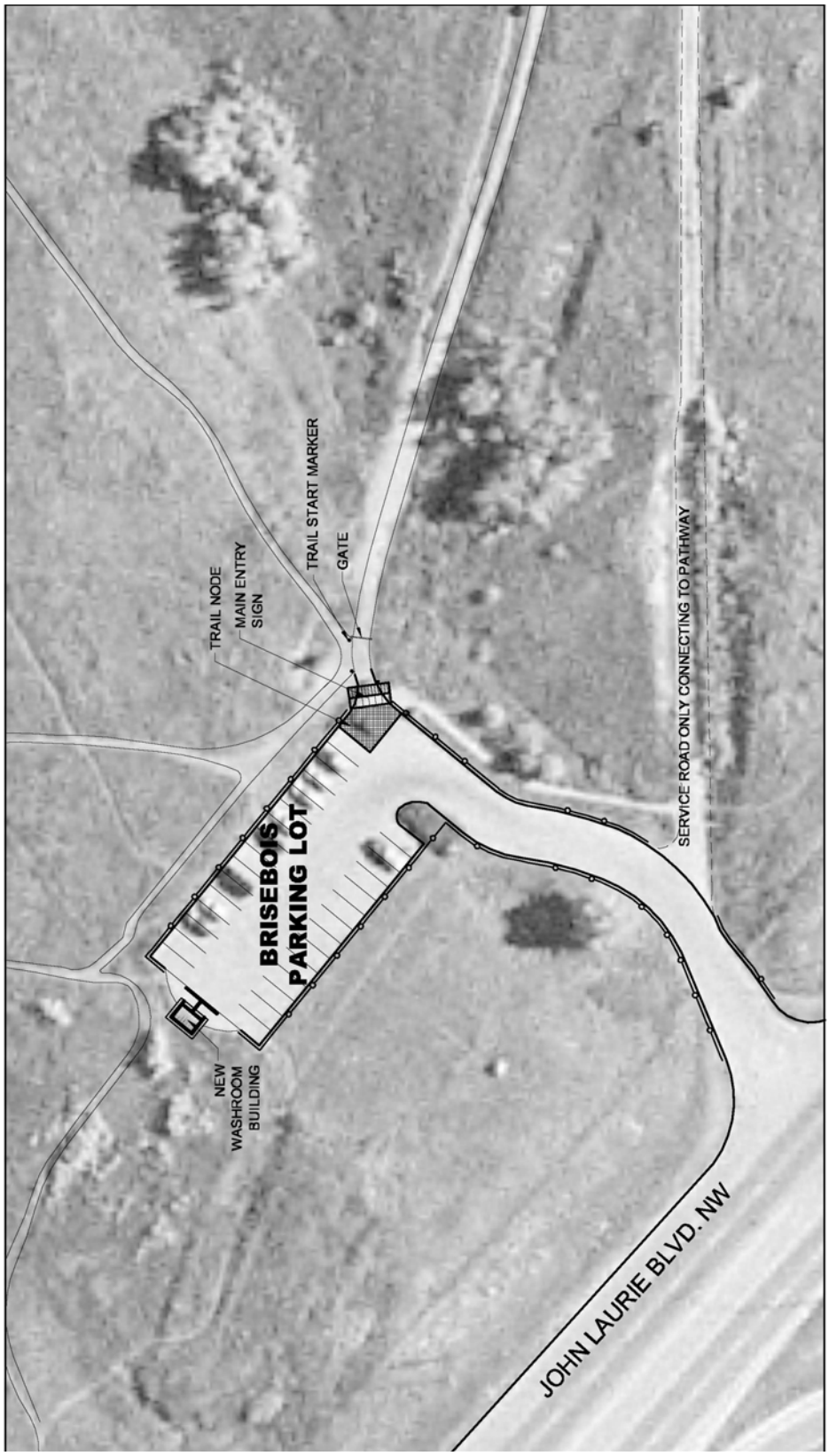


Figure 4.11 Recommended Brisebois Drive parking lot upgrades

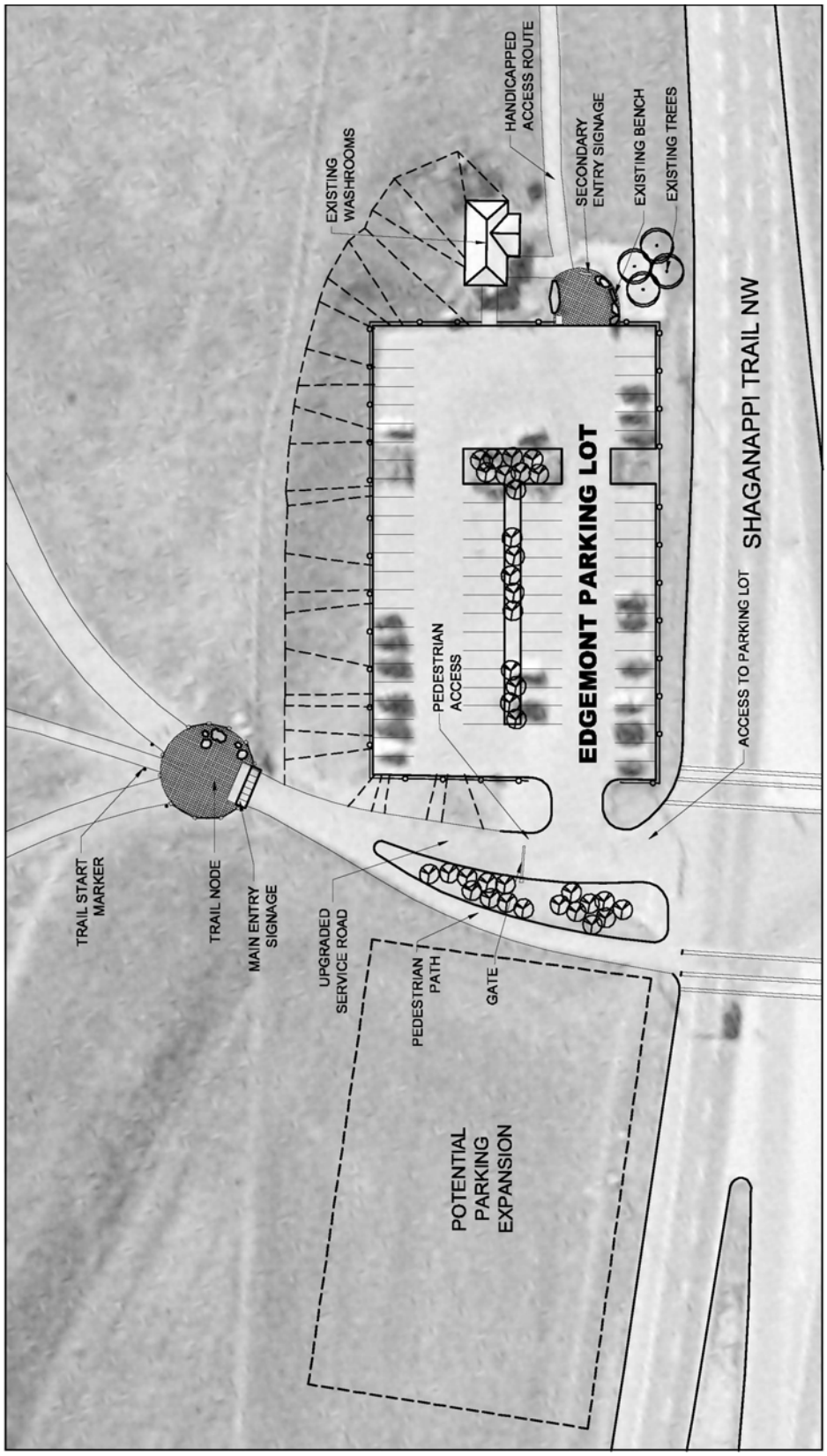


Figure 4.12 Recommended Edgemont Drive parking lot upgrades

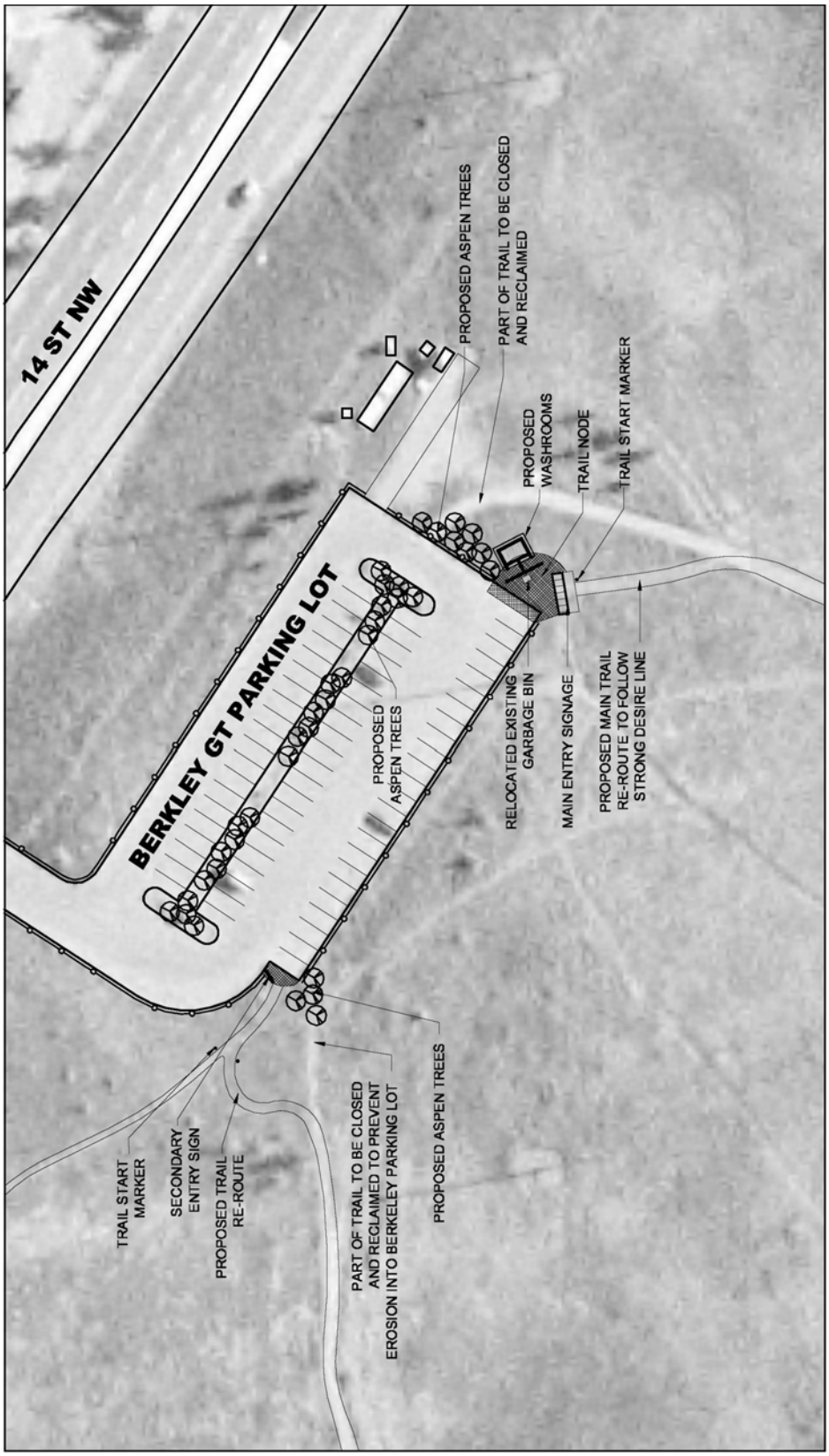


Figure 4.13 Recommended Berkley Gate parking lot upgrades

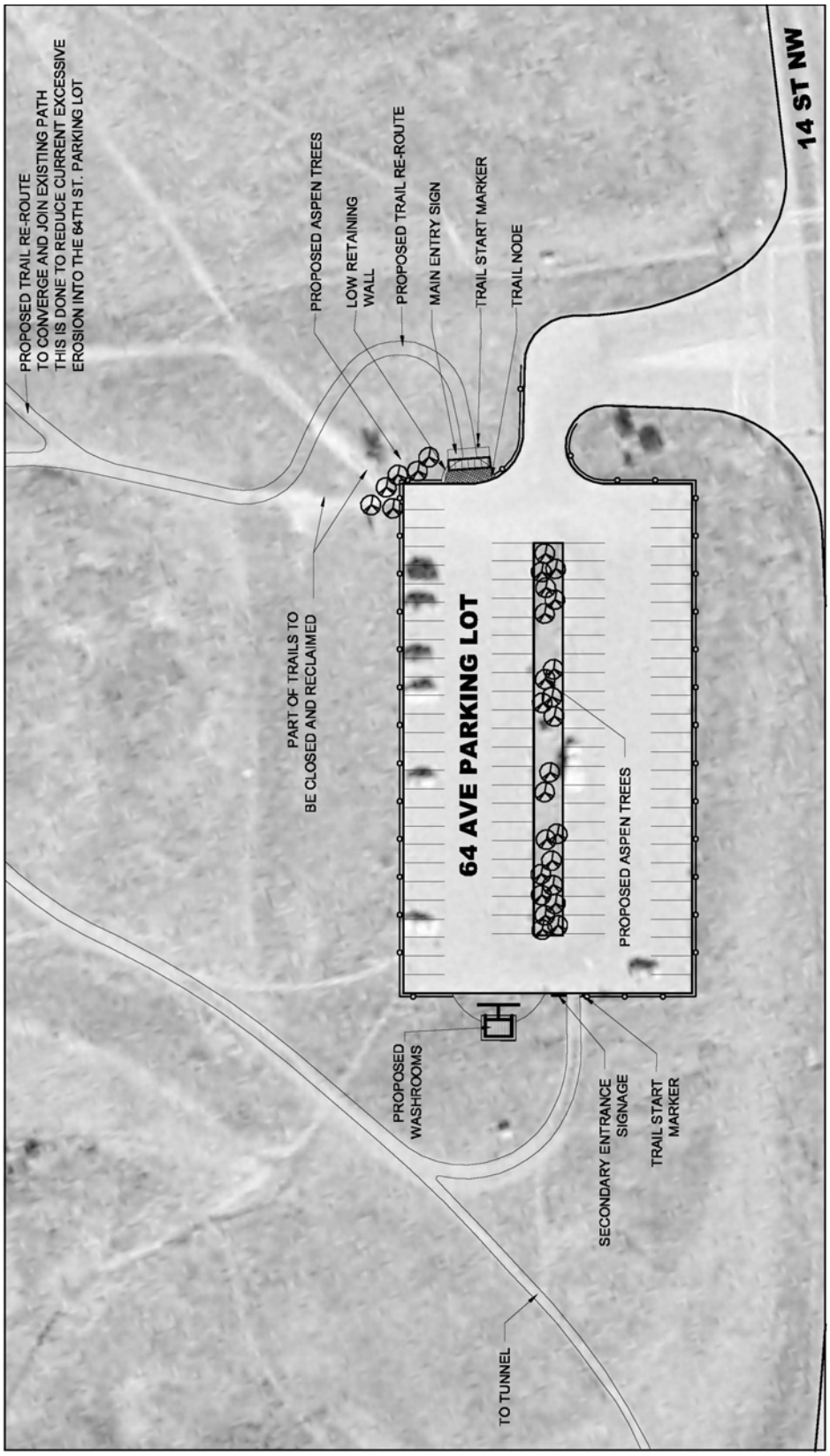


Figure 4.14 Recommended 64th Avenue parking lot upgrades

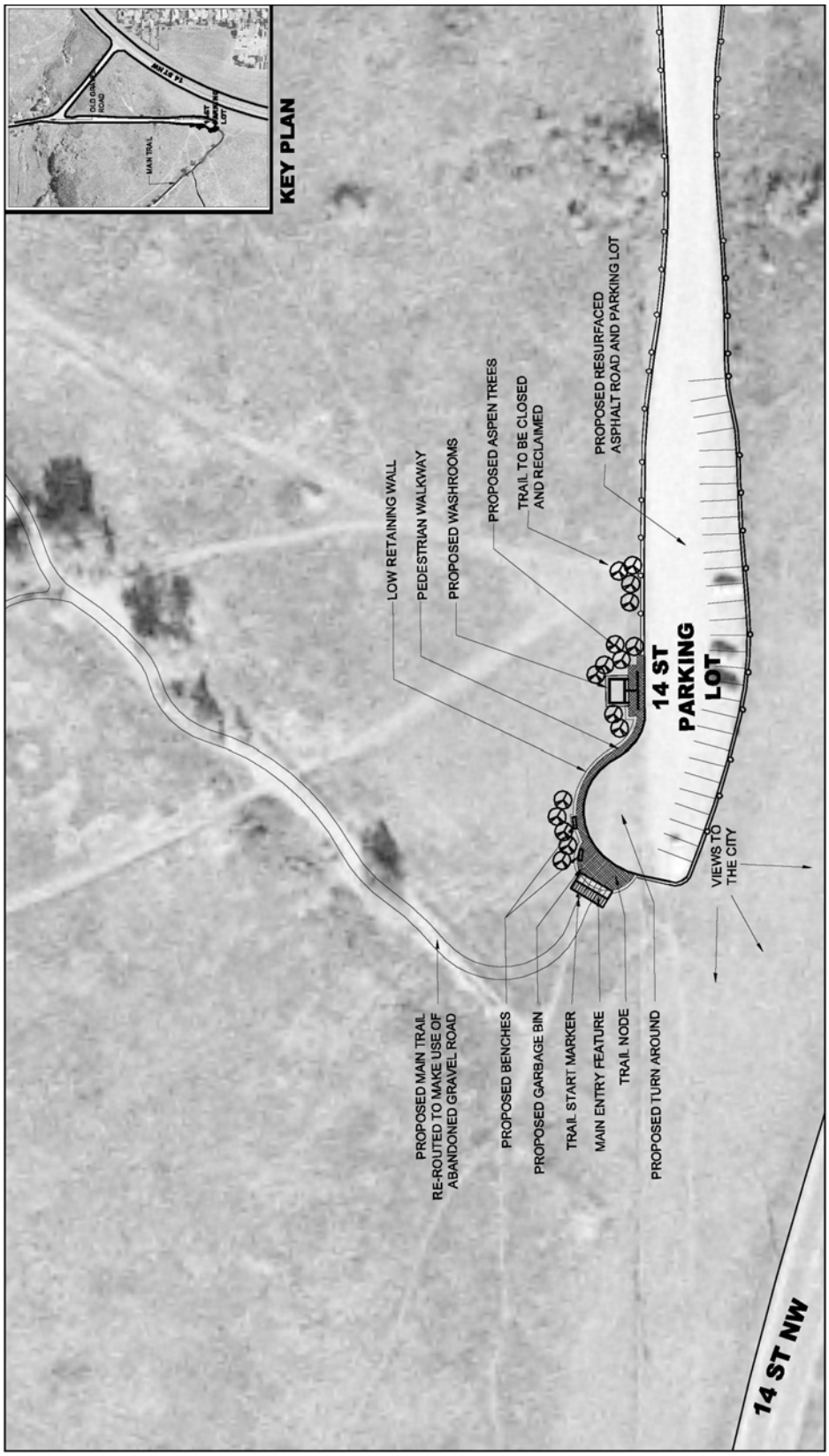


Figure 4.15 Recommended 14th Street parking lot upgrades

RECOMMENDATION: Install park benches in select locations throughout the park.

Details:

Benches are to be constructed, primarily with wood and/or stone materials, and installed at select locations inside the park.

Rationale:

- Benches provide places for park users to rest and enjoy the views of the park, and
- Public Meeting #1 respondents (60%) agreed with the recommendation to install benches.

RECOMMENDATION: Calgary Parks to continue discussions with the Calgary Winter Club regarding the development of an agreement to designate parking for Nose Hill Park users, and discuss opportunities for expanding the parking at this location.

Details:

The parking lot located at the Calgary Winter Club is privately owned, although the general public has been allowed access to this lot. There is concern that the current number of parking stalls is not adequate for both Nose Hill Park users and Winter Club patrons. For this reason, the Winter Club and the City of Calgary will be discussing the possibility of: (a.) developing an agreement to designate parking for Nose Hill Park users, and (b.) discussing opportunities to expand parking at this location.

Rationale:

- Creates designated entry that officially facilitates park entry for the general public.

4.3 Implementation and Management Recommendations

The final recommendation of the NHTPP is related to the implementation of the plan and suggested park management strategies. This recommendation is intended to address the issues described in Chapter 2.0 that require action at the park management level.

RECOMMENDATION: Calgary Parks to commence recommended implementation and phasing strategy.

Details:

The extent of work required to complete the NHTPP recommendations makes phasing of the project necessary. For this reason, an implementation schedule has been suggested that outlines the general phases of work to be undertaken over a three-year time period to complete the NHTPP (Table 4.6). This schedule prioritizes the types and areas of development in the park. For example, the cross-park pathways and plateau route, which form the skeleton of the routing plan and delineate the new multi-use zone, have been suggested as first steps in the project. The annual costs to complete the suggested work over the three-year time period have also been outlined in the suggested implementation schedule (Table 4.6). It should be noted that no capital costs are associated with both the adaptive management and public awareness and education strategies since these strategies should be completed by City staff using current operational budgets.

It should be noted that the suggested implementation schedule has prioritized the order that parking lots are upgraded. Parks may wish to re-organize this order based on other priorities, and/or complete specific upgrades at all parking lots at the same time. For example, Parks may wish to construct perimeter parking lot fencing for all parking lots at the same time.

An opinion of probable cost has also been provided to assist Parks in the budgeting of the various components to complete the NHTPP. Estimated costs for trail and pathway development, park signage, parking lot upgrades and general project costs have been provided in Table 4.7 through Table 4.10, respectively. The total estimated budget to implement the NHTPP is approximately $6.8 million, as outlined in Table 4.11.

Table 4.6 Suggested NHTPP implementation schedule

Implementation Detail	Year 1	Year 2	Year 3
Routing and Park Use			
Pathways			
Plateau Route			
Modify multi-use zone and escarpment zone			
Close Charleswood entrance			
Primary trails			
Secondary trails			
Maintained track			
Restoration activities along closed trails			
Remove old asphalt road at 14th Street parking lot			
Repair gravel pit service road			
Amenity and Parking Lot Upgrades			
Berkley Gate Parking Lot			
64th Avenue parking lot			
14th Street parking lot realignment			
Brisebois parking lot upgrade			
Edgemont parking lot upgrade			
Temporary signage (entry signs, multi-use signs and education of plan)			
Install regulation signs			
Trail markers on constructed routes			
Permanent Entry sign			
Install orientation and interpretive			
Install benches in park			
Park Management			
Develop restoration plan (trail and escarpment)			
Develop adaptive management strategy (in house)*			
Develop public awareness and education strategy (in house) (i.e. educating users on upcoming on-trail use requirement, multi-use zone modification, etc.)*			
Cost			
Phased Cost Estimate	**$2,800,000**	**$2,000,000**	**$2,000,000**

***** No capital costs are associated with both the adaptive management and public awareness and education strategies since these strategies should be completed by City staff using current operational budgets.

Table 4.7 Opinion of probable cost for trail and pathway development

Type	Surfacing Type	Distance (m)	Price / linear m	Total Cost
Trails				
Upper Plateau	Granular (Trail Mix)	8,000	$70	$546,000
Maintained Track	Stabilized Tread	10,400	$25	$260,000
Secondary Routes (assuming 25% of routes require upgrading)	Stabilized Tread	4,375	$100	$437,500
Primary Routes	Granular (Trail Mix)	16,800	$80	$1,344,000
Removal of old impassable asphalt road at 14th Street; 14th Street gravel pit service road repairs (allowance only)				$75,000
Trail Sub-Total				**$2,686,500**
Pathways				
Cross-Park Routes	Pavement with Aggregate	7,600	$115	$874,000
Pathway Sub-Total				**$980,000**
Total Trail and Pathway Cost				**$3,536,500**

Table 4.8 Opinion of probable cost for Nose Hill Park signage

Type	Quantity	Unit of Measure	Price/ Sign	Total Cost
Main Entry Feature	6	Nos.	$30,000	$180,000
Secondary Entry Feature	16	Nos.	$10,000	$160,000
Interpretive Signage	12	Nos.	$3,500	$42,000
Regulatory and/or Orientation Signage	9	Nos.	$3,000	$27,000
Temporary Signage	1	Allowance	$15,000	$15,000
Trail Marker	250	Nos.	$450	$112,500
Total Signage Cost				**$536,500**

Table 4.9 Opinion of probable cost for parking lot upgrades

Type	Quantity	Unit of Measure	Price/ Sign	Total Cost
Edgemont Parking Lot				
Trees	35	Nos.	$225	$7,875
Headers and Surfacing at Entry Feature (incl. grading)	200	Sq. m	$90	$18,000
Feature Boulders	5	Nos.	$100	$500
Vehicle Gate Barrier	1	Nos.	$500	$500
Round Wood Fencing	105	Linear m	$100	$10,500
Gate	1	Nos.	$2,000	$2,000
Curb Stops and Line Striping	1	Allowance	$5,000	$5,000
Edgemont Sub-Total				**$44,375**
Brisebois Parking Lot				
Headers and Surfacing at Entry Feature (incl. grading)	60	Sq. m	$90	$5,400
Garbage Bin	1	Nos.	$1,200	$1,200
Washroom	1	Nos.	$30,000	$30,000
Round Wood Fencing	140	Linear m	$100	$14,000
Gate	1	Nos.	$2,000	$2,000
Curb Stops and Line Striping	1	Allowance	$5,000	$5,000
Brisebois Sub-Total				**$57,600**
14th Street Parking Lot				
Headers and Surfacing at Entry Feature (incl. grading)	100	Sq. m	$90	$9,000
Re-surface Road	5,900	Sq. m	$25	$147,500
Proposed Turn-Around	170	Sq. m	$30	$5,100
Washroom	1	Nos.	$30,000	$30,000
Benches	2	Nos.	$1,500	$3,000
Garbage Bin	1	Nos.	$1,200	$1,200
Trees	16	Nos.	$225	$3,600
Retaining Wall	35	Linear m	$130	$4,550
Round Wood Fencing	600	Linear m	$100	$60,000
Gate	1	Nos.	$2,000	$2,000
Curb Stops and Line Striping	1	Allowance	$5,000	$5,000
14th Street Sub-Total				**$270,950**

Table 4.8 Opinion of probable cost for parking lot upgrades (Cont'd)

Type	Quantity	Unit of Measure	Price/ Sign	Total Cost
64th Street				
Headers and Surfacing at Entry Feature (incl. grading)	30	Sq. m	$90	$2,700
Trees	29	Nos.	$225	$6,525
Washroom	1	Nos.	$30,000	$30,000
Garbage Bin	1	Nos.	$1,200	$1,200
Retaining Wall	3	Linear m	$90	$270
Round Wood Fencing	250	Linear m	$100	$25,000
Gate	1	Nos.	$2,000	$2,000
Curb Stops and Line Striping	1	Allowance	$5,000	$5,000
64th Street Sub-Total				**$72,695**
Berkley Gate Parking Lot				
Headers and Surfacing at Entry Feature (incl. grading)	100	Sq. m	$90	$9,000
Trees	24	Nos.	$225	$5,400
Washroom	1	Nos.	$30,000	$30,000
Garbage Bin	1	Nos.	$1,200	$1,200
Round Wood Fencing	200	Linear m	$100	$20,000
Gate	1	Nos.	$2,000	$2,000
Curb Stops and Line Striping	1	Allowance	$5,000	$5,000
Berkley Gate Sub-Total				**$72,600**
Total Parking Lot Costs				**$518,220**

Table 4.10 Summary of additional general project costs

Type	Quantity	Unit of Measure	Price/ Sign	Total Cost
Benches (Parks Foundation)	40	Nos.	$1,500	$60,000
Trail Closure and Restoration Outside Multi-Use Zone	241,995	m^2	$4.50	$1,088,978
Restoration Plan	1	Allowance	$70,000	$70,000
Interpretive Materials Development (writing, graphic design)	1	Allowance	$35,000	$35,000
Total General Costs				**$1,253,978**

Table 4.11 Total estimated budget to implement the NHTPP

Detail	Detail Subtotal	Total Cost
Total Costs (Trails and Pathways, Signage, Parking Lots and General Costs)		$ 5,845,198.00
Contingency (10%)		$ 584,519.80
Design Costs		$ 372,122.00
Trails (10%)	$268,650.00	
Pathways (Assuming majority of design undertaken in-house)	$10,000.00	
Signage	$53,650	
Parking Lots (excluding washrooms)	$39,822.00	
Total Project Costs		**$ 6,801,839.80**

PART 2:
Technical Background Information

5.0 ENVIRONMENTAL RESOURCES

Nose Hill Park is located within the Foothills Fescue Subregion, which is described as a rough fescue dominated landscape (Achuff 1994). The Nose Hill Park physical environment was described in great detail in 1993, when Sentar Consultants Ltd. and GAIA Consultants Inc. were retained by the City of Calgary Parks and Recreation Department to undertake a detailed biophysical and land use inventory and analysis of the park (Kansas *et al.* 1993). This study was undertaken based on the direction from the 1992 Master Plan Review, which recommended that a biophysical analysis of the park be undertaken in order to provide an objective base layer of information for the development of a Natural Area Management Plan for Nose Hill Park (Kansas *et al.* 1993). This information has since then been valuable for assessing physical developments and disturbances in the park.

5.1 Vegetation

A detailed map of the parks key ecological units (ecosites) was developed as a key product of the biophysical and land use inventory and analysis (Kansas *et al.* 1993). Detailed ecological units were delineated throughout the park based on dominant vegetation cover, landform feature, surface texture, drainage, percent slope and soil great group. In total, 81 different ecological land units were delineated across the park.

The ecosite classification was used by Kansas *et al.* (1993) to undertake a variety of landscape analyses to identify rare species, vegetation sensitivity to recreational trampling and significant vegetation communities within Nose Hill Park. The results of these analyses contributed to the development of route planning, design and evaluation criteria for Nose Hill Park, which were used in the development of the NHTPP recommendations.

5.1.1 Vegetation Communities

The parks ecosite classification (Kansas *et al.* 1993) was analyzed using a geographic information system (GIS) in order to summarize the spatial distribution of the park's various vegetation communities. The area covered by the dominant vegetation communities in the park calculated, and, indicated by Table 5.1, over 86% of the park was interpreted as herbaceous cover types. The four dominant herbaceous communities include: Western wheatgrass, Rough fescue - Parry oatgrass, Smooth brome, and Rough fescue-golden bean. A smaller proportion of the park was interpreted as deciduous shrub cover types (<9%), and an even smaller proportion was mapped as deciduous tree cover (3%) (Table 5.1).

The various vegetation communities in Nose Hill Park were reclassified by Kansas *et al.* (1993) into eight broad categories to reflect the dominant vegetation communities in the park. The eight communities, and their representative area coverage, have been summarized in Table 5.2 and Map 5.1. As the map indicates, the majority of herbaceous cover types are found along the upland plain and escarpment slopes of the park, while most tree and shrub cover is located along the parks moister coulees and ravines. The largest cluster of shrubs and trees are found along the Aspen Grove and the Many Owls and Porcupine Valleys.

Table 5.2 identifies that approximately 39% of the park is vegetated with native grasslands, while an almost equal proportion (37%) of the park is composed on non-native vegetation, which predominantly includes bluegrass, wheatgrass and smooth brome communities. A large portion of the park is considered non-native vegetation due to past agriculture activities and clearing of the land. Another 13% of the park was classified by Kansas *et al.* (1993) as disturbed vegetation communities (Table 5.2). Disturbed vegetation communities include all human disturbed areas, with the exception of past farmland, and include the vegetated cover in and leading up to the old quarry, surrounding the winter club and along the road rights of way surrounding the park. Map 5.1 indicates in grey the various locations of disturbed vegetation communities. The current vegetation communities supported by these disturbed landscapes include young balsam poplar and non-native grassland communities, such as the Smooth brome community.

Table 5.1 Summary of Vegetation Communities Delineated on 1:5,000 Ecosites Classification.

Community Types	*Area (Ha)*	*Percent (%)*
Deciduous Tree Cover Types		
Aspen / Rose	19.0	1.7
Aspen / Smooth Brome	13.2	1.2
Balsam Poplar / Rose	1.1	0.1
Subtotal	*33.3*	*3.0*
Deciduous Shrub Cover Types		
Caragana	0.3	0.0
Chokecherry / Snowberry	0.3	0.0
Hawthorn	0.1	0.0
Poplar / Dandelion**	13.4	1.2
Rose / Snowberry	33.0	2.9
Saskatoon / Snowberry	1.8	0.2
Snowberry	0.1	0.0
Willow / Rough Fescue	28.2	2.5
Willow / Snowberry	21.2	1.9
Wolfwillow / Bluegrass	0.7	0.1
Wolfwillow / Snowberry	0.2	0.0
Subtotal	*99.3*	*8.8*
Herbaceous Cover Types		
Alfalfa / Wheatgrass	8.8	0.8
Bluegrass	27.1	2.4
Bluegrass / Rough Fescue	1.0	0.1
Bluegrass / Smooth Brome	77.6	6.9
Bluegrass / Snowberry	0.4	0.0
Bluegrass / Western Wheatgrass	7.0	0.6
Rough Fescue / Bluegrass	9.2	0.8
Rough Fescue / Golden Bean	152.9	13.6
Rough Fescue / Parry Oatgrass	220.1	19.6
Rough Fescue / Smooth Brome	8.9	0.8
Rough Fescue / Snowberry	12.8	1.1
Smooth Brome	196.2	17.5
Western Wheatgrass	246.7	22.0
Wheatgrass / Bluegrass	4.1	0.4
Subtotal	*972.9*	*86.6*
Other Cover Types		
Other	17.9	1.6
TOTAL	**1123.4**	**100.00**

****** Note: the Poplar/ Dandelion community has been classified by Kansas *et al.* (1993) as deciduous shrub cover since the height (< 3 m) and cover density (13%) of the community was not sufficient to be designated as a tree or forest community.

Table 5.2 Summary of the Eight Broad Nose Hill Park Vegetation Communities Delineated on the 1:5,000 Ecosite Classification.

Major Communities	*Area (ha)*	*Area (%)*
Aspen	32.3	2.9
Balsam poplar	1.1	0.1
Disturbed	146.6	13.1
Low shrub	35.5	3.2
Native grassland	437.5	38.9
Non-native vegetation	419.7	37.4
Upland tall shrub	50.0	4.5
Wetland	0.7	0.1

5.1.2 Rare, Threatened or Endangered Species

The biophysical and land use inventory and analysis (Kansas *et al.* 1993) attempted to identify the rare, threatened or endangered species that are present within Nose Hill Park. The authors determined, through a review of flora lists for the area and a rare plant field reconnaissance undertaken during the study, that no rare, threatened or endangered species were known to occur within Nose Hill Park. The authors did identify, however, nine rare plants that may potentially grow in the park, which are listed in Table 5.3 below.

Table 5.3 Rare Plants that May Potentially Occur in Nose Hill Park

(Source: Kansas *et al.* 1993)

Rare Species	
Carex tincta	*Polanisia dodecandra*
Orobanche uniflora	*Rorippa tenerrima*
Oryzopsis canadensis	*Stellaria crispa*
Oryzopsis micrantha	*Viola pedatifida*
Phacelia linearias	

5.1.3 Vegetation Sensitivity to Recreational Use

One of the management objectives for Nose Hill Park is to provide “compatible recreation opportunities” (Nose Hill Park Master Plan Review 1992) for all Calgarians. In order to assess the potential effect of recreational activities on Nose Hill Park, Kansas *et al.* (1993) undertook a qualitative analysis to assess the sensitivity of various vegetation communities from recreational trampling. The methodology for this analysis was based on a review of previous trampling assessments undertaken across Western Canada, which aimed to identify the relative durability

of vegetation to foot traffic and their ability to quickly recover from disturbance. Results from those studies were applied to the dominant vegetation communities found in Nose Hill Park.

A variety of recreational trampling susceptibility ratings were assigned to each vegetation community in Nose Hill Park, which varied from low to high. Table 5.4 lists susceptibility rankings that were assigned to each vegetation community in Nose Hill Park. This list is modified from that outlined in Kansas *et al.* (1993), since some of the dominant vegetation communities identified in the ecosite maps were not included in the Kansas *et al.* (1993) assessment. Therefore, O2 Planning + Design Inc. modified the trampling rating table to provide assessments for dominant vegetation communities found throughout Nose Hill Park.

In general, Kansas *et al.* (1993) summarized the following general conclusions regarding the durability of Nose Hill Park vegetation communities from trampling:

1. Herbaceous species may easily be trampled through recreational use, however, their recovery time may be also be quick.
2. Graminoid species are much more durable to trampling than herbaceous species.
3. Vegetation growing on moist sites and soils with organic soil horizons can easily become compacted and/or disturbed.

Overall, the majority (75%) of Nose Hill Park vegetation communities were considered to have low and low-to-moderate susceptibilities to recreational trampling (foot traffic), while approximately 20% of the park vegetation communities were assigned moderate ratings. These moderate ratings were assigned to three native grassland and three deciduous shrub communities (Table 5.4), which include the following:

Grassland:
Rough fescue – Bluegrass,
Rough fescue – Golden bean, and
Rough fescue – Snowberry communities;

Deciduous Shrub:
Saskatoon – Snowberry,
Willow – Rough fescue, and
Willow – Snowberry.

Only 3% of the park was assigned moderate to highly susceptible ratings to recreational trampling, and these vegetation communities included both the Rose – Snowberry and Snowberry communities.

Locations of ecosites that were rated as moderate or moderate to highly susceptibly to damage from recreational trampling are shown on Map 5.2. While eight vegetation communities were assigned moderate or moderate to high rankings, it should be highlighted that the Rough fescue – Golden bean community has the greatest distribution in the park, when compared to the other 7 communities, and contributes to almost three-quarters of the moderate and moderate to highly susceptible areas of the park. As Map 5.2 indicates, the majority of susceptible grassland communities are located along the sloped areas of the park's escarpment. It is also important to consider that while the native grasslands have higher sensitivities to trampling, heavy recreational use, as well as other disturbances in these communities, could also facilitate the invasion of non-native and weed species, of which natural recovery times could take several decades.

Table 5.4 Vegetation Communities Susceptibility to Damage from Recreational Trampling (Adapted and modified from Kansas *et al.* 1993).

Susceptibility Rating	*Community Type*	*Area (Ha)*	*Area (%)*
	Non Vegetated Landcover	17.9	1.6
No Rating	***Subtotal***	***17.9***	***1.6***
	Alfalfa – Wheatgrass	8.8	0.8
	Aspen – Rose	19.0	1.7
	Aspen – Smooth Brome	13.2	1.2
	Balsam Poplar / Rose	1.1	0.1
	Bluegrass	27.1	2.4
	Bluegrass – Smooth Brome *	77.6	6.9
	Bluegrass – Snowberry *	0.4	0.0
	Bluegrass – Western Wheatgrass *	7.0	0.6
	Caragana *	0.3	0.0
	Choke Cherry – Snowberry	0.3	0.0
	Hawthorn *	0.1	0.0
	Poplar – Dandelion	13.4	1.2
	Smooth Brome	196.2	17.5
	Wheatgrass – Bluegrass *	4.1	0.4
	Wolfwillow – Bluegrass	0.7	0.1
	Wolfwillow – Snowberry *	0.2	0.0
Low	***Subtotal***	***426.6***	***32.9***
	Bluegrass – Rough Fescue *	1.0	0.1
	Rough Fescue – Parry Oatgrass	220.1	19.6
	Rough Fescue – Smooth Brome *	8.9	0.8
	Western Wheatgrass	246.7	22.0
Low - Moderate	***Subtotal***	***476.7***	***42.4***
	Rough Fescue – Bluegrass *	9.2	0.8
	Rough Fescue – Golden Bean	152.9	13.6
	Rough Fescue – Snowberry *	12.8	1.1
	Saskatoon – Snowberry **	1.8	0.2
	Willow – Rough fescue *	28.2	2.5
	Willow – Snowberry	21.2	1.9
Moderate	***Subtotal***	***204.9***	***20.1***
	Rose – Snowberry	33.0	2.9
	Snowberry	0.1	0.0
Moderate - High	***Subtotal***	***33.1***	***2.9***

* Ratings provided by O2 Planning + Design Inc.

** Originally rated as both low and moderate by Kansas *et al.* (1993)

5.1.4 Significant Vegetation Communities

Kansas *et al.* (1993) evaluated the various vegetation communities in Nose Hill Park for their environmental significance. Significance ratings were assigned to each ecosite based on a variety of factors, including the communities local and regional abundance, feature and region representatives, scientific/educational importance, ecological importance, quality, etc. Through the significance analysis, four vegetation communities were identified to be of greatest management concern. These four vegetation communities are listed in Table 5.5 and identified on Map 5.3.

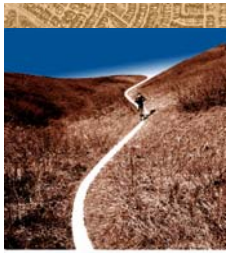
Table 5.5 Significant Vegetation Communities in Nose Hill Park.

Source: Kansas *et al.* (1993)

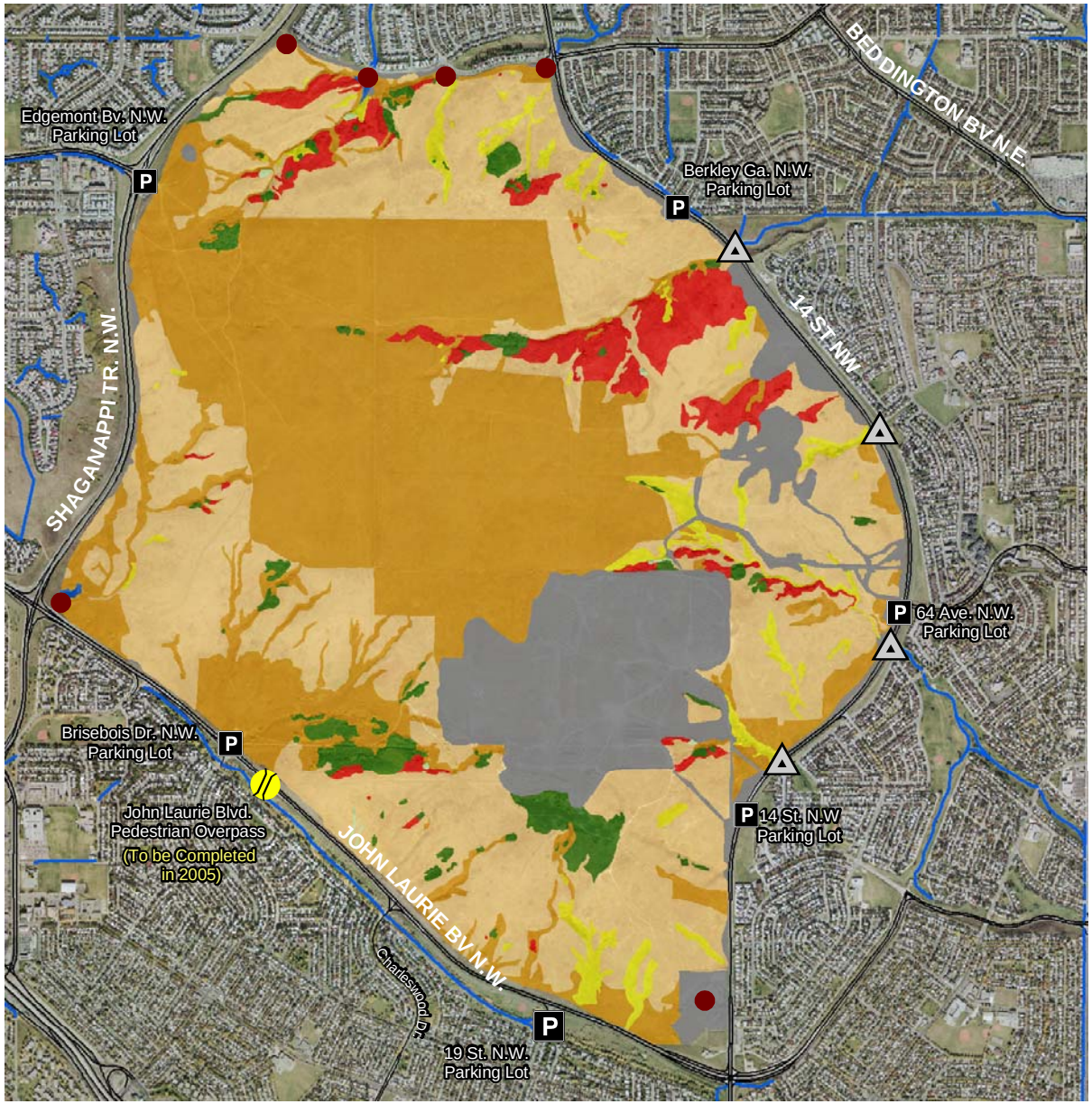
Significant Vegetation Communities
▪ Rough Fescue – Golden Bean plant community
▪ Rough Fescue – Parry Oatgrass plant community
▪ Willow – Snowberry plant community
▪ Balsam Poplar – Rose plant community

The Rough fescue grasslands were identified as significant vegetation communities since they are distributed in great abundance throughout Nose Hill Park (36% of the park is Rough fescue grassland), while they are lost throughout much of western Canada. Due to its' rarity in western Canada, Nose Hill Park's Rough fescue grassland is considered to be a nationally significant ecosite and, therefore, preservation of the grassland is of great management concern in the park (Kansas *et a.* 1993). As Map 5.3 indicates, the majority of native Rough fescue grasslands are located along the escarpment of Nose Hill. Since the escarpment is prone to erosion from increased trail proliferation and off-trail use, measures are required to minimize erosion of this important community and reduce the invasion of non-native species as a result of disturbance.

Closed canopy deciduous forest and tall willow shrub communities were also considered to be of great management significance by Kansas *et al.* (1993). The two key communities identified by the authors include the Willow – Snowberry community and the Balsam poplar – Rose community. These two communities, as demonstrated by Map 5.3, are predominantly located in the park's ravines and coulees, and have been identified as key components of both the Porcupine and Many Owls Valleys. Deciduous forest and shrub communities were identified as being significant features of Nose Hill Park due to the scarcity within the park, and for the higher levels of plant diversity that they provide. Additionally, these communities provide the escape and reproductive cover that is important to many of the parks larger birds and mammals. In addition to their habitat importance for mammals and birds, these communities provide a cooler and moister micro-climate that supports a variety of different plants and insects, which provides an important food source to contribute to Nose Hill Park's food chain (Kansas *et al.* 1993).



NOSE HILL PARK



Map 5.1
Nose Hill Park
Vegetation Communities

Map Legend

Vegetation Communities

- Aspen
- Balsam poplar
- Disturbed
- Low shrub
- Native grassland
- Non-Native Vegetation
- Upland tall shrub
- Storm Pond

Base Information

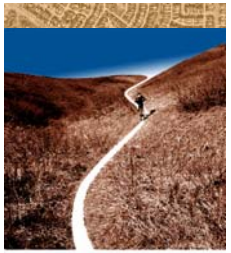
- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: GAIA Consultants Inc. 1993. Nose Hill Park Biophysical Ecosites, Detailed 1:5,000 Scale Map. Aerial photography base map acquired in 2003 by Parks.

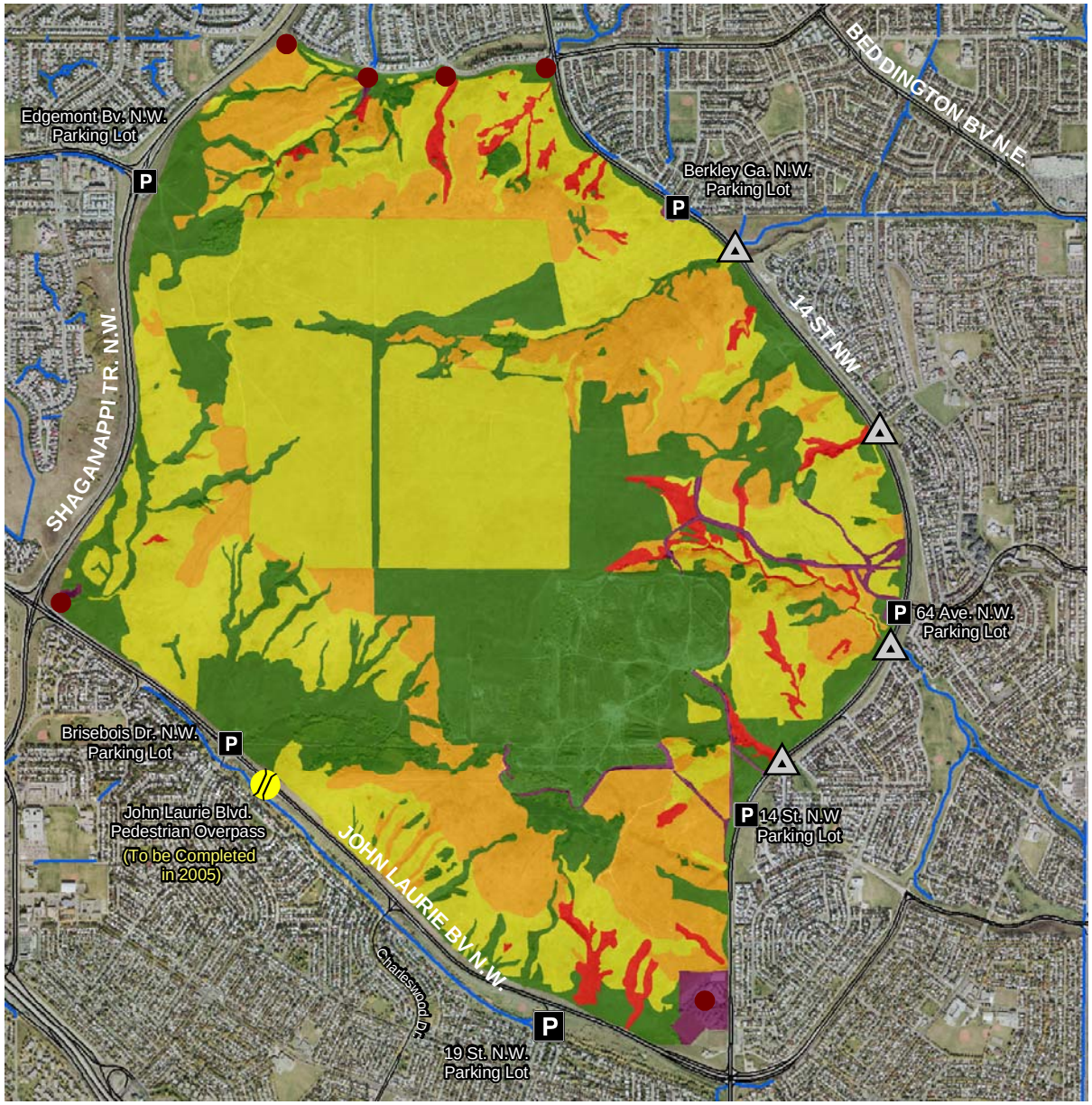
PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters



NOSE HILL PARK



Map 5.2
Nose Hill Park
Vegetation Susceptibility to Recreational Trampling

Map Legend

Vegetation Communities

- Low Susceptibility Rating
- Low - Moderate Susceptibility Rating
- Moderate Susceptibility Rating
- Moderate - High Susceptibility Rating
- Not Available

Base Information

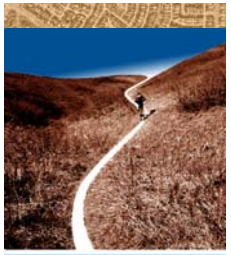
- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Adapted and modified from criteria outlined in Kansas et al. (1993). Biophysical and Land Use Inventory and Analysis of Nose Hill Park. Aerial photography base map acquired in 2003 by Parks.

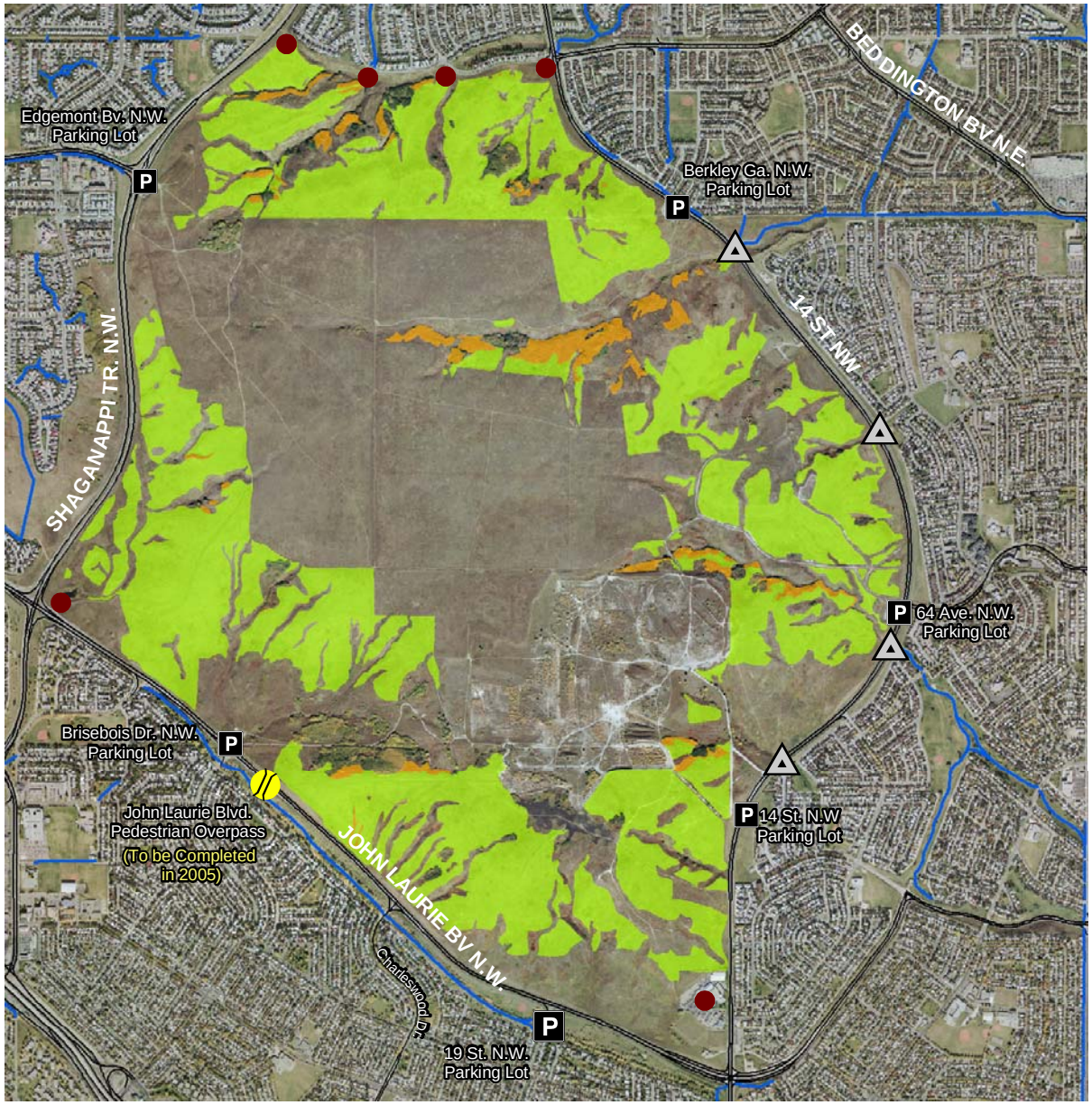
PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters



NOSE HILL PARK



North

Map 5.3
Nose Hill Park
Significant Vegetation Communities

Map Legend

Significant Communities

- Rough fescue grasslands
- Closed canopy deciduous forest and tall willow shrub communities

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Adapted from criteria outlined in Kansas et al. (1993). Biophysical and Land Use Inventory and Analysis of Nose Hill Park. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

5.2 Nose Hill Wildlife

A variety of different wildlife species can be found throughout the year in Nose Hill Park. A comprehensive listing of species known to occur, or potentially be found in Nose Hill Park was prepared by Kansas *et al.* (1993), which included approximately 136 bird species, 27 mammals and 3 amphibians. The complete summary of Nose Hill Park species identified by Kansas *et al.* (1993) is listed in Appendix A. It should be highlighted that these species lists were created in 1993, and since then some of the species identified, such as Sharp-tailed Grouse and Badger, are no longer or rarely seen within Nose Hill Park.

5.2.1 Significant Wildlife Species and Habitat Features

An evaluation of significant wildlife resources was undertaken as part of the Kansas *et al.* (1993) biophysical evaluation. This evaluation was undertaken using the same methodology employed for vegetation communities, whereby significant ratings were assigned to wildlife species and habitat features based on a variety of characteristics, including local and regional abundance, feature and region representatives, scientific/educational importance, ecological importance, quality, etc.

The following table (Table 5.6), adopted from Kansas *et al.* (1993), lists the significant wildlife species and habitat features of Nose Hill Park. Significant species and habitat features, that may be impacted by trail and pathway development, as well as other landscape disturbances, include Baird's sparrow, remnant deer populations, American badger, the Sharp-tailed grouse lek, and deciduous forest habitat.

Table 5.6 Significant Wildlife Species and Habitat Features in Nose Hill Park.
(Source: Kansas *et al.* 1993).

Significant Wildlife Species / Habitat Features
▪ Baird's sparrow
▪ Sharp-tailed grouse lek
▪ Rough fescue habitat
▪ Ponds
▪ Deciduous forest habitat for breeding and migrant songbirds, escape and reproductive cover for larger birds and mammals
▪ Remnant deer populations
▪ American badger
▪ Richardson's ground squirrel

Baird's sparrow was considered by Kansas *et al.* (1993) as a significant species since Nose Hill Park was the only known place in Calgary where Baird's sparrow had been viewed (current to 1993), and the species had formally been listed as a nationally threatened species. The ideal habitat for Baird's sparrow includes undisturbed native grassland, most notably Rough fescue grasslands. Since this grassland is important to Baird's sparrow, human and domestic animal use of the sparrow's breeding and nesting areas, as well as loss of these native Rough fescue grasslands have been identified as major threats to the bird's long-term survival in Nose Hill Park.

The Sharp-tailed Grouse lek was also identified as a significant wildlife habitat feature in the park. The lek is a specific site or ancestral dancing ground used for grouse courtship. Only one lek has been identified in Nose Hill Park, which used to support approximately 12 grouse (Kansas *et al.* 1993), and therefore was considered to be a very sensitive ecological feature. The lek is located in a fairly flat area with short grasses that provides grouse with a wide field of vision to allow them to watch for predators, and is situated close to shrubbery that would be used for food, nesting and cover (Kansas *et al.* 1993, Kirker and Kary 1996). It should be noted that Sharp-tailed Grouse were last recorded in the December 1997 Calgary Christmas Bird survey. Since this time, no Sharp-tailed Grouse have been recorded in the park (pers. comm. Mike Harrison, City of Calgary, Parks, June 4, 2004).

Mule Deer, White-tailed Deer, and American Badger, which are the larger mammals found in Nose Hill Park, were identified as significant wildlife species by Kansas *et al.* (1993). These species are significant since they require a relatively large home range and recreational use of the park may potentially threaten their populations in the medium and long-term. At the time of the Kansas et al. (1993) study, the total count of deer populations observed the park was 14 (seven of each species), a similar number (15) and distribution have been observed 10 years later by Parks staff (Pers. Comm. Dave Elphinstone, Natural Area Management Coordinator, July 05, 2004). Key habitat requirements for these species generally include deciduous shrub and forest, which provide food, escape and resting cover for these mammals.

Deciduous forest habitat was also identified as an important habitat feature in the park. This forest habitat is structurally important for breeding and migrant songbirds, and provides important food, escape and reproductive sites for larger birds, as well as mammals.

5.3 Topography & Soils

The steep slopes and associated soils with Nose Hill Park pose unique park management challenges. For example, the steep slopes might not normally be considered for trail development in other City parks (EnviResource Consulting 1994b). However, visitors have

created many informal trails throughout the park, on both its' gentle and steeper slope faces, in order to access the upper plateau. If trails were not created along the park's steep slopes, the upper plateau would not be accessible in most parts of the park. This section briefly describes the topography of Nose Hill Park and summarizes the results of a slope analysis undertaken by O2 Planning + Design Inc.

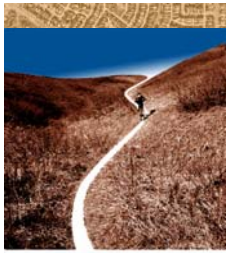
5.3.1 Nose Hill Park Terrain

The terrain of Nose Hill Park was studied to spatially identify locations with high slopes. A high-resolution (1 m) digital elevation model (DEM) was analyzed to identify park slope. While this analysis was not used to determine the specific grade of individual trail segments, it did identify areas in the park where steep segments might affect the development of a trail or pathway. This slope information was incorporated into both the pathway feasibility assessment (Part 2, Chapter 12.0 of this report) and in the development of the NHTPP recommendations (Chapter 4.0 of Part 1).

Since slope information is recorded using a continuous system (e.g. 20.4%, 20.5%, etc.), the percent slope information was classified into 7 different categories in order to better facilitate the interpretation of the data, which is presented in Table 5.7 and Map 5.4. The table and map both demonstrate how variable the topography of Nose Hill Park is. For example, only 36% of the entire park is considered to be relatively flat terrain, which, as indicated by Map 5.4, is predominantly located along the hill's plateau. The remaining 64% of the park is located along low to very high sloped topography. The park's escarpment contains the majority of the low to moderate slopes, while moderate to high and greater slopes are most common in the park's ravines and coulees (Map 5.4). Since the majority of the park is located along steep slopes, extra care is required to design trails and pathways that are safe, allow for ease of mobility for park users, and minimize the effects on the natural environment. In some instances, the trails may not meet City of Calgary construction standards due to the park's topographical constraints.

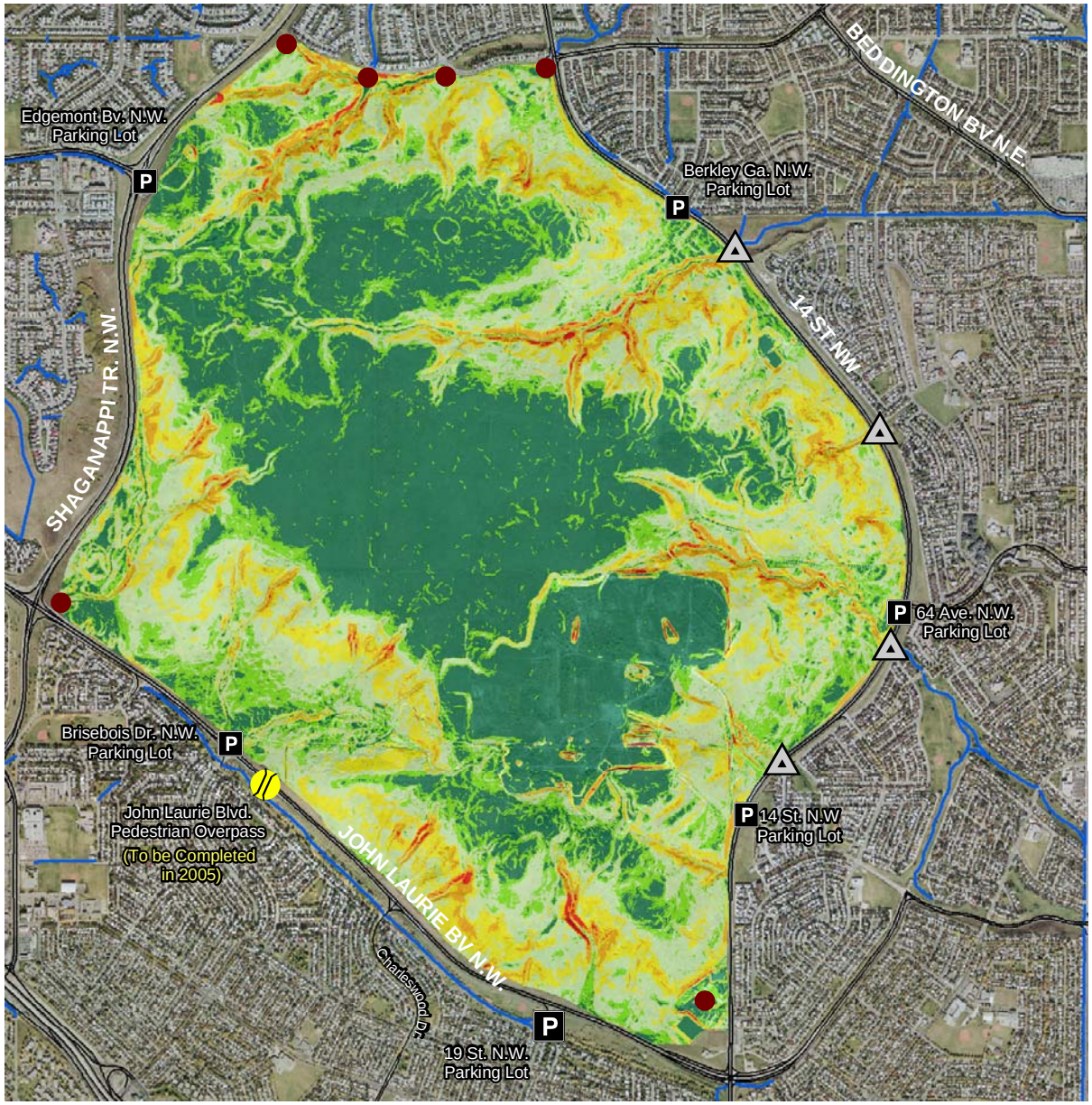
Table 5.7 Summary of Nose Hill Park Slopes.

Slope Category		*Area (ha)*	*Area (%)*
Flat	0 - 5%	403.9	36.0
Low	5 - 10%	192.1	17.1
Moderate	10 - 20%	315.0	28.0
Moderate - High	20 - 30%	151.1	13.5
High	30 - 45%	54.9	4.9
Very High	45 - 60%	6.1	0.5
	> 60%	0.2	0.0



NOSE HILL PARK

North



Map 5.4
Nose Hill Park
Slope

Map Legend

Slope Class

- 0 - 5%
- 5 - 10%
- 10 - 20%
- 20 - 30%
- 30 - 45%
- 45 - 60%
- 60+%

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Analysis of 1m digital elevation model (provided by City of Calgary, Parks) by O2 Planning + Design Inc., June 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

6.0 HISTORICAL RESOURCES

Historical resources have been defined by the Province of Alberta as "*any work of nature or of man that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest including, but not limited to, a palaeontological, archaeological, prehistoric, historic or natural site, structure or object*" (Province of Alberta 1987; Pat 1, Section 1(f)).

Known historical resources in Nose Hill Park include archeological and natural interest sites. Archaeological resources include sites that contain culturally modified objects and distributions of objects that are related to the pre-contact history and settlement of the region (Bison Historical Services 1993). Natural interest sites contain items that are considered to be of natural interest, such as geological type sections and glacial erratics (Bison Historical Services 1993).

A variety of historical resources studies have been undertaken in and around Nose Hill Park over the past 30 years. The most recent and comprehensive study was undertaken in 1993 by Bison Historical Services Ltd., which included a review of known historical resources in Nose Hill Park and provided an accurate statement of their existing conditions in the park. This information was incorporated into the Kansas *et al.* (1993) biophysical and land use inventory.

The historical resources review included an evaluation of the existing inventory of known historical sites within and immediately adjacent to the park, which was undertaken by reviewing archaeological and historic site records and field visitations to known sites. The review results were used to provide a general assessment of the potential impacts that human disturbances may have on the park's archeological and natural interest sites. The following sections describe the park's historical resources, and summarize recommendations provided by Kansas *et al.* (1993) and Bison Historical Services (1993) for maintaining historical resources within Nose Hill Park.

6.1 Archaeological Resources

Known archaeological resources in Nose Hill Park include a cairn, campsites, isolated finds, lithic scatter, tipi rings, and a kill site, which are described in Table 6.1. In 1993, Bison Historical Services Ltd. undertook a review of these archaeological resources as part of the biophysical and land use inventory and analysis being undertaken by Kansas *et al.* (1993). As part of the review process, Bison Historical Resources Ltd. attempted to relocate (confirm site location coordinates) and assess the current status of archaeological sites within Nose Hill Park. Field

visitations were used to determine if sites were located in their recorded location, and to establish their current status, such as confirmed existence, destroyed, etc.

Through the review, the authors established that the UTM coordinates provided for four of the 49 recorded sites were incorrect, or that these sites had been destroyed through development. These four sites include EgPm-36, EgPm-37, EgPm-38 and EgPm-39 (Bison Historical Services Ltd. 1993). Other examinations concluded that some sites were recorded more than once in various surveys and, therefore, were considered to be the same site, such as site EgPm-137, which was considered to be included in Armants #87 site.

The *Nose Hill Park Natural Area Management Plan: Technical Report* (EnviResource Consulting Ltd. 1994b) incorporated the results of the comprehensive historical resource inventory by excluding the 5 sites identified by Bison Historical Services Ltd. (1993) as destroyed or duplicated, thereby identifying 43 sites to be included in the park management plan. These 43 sites are listed in Table 6.2 and shown on Map 6.1. It should be noted that while the majority of the sites listed on the map and table represent one individual find, many of the recorded tipi ring finds contain more than one and up to 12 different tipi rings.

Table 6.1 Description of Nose Hill Park Archaeological Resources

(Adapted from Bison Historical Services 1993).

Archaeological Resource	*Resource Description*
Cairn	Stone features measuring approximately 1 m by 1 m, composed of relatively large numbers of cobbles. Cairns would have served a number of functions, such as drive lanes, small game traps, navigation markers, and, rarely, burials.
Campsite	Sites that contain both lithic materials and the presence of bone.
Isolated Find	Sites with individual artifact specimens, which typically include quartzite flakes.
Lithic Scatter	Sites are composed of quartzite flakes, the cores that the flakes were struck from, and occasionally fire-cracked rock.
Tipi Ring (Stone Circle)	Rocks, in the form of a circle, which form the remains of tipi lodges. Some sites may contain evidence of a central hearth.
Kill Site	Sites composed of large quantities of bone and the presence of lithics.

Table 6.2 Summary of Archaeological Resources of Nose Hill Park.

(Source: EnviResource Consulting Ltd. 1994b).

Borden #	*UTM*	*Detail*	*Significance*	*Suitability*
EgPm-35	11U QG 013 657	Campsite	None	None
EgPm-135	11U QG 022 649	Tipi Ring (n=2)	Low	Avoid
EgPm-136	11U QG 018 649	Campsite	Low	Further Study
EgPm-138	11U QG 025 645	Campsite	Low	Further Study
EgPm-139	11U QG 015 651	Campsite	Low	Further Study
EgPm-140	11U QG 018 652	Tipi Ring (n=1)	Low	Avoid
EgPm-141	11U QG 016 656	Lithic Scatter	Low	Further Study
EgPm-142	11U QG 027 648	Tipi Ring (n=1)	Low	Avoid
EgPm-143	11U QG 031 649	Tipi Ring (n=1)	Low	Avoid *
EgPm-146	11U QG 028 648	Tipi Ring (n=2)	Low	Avoid *
EgPm-147	11U QG 032 649	Tipi Ring (n=1)	Low	Avoid
EgPm-148	11U QG 031 673	Lithic Scatter	Low	Further Study
EgPm-149	11U QG 029 671	Possible Kill Site	None	None
EgPm-150	11U QG 029 672	Lithic Scatter	None	None
EgPm-151	11U QG 023 669	Isolated Find	None	None
EgPm-152	11U QG 034 670	Lithic Scatter	None	None
EgPm-153	11U QG 035 668	Isolated Find	None	None
EgPm-154	11U QG 036 667	Lithic Scatter	Low	Further Study
EgPm-155	11U QG 032 668	Lithic Scatter	Low	Further Study
EgPm-156	11U QG 031 666	Lithic Scatter	Low	Further Study
EgPm-157	11U QG 031 662	Lithic Scatter	None	None
EgPm-158	11U QG 021 658	Lithic Scatter	None	None
EgPm-159	11U QG 035 655	Lithic Scatter	Low	Further Study
EgPm-160	11U QG 025 658	Campsite	None	None
EgPm-161	11U QG 024 666	Lithic Scatter	None	None
EgPm-162	11U QG 030 666	Cairn	None	None
EgPm-163	11U QG 036 662	Lithic Scatter	Low	Further Study
E Pm-164	11U QG 032 671	Lithic Scatter	None	None
EgPm-165	11U QG 005 659	Isolated Find	None	None
EgPm-167	11U QG 024 675	Lithic Scatter	None	None
EgPm-168	11U QG 031 644	Tipi Ring (n=4)	Moderate	Avoid *
EgPm-169	11U QG 032 648	Tipi Ring (n>6)	Moderate	Avoid *
EgPm-170	11U QG 033 645	Lithic Scatter	None	None
EgPm-171	11U QG 032 641	Lithic Scatter	None	None
EgPm-172	11U QG 029 646	Campsite	Low	Further Study
EgPm-173	11U QG 029 645	Lithic Scatter	None	None
EgPm-174	11U QG 031 645	Tipi Ring (n=7)	Moderate	Avoid *
EgPm-175	11U QG 030 640	Tipi Ring (n=1)	Low	Avoid
EgPm-176	11U QG 016 669	Campsite	None	None
Aramant44	11U QG 024 646	Tipi Ring (n>11)	Moderate	Avoid *
Aramant87	11U QG 023 647	Tipi Ring (n>11)	Moderate	Avoid *
Aramant88	11U QG 023 648	Tipi Ring (n>12)	Moderate	Avoid *

* Sites suitable for interpretive development

6.1.1 Significant Archaeological Resources

Assessments on the various significance ratings for Nose Hill Park archaeological resources were provided by Bison Historical Services Ltd. (1993), Kansas *et al.* (1993), and EnviResource Consulting Ltd. (1994b). While the assessments provided by each of these authors slightly varied from one another, the common recommendation from each author is that tipi rings are the most significant archaeological resources within the park.

Table 6.3 provides a brief description of the significance of Nose Hill Park archaeological resources, as summarized from Bison Historical Services Ltd. (1993). Note, these general significance ratings incorporate perspectives from both the management perspective, which is concerned with avoiding damage to sites; and an interpretive viewpoint, which evaluates the cultural and scientific importance of a site.

Table 6.3 Significance of Nose Hill Park Archaeological Resources
(Adapted from Bison Historical Services 1993).

Archaeological Resource	*General Significance*
Cairn	Cairns served a number of functions and, therefore, the archaeological value is dependant on its function. For this reason, all cairns must be assumed to have a high value.
Campsite	If previously plowed, they have limited value; buried campsites and those associated with stone circles are considered high.
Isolated Find	No archaeological values, however, they provide a guide to the presence of nearby prehistoric campsite.
Lithic Scatter	Limited archaeological value, depending on context found. Those associated with exposed locations are of low value. Those associated with rodent holes may indicate the presence of a buried campsite and have moderate to high value. Those disturbed by plowing have low value since they are scattered. Those associated with stone circles are of higher value since they form a part of the material remains from settlement.
Tipi Ring (Stone Circle)	Are significant, on Nose Hill they exhibit varying values, but represent an important visible reminder of pre contact Native use of the landscape.
Kill Site	Kill sites are always of high value. No lithics have been identified with the site on Nose Hill and, therefore, confirmation that the site is of cultural origin has not been made.

Kansas *et al.* (1993) also identified that tipi rings are the most significant archaeological resource in Nose Hill Park. Tipi rings were considered significant for a number of reasons, including their high number of occurrences within the park, and their overall scientific, educational and interpretative importance. Tipi rings were also considered to be more prone to disturbance and damage than other archaeological sites due to their high fragility, and moderate levels of public accessibility, attractiveness and potential for increased use (Kansas *et al.* 1993).

The *Nose Hill Park Natural Area Management Plan Technical Report* (1994) further identified the potential impacts of trail management and development on individual archaeological resources. The Technical Report identified that, in general, the park's archaeological sites "are of low to moderate value, relative to their potential to contain buried archaeological material that will further the interpretation and understanding of past Native American presence and activities in the region".

Table 6.2 provides a summary of each site's significance in terms of potential impacts from trail management, the management actions that should be taken, and, when indicated, suitability for interpretive development. The *Nose Hill Park Natural Area Management Plan Technical Report* stated that the park's isolated finds have no significance, and that the majority of lithic scatters have low to no significance. Campsites were assigned no to low significance levels, and that they required either no action or further studies prior to development around the site. Recommendations for tipi rings were similar to those provided by Kansas *et al.* (1993), where tipi rings are most significant archaeological resources in the park, being assigned low to moderate significance ratings. Recommendations for each tipi ring site varied depending on the significance rating assigned. Some sites were flagged as important to avoid during trail development, while others were identified as being suitable for interpretative development (shown with an asterisks (*) in Table 6.2), or which warranted further study

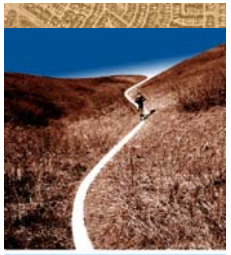
6.2 Natural Interest Resources

Two natural interest sites have been recorded by the Alberta Historic Resources Division for Nose Hill. These two sites include a glacial erratic and a series of rock mounds. Bison Historical Resources Ltd. visited these two sites and concluded that the rock mounds reported at Site # EgPm-144 were not in fact rock mounds, but were the remains of abandoned gravel tests. Therefore, it can be concluded that only one natural interest resource has been recorded in Nose Hill Park, which is the glacial erratic located on the east side of the park (see Map 6.1) (Borden # EgPm-177, UTM location 11U QG 033 350). Glacial erratics are large rocks that have been transported large distances by past glaciers. Erratics are often referred to as "buffalo rubbing stones" when they are well polished, such as the one located in Nose Hill Park. While only one erractic has been officially registered with the Alberta Historic Resources Division,

additional glacial erratics have been observed in the park, including those found along the southern portion of the 'nose' and north of the recorded erratic.

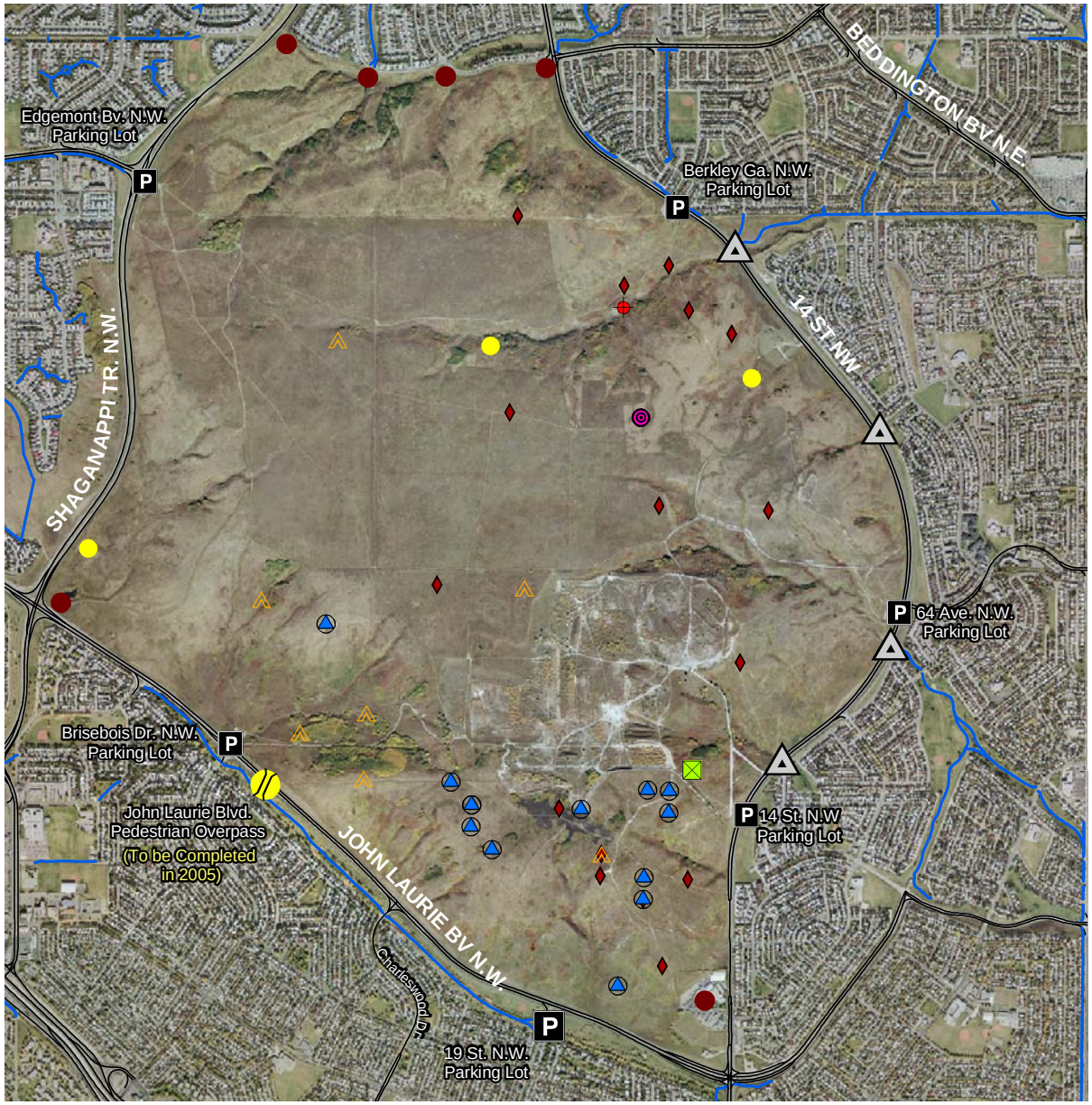
6.2.1 Significance of Natural Interest Resources

Bison Historical Resources Ltd. (1993) reviewed the significance of Nose Hills recorded natural interest resources. While the authors recognized the glacial erratic (EgPm-144) as being a dramatic landmark in the park, the resource was not considered to have any historical or archaeological significance.



NOSE HILL PARK

North



Map 6.1
Nose Hill Park
Historical Resources

Map Legend

Recorded Archaeological Resources Sites

- Cairn
- Campsite
- Isolated Find
- Lithic Scatter
- Possible Kill Site
- Tipi Ring

Recorded Natural Interest Resource Sites

- Glacial Erratic

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Sources: Archaeological resources compiled from Nose Hill Natural Area Management Plan: Technical Report (1994). Natural interest resource data compiled from Bison Historical Resources (1993), Nose Hill Park, City of Calgary, A Review of Archaeological Data. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

7.0 COUNCIL POLICIES AND DIRECTIONS

Over the past three decades, a series of policies and plans have been developed for Nose Hill Natural Environment Park. The majority of these policies and plans build upon earlier recommendations and/or have been developed to address key park issues and concerns.

The intent of this chapter is to review past polices and plans to provide a summary of the resulting directions and recommendations that influenced the development of the NHTPP. Specifically, the directions and recommendations summarized in this chapter provided valuable information that contributed to the development of route planning and design evaluation criteria, which was used to assess the feasibility of the conceptual perimeter pathway (Part 2, Chapter 12.0 of this report) and to develop the NHTPP recommendations (Chapter 4.0 of Part 1).

7.1 Policy and Planning Synopsis

A brief synopsis of the Nose Hill Natural Environment Park's planning and policy history has been provided in this section. The intent of this synopsis is to set the context for the directions and recommendations listed in the following sub-sections. This synopsis briefly identifies the key Council approved policies and plans, provides a description of the background that influenced their development, and lists the key recommendations and directions that affect the development of a trail and pathway plan for Nose Hill Park. The policy and planning synopsis has been organized by decade, in chronological order, and a summary of the key polices and plans, and associated recommendations have been provided in Table 7.1

Park Formation (1970's)

In 1972, the foundation for the Nose Hill Natural Environment Park was initiated when Calgary City Council recommended that a Sector Plan be completed before any further development occurred anywhere on Nose Hill, in order to preserve Nose Hill's natural qualities, visual aesthetics and recreational uses.

By 1973, the Calgary Planning Commission recommended that 1,057 ha of Nose Hill be preserved as regional prairie parkland. City Council subsequently approved the concept of the park, and increased its proposed size to 1,659 ha. Council once again modified the dimensions of the park in 1976, when the boundary of the park was shifted east and the park size was reduced to 1,052 ha.

Table 7.1 Synopsis of key Council approved polices and plans and associated recommendations and directions.

Policy or Plan (Date Produced)	Keys Recommendations and/or Directions
Nose Hill Park Master Plan Review (1992)	▪ Detailed resource inventory for the park ▪ Development of a natural area management plan ▪ The provision of parking areas and visitor services at perimeter locations ▪ The development of a multi-use pathway system, designed to be both wheelchair accessible and provide for emergency access to the park ▪ Provision of interpretive and educational opportunities ▪ Aggressive site rehabilitation to reduce damage caused by trail braiding and other impacts from past users ▪ Provision of perimeter trails to facilitate off-street commuter bicycle traffic
Biophysical and Land Use Inventory and Analysis of Nose Hill Park (1993)	▪ Recommendations to protect or maintain ecological and historical resources from development in the park ▪ Assessments of significant vegetation communities, wildlife and habitat features ▪ Assessments of significant historical resources ▪ Suitability rankings for vegetation susceptibly to trampling ▪ Development suitability rankings for soils and topography
Nose Hill Park Natural Area Management Plan (1994)	▪ The restriction of bicycles to surfaced trails on all sloped areas of Nose Hill Park and the designation of the top of Nose Hill and the gravel pit as unrestricted use zones ▪ The development of perimeter pathways on the east and west side of the park to fill gaps in downtown commuter routes ▪ Identification of various management zones (see Map 7.1) ▪ Identification of various management strategies for each zone, such as the unrestricted bicycle (multi-use) zone at the top of the hill, and designated no dog, on-leash and off-leash zones
Cycling Policy on Undesignated Trails in Parkland (1997)	▪ Trail use limited to designated routes in “Special Protection Natural Areas” and “Major Natural Areas” ▪ Council reconsider their motion for unrestricted bicycle use in Nose Hill Park “only upon completion of the perimeter pathways” and approve the designated trail policy for application in Nose Hill Park ▪ Nose Hill Park was identified as a priority for early management attention regarding undesignated trail use
Nose Hill Undesignated Trail Policy (2000)	▪ Designation of multi-use trail segments and pedestrian only trails on the escarpment (see Map 7.2) ▪ Restriction of bike use to designated multi-use trails on all sloped areas of Nose Hill Park ▪ Identification of 118 trail segments for closure and rehabilitation (see Map 7.2) ▪ That the Administration review the east/west connector route (trail segment 5.8), including a biophysical and use assessment of the area, with or without a connecting pathway and report back to Council ▪ That the Administration investigate, with the biking community and Nose Hill Park Management Advisory committee, the establishment of an environmentally sensitive bicycle use zone
Biophysical and Use Assessment of Trail 5.8 (2000)	▪ Trail 5.8 not be identified or designated as a regional pathway route ▪ Expand the cycling zone (multi-use zone) to intersect with the northeast corner of the interpretive trail to allow for a through route to the Porcupine Valley trail connection (expand multi-use zone to contain segment 5.8)
Calgary Pathways and Bikeways North Plan (2001)	▪ Re-stated the concept of the peripheral regional pathway as the missing link (contrary to stakeholder recommendations for east/west and north/south regional pathway linkages)
Paved Pathways within Nose Hill Park (2002)	▪ Continue to implement Council approved Master Plan, Natural Area Management Plan, and Undesignated Trails Policy ▪ Establish a sub-committee to continually monitor and evaluate the park’s pathway and trail system for accommodating multi-use
Update on Nose Hill Undesignated Trails Policy and Multi-Use Pilot Trail (2003)	▪ Continue partnering with the Calgary Mountain Bike Alliance (CMBA) to monitor and maintain the multi-use pilot trail ▪ Continue closing, repairing and rehabilitating trails, as identified in the Nose Hill Undesignated Trails Policy ▪ Develop a trail and pathway management plan for the park in consultation with stakeholders

Nose Hill Park Master Plan (1980)

In 1978, Council instructed the Planning and Parks & Recreation Departments to work with the Nose Hill Steering Committee to prepare a Master Plan for Nose Hill Park. This committee was made up of representatives of northwest Calgary communities, the Calgary Field Naturalists' Society, the Faculty of Environmental Design, the City of Calgary Planning and Parks & Recreations Departments and the National and Provincial Parks Association of Canada. The *Nose Hill Park Master Plan* (1980) was adopted by City Council in 1980, which provided many of the base principles and goals to guide park management and use.

Nose Hill Park Master Plan Review (1992)

Once the acquisition of Nose Hill Park lands was completed, City Council requested a review of the 1980 Nose Hill Park Master Plan. This review was undertaken through a system of mail-out questionnaires and public meetings. In April 1992, City Council approved the *Nose Hill Park Master Plan Review* (1992). Recommendations in the Master Plan reflected the need "to strike a balance between long term environmental protection and short term environmental degradation between public safety and the visual intrusion of necessary pathways, between designated access for all and restricted access for many" (Calgary Parks and Recreation 1992).

In order to better manage the park, the Master Plan Review provided recommendations for:

(a.) A detailed resource inventory, and
(b.) The development of a natural area management plan.

In addition, the Master Plan Review recommended the following:

(a.) The provision of parking areas and visitor services at perimeter locations;
(b.) The development of a multi-use pathway system, designed to be both wheelchair accessible and provide for emergency access to the park;
(c.) Provision of interpretive and educational opportunities;
(d.) Aggressive site rehabilitation to reduce damage caused by trail braiding and other impacts from past users; and
(e.) Provision of perimeter trails to facilitate off-street commuter bicycle traffic (Calgary Parks and Recreation 1992).

Biophysical and Land Use Inventory and Analysis of Nose Hill Park (1993)

To meet the first recommendation of the Master Plan Review, Sentar Consultants Ltd. and GAIA Consultants were retained by the City of Calgary Parks and Recreation Department to prepare a *Biophysical and Land Use Inventory and Analysis of Nose Hill Park* (Kansas *et al.* 1993). The inventory and analysis involved:

- An evaluation of existing park resources, which include mapping of vegetation communities on 1:5,000 ecosite maps and a review of important vegetation and wildlife species, habitat features and historical resources;
- An analysis of current park uses and levels;
- An assessment of land use suitability for trail development; and
- An assessment of the degree of threat to the park's significant biophysical and historical resources.

The results of the inventory and analysis report included:

a. Recommendations to protect or maintain ecological and historical resources from development in the park;
b. Recommendations of significant vegetation communities, wildlife and habitat features;
c. Assessments of significant historical resources;
d. Suitability rankings for vegetation susceptibly to trampling; and
e. Development of suitability rankings for soils and topography.

Nose Hill Park Natural Area Management Plan (1994)

The *Nose Hill Park Natural Area Management Plan* was completed in 1994, fulfilling one of the recommendations of the Master Plan Review. This management plan was developed to provide specific management directions to address the unique resources, priorities and concerns of Nose Hill Park, and was designed to be consistent with the goals and objectives of both the Master Plan Review (1992) and the Natural Area Management Plan (1994).

Expert and public involvement, as well as information collected during the Biophysical and Land Use Inventory (Kansas *et al.* 1993) was used to develop the Nose Hill Park Natural Area Management Plan. The management plan was presented in two parts: Part 1 highlighted the recommended management strategies for Nose Hill Park, and Part 2 was the technical document, which provided the rationale and background research that led to the various management recommendations.

While a variety of recommendations and strategies were presented in the Nose Hill Park Natural Area Management Plan, certain key recommendations were provided that influenced the development of the NHTPP. These key recommendations included:

a. The restriction of bicycles to surfaced trails on all sloped areas of Nose Hill Park, and the designation of the top of Nose Hill and the gravel pit as unrestricted use zones;
b. The development of perimeter pathways on the east and west side of the park to fill gaps in downtown commuter routes;

c. Identification of various management zones (see Map 7.1), including zones for preservation, wildlife refuge, natural parkland, restoration, naturalization, development/access, active recreation/sports/manicured, disturbed and experimental;
d. Identification of various management strategies for each zone, such as the unrestricted bicycle and off-leash dog (multi-use) zone at the top of the Hill, and designated no dog, on-leash and off-leash zones; and
e. A listing of potential trail management options for Nose Hill Park, that ranged from no management to formalized trails with various surfacing options.

The Nose Hill Park Natural Area Management Plan was approved by Council in 1994, and at the same time Council approved a motion for much more restrictive usage of Nose Hill Park by cyclists. This motion limited bicycle use to perimeter pathways and emergency vehicle access routes only, but was *dependent* on the completed construction of a perimeter park pathway and through input received from public consultations. An effect of this motion, however, was unrestricted bicycle use in Nose Hill Park until the development of the perimeter pathway.

Cycling Policy on Undesignated Trails in Parkland (CPS97-85) (1997)

In the spring of 1997, work began on developing the *Cycling Policy for Undesignated Trails in Parkland*. This policy was initiated as a result of increased trail proliferation in Calgary's parklands that was resulting from the use of undesignated trails, which are random "desire lines" created from repetitive use. The intent of the policy was to address bicycle use on Nose Hill Park, and to minimize bicycle impacts on the environment. Through this policy, the process and principles for making decisions about the management of undesignated trails were established.

Key policy recommendations that influenced the development of the NHTPP recommendations include:

a. Trail use limited to designated routes in "Special Protection Natural Areas" and "Major Natural Areas"; and
b. Council reconsider their motion for unrestricted bicycle use in Nose Hill Park "only upon completion of the perimeter pathways", and approve the designated trail policy for application in Nose Hill Park.

Additionally, through approval of this policy, Nose Hill Park was also identified as a priority for early management attention regarding undesignated trail use.

Nose Hill Undesignated Trail Policy (CPS2000-14) (2000)

A detailed inventory of undesignated trails in Nose Hill Park was initiated in 1998 as a result of the Cycling Policy on Undesignated Trails in Parkland (1997). Key stakeholder meetings were held to determine the process for reviewing undesignated trails in Nose Hill Park and to

recommend a designated trail system for the park. The intent for the undesignated trail policy was to minimize negative encounters among users, provide logical connections to surrounding neighborhoods, provide cyclist access to the unrestricted bicycle use zone at the top of the hill, and concentrate trail use to minimize trail proliferation, erosion hazards and wildlife disturbances, thereby reducing the effect of human use on the unique environmental characteristics of Nose Hill Park.

Council approved the policy in 2000, which recommended a system of 15 multi-use and 35 pedestrian trails, and identified 118 trail segments for closure and rehabilitation. Trail segments were closed for environmental degradation reasons and/or their proximity to environmental sensitive zones. Key policy recommendations from the Nose Hill Undesignated Trail Policy that influenced the development of the Nose Hill Park Trail and Pathway Plan include:

a. Designation of 15 multi-use trail segments and 35 pedestrian only trails on the escarpment (see Map 7.2);
b. Restriction of bike use to designated multi-use trails on all sloped areas of Nose Hill Park;
c. Identification of 118 trail segments for closure and rehabilitation (see Map 7.2);
d. The Administration review the east/west connector route (Trail Segment 5.8), including a biophysical and use assessment of the area, with or without a connecting pathway and report back to Council; and
e. That the Administration investigate, with the biking community and Nose Hill Park Management Advisory committee, the establishment of an environmentally sensitive bicycle use zone.

NOSE HILL PARK

North

Map 7.1
Nose Hill Park
Management Zones

Map Legend

Management Zones

- Nose Hill Park Management Zones
- Multi-Use Activities Permitted (off-leash dogs and off-trail activities)

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

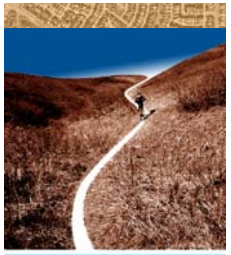
Data Source: Data Source: Data provided by City of Calgary, Parks (Provided May 2004). Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

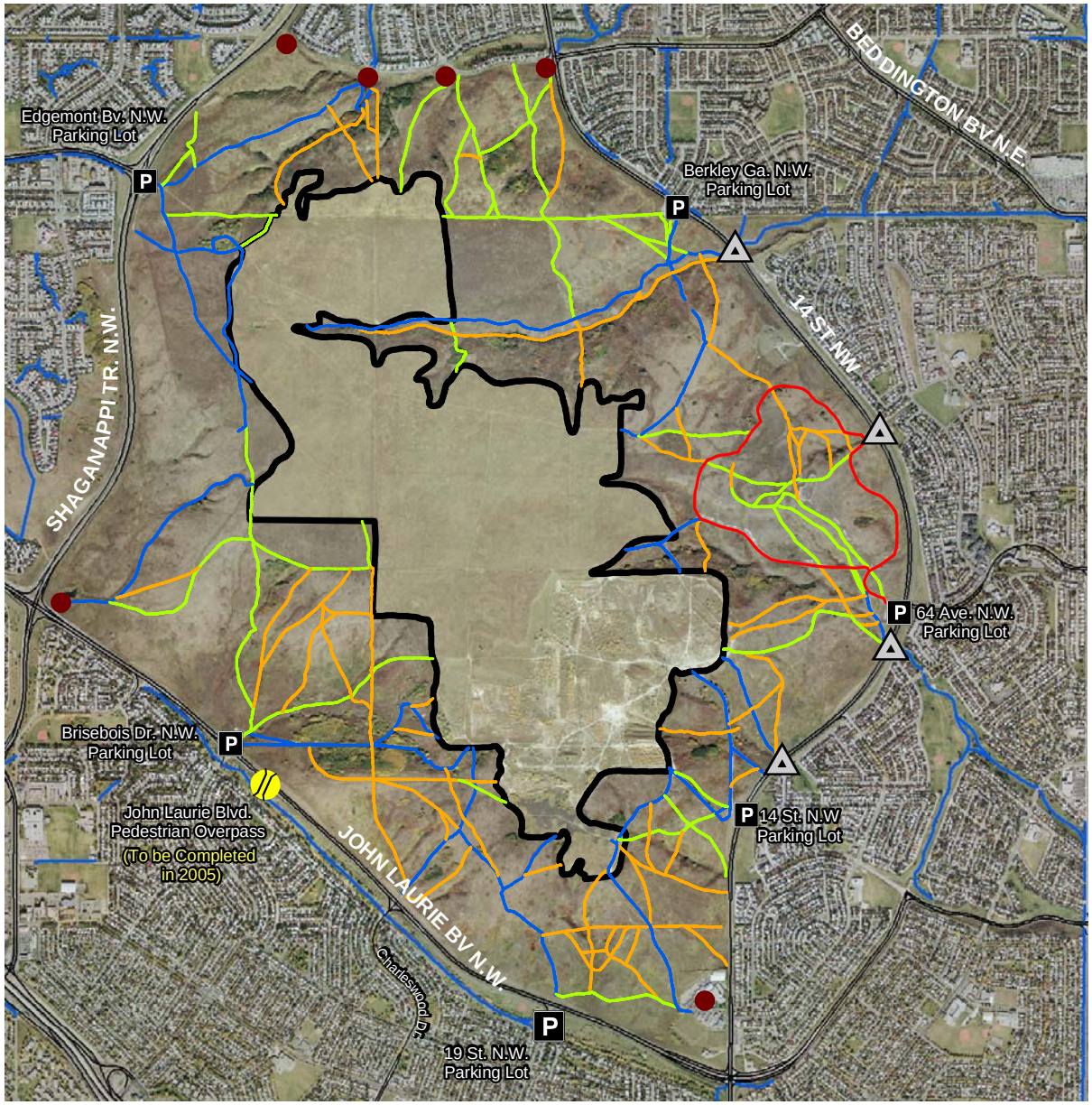
0 250 500 1,000 1,500

Meters



NOSE HILL PARK

North



Map 7.2
Nose Hill Park
Undesignated Trail Policy
(CPS2000-14)

Map Legend

Undesignated Trail Policy

- Multi-use Trail
- Closed to All Users
- Pedestrian Only
- Multi-use Pilot Trail
- Unrestricted Multi-use Area

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Nose Hill Park Undesignated Trail Policy (CPS2000-14), March 2000. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

Biophysical and Use Assessment of Trail 5.8 (2000) (CPS2000-49)

When Council approved the Nose Hill Park Undesignated Trail Policy, one of the approved amendments was to review the proposed east/west connector route (Trail Segment 5.8) and undertake a biophysical and use assessment of the route, with or without a connecting pathway. In 2000, results of the assessment were presented to Council, which identified that the area was "heavily disturbed from past agricultural practices and [that] little to no natural environment was identified" (CPS2000-49). User counts of the route indicated that it was receiving a high amount of visitor use, and since the area had been heavily disturbed in the past, there were "few arguments either for the alteration of the existing status of the trail or the exclusion of cyclists" (CPS2000-49).

The key recommendations approved by Council through this assessment (CPS2000-49) that influenced the development NHTPP recommendations include:

a. "Trail 5.8 not be identified or designated as a regional pathway route, however, the cycling zone expand to intersect with the northeast corner of the interpretive trail to allow for a through route to the Porcupine Valley trail connection" (CPS2000-49); and
b. The recommendation for expanding the cycling zone, also referred to as the multi-use zone, to contain the entire trail segment, ensured that the trail would not be identified on maps as a regional route (CPS2000-49).

Calgary Pathways & Bikeways - North Plan (2001) (TTP2001-41)

In 2001, City Council adopted the *Calgary Pathways & Bikeways North Plan* (TTP2001-41), which is an integrated pathway and bikeway plan for northwest and northeast Calgary, and part of an integrated city-wide plan to address the cities pathway and bikeway system. The intent of this plan was to identify priority areas where pathway links and bikeways are missing. Stakeholders were consulted during the development of the Plan, who identified that there were important east/west and north/south links missing across Nose Hill Park.

The recommendations provided by stakeholders were "contrary to the Council approved policies within the Nose Hill Park Master Plan, Natural Areas Management Plan and Undesignated Trails Policy, which do not support the construction of such links" (TTP2001-41). For this reason, the approved Pathways & Bikeways Plan re-stated that the conceptual peripheral regional pathway (earlier identified with the Nose Hill Natural Environment Management Plan 1994) was a missing link in Calgary's pathway and bikeway system.

Furthermore, the Calgary Pathways & Bikeways North Plan identified that an intensive public participation process and biophysical impact assessment would be required if Council wished to readdress the issue of regional pathways in Nose Hill Park, as well as Council amendments to the Master Plan, Natural Areas Management Plan and Undesignated Trails (TTP2001-41).

The key recommendation of this report that influenced the development of the NHTPP recommendations was:

a. Peripheral pathway is the missing link in Nose Hill Park to connect commuters in North Calgary.

Paved Pathways within Nose Hill Park (2002)

As a response to the Calgary Pathways & Bikeways - North Plan TTP2001-41, Council directed the Administration to hold discussions with Nose Hill Park Stakeholders to identify formal paved pathways within Nose Hill Park to provide access to mobility challenged pedestrians and mitigate the environmental impact of informal dirt trails. A workshop was held with the Nose Hill Park Management Advisory Committee to work out a solution to paved pathways. Six different alternatives were identified, which included:

1. "Pave Trail Segment 5.8 and complete the east-west route across the park";
2. "Maintain the status quo and continue to implement the Council approved Master Plan, Natural Area Management Plan and Undesignated Trails Policy for Nose Hill Park";
3. "Construct the perimeter pathway around Nose Hill Park as identified in the Council approved Calgary Pathway and Bikeway Plan – North Report (TTP2001-41)";
4. "Construct a "Ring Pathway" within and along the edge of the unrestricted bicycle use zone [(multi-use zone)] at the top of the hill to allow for multi-use around the entire park";
5. "Establish a sub-committee of the Nose Hill Park Management Advisory Committee that will monitor and evaluate the park's pathway and trail system for accommodating multi-use"; and
6. "Cut back on the amount of existing paved pathways within Nose Hill Park by removing the asphalt from the Porcupine Valley pathway and restoring the area to its natural condition"

The key recommendation:

a. The two alternatives that were recommended by the stakeholder group include # 2 and #5 (listed above), which were subsequently adopted by Council.

Update on Nose Hill Undesignated Trails Policy and Multi-Use Pilot Trail (CPS2003-40) (2003)

In May 2003, Council was provided with an update on the status of the Nose Hill Park Undesignated Trails Policy and Multi-Use Pilot Trail. The intent of the review was to report on the success of park trail closures and the implementation of the multi-use pilot trail. Council was instructed that approximately 25 km of trail closures had reduced the use of undesignated trails, however approximately 300 km of undesignated trails still existed and additional trails were being established each year. Additionally, Council was informed that many park users were

attempting to follow the designated trail system; however, they were having difficulties following the system due to increased trail proliferation in the park; while other members of the public were not always obeying trail closures.

Key recommendations and directions from Council that influenced the development of the NHTPP recommendations include:

a. "Continue partnering with the Calgary Mountain Bike Alliance (CMBA) to monitor and maintain the multi-use pilot trail";
b. "Continue closing, repairing and rehabilitating trails, as identified in the Nose Hill Undesignated Trails Policy"; and
c. "Develop a trail and pathway management plan for the park in consultation with stakeholders".

7.2 Policy and Plan Recommendations and Directions

A comprehensive review of previously approved Council policies and plans was undertaken as part of the background research and analysis component of the NHTPP development. The intent of this review was to identify the key recommendations or directions described in each policy or plan that would influence the development trail and pathway routing criteria and the NHTPP recommendations. This section builds on the summary of key directions and recommendations described in the previous section by identifying fundamental directions and recommendations related to the Nose Hill Park natural environment, historical resources, trail and pathway development and use, park infrastructure, and park use by pedestrians, dogs and cyclists.

7.2.1 Nose Hill Park Natural Environment Policies

Key policies and recommendations for management of the Nose Hill Park natural environment have been identified in past policies and plans, such as the Open Space Plan (2003), Nose Hill Park Natural Areas Management Plan (1994), and Natural Areas Management Plan: Technical Report (1994). The policies and recommendations that influenced the development of route planning and design evaluation criteria are summarized below, and subsequently the NHTPP recommendations, and are organized according to their respective documents, organized in reverse chronological order.

Open Space Plan (2003)

1. "Environmentally significant areas should be protected and maintained as integral components of the parks and open space systems…"

Natural Environment Parks and Environmentally Significant Areas Policy #2

2. "… a commitment should be made to … the protection of unique environmental features (e.g. rivers, ravines…) within the city"

   Natural Environment Parks and Environmentally Significant Areas Policy #7b

3. "… a commitment should be made to… finding a balance between public use and long-term protection of natural environments"

   Natural Environment Parks and Environmentally Significant Areas Policy #7h

4. "Protection of significant habitats within the city's parks and open space system will take precedence over recreational use where the latter may conflict with the long-term survival of the resource"

   Natural Environment Parks and Environmentally Significant Areas Policy #8

5. "Undeveloped major escarpments will be preserved as natural environment parks that enhance the environment"

   Natural Environment Parks and Environmentally Significant Areas Policy #11

6. "Appropriate recreational facilities within natural environment parks should be designed and managed to avoid or minimize negative impacts"

   Natural Environment Parks and Environmentally Significant Areas Policy #14

Nose Hill Park Natural Area Management Plan (1994):

1. "Any construction of facilities in Nose Hill Park should be subject to an environmental assessment process… Construction of facilities would include such activities as new or enlarged parking areas, engineering structures, utility upgrades, perimeter facilities such as washrooms, etc., and any new proposed trail development"

Nose Hill Park Natural Area Management Plan: Technical Report (1994):

1. "The Nose Hill Natural Parkland management zone has been designated for the protection of natural grasslands, archaeological resources and Baird's Sparrow habitat… Management priorities will be to minimize fragmentation of this area and damage to the natural habitat by designating trails, reclaiming other trails, controlling weed species and maintaining natural vegetation"

2. "Even if Sharp-tailed Grouse disappear from Nose Hill Park, management of habitat for this species will also benefit deer and a variety of small mammals and birds adapted to grassland and shrubland vegetation"

3. “In the coulees and escarpment slopes trails should be routed away from quality woody cover and the area should be zoned “no dog” or “on leash” only”.

Biophysical and Land Use Inventory and Analysis of Nose Hill Park (Kansas *et al.* 1993)

1. An organized system of trails should be established in the Rough fescue grasslands, most notably the Rough fescue – Golden bean community, to improve the long-term viability and ecological integrity of the native fescue grasslands.

2. Special protection status should be assigned to the closed-canopy deciduous forest and tall willow shrub communities associated with major ravine systems. There should be no or limited trail development in these areas and no domestic animal use.

3. Limited and organized trail development in native Rough fescue grasslands to minimize disturbance of important Baird’s sparrow habitat.

4. No organized trails within the vicinity of the lek.

5. Protection and monitoring of the lek.

6. Dogs are restricted from entering the lek area at all times.

7. Avoid drawing attention to the lek, such as publicizing its’ closure, since this could attract more people to the area and increase disturbance.

8. Dogs must be kept on-leash in shrubby portions of the park’s ravines and coulees since these are most likely important nesting habitat, and dogs could cause egg and chick mortality.

9. No or limited trail development and no domestic animal use in closed-canopy deciduous forest and tall willow shrub communities to maintain security and reproductive cover for medium and large mammals.

10. Assess zones of known and potential American Badger activity and limit human use in these areas.

11. Limit human use of the Porcupine and Many Owls Valleys.

12. Limit dog use of the Porcupine and Many Owls Valleys.

13. Limit human and dog use in areas of important thermal and security cover, including all extensive areas of thick shrub and woody vegetation, such as those found in the Porcupine and Many Owls Valleys

14. Trails should be routed away from quality woody cover in the coulees and escarpment slopes, these areas should be zoned for no dogs or on leash only

7.2.2 Historical Resource Policies

Recommendations related to the Historical Resources located throughout Nose Hill Park have been summarized from the Natural Area Management Plan: Technical Report (1994) and from the Bison Historical Services Ltd. (1993) report on park resources.

Natural Area Management Plan: Technical Report (1994)

1. "Existing trails be followed as much as possible within the site areas, and that further archaeological studies be done of the selected trail routes prior to and during their construction to minimize the impacts their construction may have"

2. "Prior to trail finalization, the archaeological sites must be revisited and the individual stone features relocated, as existing mapping is not of sufficient detail to avoid the features in route selection and subsequent construction"

3. "Impacts on artifact scatters through trail construction can be mitigated by the further study of the sites through the collection and interpretation of the exposed artifacts, as well as other on-site studies"

4. "Although Nose Hill's archaeological sites are of relatively limited scientific value… they provide an opportunity to interpret the archaeology of Nose Hill, as well as that of the Bow Valley to the visiting public"

5. "Suitable signage can interpret the role(s) Nose Hill played within the seasonal settlement of the Calgary area. The most suitable sites for interpretation are the tipi ring sites on the south end of the hill"

6. "A rock cairn or workshop has also been observed near the end of the proposed wheelchair access interpretative trail. Should development of this trail proceed, this site should be relocated and investigated for interpretive potential."

7. “In order for Nose Hill to be renewed spiritually, the land would need to be cleansed by returning it to a natural state. The areas of the most spiritual significance would need to be closed off to bike and even hiking trails. These areas would include the coulees where the herbs and medicines grow and some of the natural grasslands amongst the highest points of the hills. Also, the area with the buffalo rubbing stone would need to be preserved”

8. “The [Buffalo Rubbing] stone and the area surrounding it could be designated as a cultural or spiritual sites which would be accessed by permit only for the use of sweat ceremonies, vision questing and fasting”

9. “Trails should avoid impacting the tipi rings which are considered to be of low to moderate value”

10. “…existing trails be followed as much as possible within the site areas, and that further archaeological studies be done of the selected trail routes prior to and during their construction to minimize the impacts their construction may have”

11. “Prior to trail finalization, the archaeological sites must be revisited and individual stone features relocated as existing mapping is not of sufficient detail to avoid features in route selection and subsequent construction”

Nose Hill Park, City of Calgary, A Review of Archaeological Data (Bison Historical Services Ltd. 1994)

1. The historical resources of Nose Hill Park are all potentially subject to impact – primary sources of impacts to known resources are natural erosion and active developments.

2. Cumulative impacts resulting from past gravel mining, cultivation, trail construction and unimproved trails has already been registered.

3. Any new development which would involve excavation could potentially impact buried campsites or kill sites in depositional environments, as well as surface sites (i.e. stone circles).
4. Surface and near-surface sites could potentially be impacted by development, including new trail development.

5. New trail development in areas previously cultivated would not, in the opinion of Bison Historical Services Ltd., have an adverse effect on the historic resources.

6. Trail improvement or development using the existing routes of unimproved trails would not likely result in any additional impacts to historical resources.

7. The potential for impacts to historic resources is restricted to large-scale developments, such as parking lots, buildings or observation sites.

7.2.3 Trail and Pathway Policies and Recommendations

Trails and pathways vary according to their purpose and use, width and surfacing materials. The following definitions for these routes has been extracted from the Parks and Pathway Bylaw (20M2003).

1. A pathway is described as “a multi-purpose thoroughfare [which is] controlled by The City and set aside for use by pedestrians, cyclists and persons using wheeled conveyances, which is improved by asphalt, concrete or brick, whether or not it is located in a park, and includes any bridge or structure with which it is contiguous”.

2. A trail has been defined as “an established path within a park, used by pedestrians or cyclists, or both, which is not improved by concrete, asphalt or brick and includes any bridge or structure with which it is contiguous”.

Therefore, trails and pathways are differentiated by their surfacing material (concrete, asphalt or brick surfaces are only used for pathways) and the accessibility each offers.

As policies and plans have been developed for Nose Hill Park, the language used to describe trails has been expanded to consider two kinds of trails; designated and undesignated trails, as described in the Cycling Policy on Undesignated Trails in Parklands (CPS97-85).

1. Designated trails are defined as “developed or undeveloped paths that have been formally identified in policy or site operations as an agreed upon route”.

2. Undesignated trails are “random paths or ‘desire lines’ created as a result of repeated use”, which have not been formally agreed upon as an approved route.

The following section provides a review of past Council-approved directions and recommendations that will affect the design of trail and pathway routing criteria.

7.2.3.1 Trail Specific Policies

Specific policies and directions that are more closely related to the construction and use of trails in Nose Hill Park are listed below.

Nose Hill Park Undesignated Trail Policy (CPS2000-14)

1. "The management plan is geared toward recreational trail use, however, an east-west commuter access route across the hill will be established to complete an important missing link in the city-wide regional pathway system while making it safe for multi-use and ensuring it is located away from sensitive habitats and high wildlife use areas within the park. Note: this trail will not be considered for paving"

   CPS2000-14, Policy #8c

Cycling Policy on Undesignated Trails in Parkland (CPS97-85)

1. "Trail closure, to all users, will be employed only after careful consideration of all other recognized management options"

   CPS97-85, Policy # 9

2. "In all parkland, creation of new undesignated trails will be discouraged"

   CPS97-85, Policy # 7

3. "Trail use will be limited to designated routes in "Special Protection Natural Areas" and "Major Natural Areas". In all other parkland, existing informal trails will remain undesignated and available for use unless specific issues arise requiring a management solution"

   CPS97-85, Policy # 6

Nose Hill Park Natural Area Management Plan (1994)

1. "Trail use in areas with extensive woody vegetation should be discouraged"

2. "Pedestrian trails should be rehabilitated when topsoils have been eroded away and subsoils are exposed"

3. "Any construction of facilities in Nose Hill Park should be subject to an environmental assessment process… [including] any new proposed trail development"

4. "Locate pathway and trails, where possible, away from sensitive habitats and high wildlife use areas "

5. Recommended on-trail and pathway use only (except identified grasslands and zones such as disturbed, recreation and access)

Natural Area Management Plan: Technical Report (1994)

1. "Special Places should be considered as destination points in any planning of trail management, and as priority areas for visual resource protection in any future facility development"
2. "…minimize fragmentation of this area [(the Rough fescue – Golden Bean community that is important for Baird's Sparrow habitat)] and damage to the natural habitat by designating trails, reclaiming other trails, controlling weed species and maintaining natural vegetation"

3. "Discourage trail use in the area around the lek"

4. "In the coulees and escarpment slopes, trails should be routed away from quality woody cover and the area should be zoned "no dog" or "on-leash only""

Biophysical and Land Use Inventory and Analysis of Nose Hill Park (1993)

1. "No to limited trail development and no domestic animal use in closed-canopy deciduous forest and tall willow shrub communities"

2. "An organized system of trails should be established to improve the long-term viability and "ecological integrity" of this [Rough fescue grasslands] and other native plant communities"

3. "No organized trails should be placed within the vicinity of the lek"

Master Plan Review (1992)

Recommendations in the Master Plan Review specifically related to trail development include:

1. "Development of an integrated, multi-use pathway system, designed, where feasible, to be wheelchair accessible and, where necessary, to provide emergency vehicle access for the purpose of resource protection and management, safety, security and visitor well-being"

2. "Aggressive site rehabilitation to reduce environmental damage caused by trail braiding and other impacts from other users"

3. "Provision of perimeter trails to facilitate off-street commuter bicycle traffic"

7.2.3.2 Pathway Specific Policies

Previously identified policies and directions related to the development of pathways within Nose Hill Park are summarized below.

Open Space Plan (2003)

1. "Regional pathways should be designed to be as functional as possible. Key planning and design principles include… (f.) environmental - avoid impinging on environmentally significant areas"

   Pathway Policy #7

2. "Regional pathway connections should, where desirable, be routed along the edges of environmentally significant areas or into locations with less sensitivity to natural environment parks in order to minimize the impact on the park and reduce future damage and desire lines. Regional pathways should link natural environmental parks with the developed system"

   Pathway Policy #16 & Natural Environment Parks and Environmentally Significant Areas Policy #10

3. "… the alignment of any regional pathway close to significant habitat areas will provide sufficient buffering to sustain the habitat capabilities of the site"

   Natural Environment Parks and Environmentally Significant Areas Policy #6

7.2.4 Infrastructure Policies and Recommendations

Specific recommendations related to park infrastructure were identified in the Nose Hill Park Natural Area Management Plan: Technical Report (1994). The fundamental recommendations that will affect the development of the trail and pathway plan are listed below.

Natural Area Management Plan: Technical Report (1994)

1. "New facility construction in the park should be restricted to facilities that service the park and, other than trail development and signage, should be restricted to the perimeter of the park."

2. In regards to facilities, the Natural Area Management Plan Technical Report (1994) listed facilities that would be consistent with the intent of the Management Plan, including:
   - "Washrooms and garbage collection facilities are needed at each perimeter parking location"
   - "Emergency phones … installed in at least three locations along the perimeter of the park"
   - "Picnic tables and possibly a shelter installed at the Shaganappi parking area in conjunction with the proposed wheelchair-access interpretive trail and possibly at the 64th Street parking area"
   - "Additional parking is proposed for the Brisebois entrance and an expansion of the Shaganappi area is also proposed. A parking area is not appropriate for the north side of the park."

3. “Construction of any new facilities that involve development of surface area additional to existing perimeter parking and access routes should be subject to an independent environmental and socio-economic assessment.”

4. “Structures that intrude on the visual landscape of Nose Hill Park should be subject to a visual landscape assessment”

7.2.5 Park Use Policies

Policies and directions related to the general use of Nose Hill Park and specific user policies, such as those directed towards dog and cyclist use, have been extracted from past plans and policies. The following section presents the results of general use policies, while the sub-sections identify specific directions related to dog and cyclist uses.

Parks and Pathways Bylaw (200)

1. The Director may as the Director deem necessary for the administration of Calgary’s Parks, preservation and protection of Parks and Amenities, and to ensure public safety:
    a. close or restrict the use, or type of use of a Park, Pathway, Trail,… or portion of a Park, Pathway, Trail…

Bylaw 48(1)(a)

Open Space Plan (2003)

1. “Natural Environment Parks should be obtained and developed primarily for unstructured recreation opportunities (e.g. view points, walking, photography) rather than for intensive recreation opportunities”

Natural Environment Parks and Environmentally Significant Areas Policy #5

2. “Protection of significant habitats within the city’s parks and open space system will take precedence over recreational use where the latter may conflict with the long-term survival of the resource”

Natural Environment Parks and Environmentally Significant Areas Policy #8

3. “Planning for the overall use of Special Protection Natural Environment Parks and Major Natural Environment Parks, as directed in the site-specific Natural Area Management Plan, should limit the number of visitors and types of uses the area can accommodate”

Natural Environment Parks and Environmentally Significant Areas Policy #15

4. “Multiple use of a natural environment park should not unduly compromise the natural quality, amenity or accessibility of the site”

Natural Environment Parks and Environmentally Significant Areas Policy #17

Natural Area Management Plan: Technical Report (1994)

1. "The Management Plan is based on a hierarchy of users… Pedestrian traffic have the highest priority in Nose Hill Park and motorized vehicles the least, based on their relative impacts on the natural resources of the park"

2. The hierarchy of user priorities follows: first - pedestrian traffic, second - dogs, third - bikes, and fourth - motorized vehicles.

7.2.5.1 Dog Use

Policy directions and report recommendations related to dog use of Nose Hill Park are described below.

Natural Area Management Plan (1994)

1. "Dogs should be excluded from the Sharp-tailed Grouse Wildlife Refuge"

2. "Dogs use of coulees and escarpment slopes should be designated on-leash on formalized trails only"

3. "Three no-dog zones have been delineated in the Nose Hill Master Plan. These zones and their restrictions will be adhered to in the management plan. "Dogs will be permitted on-leash on major pathways through the Porcupine Valley and Many Owls Valley Natural Parklands, but will be prohibited from the Aspen Grove Natural Parkland"

4. "The Sharp-tailed Grouse Wildlife Refuge will also be a no-dog zone"

5. "MacEwan residents with dogs needing access to the hill can traverse the north boundary of Aspen Grove Natural Parkland along a disturbed fire break areas and access the top of the hill via the Northeast Slopes Natural Parkland".

6. "The majority of the top of Nose Hill is designated as off-leash"

7. "All remaining coulees, slopes and escarpments in Nose Hill Park will be designated on-leash areas"

8. "A 100 m on-leash zone around all parking areas"

9. "Dog-use zones will be enforced primarily through signage"

10. “Off-leash zone signs will be placed at the edge of off-leash areas where major trails access the top of the hill”

Natural Area Management Plan: Technical Report (1994)

1. “No dog zone signs will be placed at appropriate locations between the Aspen Grove Natural Parkland and the community of MacEwan, along the John Laurie Emergency Access route adjacent to the Many Owls Valley Natural Parkland and around the Sharp-tailed Grouse Wildlife Refuge”

2. “Dog zone maps will be placed at the major trailheads in the park”

7.2.5.2 Cyclists

Over the past decade, specific policies related to cyclist use in Nose Hill Park have been established. Since specific policies have been modified over time, a summary of currently applicable directions are provided below.

Nose Hill Park Undesignated Trail Policy (CPS2000-14)

1. “…the Administration will investigate, in conjunction with the biking community and the Nose Hill Park Management Advisory Committee, the establishment of an environmentally sensitive bike circuit within the unrestricted bicycle use zone that will offer a variety of terrain for “sport riding”

   CPS2000-14, Policy #6

2. The policy also recommended that the Nose Hill Park Natural Areas Management Plan bike use polices be amended to allow for implementation of the undesignated trail policies. Recommended revisions included:

   - “Mountain and street bikes will be restricted to designated multi-use trails on all slopes areas of Nose Hill Park to minimize erosion hazards, disturbances of wildlife and negative encounters with other users. Upgrading of the trails will only occur as needed to prevent environmental degradation and will not include paving.”

     - CPS2000-14, Policy #8a

   - “The management plan is geared toward recreational trail use, however, an east-west commuter route across the hill will be established to complete an important missing link in the city-wide regional pathway system… Note: This trail will not be considered for paving.”

CPS2000-14, Policy #8c

Cycling Policy on Undesignated Trails in Parkland (CPS97-85)

1. "Council be required to reconsider their previous motion of (1995 June 8) with respect to bicycle use on Nose Hill, and approve the trail management principles articulated in the 1994 Nose Hill Park Natural Area Management Plan, in conjunction with this policy"

CPS97-85, Policy Recommendation # 13

Natural Area Management Plan (1994)

1. "The overall management goal for mountain bike use on Nose Hill is to provide an area where recreational biking can occur alongside natural resource protection and the minimization of negative encounters with other users"

2. "Mountain and street bikes will be restricted to non-dirt formalized trails on all sloped areas of Nose Hill Park to minimize erosion hazard and disturbance of wildlife"

3. "The majority of the top of Nose Hill will be a bike zone with no restrictions on travel"

4. "Street bikes will be encouraged not to leave non-dirt formalized trails in order to ensure user safety and prevent damage caused by narrow tires…"

5. "Bike use will occasionally be restricted in areas of restoration or experimentation on the top of Nose Hill"

6. "The gravel pit will be restriction-free, but mountain bike damage should be closely monitored for damage… in the case of increased damage, bikes would then be restricted to non-dirt formalized trails in the area"

7. "The management plan is geared toward recreational trail use, and does not incorporate a commuter trail directly through the park. Because local residents wishing to commute to the northeast must currently do so via the Bow River regional pathway, the expedition of the construction of a peripheral Nose Hill trail is desirable"

8. "Bike zones will be enforced primarily through signage. Zonage signs will be placed at major trailheads into the park."

Natural Area Management Plan: Technical Report (1994)

1. "Mountain bikes should be discouraged from using any trail constructed for wheelchair access, in order to avoid hazards to users and reduction in quality of experience"

7.2.6 Trail and Pathway Construction Guidelines

The City of Calgary Development Guidelines and Standard Specification for Landscape Construction (The City of Calgary Parks 2004) identifies specific design standards that should be applied when designing trails and pathways. Unlike trail and pathway development in many of the cities community's and urban parks, natural environment parks, such as Nose Hill, present various challenges and constraints that, in some instances, require flexibility in the compliance of certain design guidelines. Specific design guidelines that should be incorporated, where possible, are identified in the sub-sections below.

7.2.6.1 Trail Standards

Development Guidelines and Standard Specifications have previously been developed for design and construction of City of Calgary trail and pathway systems. The following section identifies the key standards that should be incorporated with the above described routing design criteria for designing the Nose Hill Park trail and pathway plan.

PLANNING GUIDELINES:

Planning Guidelines – Alignments:

- "Ensure trail alignments correspond to Natural Areas Management Policy… and other Council-approved policy documents"
- "Located crossing of major roads at overpasses or signalized intersections"

DESIGN GUIDELINES:

Design Guidelines – Natural Areas:

- "Align trails around significant areas and sites; never through"
- "Avoid damage to natural features, vegetation and wildlife habitat"
- "Increase backsloping gradient to 2:1 to minimize fill coverage"

Design Guidelines – Surface Materials:

- "Dirt for informal trails"
- "Wooden chips, red shale, or crushed gravel (crusher fines) for formal, designated trails"

Design Guidelines – Width:

- "0.3 to 0.5 m for informal trails"
- "0.5 to 1.5 m for formal designated trails"

Design Guidelines – Slope Grades:

- "Less than 3% if required to be wheelchair accessible"

- "Less than 5% is ideal"
- "5% to 10% is acceptable"
- "More than 10; provide switchbacks or stairs"

Design Guidelines – Amenities:
- "In general, provide one trail entrance every 150 m or as needed"
- "One park bench every 250 m; one picnic table every 500 m"

Design Guidelines – Signage:
- "Provide standard signs with trail name… at trail entrances and important junctions to ensure continuity and legibility of trail routes"
- "Provide standard hazard warning signs… where appropriate"

Standard Specifications – Materials:
- "Compacted dirt, wooden chips, granular trail mix, red shale, fine gravel-clay mix or crushed gravel depending on use and as approved by The City of Calgary Parks"
- "Asphalt or other alternatives only in cases of heavy usage or extreme erosion problems"

7.2.6.2 Pathway Standards

Development Guidelines and Standard Specifications have previously been developed for City of Calgary pathway systems. The following section identifies the key standards that will influence the development of a trail and pathway routing system for Nose Hill Park.

PATHWAY PLANNING GUIDELINES:

Planning Guidelines – Alignments:
- "Pathways, where desirable, should be routed along the edges of environmentally significant areas or into locations with less sensitivity in natural environment parks in order to minimize the impact on the park and reduce future damage and desire lines"

Planning Guidelines – Parking Lots:
- "Route pathways around, avoid through"
- "Provide links from parking lots to pathways"
- "Locate pathway entrance at street"

Planning Guidelines – Natural Areas
- "Encourage backsloping gradient to 2:1 to minimize disturbance"

PATHWAY DESIGN GUIDELINES:

Design Guidelines – Surface Materials:

- "Generally all regional pathways are to be of asphalt pavement to accommodate both pedestrians and cyclists"
- "Local pathways and pathways oriented to pedestrian traffic can be made up of a variety of materials"

Design Guidelines – Width:

- "2.0 m minimum for local pathways"
- "2.5 m minimum for regional pathways"

Design Guidelines – Criteria for Bicycles:

Maximum Grades

- "over 8%: re-route or provide stairs"
- "5% to 8%: not longer than 50 m (keep bicycles and pedestrians separate and avoid curves and constrictions)"
- "3% to 5%: not longer than 200 m
- "under 3%: acceptable"

Design Guidelines – Signage:

- "Provide standard identification signs with pathway name… at pathway entrances"
- "Provide centre line pavement marking on regional and river pathways and on separate bicycle pathways"

8.0 PUBLIC USE PATTERNS

An understanding of public use patterns was important for the development of the NHTPP recommendations. Use patterns identify popular areas of attraction, common park activities and general park user levels. As part of the NHTPP background research and efforts were taken to review past studies, such as the 1997 Nose Hill Park User Study (Calgary Parks and Recreation 1997) and 1994 Nose Hill Park Natural Environment Management Plan (Technical Report) (EnviResource Consulting Ltd. 1994b); and research on park use patterns undertaken through stakeholder consultations, discussions with City Parks' staff and field visitations. The following sections provide a summary of the public use patterns research.

8.1 Visitation Levels and Trailhead Use

In 1997, the Nose Hill Park User Study (Calgary Parks and Recreation 1997) was undertaken to gain an understanding of park use patterns and to provide baseline information for future park planning. The results of this study have been used to describe general park visitation patterns for the summer months, during the hours of greatest park use (7:00 am to 9:00 pm). The study was undertaken through both user observations and surveys taken at selected entrances to the park. Initially, eight survey locations were selected, which included sites with and without parking lot entrances.

Table 8.1 identifies each survey site and provides a summary of the visitation observations made at each survey site. As the table indicates, the busiest sites in the park, listed in order of percent magnitude include: Edgemont Boulevard NW (31%), 14th Street NW (22%), Berkley Gate NW and 64th Avenue NW (14% each), Brisebois Drive NW (11%), Calgary Winter Club (4.4%), MacEwan Glen Drive NW (3.8%) and 19th Street NW (0.5%). After user frequency tallies were completed, the 19th Street trail entrance site was removed from the study since it was determined that only 0.5% of all park users entered the park from this location. Only seven survey locations remained once the 19th Street entrance was removed from the study.

Site visitation frequency data, as well as daily visitation surveys, were used to predict average summer weekly visitation rates in the park. On average, it was estimated that 5,426 people visited the park each week during the summer of 1997. The busiest sites, as indicated in Table 8.1, included both the Edgemont and 14th Street locations, with approximately 1,693 and 1,177 park visitors weekly, respectively.

Table 8.1 1997 Summary of Observed Park Visitation Levels

Source: Nose Hill Park User Study (1997) (Calgary Parks and Recreation 1997)

Survey Site	*Observed Site Visitation Frequency (%)*	*Predicted Average Weekday Use*	*Predicted Average Weekend Day Use*	*Predicted Average Weekly Use*
Calgary Winter Club Parking Lot Entrance	4.4	29.7	45.4	239.1
19th Street NW Trail Entrance	0.5	NR	NR	NR
Brisebois Drive NW Parking Lot	11.0	66.2	126.6	584.2
Edgemont Boulevard NW Parking Lot	31.0	182.1	391.4	1,693.6
MacEwan Glen Drive NW at Bus Stop	3.8	25.5	38.6	204.7
Berkley Gate NW Parking Lot	14.0	82.9	166.6	747.6
64th Ave. NW Parking Lot	14.0	105.7	125.7	779.9
14th St. NW Parking Lot	22.0	122.1	283.4	1,177.1

NR = Not Recorded

8.2 Park Activities

Activities of over 8,804 users were observed, during the hours of 7:00 am to 9:00 pm, throughout the 1997 User Study (Calgary Parks and Recreation 1997). Overall, the majority of park users were observed walking (42%) and walking dogs (31%), while only 13% of users were observed cycling and 3% running. 11% of park users were observed to be taking part in “other” activities, which mainly included people sitting in vehicles to read, drink coffee, eat lunch and taking in the views of the City.

Observed trends in park activities were, on the whole, repeated consistently at most survey sites. Generally, walking was observed as the most frequent activity, while the frequency of runners at each site was consistently the lowest occurring activity. Table 8.2 summarizes the observed frequency of park activities at each entrance site surveyed. As indicated by the table, slight deviations in the overall trends were observed at the MacEwan, Calgary Winter Club and 14th Street locations. For example, more dog walking activities (46%) were observed at the MacEwan site than walkers (40%), and the highest overall proportions of runners were observed at the Calgary Winter Club (8% versus the overall trend of 3% of park users). At the 14th Street location the observed proportion of “other” activities (25%) were significantly higher than the overall trend (11%), which was largely attributed to the high number of park users that

stay in their cars to eat meals, rest and enjoy the view of the city provided at the 14th parking lot.

Table 8.2 Summary of Nose Hill Park User Activities

Source: Nose Hill Park User Study (1997) (Calgary Parks and Recreation 1997)

Survey Site	Walking	Running	Cycling	Dog Walk	Other
Calgary Winter Club Parking Lot Entrance	37%	8%	21%	22%	13%
19th Street NW Trail Entrance	NS	NS	NS	NS	NS
Brisebois Drive NW Parking Lot	40%	5%	17%	29%	9%
Edgemont Boulevard NW Parking Lot	42%	4%	20%	30%	3%
MacEwan Glen Drive NW at Bus Stop	40%	5%	9%	46%	0%
Berkley Gate NW Parking Lot	48%	2%	10%	31%	10%
64th Avenue NW Parking Lot	46%	2%	6%	37%	10%
14th Street NW Parking Lot	40%	1%	5%	28%	25%
Overall Park Activities	42%	3%	13%	31%	11%

NS = Not Surveyed

8.3 Multi-Use Zones

Currently, the upper plateau of Nose Hill Park is the only location in the park that has been designated as a multi-use zone. Permitted uses in this zone include off-leash dog walking and off-trail use (i.e. cycling and pedestrian activities). As part of the 1997 User Study (Calgary Parks and Recreation 1997), observations were made on the proportion of dog walkers that complied with the parks on-leash bylaw. Observations were made at each of the park's access points and along trails leading to the upper plateau. Overall, 59% of dog walkers were observed to be in compliance with the Nose Hill Park's on-leash bylaw. As Figure 8.1 demonstrates, compliance was observed to be highest around the Edgemont and MacEwan sites (80% and 71%, respectively), and lowest around the 14th Street entrance (33%).

8.4 Parking Lot Use

The percentages of users that make use of Nose Hill Park's parking lots have been summarized in Table 8.3. As the table demonstrates, the two sites with the highest percent parking lot use in 1997 included the 64th Avenue and 14th Street locations. A much lower proportion of users surveyed indicated that they parked at either the Calgary Winter Club or the Brisebois Drive

sites. The 1997 survey results for parking lot use and predicted daily and weekly park visitation levels (Table 8.3) were used to calculate approximate parking lot use levels for each site.

The results from these parking lot use estimates are outlined in Table 8.3 and Figure 8.2. As the figure indicates, weekday parking lot use levels were highest at the Edgemont, 64th Avenue and 14th Street locations. Weekend parking trends slightly varied, where the highest observed use levels were at the Edgemont and 14th Street sites. Overall, the survey indicated that relatively low numbers of park visitors are expected to park at the Calgary Winter Club. .

It should be noted that the results of this analysis are only *approximate* and most likely provide an *overestimate* of parking lot use since they are based on the assumption that park visitors are traveling to the park solo. This assumption is not entirely accurate since the survey results indicated that, on average, only 36% of park visitors were solo, while 36% visited in pairs, 21% in groups of three or four, and 7% in groups of five or more.

Table 8.3 Predicted Summer Parking Lot Use Levels

Adapted from Nose Hill Park User Study (1997) (Calgary Parks and Recreation 1997)

Survey Site	*Parking Lot Use (%)*	*Predicted Weekday Parking Lot Use*	*Predicted Weekend Day Parking Lot Use*	*Predicted Weekly Parking Lot Use*
Calgary Winter Club Parking Lot Entrance	58	17.2	3.1	138.7
19th Street NW Trail Entrance	n/a	n/a	n/a	n/a
Brisebois Drive NW Parking Lot	64	42.4	81.0	373.9
Edgemont Boulevard NW Parking Lot	72	131.1	281.8	1219.4
MacEwan Glen Drive NW at Bus Stop	n/a	n/a	n/a	n/a
aGate NW Parking Lot	71	58.8	118.3	530.8
64th Ave. NW Parking Lot	86	90.9	108.1	670.7
14th St. NW Parking Lot	80	97.7	226.7	941.7

N/A = Not applicable since detailed field surveys were not undertaken and/or the site is not a parking lot.

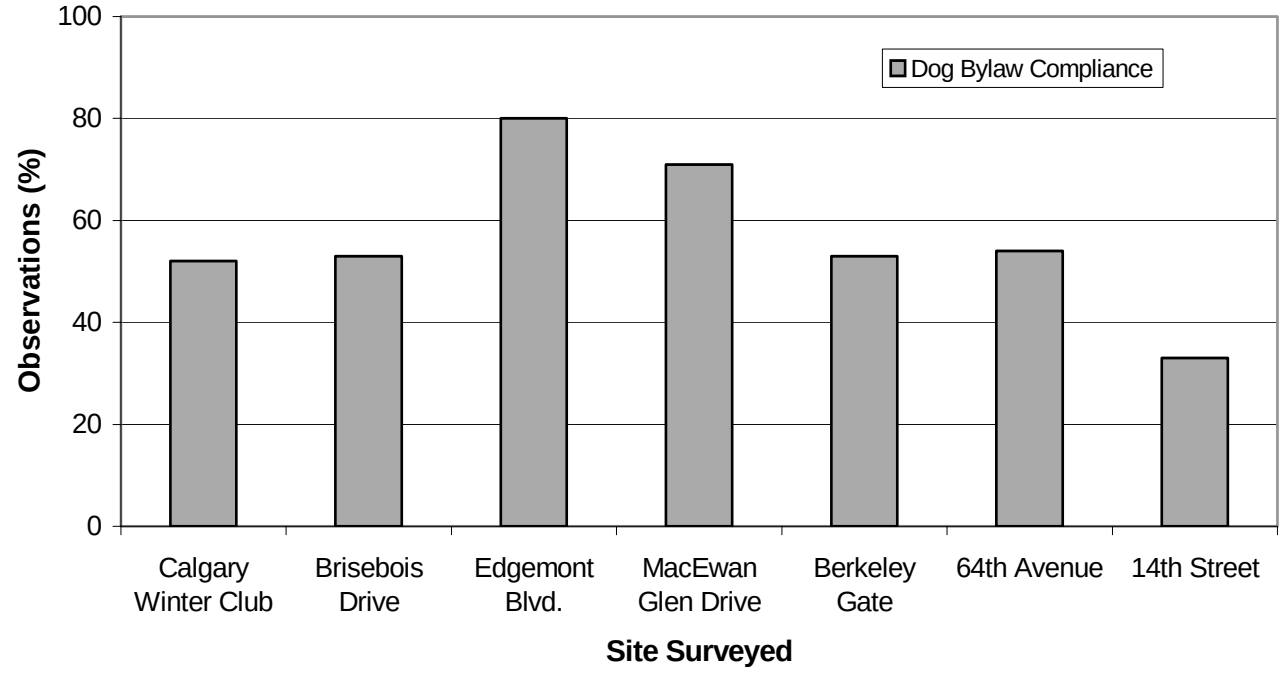


Figure 8.1 Observed Dog Bylaw Compliance

Source: Nose Hill Park User Study (1997) (Calgary Parks and Recreation 1997)

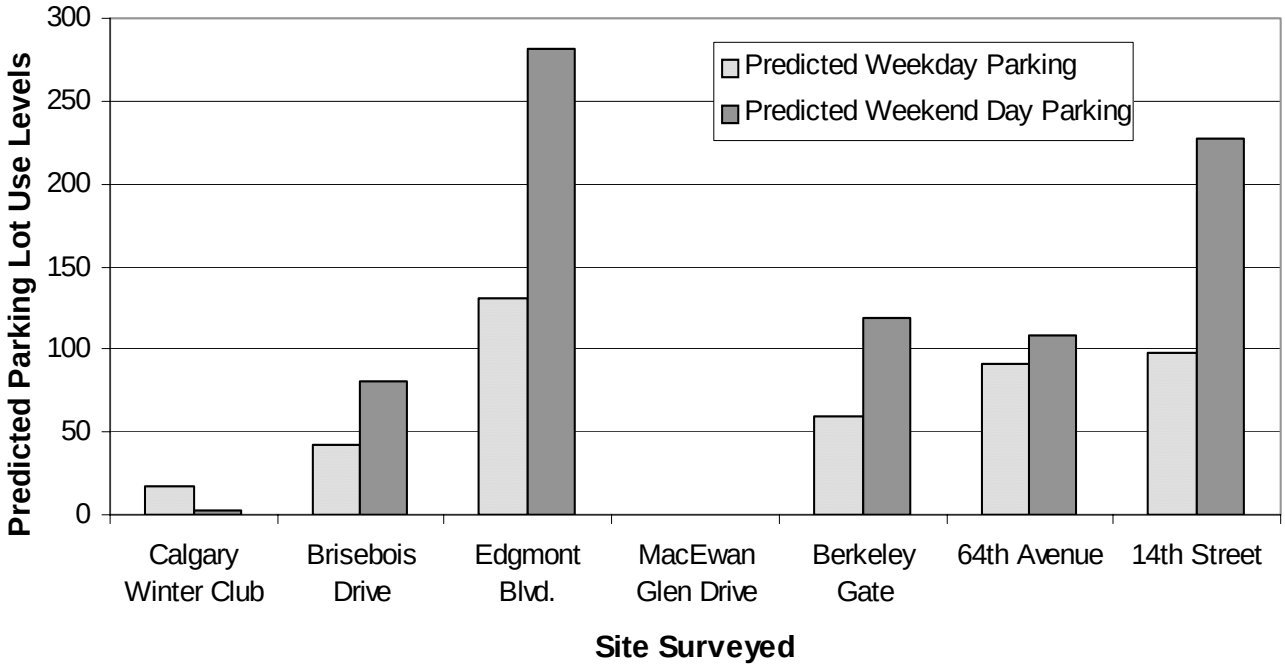


Figure 8.2 Nose Hill Park Predicted Day Parking Lot Use

Source: Analysis of Nose Hill Park User Study (Calgary Parks and Recreation 1997) predicted visitation levels and observed parking lot use

8.5 Areas of Attraction

People are attracted to Nose Hill Park for a variety of different reasons. Many visitors come to enjoy the spectacular visual aesthetics provided by the park, which includes the panoramic viewing opportunities of the city, surrounding countryside and mountains. Visitors are also attracted to the park's coulees and ravines, which provide a sense of solitude and isolation and allow users to experience an escape away from the city. Other visitors come to Nose Hill Park to enjoy the various cultural features, natural interest and ecological features found in the park.

Many of the park's features attract a high concentration of users, which has led to the increased proliferation of trails in the park, thereby increasing soil erosion and vegetation disturbances. Since these features attract people to the park, the trail and pathway plan considered many of the park's destinations in the planning process, thereby providing the means for users to access many of these destinations, while also reducing potential environmental disturbances to provide for long-term resource protection. This section summarizes the results of research on park attractions and identifies many of the park's key areas of attraction.

8.5.1 Stakeholder Identified Attractions

A meeting was held on June 24, 2004 with the Nose Hill Park Stakeholder Input Group to engage participants in the mapping of points of attraction in the park. Stakeholders were split into three different groups and were each asked to map areas of attraction on large photography-based maps. The number of points mapped by each group varied from 6 to 44 points of attractions, however, the attraction themes associated with each point were fairly similar among each group. Map 8.1 identifies the locations of the various attraction themes identified, and a list summarizing the frequency of site types are listed in Table 8.4.

The majority of stakeholder identified attractions included viewpoints (25 occurrences) and "good" dog walking locations (13 occurrences). Other common attractions included cultural interest sites, including the tipi rings located in the southern portion of the park and the potential kill site located along Porcupine Valley. Stakeholders also expressed interest in viewing the natural interest sites provided by the park, which included the park's various glacial erratics (i.e. buffalo rubbing stone in the eastern portion of the park and erratics located near the nose of the park); as well as the exposed rock faces in the quarry, which provide a glimpse into the geological history of Nose Hill. Stakeholders also identified many of the park's vegetation communities as attractions. Vegetation communities of interest included those composed of native and non-native grassland species, as well as the early successional poplar communities located in the quarry.

It should be emphasized that caution should be employed when interpreting the results of the stakeholder attraction mapping efforts since the sample of people used to identify locations was very small, and may be biased by the personal preferences of individual stakeholders. The results are important, however, since they have helped distinguish the general use trends in the park, indicating the kinds of attractions that people are interested in and identifying example locations for each attraction. This information was valuable in ensuring that the NHTPP recommendations ensured that access is provided the various park attractions.

Table 8.4 Nose Hill Park Attractions Identified by Stakeholder Groups June 2004

Attraction	*# of Attractions Identified*
Viewpoint	25
Park Facility / Rest Stop (e.g. picnic table, rest area)	3
Cultural Interest (e.g. tipi rings, potential kill site)	5
Natural Interest (e.g. glacial erratics, local geology)	5
Vegetation Viewing (e.g. native and disturbed grassland species, successional patterns in quarry, vegetation reclamation demonstration)	8
Dog Walking	13
Travel Route	2
Spiritual Interest (e.g. meditation knoll)	1
First Nations Gathering	1
Survey Benchmark	1
Water Feature (e.g. seasonal water features)	3

8.5.2 Management Plan Special Places

Rather than identify individual points of attraction, as undertaken with park stakeholders, the Nose Hill Park Natural Areas Management Plan (EnviResource Consulting Ltd. 1994a) identified various areas of interest in Nose Hill Park and labeled each location as a *special place*. Map 8.2 identifies the approximate locations for each of these areas of attraction throughout the park.

Special places were identified based on the significance that the area could offer visitors, such as the viewpoint provided by a certain location of the park or the potential to view wildlife. Table 8.5 provides a brief description, as summarized from the management plan, of the significance associated with each special place. The locations of special places were incorporated into the development of the NHTPP recommendations to ensure that access was provided to as many special places as possible.

Table 8.5 Special Places identified in the Nose Hill Park Natural Area Management Plan: Technical Report (EnviResource Consulting Ltd. 1994b),

Special Place	*Place Significance*
The Nose	Signature landmark for the park and greater Calgary area
Many Owls Valley	Open basin view
Bow Corridor Promontory	Dramatic viewpoint
Shaganappi Viewpoint	Beautiful panorama view
Aspen Grove Coulee	Great sense of isolation
Northeast Promontory	Significant viewpoint
Porcupine Valley	Experience of enclosure and frequent wildlife sightings
Rubbing Stone Hill	Significant viewpoint
Rubbing Stone Coulee	Site of Rubbing Stone glacial erratic and view of coulee

8.5.3 Nose Hill Trail Density

A trail density analysis was employed as an additional method to map out the locations of potential special places and attractions in Nose Hill Park. This analysis was used to identify where major trail nodes or “hot spots” are located in the park, thereby indicating areas of potential attraction and/or high traffic areas.

Trail density was calculated by using a “moving window analysis” that calculated the total length of trails that were located within a 250 m by 250 m window. This form of analysis is called a “moving window” since a 250 m by 250 m window was moved over each location in the park, 1 m^2 at a time, to determine trail density. At each square metre interval, the total length of trails contained within the window was calculated and recorded in the map data. These calculations resulted in a map with continuous trail density calculations that were colour coded for ease of interpretation. As Map 8.3 indicates, areas with higher trail densities (hot spots) were represented by dark red and orange colours, while areas of the park with very low trail densities were generally indicated by lighter-orange and yellow colours. It should also be noted that many of these hot spots coincide with the locations of special places that have been identified in the Nose Hill Park Management Plan (EnviResource Consulting Ltd. 1994a).

Each of the hot spots (dark red and dark orange colours) on the map identified areas where routes should lead to and/or connect with. These hot spot nodes were incorporated into the development of the NHTPP recommendations to ensure that many of the designated routes connect users with many of these nodes.

8.5.4 1997 User Survey Use Patterns

Park user intercept interviews were conducted during the 1997 User Study (Calgary Parks and Recreation 1997) to question visitors on their park use and pathway patterns, seek feedback on existing facilities, and establish if there were any user conflicts in the park. Of the 5,894 users observed throughout the study, 16% (984) responded to the intercept interviews.

General park use patterns were identified by interviewing park users at various trailhead locations and asking users to indicate on a map the destinations that they planned on visiting during their current visit to Nose Hill Park. Seven "Natural Area Interpretive Zones" were identified as park destination zones on the survey map. These seven locations, which are identified on Map 8.4, include:

A. Wintering Hill
B. Many Owls Valley
C. Meadow Lark Prairie
D. Aspen Grove
E. Porcupine Valley
F. Rubbing Stone Hill
G. Mule Deer Plateau

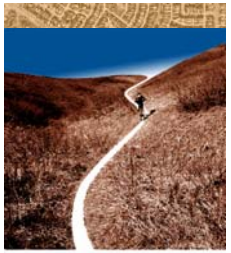
The results of the park use pattern survey have been summarized in Map 8.4 and Table 8.6. As the table and map indicate, use patterns associated with each interpretive zone vary across the park. Some zones, such as the Many Owls and Porcupine Valleys and Rubbing Stone Hill, are predominantly accessed by users from a single trailhead location, while other zones are accessed by two or three trailheads.

Map 8.4 provides an overview on the general vicinities where users are traveling to, as accessed from each of the park's main trailheads. This visual portrayal indicates locations where various trail types, such as stacked or looped trails, should be located through the NHTPP. For example, intercept interviews indicated that the Winter Hill (A) zone is accessed by users from both the Winter Club and 14th Street trailheads. This indicates that a linked trail systems would be required to allow users from both trailheads to access and travel through this zone.

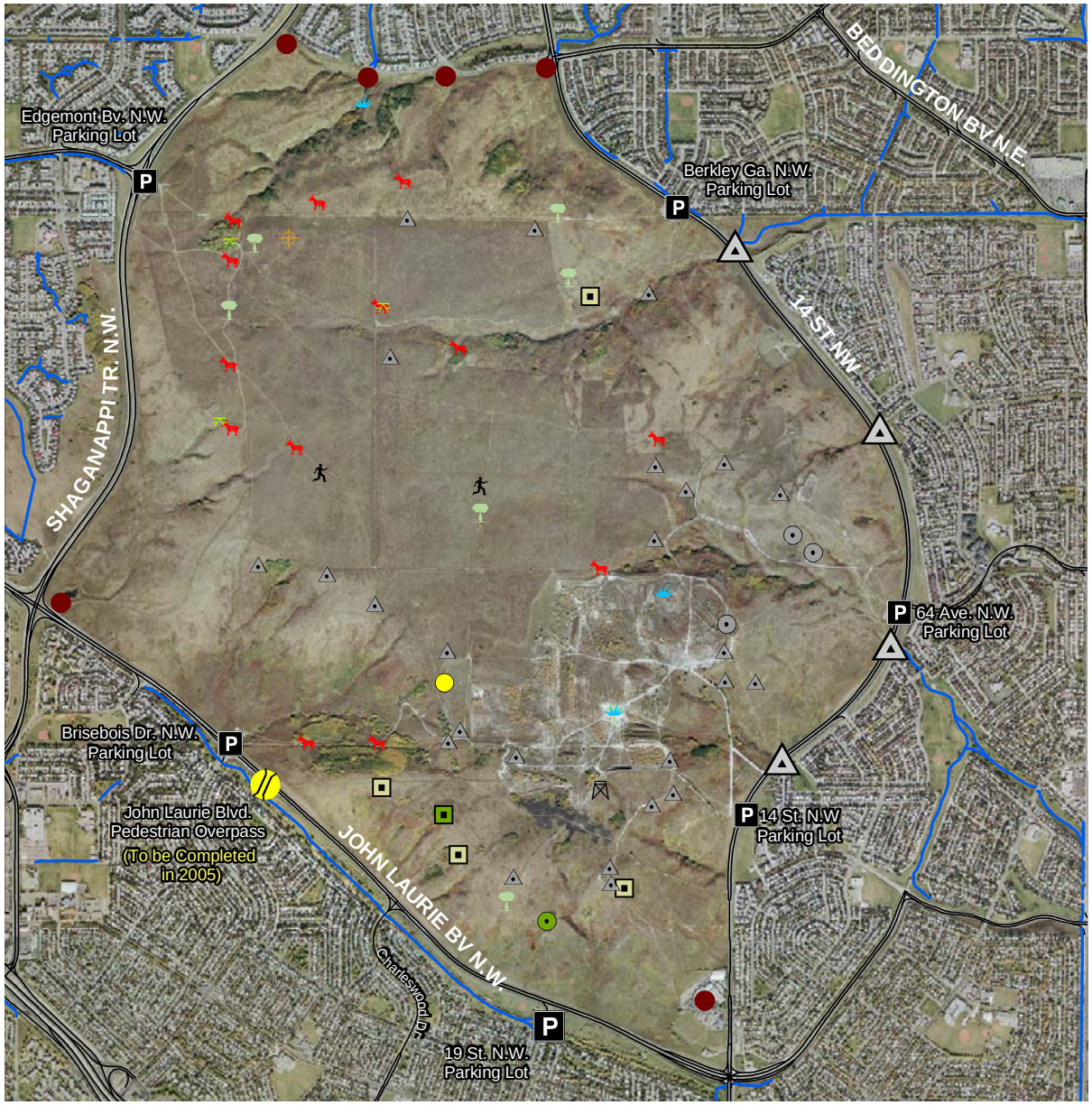
Table 8.6 Nose Hill Park Use Patterns

Adapted from Nose Hill Park User Study (1997) (Calgary Parks and Recreation 1997)

Trailhead	*Natural Area Interpretive Zone(s) Visited*
Edgemont Boulevard NW Parking Lot	Meadow Lark Prairie, Aspen Grove
MacEwan Glen Drive NW (Bus Stop)	Aspen Grove, Meadow Lark Prairie
Berkley Gate NW Parking Lot	Porcupine Valley
64th Avenue NW Parking Lot	Rubbing Stone Hill, Mule Deer Plateau
14th Street NW Parking Lot	Mule Deer Plateau, Wintering Hill
Calgary Winter Club Parking Lot Entrance	Wintering Hill, Mule Deer Plateau
19th Street NW Trail Entrance	Public use patterns not surveyed
Brisebois Drive NW Parking Lot	Many Owls Valley



NOSE HILL PARK



North

Map 8.1
Stakeholder Identified Attractions

Map Legend

Stakeholder Attractions

- Viewpoint
- Park Facility / Rest Stop
- Cultural Interest
- Cultural Interest, Natural Interest
- Natural Interest
- Natural Interest, Vegetation Viewing
- Vegetation Viewing
- Dog walking
- Travel Route
- Spiritual Interest
- First Nations Gathering
- Survey Benchmark
- Water feature

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

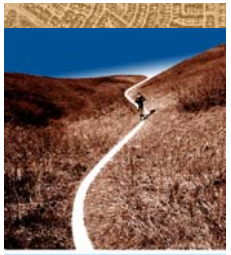
Data Source: Nose Hill Natural Environment Park Stakeholder Meeting # 2 - June 24, 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

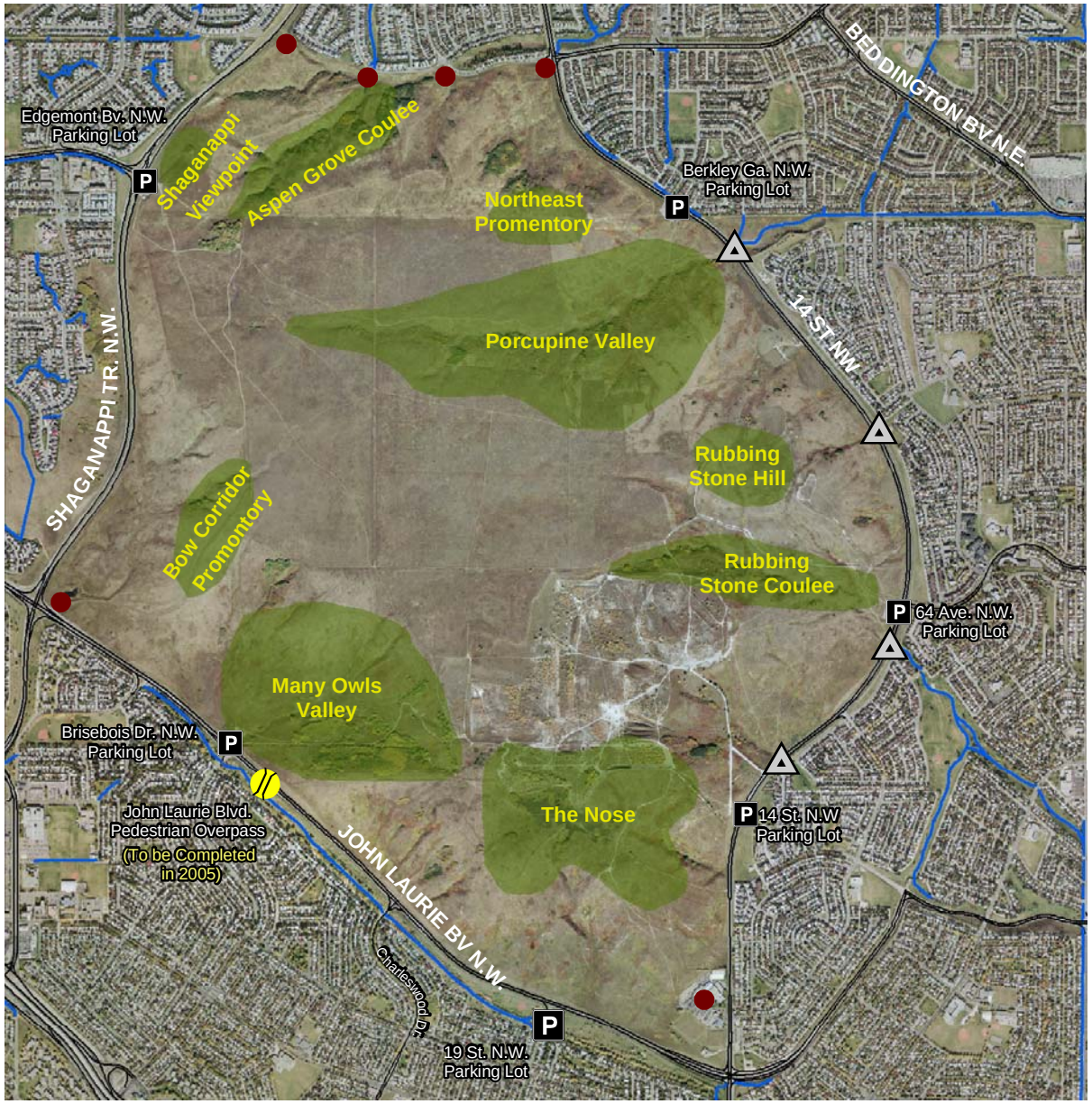
0 250 500 1,000 1,500

Meters



NOSE HILL PARK

North



Map 8.2
Nose Hill Park
Special Places

Map Legend

Special Place

The Nose — Special Place Names

Approximate Special Place Boundary

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

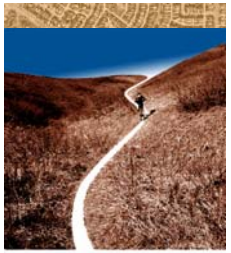
Data Source: Adapted from Special Places Map, Nose Hill Park Natural Areas Management Plan: Technical Report, 1994. p 3.5. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

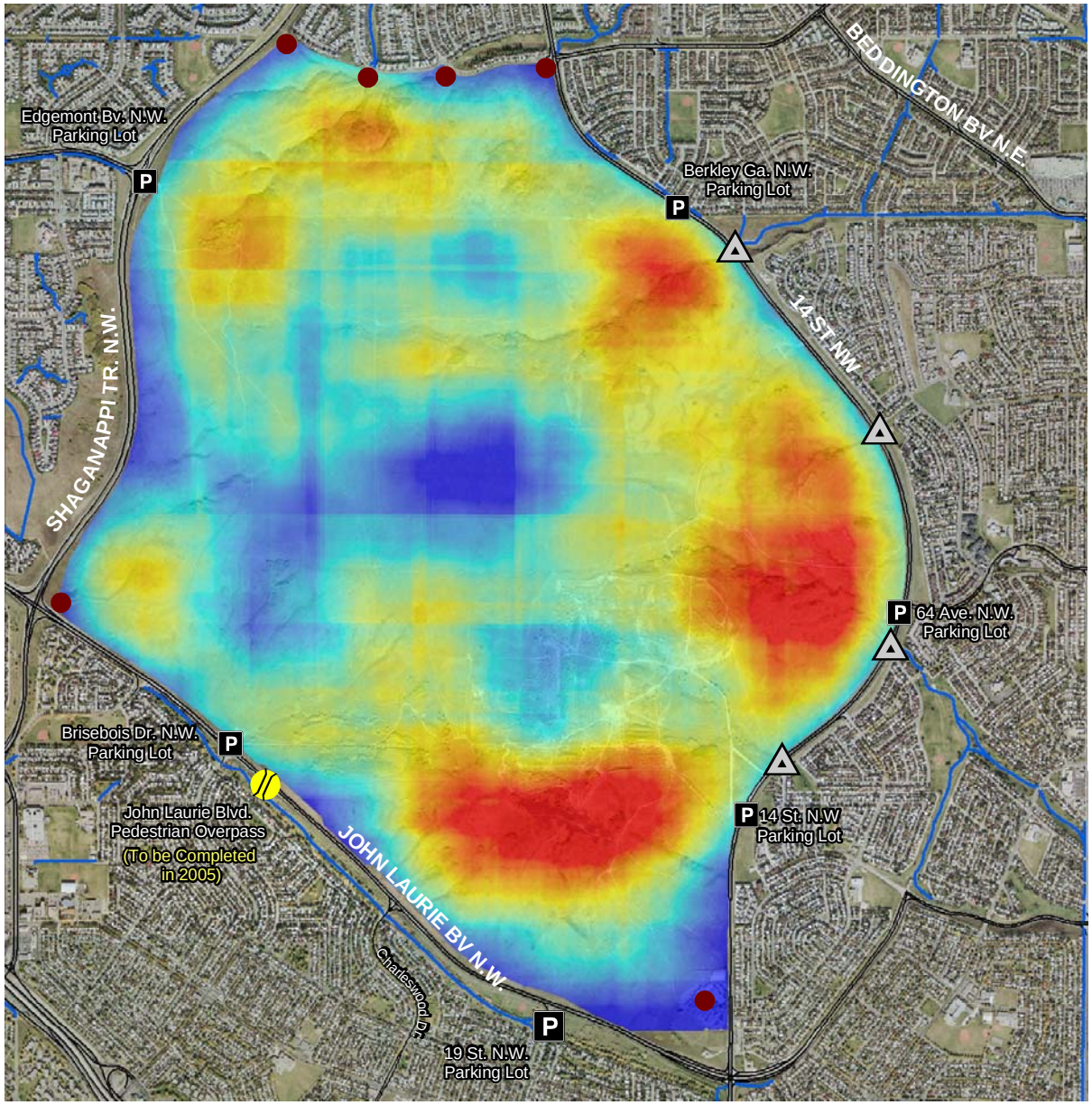
0 250 500 1,000 1,500

Meters



NOSE HILL PARK

North



Map 8.3
Nose Hill Park
Trail Density
(500 Metre Zone)

Map Legend

Trail Density

High: 16600 metres

Low: 0 metres

Represents the total length of trail within a 500m moving window of analysis.

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

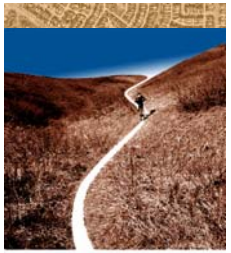
Data Source: Analysis of City of Calgary, Parks, Nose Hill informal trail data (provided by City of Calgary, Parks). Analysis by O2 Planning & Design Inc. June 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

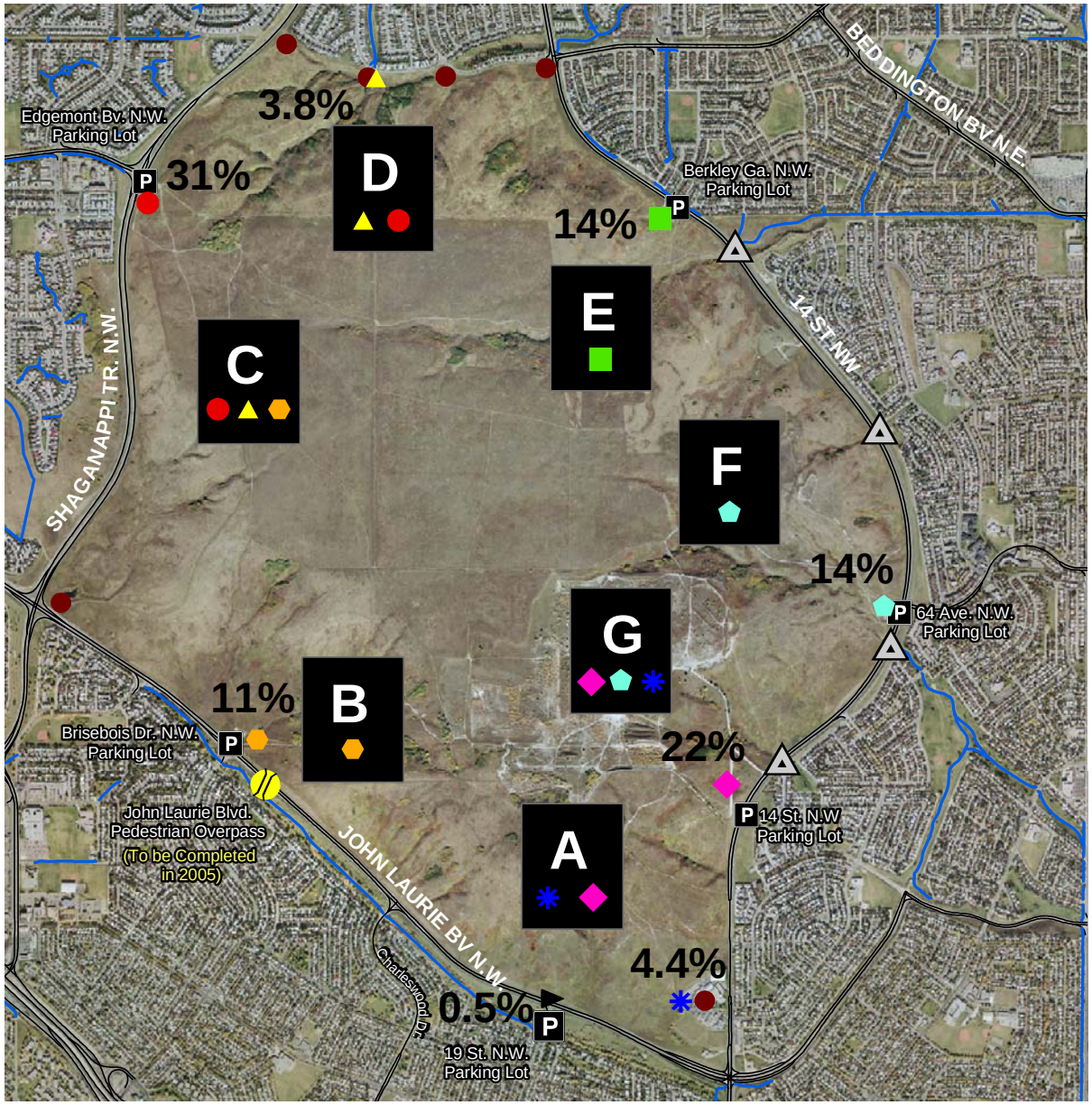
0 250 500 1,000 1,500

Meters



NOSE HILL PARK

North



Map 8.4
Nose Hill Park
Use Patterns

Map Legend

Trail Heads Surveyed:

- Edgemont Blvd NW Parking Lot
- MacEwan Glen Drive (Bus Stop)
- Berkeley Gate Parking Lot
- 64th Avenue Parking Lot
- 14th Street Parking Lot
- Calgary Winter Club Parking Lot Entrance
- 19th Street NW Trail Entrance (Public Use Patterns Not Surveyed)
- Brisebois Drive NW Parking Lot

Natural Area Interpretive Zones (from User Study):

- A Wintering Hill
- B Many Owls Valley
- C Meadow Lark Prairie
- D Aspen Grove
- E Porcupine Valley
- F Rubbing Stone Hill
- G Mule Deer Plateau

Trail Head Use:

34% Observed Park Visitation Rates

Base Information

- P Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (2005)
- Existing Regional Pathways
- Major Roads

Data Source: Adapted from Nose Hill Park User Study (1997). Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters

9.0 PARK AND TRAIL CONDITIONS

The historical and contemporary uses of Nose Hill Park have influenced the linear disturbance patterns that currently exist across the park's landscape. Historical disturbances have left large scars on the landscape from heavy vehicular use in the 1950's, 1960's, 1970's and 1980's. Historical and contemporary land uses have led to the proliferation of trails in the park, as well as the widening and/or erosion of trail segments. The following sections describe and provide examples of the historical and contemporary land use patterns in Nose Hill Park.

9.1 Historical Land Use Patterns

Detailed historical accounts of the settlement and land use patterns for Nose Hill have been described in the *Biophysical and Land Use Inventory and Analysis of Nose Hill Park* (Kansas *et al.* 1993), the Gabert study (1991) that analyzed historical aerial photographs taken over Nose Hill from 1959 to 2000, and in the Nose Hill Park Master Plan (1980). Since great care has already been taken to describe the historical intensification of land use patterns on Nose Hill, the intent of this Chapter has been to provide photographic examples of where and when land use and trail intensification patterns occurred on Nose Hill.

Over the past century, the land use patterns on Nose Hill have intensified. During the late 1800's and early 1900's, the upper plateau of Nose Hill was primarily used for cattle grazing and agricultural production. During this time, the majority of the escarpment remained relatively untouched by Calgarians, until residential development began to approach Nose Hill in the late 1940's and 1950's. Since then, the number and density of trails on Nose Hill have been ever increasing.

Aerial photography taken in 1948 over the southwestern portion of Nose Hill (see Figure 9.1) demonstrates how agricultural development was isolated to the upper plateau of Nose Hill (site of future quarry) and how there was only limited trail and road development leading up to the agricultural land. As residential development approached Nose Hill in the late 1950's, the use of the hill by Calgarians began to intensify.

Use patterns were most intensified with the purchase of the Calgary Winter Club in 1959. At this time, the hill was opened up to the general public. This resulted in both the overuse of the hill by pickup trucks, which left deep scars on the landscape, and the establishment of significant trail developments on the hill. A comparison of aerial photography taken in 1959 over the southwestern portion of Nose Hill (see Figure 9.2) with the 1948 photography (Figure 9.1) demonstrates the magnitude of trail and vehicle scar proliferation over Nose Hill's southern escarpment throughout the 1950's.

Human use of the park again intensified in the 1960's with both the commencement of gravel resource extraction on the hill and the development of John Laurier Boulevard, which left the slopes of the southern escarpment unprotected from vehicular traffic, thereby resulting in heavy scars north of John Laurier Boulevard. Evidence of these intensified human uses and landscape scars are depicted in the 1971 aerial photography (Figure 9.3), which show the gravel quarry in the north (top of photo) and the increased number of trails leading up to the quarry; as well as the development of John Laurier Boulevard in the south (bottom of photo), which is associated with intensified trail development and new trails running both parallel and perpendicular to this street.

As the number of residential developments increased and gradually began to surround Nose Hill Park, the proliferation of trails continued to increase in Nose Hill Park. For example, in 1982, when there were no significant residential developments north of the park, and the number of trails in the northern half of the park were low (see Figure 9.4). Once residential developments surrounded the entire park, the number of trails in the northern portion of the park increased, as well, photo-interpretation indicates an increased widening of many of these trails over time. An example of these land use changes in the northern portion of the park are depicted in Figure 9.5.

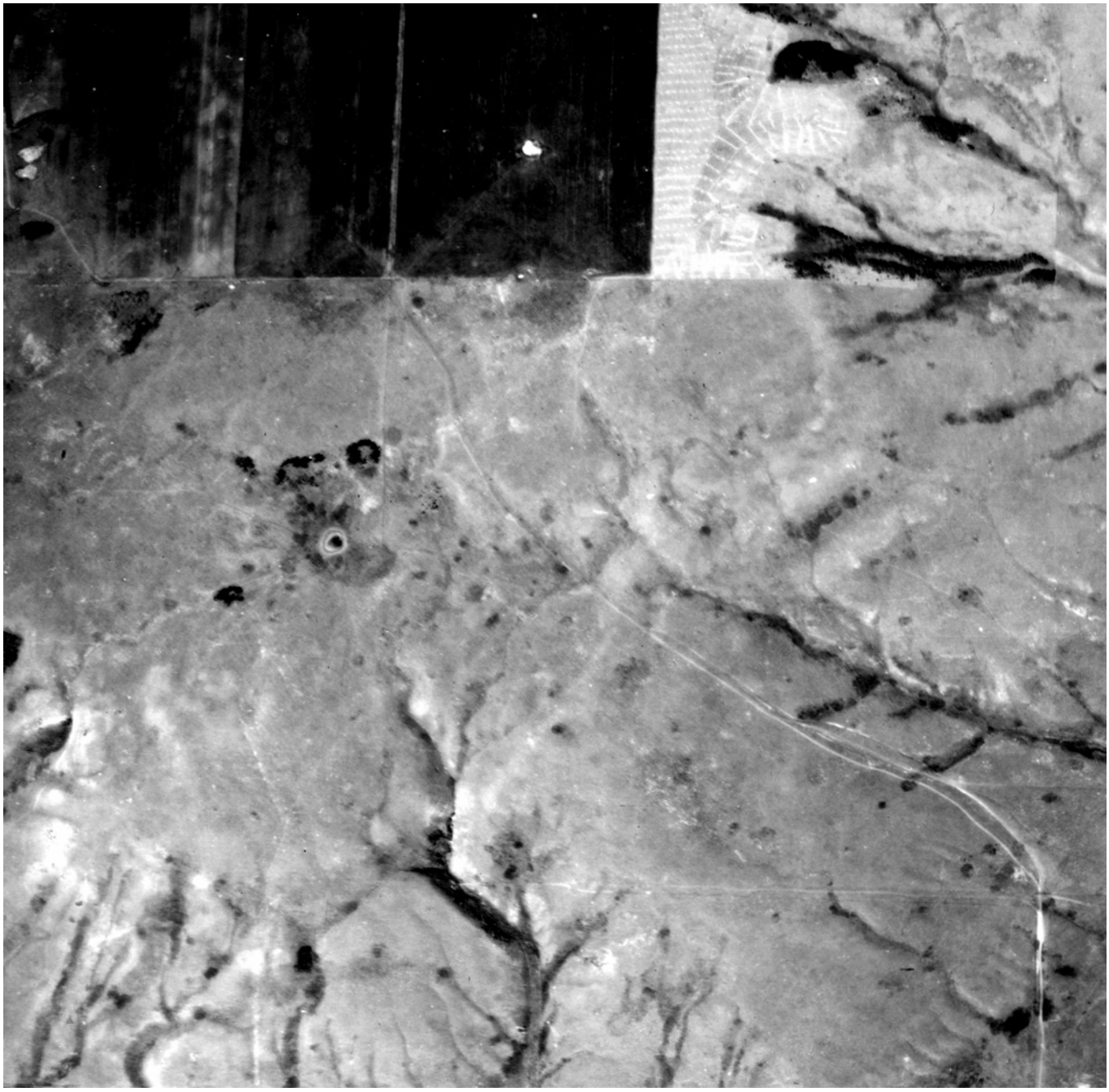


Figure 9.1 1948 Aerial Photograph over the Southeast Portion of Nose Hill Park

1948 aerial photograph over the southeast portion of Nose Hill Park that depicts a time period when there were minimal linear disturbances on the Nose Hill escarpment. (note 14 Street NW in bottom right corner).

Photo Source: University of Calgary, Maps and Airphoto Collection

Figure 9.2 1959 Aerial Photograph of the Southeast Portion of Nose Hill Park

1959 aerial photograph of the southeast portion of Nose Hill Park depicting how quickly linear disturbances proliferated across the southern portion of the Nose Hill escarpment between 1948 and 1959.

Photo Source: University of Calgary, Maps and Airphoto Collection

Figure 9.3 1971 Aerial Photograph of the Southeast Portion of Nose Hill Park

1971 aerial photograph of the southeast portion of Nose Hill Park which demonstrates how linear disturbances continued to increase along the southern portion of the Nose Hill escarpment and quarrying activities began in the north.

Photo Source: University of Calgary, Maps and Airphoto Collection

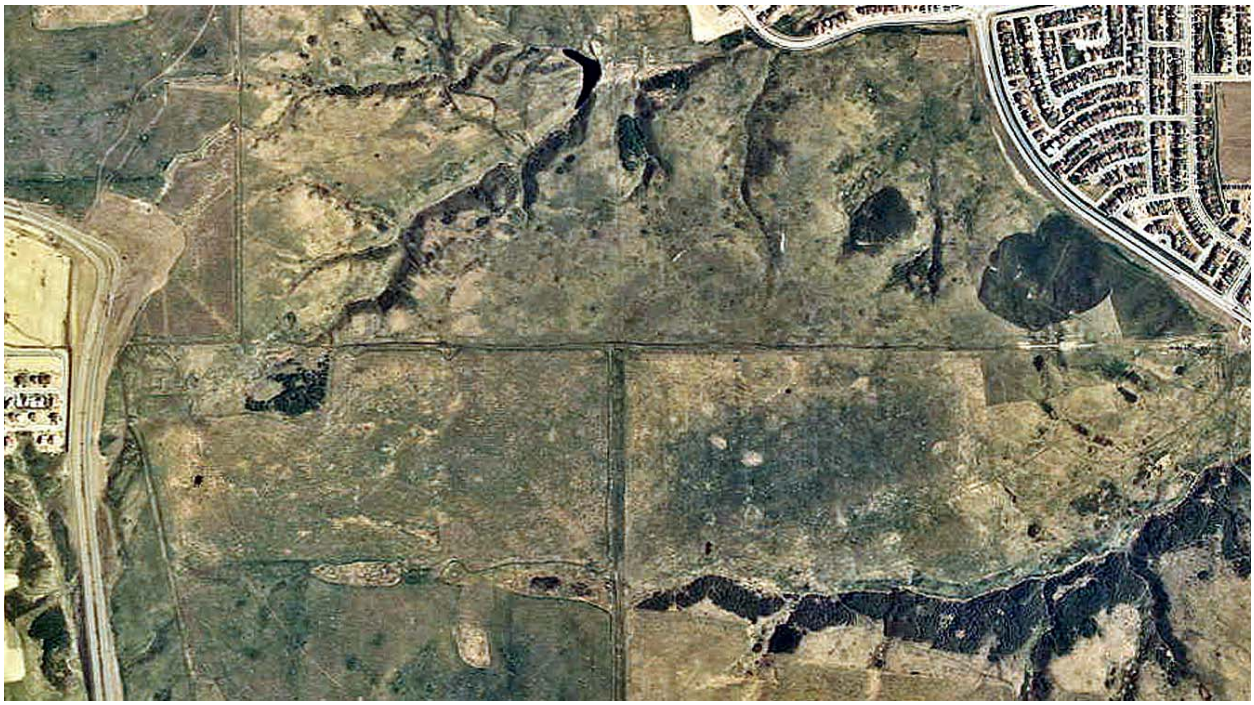


Figure 9.4 1982 Aerial Photograph taken over the North Portion of Nose Hill Park

1982 aerial photograph taken over the north portion of Nose Hill Park depicting the lack of significant trail development at this time period. Photo Source: City of Calgary, Parks

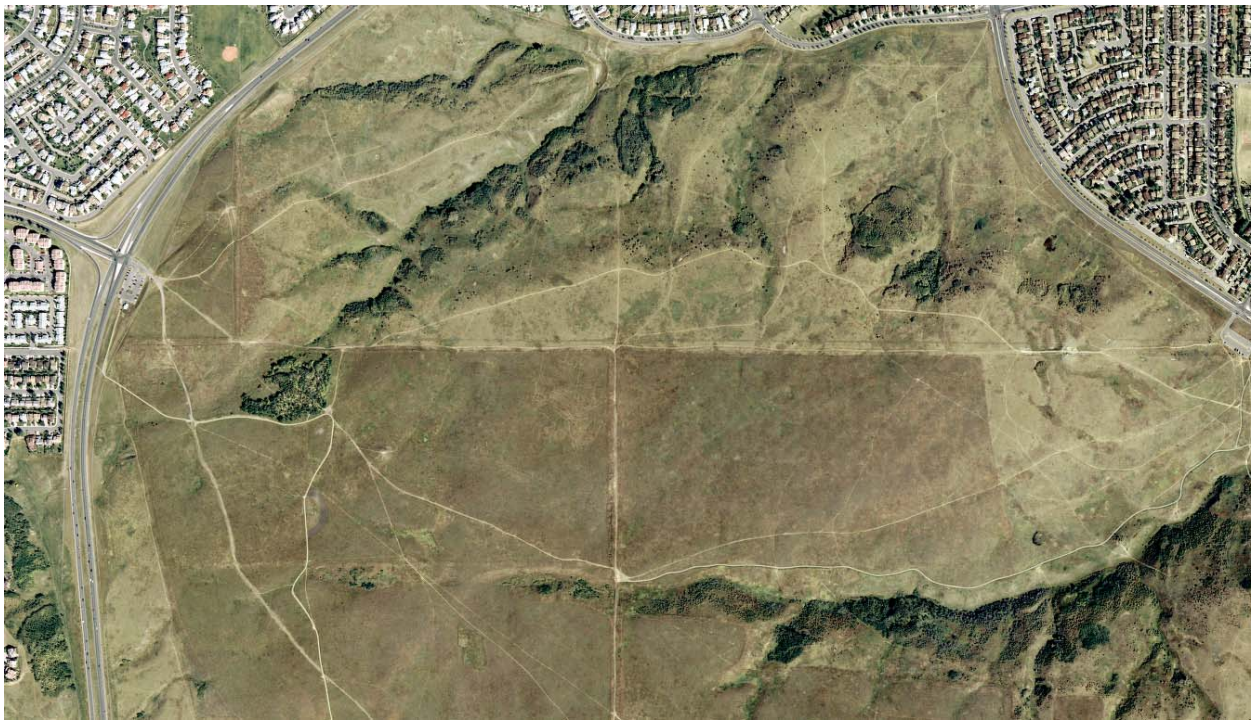


Figure 9.5 2001 Aerial Photograph taken over the North Portion of Nose Hill Park

2001 aerial photograph taken over the north portion of Nose Hill Park depicting the increased proliferation of trails as residential development expanded north of the Park. Photo Source: City of Calgary, Parks

9.2 Current Trail Conditions

Three extensive assessments of Nose Hill trail conditions have been undertaken over the past 10 years. In 1993, Kansas *et al.* (1993) mapped out the locations of the majority of trails located throughout the park and undertook a general assessment of the trail's general. During this time, approximately 300 km of trails were mapped in the park. In 1998, detailed field assessments were undertaken on many of these trail segments to support the development of the undesignated trail policy. These assessments identified the current condition of each trail segment, which supported the designation of trails as closed, pedestrian use only or multi-use.

As part of the NHTPP, an additional assessment of approximately 60 km of the park's more heavily used trails was undertaken. These assessments were undertaken to study trails identified for potential inclusion in the Nose NHTPP recommendations, while other assessments were undertaken to summary trail conditions and issues. This field assessment was undertaken through the use of GPS measurements, photo documentation and an in-depth inventory collection system. Approximately, three weeks were spent during the spring and summer of 2004 biking and walking down carefully selected trails, collecting field data and developing a substantial database of trail use information. Additional trails were analyzed throughout the fall and winter of 2004. Current trail conditions and issues are summarized in the sections below.

9.2.1 Overview of Current Nose Hill Park Trail Conditions

An overview of the current Nose Hill Park trail conditions is listed below.

Dirt Trails:

- The majority of trails documented in 2004 were dirt trails, but were more than 50% covered with overgrown grass and weeds.
- The majority of trails documented were approximately 1.5 m wide.
- The majority of trails documented were multi-tracked, rutted and braided.
- Many documented trails showed some degree of erosion.
- Minor trails were mostly 0.3 m – 0.6 m wide.
- The majority of minor trails had well worn dirt surfaces with little or no vegetation on the trail itself. Many of them were badly eroded and rocky.

Asphalt Trails:

- The asphalt or asphalt with imbedded aggregate trails were generally in good condition.
- There were some signs of soil instability on one asphalt trail, however, most of the other trails showed no sign of erosion.
- Asphalt trails varied from 1.5 m – 2.5 m in width.

Gravel Trails:

- Gravel trails were in poor condition and depicted excessive erosion.
- 20% – 50% of gravel trails were covered in loose gravel. Standing water or gullies in the trail was common on the gravel trails.
- Gravel trails often had sections where gravel had broken away from the main trail.
- Trails varied from 2.5 m – 4 m in width.

9.2.2 Specific Trail Conditions

1. Many trails were more than 50% overgrown with weeds. This overgrowth often makes it difficult for users to clearly identify and stay on path, which causes new tracks to be formed alongside the main trail, damaging adjacent vegetation, eventually widening the trail width (Figure 9.6).

2. Most trails were rutted and braided. In some cases the wear on trails is so severe that double and triple tiered tracks have formed (Figure 9.7).

3. There was an increased density of trail proliferation in the flat grassland area of the park. This may partially be attributed to the flat terrain and tall grasses, which obscure the locations of individual and adjoining trails, and the easy to view final destination off in the distance. Since it is easy to walk through flat areas with no obstructions, users tend to go in the direction of choice, often creating their own trails to reach their final destination point, resulting in increased trail proliferation (Figure 9.8).

4. Trails ended abruptly at the top of the escarpment. This may cause confusion for some users as there is no signage indicating their next destination option (Figure 9.9).

5. Trails were too steep in some areas, often causing major erosion along the slope (Figure 9.10).

6. Old asphalt/gravel roads and trails were heavily used, but have not been maintained or upgraded. Gravel has been eroding, leaving gullies where the water has run down steep portions of the road, and pools of standing water in depression. As well, in certain sections gravel and asphalt roads have broken away from the main trail. This erosion is not only damaging for the surrounding environment, but as the surface stability continues to weaken, the risk for user safety and conflicts increases (Figure 9.11).

7. The main trail leading from the 64th Avenue NW parking lot was very steep and was eroding into the parking lot (Figure 9.12).

8. Many trails have undergone some degree of erosion. Those which are heavily eroded have exposed substrate sand, soil and rock, which creates hazards for users, such as large potholes and rocky slopes.

9. Many trails have been damaged by gopher holes, in many cases in the middle of the trail. The size of these holes range from 4” in diameter to a foot wide, and most holes are more than 6” deep. The larger holes pose a serious tripping hazard to users.

10. There were inadequate rest and meeting spots around the hill for users to gather, therefore, users stop wherever they choose, in many situations trampling on potentially sensitive vegetation and/or disturbing important wildlife areas.

11. During the 2004 field assessment, many dogs were observed off-leash while in on-leash areas.

12. Cyclists could be found using most areas of the park, including closed trails (as indicated by the orange plastic snow fences), and in environmentally sensitive areas, such as forested valleys and coulee areas, that are currently closed to cyclists.

Figure 9.6 Example of Multi-track Trails Overgrown with Weeds

Figure 9.7 Example of Rutted and Braided Trails

Figure 9.8 Flat Terrain and Grasses on the Upper Plateau

The flat terrain and grasses on the upper plateau make it difficult for users to orient themselves.

Figure 9.9 Top of the Escarpment

Trails end at the top of the escarpment and no orientation signage is available to direct users.

Figure 9.10 Steep Trails Cause Erosion of the Slope

Figure 9.11 Unmaintained and Eroded Old Gravel Trails/Roads (example B)

Old gravel roads have not been maintained and gravel is being eroded away leaving behind gullies.

Figure 9.12 64th Avenue Parking Lot Trail

64th Avenue parking lot trail is eroding and causing damage to parking lot**.**

10.0 KEY ISSUES

Trail and pathway related issues for Nose Hill Park were identified through consultations with park stakeholders, discussions with City Administration, consultant recommendations, a review of previous policy documents and studies, and field observations in Nose Hill Park. The issues presented below have been arranged according to a series of associated themes, which include: trail, wildlife, physical environment, public education/awareness, park amenities and infrastructure, general park users, dog use, cyclist use, pedestrian use and regional pathway issues.

10.1 Trails

a. Ad hoc trail use has led to proliferation of trails throughout the park.
b. Trail proliferation and ad hoc trail use is disturbing native grasslands in Nose Hill Park.
c. Sensitive native grasslands are undergoing degradation from inappropriately located trails.
d. Currently, the constrained and concentrated use of trails increases soil/trail erosion potential at certain times of the year (e.g. after rainfalls, snowmelt).
e. Park users on undesignated trails are reducing the effectiveness of rehabilitation processes.
f. High densities of traffic create user conflicts in confined areas and/or areas with poor trail design (e.g. narrow trails).
g. Park users are unclear on the locations of many closed trails.
h. Park users are unclear on the location of designated trails and where these trails lead to.
i. Paved routes are not clearly identifiable when snow is on the ground.
j. The visual aesthetics of the park are impacted by multiple trails and trail erosion problems.
k. A lack of proper trail surfacing causes widening of trails by users walking/cycling on the grass when the trail is wet and muddy.
l. The trail system may not allow users to quickly evacuate the park in the event of an emergency situation (e.g. grassland fire).
m. There is a lack of clearly indicated “loop” travel options for park users at each trailhead.
n. There is a lack of directional and route signage, leading to increased ad hoc trail use.
o. Trails have not been maintained, thereby increasing the proliferation of weedy vegetation along trail edges and increased soil erosion and gullies.
p. Orange snow fences, indicating a closed trail, have not held up over time as many are damaged or missing.
q. Some park users are using closed trails indicated by the orange snow fences and have been walking around or riding over fences.

10.2 Wildlife

a. Park users (including pedestrians, dogs and cyclists) disturb important forage, breeding and nesting areas.
b. Evening use of the park disrupts wildlife.
c. Important wildlife habitat features are undergoing degradation from inappropriately located trails.
d. The large number of informal trails has led to serious habitat fragmentation throughout the park.
e. There is concern that there are not enough wildlife refuge opportunities in the park.

10.3 Natural Environment

a. There is a lack of effective strategies in place for protecting native vegetation from recreational trampling.
b. It is difficult to balance preservation objectives and human usage in the park.
c. Too many people are using undesignated trails in sensitive landscape features, such as steep slopes and important wildlife habitat, which is causing degradation of the environment and vegetation communities, increasing soil erosion and disrupting wildlife.
d. Natural features (e.g. Glacial erratic) are attracting many people to small areas, causing overuse of these areas.

10.4 Public Education and Awareness

a. There is a lack of public knowledge and awareness of the sensitivity of many environmental features (e.g. wildlife habitat, native grasslands) and the need for protection.
b. There is a lack of adequate education/interpretive opportunities within Nose Hill Park.
c. There is a lack of public understanding on the bylaws and regulations that affect use in Nose Hill Park.
d. These is a lack of signage explaining current park policies and bylaws.
e. There is a lack of awareness and respect between the various spiritual groups that use the park.
f. There is a lack of awareness, respect and education opportunities associated with the various archaeological sites in the park.
g. Users are not well educated on the purpose and location of designated trails in Nose Hill Park.
h. Users of undesignated and closed trails may not be fully aware of the future rehabilitation plans and justification for closing trails.

i. The multi-use (off-leash dog and off-trail cycling) zone is insufficiently distinguished at the top of the hill.

10.5 Park Amenities & Infrastructure

a. There is a lack of sufficient public amenities available at each of the park entrances.
b. There is a lack of signage in the park that identifies locations and permitted uses (multi vs. single) of designated trails.
c. There is a lack of signage in the park identifying the purpose and objectives for closing trails or limiting users.
d. Some existing park signage may provide unclear or confusing messages to users.
e. There is an insufficient presence of City staff to assist with interpretative opportunities, clarify designated trails and enforce park bylaws.
f. There is a concern that park infrastructure will interfere with the park's high quality aesthetic values.
g. There are insufficient park benches and rest locations throughout the current designated trail system.
h. There is no system for parking lot security and/or surveillance.
i. Nose Hill Park must be accessible for emergency response vehicles.

10.6 General Park Use

a. Trails closures are not applied to all park users equally (cyclists are banned from more trails than pedestrians)
b. Park planning initiatives do not always incorporate spiritual considerations.
c. Some park users are deliberately ignoring the designated trails in the park.
d. Some park users do not obey park policies regarding designated trail use.
e. There is a lack of public compliance to park policies and bylaws, which is contributing to the proliferation of trails in the park.
f. Some park users are not removing their personal refuse and dog feces from the park.
g. There is lack of self-enforcement by park users on trails used by pedestrians and cyclists (i.e. bells of bicycles, rights-of-way).
h. There are not many barrier free (highly accessible) opportunities in the park.
i. There is a lack of accessibility options for mobility-challenged park users.
j. Many trails are not wide enough to accommodate all kinds of park users.

10.7 Dog Use

a. Dogs disturb important wildlife habitat, such as breeding and nesting areas.

b. There are conflicts between off-leash dogs and cyclists on designated trails.
c. Some park users are not comfortable when confronted by dogs in the off-leash area.
d. Pedestrians are concerned about encounters with dog threats/attacks, barking and dog feces.

10.8 Cyclist Use

a. Cyclists riding at high speeds reduce pedestrian safety, especially down steep hills and/or areas with low visibility.
b. The current designated trail system does not provide cyclists with the same viewing opportunities that attract many users to the park.
c. The various kinds of cyclists in the park (commuter to extreme biking) pose safety conflicts in some locations.

10.9 Pedestrian

a. Pedestrians require a right-of-way when facing cyclists.

10.10 Regional Pathway

a. There is a lack of regional pathway connections through or around the park
b. It is difficult for users to quickly commute across the park.
c. There is no pathway connection meeting up with the handicap-designed Brisebois Drive NW pedestrian overpass.

10.11 Park Infrastructure

a. Orange snow fences currently used to indicate a closed trail have not held up over time as many are damaged
b. There is a lack of signage explaining current park policies and bylaws.
c. There is a lack of direction and route signage, leading to increased ad hoc trail use.
d. There is a lack of adequate education / interpretive opportunities within the park.
e. There are insufficient park benches and rest locations throughout the current designated trail system.
f. There is a lack of sufficient public amenities, including washrooms and refuse containers, at each parking lot.
g. The current asphalt surface of the 14th Street parking lot is in poor condition (e.g. heavily eroded and crumbled asphalt, potholes) and does not provide easy turn-around movement for automobiles.

11.0 PLANNING, DESIGN & EVALUATION CRITERIA

Relevant Nose Hill Park pathway routing criteria were used to evaluate the feasibility of the conceptual perimeter pathway and to develop the NHTPP recommendations. These criteria were been compiled from the key recommendations summarized through environmental, historical resources and policy and direction review (Chapters 5.0 through 8.0 of this report, respectively), and through planning consultations and workshops held with park stakeholder working groups and City Administration. The pathway routing criteria were organized according to vulnerability, attractiveness and logistical criteria. Vulnerability criteria are those related to the avoidance of vulnerable areas, attractiveness criteria relate to where routes should go, and logistical criteria are related to how well the route meets pathway regulations and cost considerations. The following sections outline the various evaluation criteria.

11.1 Vulnerability Criteria

As described above, vulnerability criteria are those that are related to the avoidance of vulnerable or sensitive areas within the park. Vulnerability criteria include those that consider ecological values, topography, historical resources, and general trail design. Each of the vulnerability criteria listed below have been addressed throughout the design of the NHTPP, as well as the feasibility assessment of the conceptual perimeter pathway. Many of these criteria could be assessed through the use of a geographic information system (GIS), which facilitated the design of park routes. They various vulnerability criteria are listed below:

Ecological:
Recommendations and guidelines related to trail and pathway development and the maintenance or protection of important ecological conditions throughout the City of Calgary's natural area parks have been described in a variety of reports and Council approved policies. Many of these ecological recommendations are summarized in Chapter 5.0 of this report, which include recommendations to minimize development and disturbances in sensitive and important vegetation communities, to maintain or protect the native character of these communities, and to preserve important wildlife habitat features.

The recommendations from past reports, such as the *Open Space Plan* (Calgary Parks 2003), *Nose Hill Park Natural Area Management Plan* (EnviResource Consulting 1994), the city-wide Natural Area Management Plan (Calgary Parks and Recreation 1994), and the *Biophysical and Land Use Inventory and Analysis of Nose Hill Park* (Kansas *et al.* 1993) have influenced the development of the following ecologically themed pathway design criteria for Nose Hill Park:

a. Avoid areas of extensive woody vegetation
b. Avoid significant vegetation communities
c. Avoid new routes in native vegetation
d. Reduce landscape fragmentation
e. Avoid wet areas

Historical Resource Considerations:

Nose Hill Park contains a variety of historical resources that represent more than 10,000 years of land use by the Native inhabitants of the Calgary region. These resources include campsites, kill sites, and lithic scatters, as well as a variety of stone features, such as cairns and stone circles (Kansas *et al.* 1993, Van Dyke 1993). One key design criteria has been identified to address historical resources in Nose Hill Park. This criteria and the potential impact of the perimeter pathway on historical resources is:

a. Avoid historical resources

Topographical Considerations:

The complex topographical landscape that attracts users to Nose Hill Park is also one of the park's key constraints to development. Landscape slope can be a major obstacle physical or financial limitation to trail and pathway development. Landscape slope is defined as the gradient, measured in percent slope, of a hill; or simply the maximum rate of change in elevation over a distance. As summarized in Table 5.7, almost half of Nose Hill Park contains slopes that are greater than 10%. The park's flatter slopes (those less than 10% slope) are primarily located on the upper plateau and along the toe of some of the park's escarpment. The majority of steep slopes (greater than 10% slope) are located along the park's escarpment face, while the steepest slopes are most commonly found along the park's many ravines and coulees.

Steeper slopes create a barrier to movement to many park users and present challenges during the construction of pathways. As a general rule of thumb, as slope increases, the challenges and costs associated with building a pathway increase. Commonly, if a route is to be located along slopes steeper than 10%, a cut-and-fill procedure would be required to level and stabilize the route. Cut-and-fill is a procedure where the elevation of a surface is modified by the addition or removal of surface material. Specifically, material is removed (cut) from sections where the existing surface is too high and deposited (fill) in low-lying sections to even out the slope of the route. The design criteria identified to address the parks slope is:

a. Avoid steep slopes

Table 11.1 Summary of Nose Hill Park slopes.

Slope Category	*Area (ha)*	*Area (%)*
0 - 5%	403.9	36.0
5 - 10%	192.1	17.1
10 - 20%	315.0	28.0
20 - 30%	151.1	13.5
30 - 45%	54.9	4.9
45 - 60%	6.1	0.5
> 60%	0.2	0.0

11.2 Attractiveness Criteria

Attractiveness criteria relate to where routes should be designated in Nose Hill Park. Attractiveness criteria include those that consider areas of attraction or interest in the park, while also considering the needs or desires of the various park users. The feasibility of the perimeter pathway and designated routes were determined by examining how well route met the various attractiveness criteria. Four criteria were identified to address interest in the park's special places, scenic routes and interest areas. The four attractiveness criteria include:

a. Link areas of attraction and park destinations (special places, features and major points of interests)
b. Provide for high quality views from routes
c. Locate routes in areas of heaviest park use
d. Follow "Desire Lines" where possible

11.3 Logistical Criteria

In addition to the general trail and pathway routing criteria, additional logistical criteria were identified to determine how well routes meet the vision and objectives of Calgary's pathway system, design specifications for pathways, and costs. The various logistical criteria are listed below.

a. Ensure pathways are multi-use and meet City of Calgary design standards and specifications (including specifications for route grade)
b. Ensure pathways efficiently connect communities and integrate with the existing City-wide regional pathway system
c. Ensure pathways are consistent with roadway guidelines
d. Ensure most effective use of public funds

12.0 PERIPHERAL PATHWAY FEASIBILITY

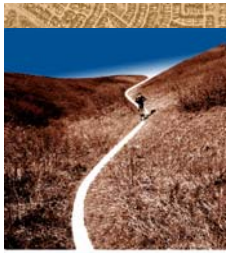
12.1 Conceptual Perimeter Pathway Background

The concept for the Nose Hill Park perimeter pathway was first identified by City Council in 1994 when approving the Nose Hill Park Natural Environment Management Plan (EnviResource Planning 1994). When approving the plan, Council also approved a motion for more restrictive usage of Nose Hill Park by cyclists to perimeter pathways and emergency vehicle access routes only. Implementation of this motion was dependent, however, on both the completed construction of a perimeter park pathway and through input received from public consultations.

Seven years later, the need for the perimeter pathway was re-stated as a missing link in the Calgary pathway network. This need was identified in the 2001 Calgary Pathways & Bikeways North Plan (IBI Group 2001) (TTP2001-41), which was created to identify priority areas where pathway links and bikeways are missing in north Calgary.

While the concept of the Nose Hill Park perimeter pathway has been identified and approved by City Council, the actual routing of the pathway and its' feasibility have not been fully established. The Calgary Pathways & Bikeways North Plan (IBI Group 2001) (TTP2001-41) identified a general circular route around the periphery of the park, however, the details of this route were not fully developed. The intent of this chapter is to provide an assessment of the feasibility of this pathway, by applying the Nose Hill Park planning, design and evaluation criteria and *City of Calgary Development Guidelines and Standards Specifications: Landscape Construction* (The City of Calgary Parks 2004). The results, and subsequent recommendations, of this analysis contributed to the development of the NHTPP recommendations.

Since the perimeter pathway has only been identified in concept, its' specific route was not yet formally designed. When the feasibility analysis was first initiated, it was not entirely clear if Council intended for the pathway to be constructed inside or outside of the park's boundary. In developing this study, however, it was assumed that a full circular conceptual pathway would be completely located within the park boundary, spaced approximately 10 m away from the inside (fenced) boundary (Map 12.1). This assumption was largely based on City of Calgary expressway set-back requirements and user safety concerns that prohibit the construction of a pathway along the rights-of-way of major expressways, including John Laurie Boulevard and Shaganappi Trail (Calgary Roads 2001). The length of this conceptual inside park perimeter pathway is approximately 13.5km long.



NOSE HILL PARK

North

Map 12.1 Conceptual Perimeter Pathway Route

Map Legend

Perimeter Pathway Routes

- Existing Pathways and Bikeways
- Conceptual Nose Hill Park Perimeter Pathway

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Major Roads

Data Source: Existing and planned pathway data provided by City of Calgary, Parks. Conceptual perimeter pathway digitized by O2 Planning + Design Inc. Aerial photography base map acquired in 2003 by Parks.

O2 PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters

12.2 Feasibility Analysis

The feasibility for the conceptual perimeter pathway was assessed by determining how well the entire pathway, and each pathway section, fulfilled a series of criteria. Pathway sections included those that run along 14th Street, John Laurie Boulevard, Shaganappi Trail and along the community of MacEwan.

Relevant Nose Hill Park pathway routing criteria were used to evaluate the feasibility of the conceptual perimeter pathway, which are described in Chapter 11.0 of this report. The feasibility of the conceptual perimeter pathway was assessed by determining how well the entire pathway, and each pathway section, fulfilled the pathway vulnerability, attractiveness and logistical criteria. The results of this assessment are described in the sections below.

12.2.1 Feasibility based on Vulnerability Criteria

Vulnerability criteria were used to help determine the overall suitability of the perimeter pathway. Results of this assessment, which were based on ecological, historical resources and topographical considerations, are described in the following sub-sections.

12.2.1.1 Ecological Considerations

The conceptual perimeter pathway route was assessed against five ecologically based criteria. These criteria are listed below, and the results of the feasibility assessment are described below.

a. Avoid areas of extensive woody vegetation
b. Avoid significant vegetation communities
c. Avoid new routes in native vegetation
d. Reduce landscape fragmentation
e. Avoid wet areas

A. Avoid areas of extensive woody vegetation

Woody vegetation communities should be protected, since their structure provides valuable cover for the park's birds and larger mammals, and an opportune micro-climate to support a variety of plants and insects. Woody vegetation communities include: aspen, balsam poplar, low shrub and tall shrub stands. In order to best protect these communities, trails and pathways should not, wherever possible, be routed through these invaluable habitats.

An analysis was undertaken that assessed the potential impact that the perimeter pathway may have on woody vegetation communities in Nose Hill Park. This analysis was undertaken by overlaying the pathway route over the park's detailed 1:5,000 ecosite inventory (GAIA Consultants 1993) in a geographic information system (GIS). The results of this analysis are presented in Table 12.1, which summarizes the total length of conceptual perimeter pathway that could affect each vegetation community. Map 12.2 identifies the locations where specific pathway sections conflict with woody vegetation (shown in red line). As Table 12.1 indicates, only 1% (148 m) of the conceptual perimeter pathway would impact woody vegetation communities, while large sections of the pathway would impact much larger patches of disturbed grassland (46%), non-native vegetation (30%) and native grassland (23%).

While the length of the potential pathway that may impact woody vegetation is low, it should be highlighted that there are many patches of woody vegetation along the conceptual pathway route that were not mapped in the 1:5,000 ecosite map, since the size of these stands were too small to meet the minimum mapping unit used to create the ecosite map. A visual analysis of the remote sensing imagery taken over the park, supported with field observations, indicated that the conceptual perimeter pathway would also impact many smaller patches of (unmapped) woody vegetation. If the conceptual pathway is constructed, extra care should be taken to avoid these small patches of woody vegetation since they are just as important ecologically as larger patches.

Based on the results of the woody vegetation assessment, it was of the opinion of O2 Planning + Design that the complete conceptual perimeter pathway, including all sections, met the majority of the criteria for avoiding areas of extensive woody vegetation.

Table 12.1 Total length of vegetation communities affected by the regional perimeter pathway.

Habitat	**All**		**14th Street NW**		**John Laurie Boulevard NW**		**MacEwan**		**Shaganappi Trail NW**	
	Length		**Length**		**Length**		**Length**		**Length**	
	(m)	***(%)***	***(m)***	***(%)***	***(m)***	***(%)***	***(m)***	***(%)***	***(m)***	***(%)***
Aspen	29	0.2	0	0.0	0	0.0	0	0.0	29	1.0
Balsam poplar	8	0.1	0	0.0	8	0.2	0	0.0	0	0.0
Disturbed	6,117	45.6	4,291	80.6	293	7.7	872	63.7	661	22.7
Low shrub	111	0.8	79	1.5	33	0.9	0	0.0	0	0.0
Native grassland	3,075	22.9	520	9.8	1,336	35.0	150	11.0	1,070	36.7
Non-native vegetation	4,045	30.1	433	8.1	2,145	56.2	347	25.3	1,120	38.4
Storm pond	37	0.3	0	0.0	0	0.0	0	0.0	37	1.3
Total	13,423	100	5,322	100	3,814	100	1,369	100	2,917	100

Summary of Potential Impacts / Limitations

Overall:	Meets the majority of criteria
14th Street NW:	Meets the majority of criteria
John Laurie Boulevard NW:	Meets the majority of criteria
MacEwan:	Meets the majority of criteria
Shaganappi Trail NW:	Meets the majority of criteria

B. Avoid significant vegetation communities

Four vegetation communities were identified by Kansas *et al.* (1993) as being environmentally sensitive and significant habitat features. Included in this designation were the Balsam poplar/Rose, Rough fescue/Parry oatgrass, Rough fescue/Golden bean, and Willow/Snowberry communities. A brief description of these habitat features and the justification for designating them as significant communities has been discussed in Chapter 5.0 of this report, and has been described in full detail in Kansas *et al.* (1993). It has been recommended that new trail and pathway developments be re-routed around these communities in order to protect these significant vegetation communities from disturbance, thereby maintaining their important wildlife habitat features.

The potential impacts of the perimeter pathway on these significant communities was assessed, and the results are outlined in Table 12.2. As the table indicates, the pathway would have an impact on two native grassland communities, and most notably the Rough fescue/Parry oatgrass community, which would be impacted by 2 km (15%) of the total pathway. The conceptual pathway would have a negligible effect on the two significant woody vegetation communities.

When analyzing individual pathway sections, it was observed that the John Laurie Boulevard and Shaganappi Trail pathway sections would have the greatest impact on significant vegetation communities (1.2 km and 1.1 km, respectively), while a much lower proportion of the 14th Street and MacEwan pathway sections would impact significant vegetation communities (Table 12.2).

Based on this analysis, it was the opinion of the consultants that the complete conceptual perimeter pathway would only partially meet the criteria for avoiding significant vegetation communities. It was felt that the John Laurie Boulevard and Shaganappi Trail sections did not meet the criteria, and therefore the only two pathway sections that would partially meet the criteria included the 14th Street and MacEwan sections, since only a very small proportion of significant vegetation communities would be disturbed by these pathway sections.

Summary of Potential Impacts / Limitations

Overall:	Partially meets the criteria
14th Street NW:	Partially meets the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Partially meets the criteria
Shaganappi Trail NW:	Does not meet the criteria

Table 12.2 Total length of pathway intersecting with significant vegetation communities

Vegetation Community	**All**		**14th Street NW**		**John Laurie Boulevard NW**		**MacEwan**		**Shaganappi Trail NW**	
	Length		**Length**		**Length**		**Length**		**Length**	
	(m)	***(%)***	***(m)***	***(%)***	***(m)***	***(%)***	***(m)***	***(%)***	***(m)***	***(%)***
Balsam Poplar / Rose	8	0.1	0	0.0	8	0.2	0	0.0	0	0.0
Rough Fescue / Parry Oatgrass	2,016	15.0	131	2.5	1,168	30.6	0	0.0	717	24.6
Rough Fescue / Golden Bean	587	4.4	156	2.9	0	0.0	78	5.7	353	12.1
Willow / Snowberry	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total Sensitive Vegetation	2,611	19.5	287	5.4	1,176	30.8	78	5.7	1,070	36.7
Total Pathway (Section) Length	13,423	100	5,322	100	3,814	100	1,369	100	2,917	100

C. Avoid new routes in native grassland vegetation

Nose Hill Park is one of the last places in Calgary that contains large expanses of native grassland. For this reason, one of the key routing criteria identified for the NHTPP was the avoidance of new route developments in native grassland. As summarized earlier in Table 12.1, the total length of the regional perimeter pathway that would affect native vegetation is approximately 3,075m or 23% of the entire pathway.

Map 12.2 identifies specific pathway sections (shown in yellow) where the perimeter pathway would impact native grassland communities. As demonstrated in the map and Table 12.1, both the John Laurie Boulevard and Shaganappi Trail pathway sections would have the greatest impact on native vegetation, where approximately 35% and 37% of each section would be located in native vegetation communities. Approximately 10% of the 14th Street and MacEwan pathway sections would be located in native vegetation communities, thereby posing a smaller impact than the other two conceptual pathway sections.

In order to better visualize where the perimeter pathway would impact native vegetation, elevational cross-sections were created for each pathway section. These cross-sections were used to visualize the locations of the various vegetation communities and elevational changes found along the perimeter pathway. This visualization helps demonstrate the magnitude of impact that the pathway would have on the various vegetation communities located in the park, including native grasslands. As depicted in Figure 12.1 and Figure 12.2, the degree of disturbance in native grasslands would be very high along the Shaganappi Trail and John Laurie Boulevard pathway sections. Conversely, the disturbance of native grasslands along the 14th Street (Figure 12.3) and MacEwan (Figure 12.4) pathway sections would only occur in isolated portions of the pathway.

Overall, it was of the opinion of the consultants that the complete conceptual perimeter pathway only partially met the criteria for avoiding new routes in native vegetation. As indicated below, the criteria were not met along the John Laurie Boulevard and Shaganappi Trail sections. Only the 14th Street and MacEwan sections partially met the criteria, since only 10% of the proposed routes sections would disturb native grassland communities.

Summary of Potential Impacts / Limitations

Overall:	Partially meets the criteria
14th Street NW:	Partially meets the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Partially meets the criteria
Shaganappi Trail NW:	Does not meet the criteria

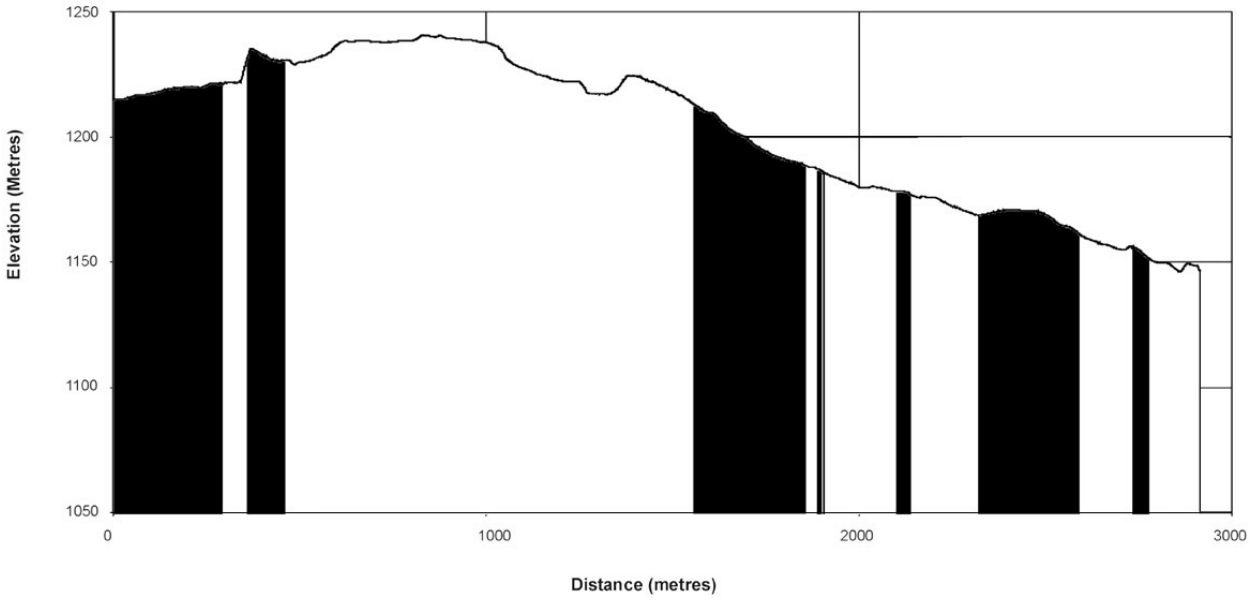


Figure 12.1 Native grassland and elevational cross-section along Shaganappi Trail NW pathway section

Pathway section shown represents the route running from the north (left) to the south (right)

Note: Areas of native grassland that would be impacted by perimeter pathway is shown in black.

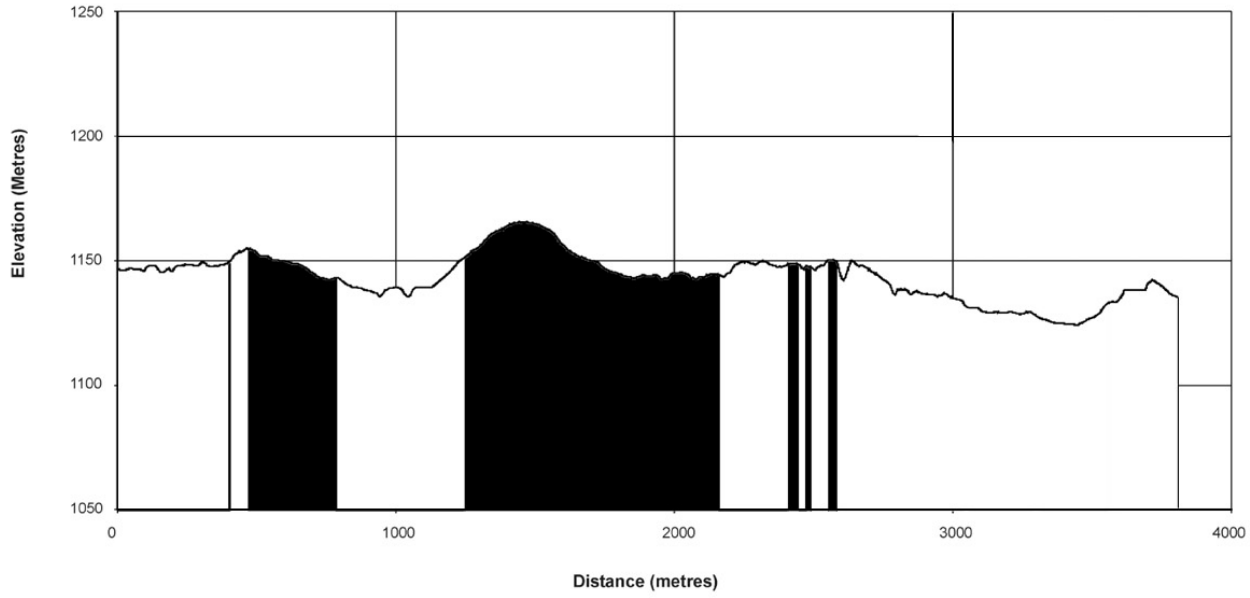


Figure 12.2 Native grassland and elevational cross-section along John Laurie Boulevard NW pathway section

Pathway section shown represents the route running from the west (left) to the east (right)

Note: Areas of native grassland that would be impacted by perimeter pathway is shown in black.

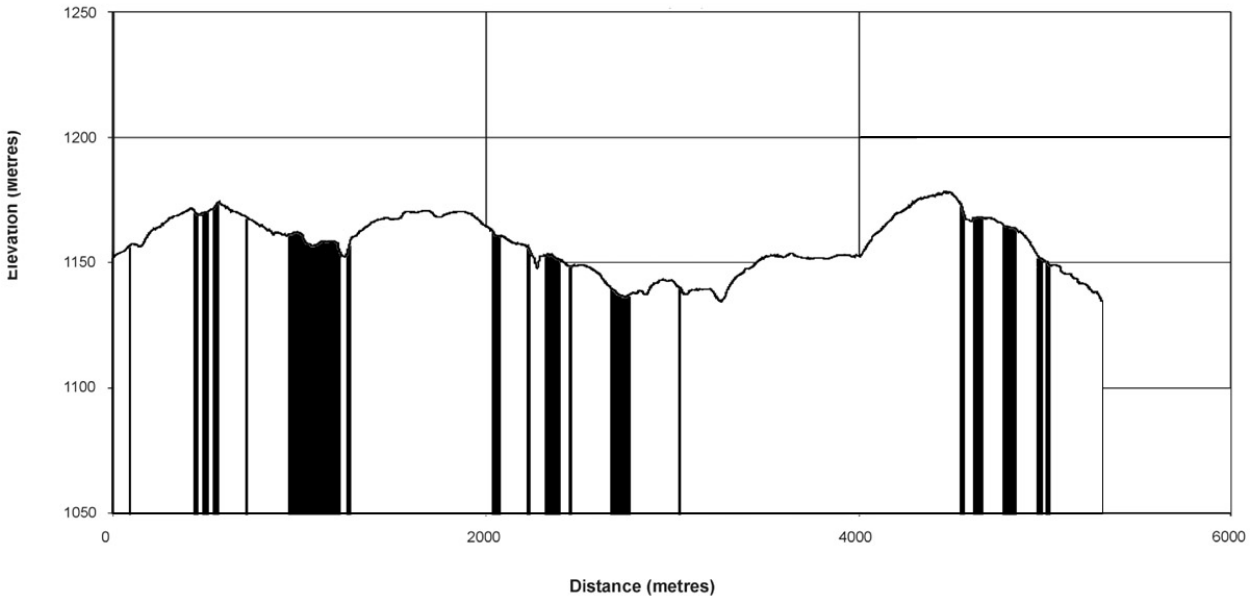


Figure 12.3 Native vegetation and elevational cross-section along 14th Street NW pathway section

Pathway section shown represents the route running from the north (left) to the south (right)

Note: Areas of native grassland that would be impacted by perimeter pathway is shown in black.

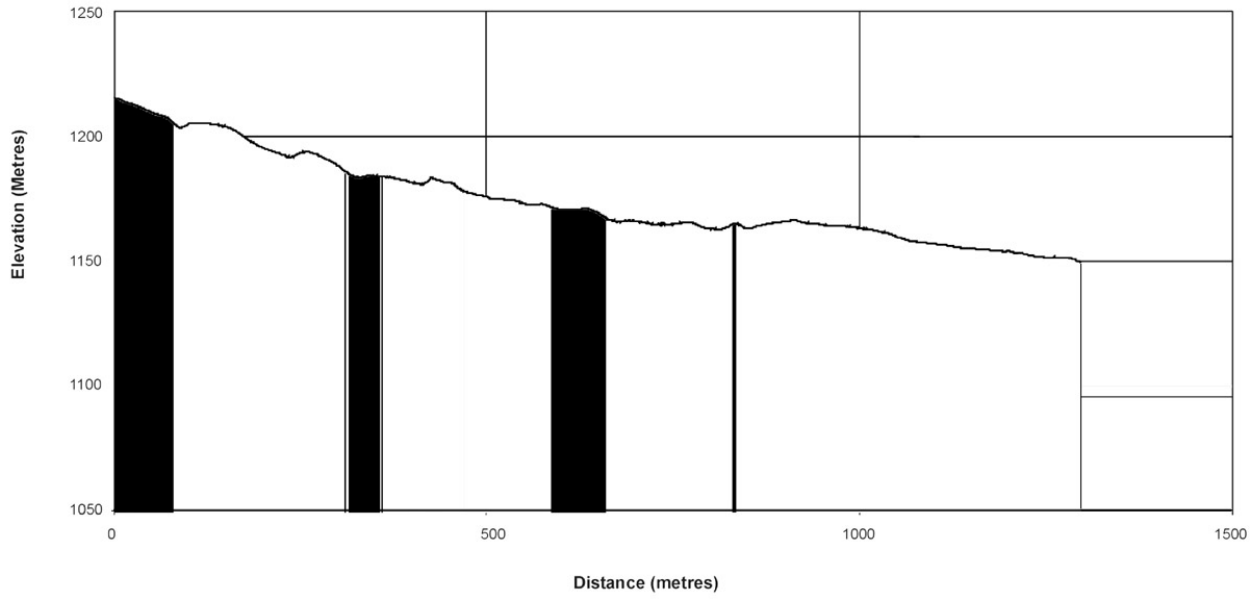


Figure 12.4 Native grassland and elevational cross-section along MacEwan pathway section

Pathway section shown represents the route running from the east (left) to the west (right)

Note: Areas of native grassland that would be impacted by perimeter pathway is shown in black.

D. Reduce landscape fragmentation

Landscape fragmentation is a statistical measure of how homogenous a landscape is. Fragmentation is, by definition, the breaking up of contiguous landscape patches into smaller patches (Forman 1995). This may occur through a number of processes of land transformation, such as trail and pathway development. Often, as a landscape becomes more fragmented from human disturbances, the connectivity of natural patches is reduced. Forman (1995) has identified key features that are indispensable to providing an ecologically viable landscape. These include (i.) large patches of natural vegetation, which provide the benefits of species richness and habitat for interior species, and (ii.) connectivity between large patches, often in the form of wide corridors or clusters of smaller patches of natural vegetation. At least some of these corridors or clusters of patches should be large enough to provide interior habitat.

It is recommended that a large proportion of the park's natural vegetation patches be retained. A review of historical aerial photographs of the park indicates that, historically, Nose Hill Park was composed of a few large natural landscape patches, with very few small patches. Today, the large patches have been lost and the park is dominated by many small landscape patches, which vary in size from less than 1 ha to 35 ha.

It is the opinion of the consultant that the conceptual perimeter pathway meets the criteria for reducing landscape fragmentation. The pathway would have a very minimal impact on landscape fragmentation since the pathway would be located around the perimeter of the park, parallel to the fence enclosing the park and the road networks, thereby only slightly reducing the outside patch sizes.

Summary of Potential Impacts / Limitations

Overall:	Meets the majority of criteria
14th Street NW:	Meets the majority of criteria
John Laurie Boulevard NW:	Meets the majority of criteria
MacEwan:	Meets the majority of criteria
Shaganappi Trail NW:	Meets the majority of criteria

E. Avoid wet areas

It has been recommended that all developments in the park avoid wet areas for ecological and surface stability reasons. Wet areas are considered to be ecologically important since they provide a source of water for the park's wildlife species. Wet areas should also be avoided since off-pathway use in these areas could reduce surface and soil stability, thereby contributing to vegetation and soil erosion.

The conceptual perimeter pathway is routed in very close proximity to the storm pond located in the southwest corner of the park (shown on Map 12.2 in blue, near the intersection of Shaganappi Trail and John Laurie Boulevard), and therefore, this portion of the pathway is not considered feasible.

If a pathway is to be constructed near this pond, the portion of the pathway that runs around the pond would need to be moved. While a detailed field assessment has not been undertaken to determine the best option for re-routing the pathway around the storm pond, two alternatives were briefly investigated. These alternatives include: Alternative A, which involves moving the pathway section further into the park; or Alternative B, which involves moving the section out of the park towards the intersection of John Laurie Boulevard and Shaganappi Trail. After reviewing the alternatives, only Alternative A was deemed feasible.

By applying Alternative A, the pathway section would need to be moved into the park, in a northeast direction. Since the pathway is being moved onto the slope that drains toward the pond, the side-slope cuts, which would be required for construction, would increase the impact on the environment, including disturbance of vegetation communities and disruption of shallow sub-surface flows. While additional work would be required to mitigate the potential for erosion along this pathway section, it is the opinion of the consultant that this alternative routing would be feasible.

Alternative B, which involves moving the pathway outside of the park, would not be feasible since the pathway would be relocated into the rights-of-way of Shaganappi Trail and/or John Laurie Boulevard. This pathway routing would not be feasible, since City of Calgary road standards (discussed in Chapter 12.1 of this report) do not permit the development of pathways along the rights-of-way of major highways.

It is of the opinion of the consultants that, overall, the conceptual perimeter pathway meets the criteria for avoiding wet areas. As indicated below, almost all sections meet this criteria, except for the Shaganappi Trail section, which only partially met this criteria due to the conflict with the pond and slope drainage as described above.

Summary of Potential Impacts / Limitations

Overall:	Meets the majority of criteria
14th Street NW:	Meets the majority of criteria
John Laurie Boulevard NW:	Meets the majority of criteria
MacEwan:	Meets the majority of criteria
Shaganappi Trail NW:	Partially meets the criteria

12.2.1.2 Historical Resources

One design criteria has been identified to address historical resources in Nose Hill Park. This criteria and the potential impact of the perimeter pathway on historical resources is described below.

A. Avoid historical resources

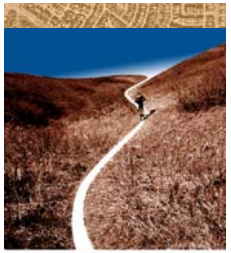
The design criteria related to historical resources is to avoid historical resources where feasible, otherwise mitigate. A GIS overlay analysis was used to determine where the conceptual perimeter pathway may impact known historical resources. When doing such analysis, it is important to keep in mind that the accuracy of the coordinates recorded for each historical resource vary significantly (i.e. from 50 m to 100 m), and, therefore, any conclusions regarding potential impact would need to be field verified during the detailed pathway design.

The GIS overlay analysis indicated that only one historic resource (Sited #EgPm-165) is located within close proximity (35 metres) to the conceptual perimeter pathway (site located along south end of Shaganappi Trail). This site has been described in Van Dyke's (1993) summary of archaeological sites as a campsite, composed of butchered bone and fire-cracked rock. It was of Van Dyke's (1993) opinion that the coordinates recorded for the sites were essentially correct (+/- 50 m). Since the coordinate for the site is within 35 m of the conceptual perimeter pathway location, a more detailed archaeological assessment of this vicinity would be required prior to construction to ensure that historical resources are not impacted by the pathway construction. It should be noted, however, that mitigation should be possible by re-routing the pathway around the archaeological site.

Based on this analysis, it is the opinion of the consultants that the complete conceptual perimeter pathway meets the criteria for avoiding historical resources. As indicated below, almost all sections met this criteria, except for the Shaganappi Trail section, which only partially met the criteria due to the potential conflict with site #EgPm-165 and the perimeter pathway route.

Summary of Potential Impacts / Limitations

Overall:	Meets the majority of criteria
14th Street NW:	Meets the majority of criteria
John Laurie Boulevard NW:	Meets the majority of criteria
MacEwan:	Meets the majority of criteria
Shaganappi Trail NW:	Partially meets the criteria



NOSE HILL PARK

North

Edgemont Bv. N.W. Parking Lot

Berkley Ga. N.W. Parking Lot

BEDDINGTON BV N.E.

SHAGANAPPI TR. N.W.

14 ST NW

64 Ave. N.W. Parking Lot

Brisebois Dr. N.W. Parking Lot

John Laurie Blvd. Pedestrian Overpass (To be Completed in 2005)

JOHN LAURIE BV N.W.

14 St. N.W Parking Lot

Charleswood Dr.

19 St. N.W. Parking Lot

Map 12.2
Potential Impacts of the Perimeter Pathway on Ecological Resources

Map Legend

Potential Ecological Impacts:

- Pathway with no impact
- Pathway impact on woody vegetation (aspen, balsam, low shrub)
- Pathway impact on native grassland communities

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Analysis of perimeter pathway on ecological resources by O2 Planning + Design Inc., October 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters

12.2.1.3 Topographical Considerations

The complex topographical landscape that attracts users to Nose Hill Park is also one of the park's key constraints to development. The sections below discuss the key topographical constraint that must be considered in the development of the conceptual perimeter pathway in Nose Hill Park.

A. Avoid steep slopes

An analysis was undertaken in the GIS to determine the landscape slope along all proposed sections of the perimeter pathway. The results of this analysis are summarized in Table 12.3 and Map 12.3. In total, approximately 30% of the conceptual perimeter pathway would be located on slopes less than 10%, which would require very little to no cut-and-fill. The remaining 70% of the conceptual pathway would be located on very steep slopes, which would, therefore, require a substantial amount of cut-and-fill to produce an acceptable tread cross slope. It should also be highlighted that the steeper the slope, the greater the amount of landscape disturbance since more cut-and-fill would be required; as well, wider shoulders would need to be constructed to stabilize the banks of the slope. Steep slopes also greatly increase pathway costs.

The results of the analysis were also summarized for each of the four pathway sections. The results of this analysis are summarized in Table 12.3, where it was demonstrated that, from a percentage point of view (not metres), both the John Laurie Boulevard and Shaganappi Trail pathway sections would require the least amount of cut-and-fill to construct a relatively flat route, when compared to the 14th Street and MacEwan pathway sections. That being stated, a substantial amount of cut-and-fill would still be required to level out at least 60% of the pathway sections along John Laurie Boulevard and Shaganappi Trail. Overall, 71% of the pathway system (9.5km) would require cut and fill to produce grades less than 10%.

Based on the results of this slope analysis, it is of the opinion of the consultants that, overall, the complete conceptual perimeter pathway, and each section, do not meet the criteria for avoiding steep slopes.

Summary of Potential Impacts / Limitations

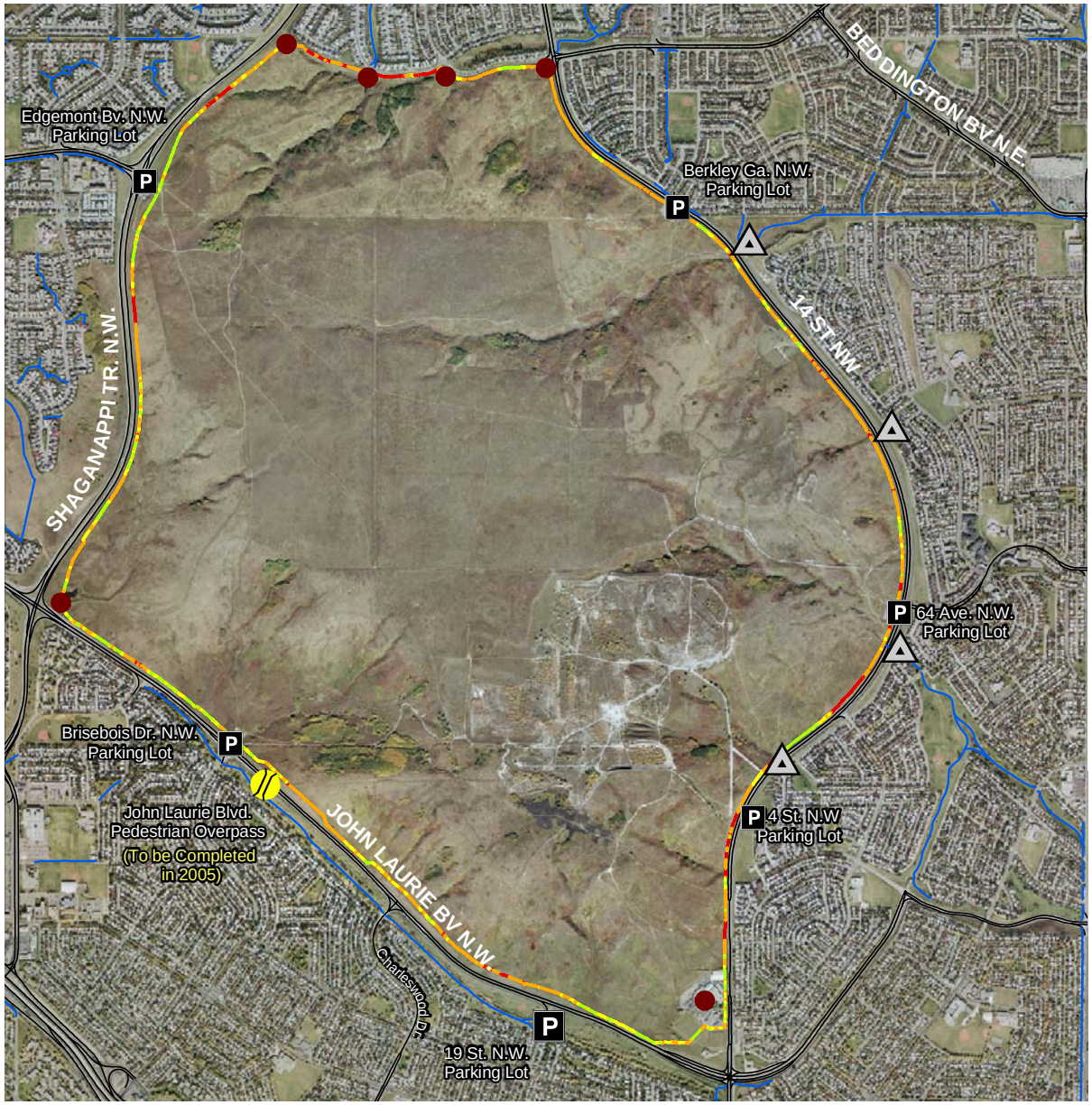
Overall:	Does not meet the criteria
14th Street NW:	Does not meet the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Does not meet the criteria
Shaganappi Trail NW:	Does not meet the criteria

Table 12.3 Total pathway sections by slope category

Landscape Slope (%)	All		14th Street		John Laurie Boulevard		MacEwan		Shaganappi Trail	
	Length		Length		Length		Length		Length	
	(m)	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*
0 – 5	1,601	11.9	356	6.7	671	17.6	59	4.3	515	17.7
5 – 10	2,344	17.5	644	12.1	975	25.6	94	6.9	631	21.6
10 – 20	4,009	29.9	1,072	20.1	1,618	42.4	291	21.3	1,028	35.2
20 – 30	3,450	25.7	2,180	41.0	406	10.6	435	31.8	429	14.7
30 – 45	1,842	13.7	1,067	20.0	131	3.4	376	27.5	269	9.2
45 – 60	176	1.3	3	0.1	14	0.4	114	8.3	45	1.5
> 60	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Total	13,423	100	5,322	100	3,814	100	1,369	100	2,917	100

NOSE HILL PARK

North



Map 12.3
Slope Influence on Perimeter Pathway Construction

Map Legend

Slope Influence

- 0% - 5% (No Cut and Fill Required)
- 5% - 10% (Cut and Fill may be Required)
- 10% - 30% (Cut and Fill Required)
- > 30% (Extensive Cut and Fill Required)

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Analysis of perimeter pathway and park slope by O2 Planning + Design Inc., October 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters

12.2.2 Feasibility based on Attractiveness Criteria

The rankings provided for each of the attractiveness routing criteria were used to help determine the overall suitability of the perimeter pathway. Results from the attractiveness criteria rankings are described below.

A. Link areas of attraction and park destinations (special places, features and major points of interests)

Special places, features and major points of interest in Nose Hill Park were mapped to contribute to the development of the NHTPP recommendations, and ensure that designated routes bring users to the various park destinations. A GIS analysis indicated that the perimeter pathway only links users to the park entrance points, and does not provide any significant access to any of the park's other destinations. For this reason, the complete conceptual perimeter pathway only partially meets the criteria for linking areas of attraction in the park.

Summary of Potential Impacts / Limitations

Overall:	Partially meets the criteria
14th Street NW:	Partially meets the criteria
John Laurie Boulevard NW:	Partially meets the criteria
MacEwan:	Partially meets the criteria
Shaganappi Trail NW:	Partially meets the criteria

B. Provide for high quality views from routes

One of the key features that attract users to Nose Hill Park is the dramatic views of the city, surrounding countryside and mountains. The majority of these high quality viewpoints are provided along the ridge that runs along the park's escarpment. The conceptual perimeter pathway would only provide a few scenic viewing opportunities, when compared to those provided by the parks escarpment and ridge. For this reason, it was determined that all sections of these perimeter pathway would not meet the criteria for providing high quality views from its' route.

Summary of Potential Impacts / Limitations

Overall:	Does not meet the criteria
14th Street NW:	Does not meet the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Does not meet the criteria
Shaganappi Trail NW:	Does not meet the criteria

C. Locate routes in areas of heaviest park use

Currently, over 320 km of formal and informal routes have been mapped in Nose Hill Park. This network indicates, in general, where the highest and lowest concentrations of use are in the park. In order to graphically display park use trends, a trail density map was created that counted the density of trail sections found within a fixed area. The results of this density map were presented earlier in this report (Chapter 8.0, Map 8.3). As the map indicates, the highest density of trails (and hence park use levels) are associated with each park entry point (parking lots, tunnels, etc.) and extend inwards along the neighbouring escarpment and upper plateau. Trail density (and associated park use levels) are lowest along the outside perimeter of the park. Based on the trail density mapping results, it was determined that perimeter pathway would not be located in areas of heaviest park use, and therefore does not meet the criteria for locating routes in areas of heaviest use.

Summary of Potential Impacts / Limitations

Overall:	Does not meet the criteria
14th Street NW:	Does not meet the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Does not meet the criteria
Shaganappi Trail NW:	Does not meet the criteria

D. Follow "Desire Lines" where possible

A visual interpretation of the aerial photography and informal trail network mapped for Nose Hill Park was used to determine how well “desire lines” could be followed in the routing of the conceptual perimeter pathway. While there are a few small desire lines located in close proximity to the conceptual perimeter pathway along 14th Street and John Laurie Boulevard, the majority of the conceptual perimeter pathway does not significantly follow any of the currently existing desire lines. Rather, the majority of desire lines link trailheads with points of attraction, and therefore lead up the escarpment, follow along the escarpment ridge and cross over the upper plateau.

Based on these results, it was concluded that the conceptual perimeter pathway did not meet the criteria for following desire lines. As indicated below, the only two sections that partially met this criteria included portions of the 14th Street and John Laurie Boulevard sections.

Summary of Potential Impacts / Limitations

Overall:	Does not meet the criteria
14th Street NW:	Partially meets the criteria
John Laurie Boulevard NW:	Partially meets the criteria
MacEwan:	Does not meet the criteria
Shaganappi Trail NW:	Does not meet the criteria

12.2.3 Feasibility based on Logistical Criteria

Pathway feasibility rankings were determined by examining how well the perimeter pathway route met various logistical criteria. The results of these rankings are described below.

A. Ensure pathways are multi-use and meet City of Calgary design standards and specifications

The concept of *pathway grade* varies from *landscape slope*. Pathway grade is the gradient along the alignment, measured in percent slope, of a pathway section, rather than of the landscape itself. The City of Calgary construction specifications for pathways set specific guidelines related to pathway grade. Pathway grades under 3% are acceptable for all users, including wheelchairs. Grades that extend from 3% to 5% are only acceptable if the pathway section is no longer than 200m, and grades that range from 5% to 8% are only acceptable if the sections are no longer than 50m.

The grade of individual perimeter pathway sections were analyzed in the GIS, and the results of this analysis are outlined in Table 12.4. The analysis indicated that approximately 10% of the perimeter pathway will have a desirable grade of less than or equal to 3%, and, in total, 17% of the pathway meets the standards of shorter pathway sections on steeper grades (i.e. 3% and 5%, and 5% and 8% sections).

Approximately 74% (9,864 m) of the conceptual perimeter pathway does not meet the desirable maximum grade for pathways (greater than 8% grade), and, therefore, the pathway will not meet the City of Calgary construction standards. Map 12.4 identifies (shown using red line) all locations along the perimeter pathway that exceed the 8% grade and, therefore, would require mitigation when constructing the route. Potential mitigation to this steep grade issue include pathway re-routing, and/or significant cut-and-fill to reduce the grade to acceptable levels. While the possibility of using cut-and-fill exists, it should be highlighted that this would substantially increase the construction costs along the pathway and impact native grasslands in some areas.

Based on the results of the pathway grade analysis, it is the opinion of the consultants that, overall, the complete conceptual perimeter pathway, including each section, does not meet the criteria for ensuring that multi-use pathways meet City of Calgary design standards for slope and grade. It is felt that this failure to meet design standards is an overriding concern, and, in itself, makes the conceptual perimeter pathway routing infeasible.

Summary of Potential Impacts / Limitations

Overall:	Does not meet the criteria
14th Street NW:	Does not meet the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Does not meet the criteria
Shaganappi Trail NW:	Does not meet the criteria

Table 12.4 Total pathway grade

Pathway Grade (%)	All		14th Street		John Laurie Boulevard		MacEwan		Shaganappi Trail	
	Length		Length		Length		Length		Length	
	(m)	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*
0% – 3%	1,291	9.6	299	5.6	539	14.1	51	3.7	402	13.8
3% – 5% < 200m	878	6.5	255	4.8	305	8.0	41	3.0	278	9.5
3% – 5% > 200m	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5% – 8% < 50m	1,391	10.4	358	6.7	598	15.7	44	3.2	391	13.4
5% – 8% > 50m	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
> 8%	9,864	73.5	4,411	82.9	2,373	62.2	1,233	90.1	1,847	63.3
Total	13,423	100	5,322	100	3,814	100	1,369	100	2,917	100

B. Ensure pathways efficiently connect communities and integrate with the existing city-wide pathway system

A key intent for the conceptual perimeter pathway is to contribute to and provide a logical connection to the existing regional pathway network. The conceptual routing for the perimeter pathway would provide a good connection to:

- Surrounding communities,
- Existing local and regional pathways,
- The four tunnels currently running under 14th Street,
- The proposed John Laurie Boulevard overpass, and
- Existing infrastructure, such as parking lots, rest areas and the public washroom at Edgemont Drive.

While the conceptual pathway provides good connections to neighbouring communities, it does not provide good connections to neighborhoods on opposite sides of the park (i.e. from Edgemont to Berkley Gate), since the distance and time to travel around the perimeter pathway would be much longer, and often physically more intensive, than using a route that crosses directly over the park.

Each pathway section would efficiently connect to the surrounding network of regional and local pathways, except for the John Laurie Boulevard section. This section would provide a redundant

travel route since there is already an existing pathway established along most of the south side of John Laurie Boulevard, and additional sections are planned to extend this route eastward to 14th Street (see Map 12.1). Based on this redundancy, it is recommended that majority of the John Laurie Boulevard conceptual perimeter pathway sections be removed from the concept.

It is of the opinion of the consultants that the 14th Street, MacEwan and Shaganappi Trail pathway sections only partially met the criteria for ensuring that the pathway connects and contributes to the existing regional pathway since these sections only provided circular access around the park, and did not facilitate ease of movement between cross-park communities. The John Laurie Boulevard section did not meet the criteria since a redundant parallel route is located directly south of the park, which is very similar in length to the John Laurie Boulevard route section identified in the conceptual perimeter pathway.

Summary of Potential Impacts / Limitations

Overall:	Partially meets the criteria
14th Street NW:	Partially meets the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Partially meets the criteria
Shaganappi Trail NW:	Partially meets the criteria

C. Ensure pathways are consistent with roadway guidelines

Pathway construction is not permitted along the rights-of-way of major expressways, which includes both John Laurie Boulevard and Shaganappi Trail, due to City of Calgary expressway set-back requirements and user safety concerns (Calgary Roads 2001). Since the conceptual perimeter pathway is located within the park boundary, the pathway sections along Shaganappi Trail and John Laurie Boulevard will uphold this regulation.

It should be noted, however, that if the conceptual perimeter pathway were to be located outside of the park boundary, the pathway could not be constructed along John Laurie Boulevard or Shaganappi Trail due to conflicts with the road rights-of-way regulation. It should also be noted that while regulations could permit the development of a pathway along 14th Street, this route would not be fully feasible since the light posts installed along 14th Street would become obstacles to construction or movement. Many of the posts would need to be moved in order to permit construction of the pathway route.

Since the conceptual perimeter pathway is entirely located inside the park, all pathway sections satisfactorily meet the routing criteria that state pathways should be consistent with roadway regulations.

Summary of Potential Impacts / Limitations

Overall:	Meets the majority of criteria
14th Street NW:	Meets the majority of criteria
John Laurie Boulevard NW:	Meets the majority of criteria
MacEwan:	Meets the majority of criteria
Shaganappi Trail NW:	Meets the majority of criteria

D. Ensure most Effective Use of Public Funds

One major consideration in determining the feasibility of the conceptual perimeter pathway is how effectively public funds are utilized. While it is not possible to provide a specific construction estimate without confirmation of the final route and a detailed routing design, an opinion of probable cost has been provided to demonstrate the potential costs of the regional perimeter pathway. The opinion of cost has been determined by calculating an approximate linear per metre construction cost for regional pathways of $125/m, which is based on the assumption of a 2.5 m pathway width. This cost per linear metre was multiplied by the total length of the conceptual perimeter pathway, which is approximately 13.4km long.

The potential cost of each section is summarized in Table 12.5, and, as the table indicates, the potential cost for the conceptual perimeter pathway would be approximately $1,677,750. This opinion of cost considers the large amount of cut-and-fill that would be required to construct a pathway with satisfactory grades. Additional costs may be incurred if difficult construction conditions are encountered.

It is the opinion of the consultants that the perimeter pathway, including all sections, is not an effective use of public funds. This opinion is influenced by the following factors, including:

- The high costs associated with the construction of the perimeter pathway
- The potential for increased costs when dealing with the extensive cut-and-fill that would be required to produce an acceptable pathway grade
- The routing selection does not link major areas of attraction in the park, and therefore would only serve a limited user base
- The routing selection is not as effective in connecting communities located across the park as an east-west and north-south connection could be
- Other alternative routes (described in the following chapter) would better satisfy: the pathway evaluation criteria described throughout the report; City of Calgary standards and specifications; the missing links in the city-wide pathway system; and the needs and use patterns of the majority of park uses.

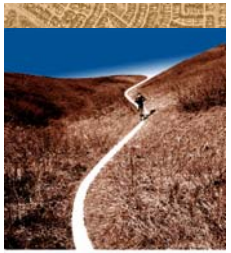
Based on the above listed factors, it is the opinion of the consultants that other alternative routes be examined that would make far more effective use of public funds.

Summary of Potential Impacts / Limitations

Overall:	Does not meet the criteria
14th Street NW:	Does not meet the criteria
John Laurie Boulevard NW:	Does not meet the criteria
MacEwan:	Does not meet the criteria
Shaganappi Trail NW:	Does not meet the criteria

Table 12.5 Opinion of probable cost for conceptual perimeter pathway construction

Conceptual Perimeter Pathway Section	*Pathway Length (m)*	*Cost / m ($)*	*Opinion of Probable Cost*
14th Street	5,322	$ 125	$ 665,250.00
John Laurie Boulevard	3,814	$ 125	$ 476,750.00
MacEwan	1,369	$ 125	$ 171,125.00
Shaganappi Trail	2,917	$ 125	$ 364,625.00
Overall	**13,422**		**$ 1,677,750.00**



NOSE HILL PARK

North

Map 12.4
Grade Influence on Perimeter Pathway Construction

Map Legend

Grade

- Acceptable Grade
- Grade Requires Mitigation

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Analysis of perimeter pathway and park elevation by O2 Planning + Design Inc., October 2004. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

12.3 Recommendations for Pathway Development

In response to the results of the conceptual perimeter pathway feasibility assessment, the consultants have suggested the following alternative options for pathway development in and around Nose Hill Park. Where possible, these options will be integrated into the development of the NHTPP recommendations.

12.3.1 Alternative Pathway Recommendations

Four alternative pathway routing options have been suggested that, in the opinion of the consultants, would better meet the Nose Hill Park pathway route evaluation criteria and contribute to existing city-wide pathway connections, and therefore provide a more responsible use of public funds. These four alternative routes include:

1. On-Street Bikeway on the east side of MacEwan Glen Drive
2. 14th Street NW Regional Pathway
3. Nose Hill Park East-West Pathway
4. Nose Hill Park North-South Pathway

MacEwan Glen Drive On-Street Bikeway

An on-street bikeway is one of the suggested alternative pathway options. This route would be located along the east side of MacEwan Glen Drive (shown Part 1, Chapter 4.0 - Map 4.3), which is located along the north end of Nose Hill Park. The benefits of this bikeway, when compared to the conceptual perimeter pathway, include:

- No direct impact to park landscape, vegetation and wildlife;
- No impact to Nose Hill Park's sensitive vegetation communities;
- No need for any cut-and-fill (reduces costs);
- Very little modifications to existing infrastructure (asphalt already exists);
- Road has relatively level grade, therefore meets City of Calgary criteria related to bikeway designation; and
- On-street bikeway would link with existing local and regional pathway system north and east of the park.

14th Street NW Regional Pathway

Another alternative pathway routing option is the construction of a regional pathway along the east side of 14th Street NW, making use of existing infrastructure (on-street and pathways) and informal routes currently in use along the green space that runs parallel to 14th Street. The

approximate location for this route is shown in Part 1, Chapter 4.0 - Map 4.3. The benefits of this pathway, when compared to the conceptual perimeter pathway, include:

- No direct impact to park landscape, vegetation and wildlife;
- No impact to Nose Hill Park's sensitive vegetation communities;
- Makes use of existing infrastructure (local pathways, on-street);
- Only 28% of this route currently has grades greater than 8%, therefore requiring less cut-and-fill than would be required inside the park along 14th Street (83% of 14th Street perimeter pathway has grades greater than 8%); and
- Pathway provides a good link to the existing regional pathway system located east of the park, as well as connects well with all tunnel entrances into Nose Hill Park.

Nose Hill Park East-West and North-South Routes

In addition to the two out-of-park pathway alternatives, two alternative pathway routing options have been delineated to provide east/west and north/south access across Nose Hill Park, which are approximately 7.5km in length. The approximate locations for these two routes are highlighted in Part 1, Chapter 4.0 - Map 4.3. The benefits of these across park pathways, when compared to the conceptual perimeter pathway, include:

- Reduces the total length of regional pathways in the park from approximately 13.5km to 7.5km, of which 0.6km already exists along the Edgemont interpretive pathway
- Lower impact to native and sensitive vegetation communities since the pathway route, for the most part, would follow existing desire lines
- Meets the majority of attractiveness routing criteria (i.e. provides high quality views, located along routes of heavy use, links users with areas/points of attraction);
- Makes use of existing desire lines;
- A few select pathway sections would require cut and fill to produce a grade that is less than 8%, compared to the 9.8km perimeter pathway that would require substantial cut and fill work to reduce the grade below 8%; and
- Good connection with the existing regional pathway network located northwest and northeast of Nose Hill park, as well as good connection to the new Brisebois Drive barrier-free pedestrian overpass and the regional pathway system running south of the park.

12.4 Summary of Feasibility Findings

This section provides a summary of the Nose Hill Park perimeter pathway feasibility assessment results. Feasibility was assessed by determining how well the complete pathway, and each individual pathway section, fulfilled a series of pathway routing evaluation criteria. The pathway routing criteria were organized according to vulnerability, attractiveness and logistical criteria. Ratings were applied to each evaluation criteria based on the assessment that indicated if the

pathway: (a.) met the majority of the criteria requirements, (b.) partially met the criteria, or (c.) did not meet the criteria. A summary of the feasibility rankings applied to each evaluation criteria have been summarized in Table 12.6.

In light of the evaluation, the overall conclusion of the consultants is that the Nose Hill Park conceptual perimeter pathway, including each pathway section, is not practically feasible. This conclusion is based on a variety of considerations, including ecological, topographical, construction considerations, user considerations and cost estimates. The overriding elements that determined this conclusion include:

1. The ecological and topographical considerations strongly support rejection of the perimeter pathway, since significant lengths of native grasslands, which are also considered sensitive wildlife habitat components, and many steeply sloping areas would be disturbed in order to construct the perimeter pathway.
2. The perimeter pathway would only serve a limited user base since the pathway does not link major areas of attraction in the park.
3. The perimeter pathway does not respond to desired regional pathway routes, such as the east-west and north-south access routes identified as missing links across the park by the Calgary Pathways and Bikeways stakeholder working group, as described in the Calgary Pathways and Bikeways – North Plan (IBI Group 2001) (TTP2001-41).
4. The required design standards for a perimeter pathway cannot be met without extensive grade modifications, which would substantially increase pathway construction costs and disturbances to native grasslands.
5. The perimeter pathway is not an efficient use of public funds. This conclusion is based on a variety of factors, including the redundancy with the parallel pathway along John Laurie Boulevard; the routing selection is not as effective in connecting communities as an east-west and north-south connection would be; the route would not serve the purposes of the majority of park users; and the high construction costs that would be required to produce a pathway with suitable grades.

For the above listed reasons, it is recommended that in order to fulfill the Council motion for a Nose Hill Park regional pathway that other alternative routing be incorporated that better meet the pathway routing criteria and provide a more responsible use of public funds. Preliminary concepts for alternative pathways have been described in this Chapter, and include an on-street bikeway along the east side of MacEwan Glen Drive, a pathway located on the east side of 14th Street NW, and two pathway routes in the park that extend in east-west and north-south directions.

Table 12.6 Summary of feasibility rankings

SUMMARY OF FEASIBILITY RESULTS

Evaluation Criteria	Overall Pathway Rating	14th Street NW	John Laurie Boulevard NW	MacEwan Glen Drive NW	Shaganappi Trail NW
Vulnerability Criteria					
Ecological					
Avoid areas of extensive woody vegetation	●	●	●	●	●
Avoid significant vegetation communities	◑	◑	○	◑	○
Avoid new routes in native vegetation	◑	◑	○	◑	○
Reduce landscape fragmentation	●	●	●	●	●
Avoid Wet Areas	●	●	●	●	◑
Historical Resources					
Avoid historical resources	●	●	●	●	◑
Topographical					
Avoid steep slopes	○	○	○	○	○
Attractiveness Criteria					
Make areas of attraction park destinations	◑	◑	◑	◑	◑
Provide for high quality views from routes	●	●	●	●	●
Locate trails in areas of heaviest park use	○	○	○	○	○
Follow "Desire Lines" where possible	○	◑	◑	○	○
Logistical Criteria					
Ensure pathways are multi-use and meet City of Calgary design standards and specifications	○	○	○	○	○
Ensure pathways efficiently connect communities and integrate with the existing City-wide regional pathway system	◑	◑	○	◑	◑
Ensure pathways are consistent with roadway guidelines	●	●	●	●	●
Ensure most effective use of public funds	○	○	○	○	○
Overall Rating	○	○	○	○	○

Legend: ● Meets the Majority of Criteria ◑ Partially Meets the Criteria ○ Does Not Meet the Criteria

13.0 PUBLIC PARTICIPATION

In 2004, The City of Calgary Parks followed a City Council directive to develop a trail and pathway plan for Nose Hill Park. As part of the planning process, Parks collaborated with the Engagement Resource Unit to develop a public participation engagement plan. In May 2004, Parks contracted the services of KARDUN Consultants & Associates (KARDUN) to work with the NHTPP project team and to facilitate the planned series of stakeholder input group and public meetings.

13.1 Public Participation Process

A general framework for the public participation process was identified by Parks and the Public Engage Unit at the start of the project. This framework initially included two stakeholder input group meetings and two public meetings, which were planned to start in June of 2004 and finish sometime in late fall 2004 or early winter 2005. In response to stakeholder requests, as well as changes in the project scope, four additional stakeholder meetings were added throughout the process. Table 13.1 outlines the timeline and planned steps for the public participation meetings, and identifies a summary of the key outcomes from each meeting.

The City Council approved “engage! Framework” was incorporated into all aspects of the public participation process. At each meeting participants were informed as to where the meeting fit into the “Spectrum of Strategies and Promises”, and what the expectations were for the public, stakeholders and members of the project team (Parks staff and consultants). A summary of the engagement strategies for each stakeholder and public meeting are listed in Table 13.1.

The engage! Framework also provided direction to the project team on how to best involve the public and stakeholders in a meaningful participation process. For example, the planned and structured stakeholder consultation process involved information sharing, group work, questionnaires and a tour in Nose Hill Park. Stakeholders were also expected to communicate project information with members of their respective groups, and, where required, report back key information from their members.

Table 13.1 Public engagement activities and purpose

Date	Engagement Activity	Engage Strategy	Purpose and Outcomes
June 10, 2004	Stakeholder Input Group – Meeting # 1	Inform Listen and Learn	▪ Provide stakeholders with background information related the NHTPP project, including the planned stakeholder engagement process and need for the plan ▪ Obtain feedback from stakeholders related to park issues and concerns, including priorization of issues and concerns ▪ Obtain input on route planning and design evaluation criteria
June 24, 2004	Stakeholder Input Group – Meeting # 2	Consult	▪ Share the information collected during meeting # 1 ▪ Consult with stakeholders in the identification and mapping of special features, park attractions, and suggested park travel routes and amenities
September 11, 2004	Stakeholder Input Group – Meeting # 3	Inform Listen and Learn	▪ Consultant presentation of preliminary routing (4) and facilities concepts for stakeholder evaluation, which include route types and surface materials, multi-use zone configurations, as well as suggested amenity and parking lot upgrades (note, concepts developed based on input received from stakeholders during the previous two meetings and through a series of planning and evaluation criteria) ▪ Clarify questions and comments on the preliminary concepts ▪ Relate the concepts presented with a visit to key areas within Nose Hill Park
September 11 to October 14, 2004	Stakeholder Input Questionnaire	Consult	▪ Stakeholders provided input in regards to the four concept plans ▪ Questionnaire was used to identify areas of support amongst stakeholders, to identify areas of disagreement amongst stakeholders, and to identify gaps in the concept plans
October 27, 2004	Stakeholder Input Group – Meeting # 4	Listen and Learn	▪ Present the findings from the stakeholder questionnaire ▪ Provide stakeholder with an opportunity to make a brief presentation on their comments and suggestions for improvement of the preliminary routing and facility concepts ▪ Clarify areas of stakeholder support, differences and new ideas (by project team) ▪ Discuss dates and promotion of the upcoming public meetings

Table 13.1 Public engagement activities and purpose (Cont'd)

Date	Engagement Activity	Engage Strategy	Purpose and Outcomes
January 15, 2005	Public Meeting # 1	Listen and Learn Consult	▪ Review park issues, concerns and the need for a trail and pathway plan ▪ Present the alternative routing and facilities components for Nose Hill Park, including routing, surfacing, amenities and parking lot upgrades ▪ Answer technical questions related to the NHTPP and alternative components ▪ Obtain citizen feedback and preference for the alternative components through a design option feedback questionnaire ▪ Obtain citizen feedback on the effectiveness of the meeting
February 15, 2005	Stakeholder Input Group – Meeting # 5	Inform Consult	▪ Provide the stakeholders with an overview of the findings from questionnaire distributed at the public meeting # 1 ▪ Present the preferred alternative components and the preliminary NHTPP recommendations ▪ Provide stakeholders with the opportunity to review and provide feedback on the preliminary NHTPP recommendations
February 26, 2005	Public Meeting # 2	Inform Listen and Learn Consult	▪ Present the preferred concepts and the NHTPP recommendations ▪ Provide answers to questions asked by the public ▪ Receive feedback from the public related to the recommended plan
April 21, 2005	Stakeholder Input Group – Meeting #6	Inform	▪ Present final NHTPP recommendations to stakeholders ▪ Thank the stakeholders for their contribution of time and energy associated with the extensive stakeholder consultation process

13.2 Stakeholder Input Group Participation

A stakeholder input group was assembled to assist in the development of the NHTPP recommendations. At the start of the project, representatives from 24 organizations were invited to participate in the planning process. The intent of their participation was to identify and validate park issues, contribute to the development of route planning and design evaluation criteria, identify and map potential park destinations and park routes, review and evaluate preliminary routing and facilities concepts, and review and critique the NHTPP recommendations. Stakeholder representatives were also expected to communicate with and

provide updates to their respective organizations on the status of the plan, and to gather input when needed.

A summary of the 24 organizations that were invited to form the stakeholder working group are listed Table 13.2. These groups were selected to represent both city-wide interest groups and community organizations that directly border Nose Hill Park. In order to provide for productive input group meetings, a strategic decision was made to limit the stakeholder group size to not more than twenty-five organizations. Only one representative from each stakeholder group was invited to attend each meeting.

A summary description of the intent and outcomes of each stakeholder input meeting has been provided in the following sub-sections.

Table 13.2 Listing of invited stakeholder organizations

Advisory Committee on Accessibility	Beddington Community Association
Brentwood Community Association	Calgary Aboriginal Urban Affairs
Calgary Field Naturalists' Society	Calgary Mountain Bike Alliance
Calgary Parks and Wilderness Society	Calgary Pathways and Bikeways Advisory Council
Calgary Road Runners	Calgary Winter Club
Cambrian Heights Community Association	Dalhousie Community Association
Edgemont Community Association	Elbow Valley Cycling Club
Federation of Calgary Communities	Foothills Wanderers
Friends of Nose Hill	Huntington Hills Community Association
North Haven Community Association / Ward 4 Liaison	MacEwan / Sandstone Community Association
Off-Leash Calgary	Seniors Outdoor Recreation Group
Triwood Community Association / Ward 7 Liaison	Ward 2 Liaison

13.2.1 Stakeholder Meeting #1: Identification of Park Issues, Conflicts, Planning & Evaluation Criteria

Meeting Overview

The first stakeholder input group meeting was held on June 10, 2004. In total, 17 stakeholders participated in this meeting. The purpose for this meeting was to:

- Provide stakeholders with background information related the NHTPP project, including the planned stakeholder engagement process and need for the plan,
- Obtain feedback from stakeholders related to park issues and concerns, including priorization of issues and concerns, and
- Obtain input on route planning and design evaluation criteria.

Stakeholders were also informed on the engagement process, including the expectations of the stakeholders, consultants, and Parks staff within the context of the "Spectrum of Strategies and Promises" as part of the "engage! Policy Framework". Additionally, stakeholders were given information related to the project history, current state of the park, impacts of park use, and technical information relevant to the routing of trails and pathways.

In small input groups, stakeholders were asked to identify and list park conflicts and issues, as well as potential planning and evaluation criteria. Following the small group sessions, the entire group congregated together and a "nominal group process" was used to priorize the lists of conflicts/issues and evaluation criteria.

Meeting Outcome

The key outcomes of the June 10, 2004 stakeholder meeting included three lists of high, moderate and low priority park issues and conflicts; as well, a listing of potential route planning and design evaluation criteria. A listing of the high priority conflicts/issues identified by stakeholders is summarized in Table 13.3, below. Additional graphics that summarize the ranked issues/conflicts and routing criteria are outlined in Appendix B.

Note, it should be highlighted that all data gathered through stakeholder meetings represent the views of the stakeholder participants, and therefore should not be viewed as being statistically valid.

Table 13.3 Top ten stakeholder prioritized conflicts / issues

▪ Need to protect / preserve grasslands	▪ Meeting all user needs versus preservation
▪ People versus the environment (a lack of awareness and knowledge)	▪ Lack of respect for cultural significant and inappropriate use
▪ Constraining uses of trails causes conflicts	▪ People versus wildlife
▪ Dogs versus wildlife	▪ Lack of amenities at entrances
▪ Rehabilitation versus users	▪ Trail use bans/closures should apply to all users

Following the first stakeholder meeting, O2 Planning + Design Consultants Inc. developed a more comprehensive list of issues for Nose Hill Park. This list was developed based on information gathered through stakeholder meeting # 1, previous policy documents and studies, and incorporated consultant recommendations. The issues were arranged according to common themes, which include: trail, wildlife, physical environment, public education/awareness, park amenities and infrastructure, general park users, dog use, cyclist use, pedestrian use, and regional pathway issues.

13.2.2 Stakeholder Meeting #2: Mapping & Identification of Recommended Routes and Features

Meeting Overview

The second stakeholder input group meeting was held on June 24th at the Triwood Community Association. In total, 21 stakeholders attended this meeting. The intent of the meeting was to:

- Share the information collected during meeting # 1, and
- Consult with stakeholders in the identification and mapping of special features, park attractions, and suggested park travel routes and amenities.

Stakeholder were randomly split into three input groups, which were led by a City Parks or consultant facilitator, whose role was to keep the group on task. Each group was asked to identify, on large scale maps of the park, the locations of known special features and park attractions, park conflicts/issues and locations for potential trail and pathway routes. Once the task was completed, each group presented their work to the entire stakeholder group.

Meeting Outcome

The key outcomes of the June 24, 2004 stakeholder input meeting were three maps created by each input group, which are included in Appendix B. The information from each input group has been combined into a summary map (Map 13.1), which identifies the locations of points of interest/attraction and lines that represent stakeholder suggestion routes. Details regarding the various points of interest/attraction have been summarized in Table 8.4 and Map 8.1 in Chapter 8.0 of this report.

13.2.3 Stakeholder Meeting # 3: Consultant Presentation of Preliminary Routing Concepts

Meeting Overview

The third stakeholder input meeting was held on September 11, 2004 at the Calgary Winter Club. The purpose of this meeting was to:

- Give consultants the opportunity to present the preliminary routing (4) and facilities concepts for stakeholder evaluation. The concepts included route types and surface materials, multi-use zone configurations, as well as suggested amenity and parking lot upgrades (note, concepts developed based on input received from stakeholders during the previous two meetings and through a series of planning and evaluation criteria),
- Clarify questions and comments on the preliminary concepts, and
- Relate the concepts presented with a visit to key areas within Nose Hill Park.

The Project Team also distributed a "Stakeholder Input Questionnaire", which was to be completed by stakeholders within approximately 1 month of the meeting. The intent of the questionnaire was to gain feedback on the routing and facilities concepts presented, which would be used by the consultants in revising the concepts prior to presentation at the first public meeting.

Meeting Outcome

During the meeting, stakeholders requested that another stakeholder meeting be added to the planning process, which would provide the stakeholders with the opportunity to make presentations to the project team and stakeholder group on their feedback and suggestions for improving the concepts. Based on this request, a new meeting was scheduled for October and stakeholder representatives were encouraged to meet with their respective organizations to gain a broader base of input related to the concepts prepared by the project team.

Specific comments and feedback were provided by stakeholders through the field trip and stakeholder questionnaire. These comments and feedback were summarized, the results of which are presented in Appendix B. The comments and results were reviewed by the planning team. When there was a strong majority supporting a certain concept component, these items were included into the preliminary routing and facilities components presented at public meeting # 1. When there was no agreement, the project team identified these items as areas that needed to be flushed out in more detail, and to capture the variability in options, then take this information to the larger public for input.

13.2.4 Stakeholder Meeting # 4: Stakeholder Presentations Comments and Suggestions for Improving Preliminary Routing Concepts

Meeting Overview

Stakeholder meeting # 4 was held on October 27, 2004. The purpose of this meeting was to:

- Present the findings from the stakeholder questionnaire,
- Provide stakeholders with an opportunity to make a brief presentation on their comments and suggestions for improvement of the preliminary routing and facility concepts,
- Clarify areas of stakeholder support, differences and new ideas (by project team), and
- Discuss dates and promotion of the upcoming public meetings.

During each presentation, stakeholders were requested to identify the top 5 aspects of the preliminary concepts that their organization supports, as well as the top 5 aspects of the preliminary concepts that their organization would like changed or modified

Meeting Outcome

Presentations and/or letters of comments were provided by 15 different stakeholder organizations that identified areas of support and sections to improve or modify. A summary of the comments provided by each organization is listed in Appendix B. All of the comments were reviewed, and incorporated, where possible, in the development of alternative routing and facilities components, which were presented at public meeting # 1.

The project team also took into consideration the feedback received by the stakeholders related to the timing of the upcoming public meetings, and the overwhelming support to hold-off on the first public meeting until the December holidays passed. The group suggested that waiting until January to hold the first meeting would help ensure for a good meeting turnout and provide organizations with enough time to utilize community and organization newsletters to promote the public meetings.

13.2.5 Stakeholder Meeting # 5: Presentation of Draft Trail & Pathway Plan

Meeting Overview

The fifth stakeholder meeting was hold on February 15th, 2005. The purpose for this meeting was to:

- Provide the stakeholders with an overview of the findings from questionnaire distributed at the public meeting # 1,
- Present the preferred alternative components and the preliminary NHTPP recommendations, and

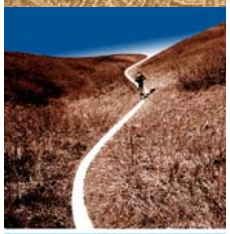
- Provide stakeholders with the opportunity to review and provide feedback on the preliminary NHTPP recommendations.

Individual stakeholders were split into four working groups and were asked to review the preliminary NHTPP recommendations and provide feedback on areas that they liked or would improve upon. Once the groups had reviewed the preliminary recommendations they reported back to the plenary group, providing feedback pertaining to their groups recommendations. The project team actively listened to the feedback presented by the stakeholders since this was the final opportunity for stakeholders to be consulted in the development of the NHTPP. The preliminary recommendations were modified and updated, where feasible, based on the stakeholder feedback, which formed the draft NHTPP recommendations that were presented at public meeting # 2.

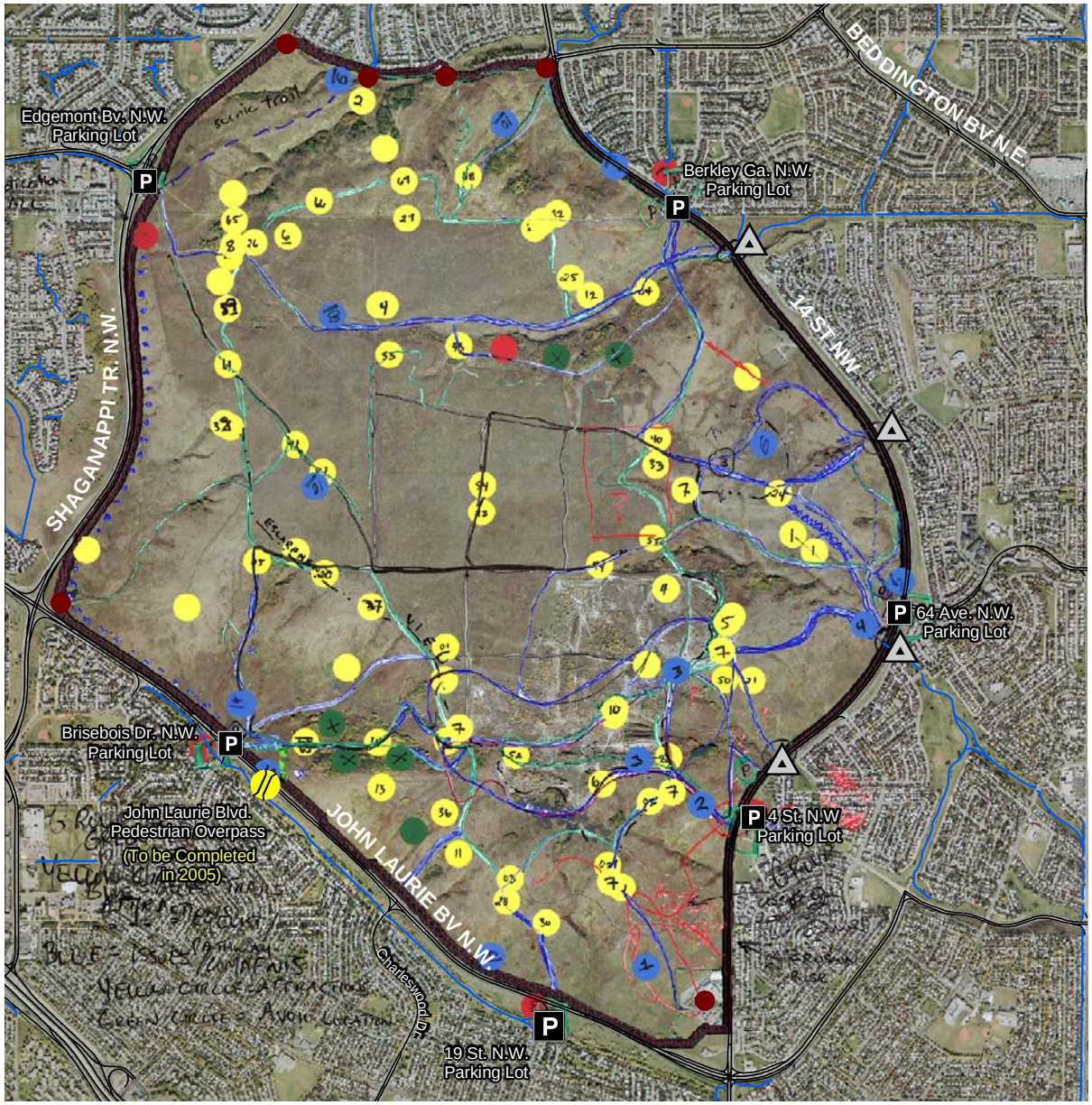
13.2.6 Stakeholder Meeting # 6: Review Final Recommended Plan and Appreciate Volunteer Stakeholders

The purpose of the April 21, 2005 stakeholder meeting was to:

- Present the final recommended trail and pathway plan, and
- Thank the stakeholders for their contribution of time and energy associated with this extensive stakeholder consultation process



NOSE HILL PARK



North

Map 13.1
Combined Mapping Results from all Stakeholder Input Groups

Map Legend

Combined Stakeholder Input Group Results

- Stakeholder Identified Attractions
- (Any Colour Line) Stakeholder Identified Route

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Nose Hill Natural Environment Park Stakeholder Meeting # 2 - June 24, 2004. Data Mapped by all Stakeholder Input Groups. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN

THE CITY OF CALGARY
Parks

0 250 500 1,000 1,500
Meters

13.3 Public Meetings

Two public meetings were planned to give the general public an opportunity to review and comment on the alternative routing and facilities components for Nose Hill Park, and to present the preferred concepts and NHTPP recommendations.

A variety of methods were used to promote the two public meetings. Promotional activities included the City of Calgary website, community newsletters, notification by stakeholder groups, newspaper advertising, radio, portable roadway signs, brochures mailed out to households surrounding the park, as well as word of mouth.

The following sections provide an overview and the outcomes of the two public meetings.

13.3.1 Public Meeting # 1: Presentation on Draft Routing and Facilities Concepts

Meeting Overview

The first public meeting was held on January 15, 2005 at the Edgemont Community Centre. Approximately 650 members of the public attended this meeting, the majority of which lived within close proximity to Nose Hill Park. The intent of this first meeting was to:

- Review park issues, concerns and the need for a trail and pathway plan,
- Present the alternative routing and facilities components for Nose Hill Park, including routing, surfacing, amenities and parking lot upgrades,
- Answer technical questions related to the NHTPP and alternative components,
- Obtain citizen feedback and preference for the alternative components through a design option feedback questionnaire, and
- Obtain citizen feedback on the effectiveness of the meeting.

The same presentation was made twice throughout the day (10:00 am and 2:00 pm), with the intent to provide background information related to the planning process and to clearly indicate how the public was to be engaged in providing feedback on their preferred routing options, desired trail surfaces, and preference for facilities and amenities upgrades. Most of the public attended one of the two presentations.

Following the formal presentation, a question and answer session was conducted. Due to the large attendance at the public meeting, the question/answer session was structured in a manner that had all attendees write questions down on cards, which were submitted to the meeting facilitator. The meeting facilitator, assisted by project team members, organized the questions

into common categories, then a panel made up of City Parks staff and consultants answered a large number of questions. A total of 87 questions were received in the morning session and 99 questions in the afternoon session. Any of the questions not verbally answered during the question and answer period were responded to following the meeting, and were compiled into a comprehensive question and answer package that was made available for viewing at the second public meeting.

Meeting Outcome

The various marketing activities used to promote the public meeting were effective, as was evident by the approximately 650 people who attended the meeting. It should be highlighted that the attendance recorded at this meeting was the largest turnout that Parks has ever had at a public meeting. As demonstrated in Figure 13.1, over 40% of attendees heard about the public meeting through the mail out informational brochures sent to invite residences of all communities surrounding Nose Hill Park. Many other marketing activities were also successful in encouraging citizens to attend, including community newsletters (22.5%), newspaper/magazine advertisements (20.8%), portable roadway signs (20.8%) and word of mouth (20.4%).

The formal feedback received from the public indicated that they liked the format used for the public meeting. An overwhelming majority of respondents agreed, or strongly agreed, that the information presented at the public meeting was informative (93%), and sufficient for them to provide input towards the development of the NHTPP (85%).

A total of 360 completed questionnaires on the alternative routing and facilities components were received, including 301 questionnaires that were completed at the public meeting and an additional 59 questionnaires that were returned in the week following the public meeting. The feedback and responses provided in the questionnaires were valuable in the selection of the preferred components and in the development of the final NHTPP recommendations. The feedback indicated areas where there was strong public support, and other areas where there was a complete mix of public opinion, thereby indicating that other variables, such as planning and design criteria, expert opinion and science, needed to play a role in the selection and development of alternatives. A complete summary of the questionnaire results from public meeting # 1 area presented in Appendix B.

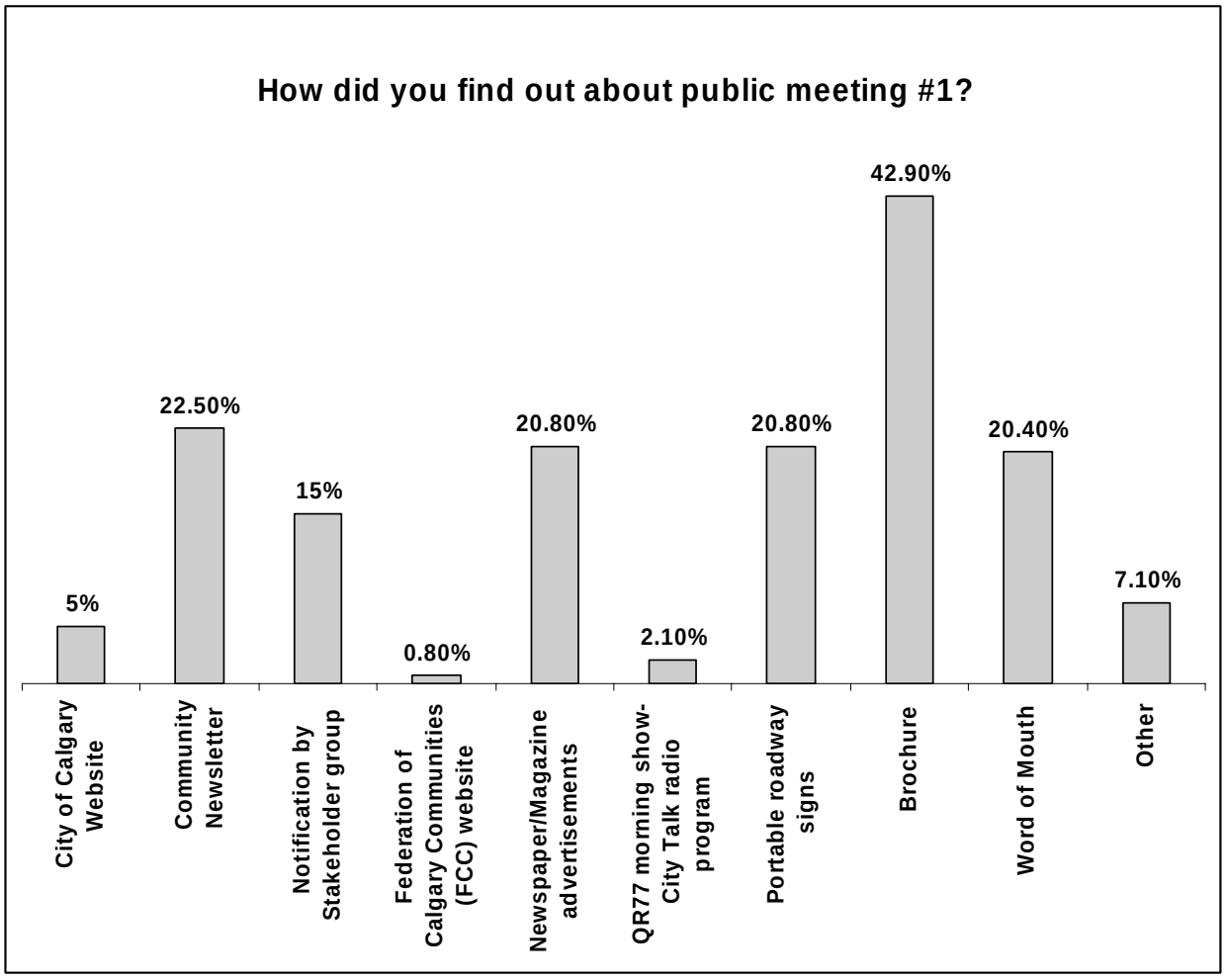


Figure 13.1 Summary of public meeting #1 promotional activities

13.3.2 Public Meeting # 2: Presentation on Trail & Pathway Plan Recommendations

Meeting Overview

The second public meeting was held on February 26, 2005, at the Dalhousie Community Association. Approximately, 308 members of the public attended this meeting. The purpose of this meeting was to:

- Present the preferred concept and NHTPP recommendations,
- Provide answers to questions asked by the public (105 questions were received from the public), and
- Receive feedback from the public related to the recommended plan.

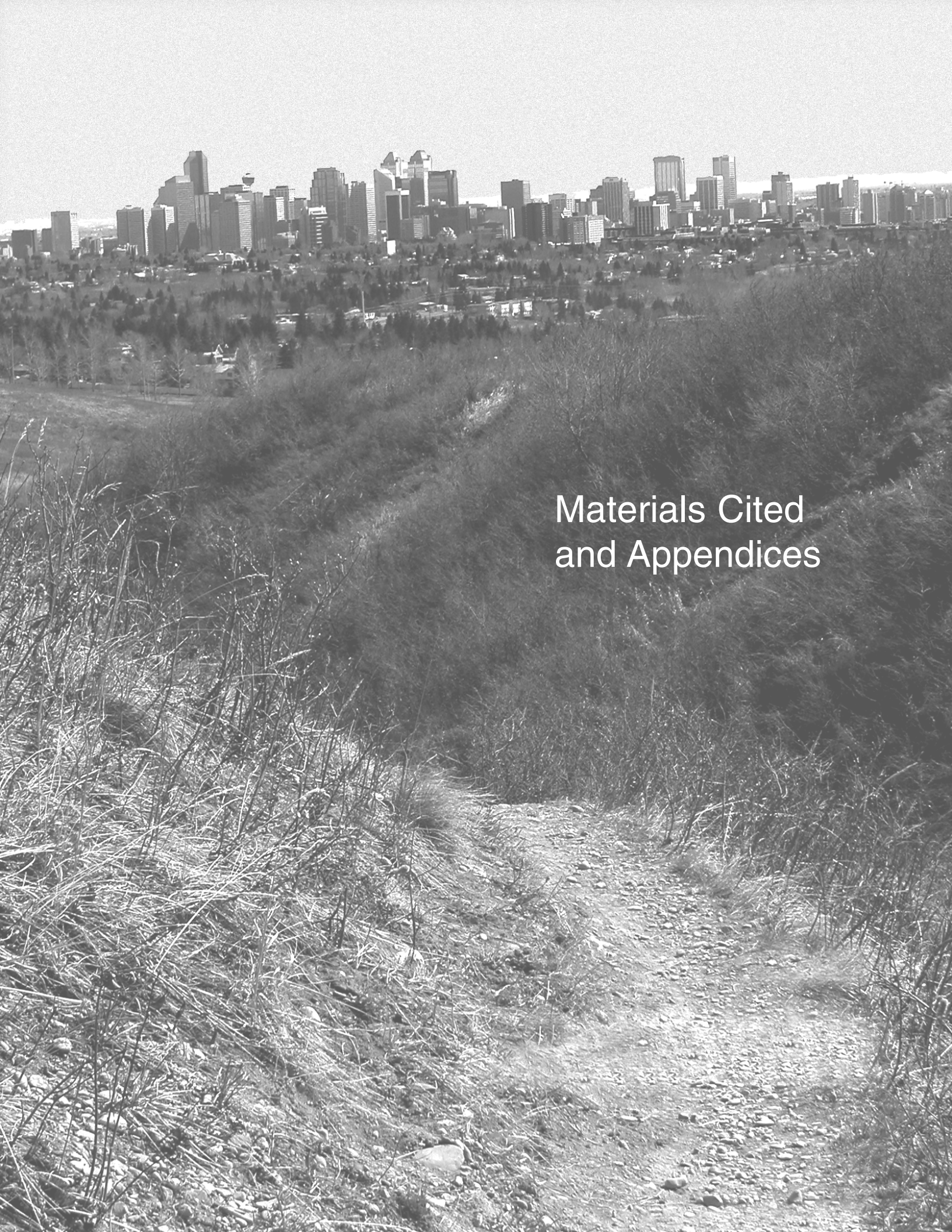
The structure of the meeting was similar to that of the first meeting. Informational posters were placed around the room, which described each of the NHTPP recommendations. Planning team members (Parks staff and consultants) were situated around the room to discuss the recommendations and answer questions. One formal presentation was provided that summarized the NHTPP recommendations and next steps in the project.

Following the presentation, a question and answer session was provided. As with public meeting # 1, the question and answer session was structured in a manner that had citizens write questions down on cards, which were organized into common themes by the meeting facilitator, then responded to by a panel made up of Parks staff and consultants. In total, 105 questions were submitted by members of the public. This method was selected due to the large attendance at the meeting, and the public support for this kind of forum. Many members of the public commented to project team members in public meeting # 1 and #2 that they appreciated the format used for the questions and answers. Only a very small number of individuals voiced a concern that an opportunity for open debate was not provided at this public meeting.

Meeting Outcome

In total, 502 written comments were received from the respondents who filled out a comment form on the NHTPP recommendations. A strong majority of the respondents commented in support of the plan and supported the way the public meeting was conducted. Only 6% of the respondents commented that they did not in support the plan.

Following a review of citizen comments, some aspects of the NHTPP recommendations were revised following the public meeting, which led to the development of the final 15 NHTPP recommendations that are described in Part 1 of this report.



Materials Cited and Appendices

MATERIALS CITED

Resource Evaluations:

Calgary Parks & Recreation. 1997. *Nose Hill Park User Study – 1997: Volume 1 – Final Report.* November 1997.

Kansas, J. L., Usher, R. G., and W. L. Strong. 1993. *Biophysical and Land Use Inventory and Analysis of Nose Hill Park.* Prepared for The City of Calgary, Calgary Parks & Recreation, by Sentar Consultants Ltd. and GAIA Consultants Inc.

Kirker, J. and D. Kary. 1996. *Exploring Nose Hill Park: A Hands on Field Guide*. Grassroots N.W.: Environmental Awareness Society.

Van Dyke, S. 1993. *Nose Hill Park, City of Calgary, A Review of Archaeological Data.* Prepared for GAIA Consultants Inc. September 9, 1993.

Policies, Plans and Regulations:

The City of Calgary Parks. 2004. *Development Guidelines and Standard Specifications: Landscape Construction.* The City of Calgary.

The City of Calgary Parks. 2003a. *Open Space Plan*. The City of Calgary. Adopted by Council July 22 2002, Amended by Council March 3 2003.

The City of Calgary Parks. 2003b. *City of Calgary Parks and Pathways Bylaw*. The City of Calgary Bylaw Number 20M2003.

Calgary Parks & Recreation. 1997. *Nose Hill Park User Study – 1997: Volume 1 – Final Report.* November 1997.

Calgary Parks and Recreation. 1994. *Natural Area Management Plan*. The City of Calgary.

Calgary Parks & Recreation. 1992. *Nose Hill Park Master Plan Review.* The City of Calgary. January 1992.

Calgary Parks & Recreation. 1980. *Nose Hill Park Master Plan*. Prepared by the City of Calgary, Parks & Recreation, Nose Hill Master Planning Team and Nose Hill Steering Committee

EnviResource Consulting Ltd. 1994a. *Nose Hill Park Natural Area Management Plan.* Prepared for The City of Calgary, Parks & Recreation.

EnviResource Consulting Ltd. 1994b. *Nose Hill Park Natural Area Management Plan: Technical Report.* Prepared for The City of Calgary, Parks & Recreation.

IBI Group. 2001. *Calgary Pathway & Bikeway Plan: North Report*. Prepared for The City of Calgary, Planning & Transportation Policy, Park Development & Operations. Adopted by Council July 23, 2001.

City Council Policies and Directions:

Cycling Policy on Undesignated Trail in Parkland. CPS97-85, April 6, 1998.

Nose Hill Undesignated Trail Policy. CPS2000-14. March 15, 2000.

Biophysical Impact Assessment – Nose Hill Trail 5.8. CPS2000-49. July 19, 2000.

Paved Pathways within Nose Hill Park. TTP2002-17. April 16, 2002

Update on Nose Hill Undesignated Trails Policy and Multi-Use Pilot Trail. CPS2003-40. May 7, 2003.

Other Reports

Achuff, P. L. 1994. *Natural Regions, Subregions and Natural History Themes of Alberta – A Classification for Protected Areas Management.* Prepared for Parks Services, Alberta Environmental Protection. Updated and Revised December 1994.

Gabert, L. R. 1991. Nose Hill Pathways: A brief historical perspective. 10pp. Friends of Nose Hill, Calgary, Alberta.

APPENDIX A: NOSE HILL PARK WILDLIFE

Birds species known to occur or potentially be found throughout the year in Nose Hill Park.

(Source: Kansas *et al.* 1993).

Birds

Common Loon	Marbled Godwit	Common Raven	Rufous-sided Towhee
Pied-billed Grebe	Common Snipe	Black-capped Chickadee	American Tree Sparrow
Double-created Cormorant	Franklin's Gull	Boreal Chickadee	Chipping Sparrow
Snow Goose	Ring-billed Gull	Red-breasted Nuthatch	Clay-coloured Sparrow
Canada Goose	California Gull	Rock Wren	Brewer's Sparrow
Gadwall	Great Blue Heron	House Wren	Vesper Sparrow
Mallard	Black-crowned Night-Heron	Sedge Wren	Savannah Sparrow
Northern Pintail	Rock Dove	Golden-crowned Kinglet	Baird's Sparrow
American Wigeon	Mourning Dove	Ruby-crowned Kinglet	Le Conte's Sparrow
Blue-winged Teal	Black-billed Cuckoo	Northern Wheater	Fox Sparrow
Common Merganser	Great Horned Owl	Mountain Bluebird	Song Sparrow
Bald Eagle	Snowy Owl	Townsend's Solitaire	Lincoln's Sparrow
Northern Harrier	Long-eared Owl	Swainson's Thrush	Swamp Sparrow
Sharp-shinned Hawk	Short-eared Owl	Hermit Thrush	White-throated Sparrow
Cooper's Hawk	Northern Saw-whet Owl	American Robin	White-crowned Sparrow
Northern Goshawk	Common Nighthawk	Gray Catbird	Harris' Sparrow
Red-tailed Hawk	Ruby-throated Hummingbird	Brown Thrasher	Dark-eyed Junco
Swainson's Hawk	Downy Woodpecker	Water Pipit	Lapland Longspur
Rough-legged Hawk	Northern Flicker	Sprague's Pipit	Chestnut-collared Longspur
Ferruginous Hawk	Western Wood Pewee	Bohemian Waxwing	Snow Bunting
Golden Eagle	Alder Flycatcher	Cedar Waxwing	Red-winged Blackbird
Broad-winged Hawk	Least Flycatcher	Northern Shrike	Western Meadowlark
American Kestrel	Say's Phoebe	European Starling	Brewer's Blackbird
Merlin	Western Kingbird	Warbling Vireo	Brown-headed Cowbird
Gyrfalcon	Eastern Kingbird	Veery	Northern Oriole
Prairie Falcon	Horned Lark	Philadelphia Vireo	Pine Grosbeak
Gray Partridge	Tree Swallow	Red-eyed Vireo	Common Redpoll
Ring-necked Pheasant	Northern Rough-winged	Tennessee Warbler	Hoary Redpoll
Sharp-tailed Grouse	Swallow	Orange-crowned Warbler	Pine Siskin
Killdeer	Bank Swallow	Yellow Warbler	American Goldfinch
Lesser Yellowlegs	Barn Swallow	Yellow-rumped Warbler	House Sparrow
Spotted Sandpiper	Black-billed Magpie	Palm Warbler	Rosy Finch
Upland Sandpiper	American Crow	Wilson's Warbler	Red Crossbill
Long-billed Curlew	Blue Jay	Lazuli Bunting	White-winged Crossbill

Mammals known to occur or potentially be found throughout the year in Nose Hill Park.

(Source: Kansas *et al.* 1993).

Mammals	
Coyote	Little Brown Bat
Red Fox	Long-eared Bat
Richardson's Ground Squirrel	Hoary Bat
Northern Pocket Gopher	Silver-haired Bat
Meadow Vole	Big Brown Bat
Southern / Red-back Vole	Muskrat
Deer Mouse	American Badger
Porcupine	Long-tailed Weasel
Varying Hare	Least Weasel
White-tailed Prairie Hard	Striped Skunk
Mule Deer	Dusky Shrew
White-tailed Deer	Western Jumping Mouse
Moose	Prairie Shrew
Lynx	

Amphibians known to occur or potentially be found throughout the year in Nose Hill Park.

(Source: Kansas *et al.* 1993).

Amphibians
Chorus Frog
Garter Snake
Tiger Salamander

APPENDIX B: SUMMARY OF OUTCOMES FROM PUBLIC PARTICIPATION

The following sections provide a summary of the outcomes from the various stakeholder input group meetings and public meeting # 1.

Stakeholder Input Meeting # 1

Figure A 1 through Figure A 3 summarize the stakeholder ranked conflicts/issues within Nose Hill Park. A summary of route planning and design evaluation criteria identified by stakeholders during Meeting # 1 are listed in Figure A 4.

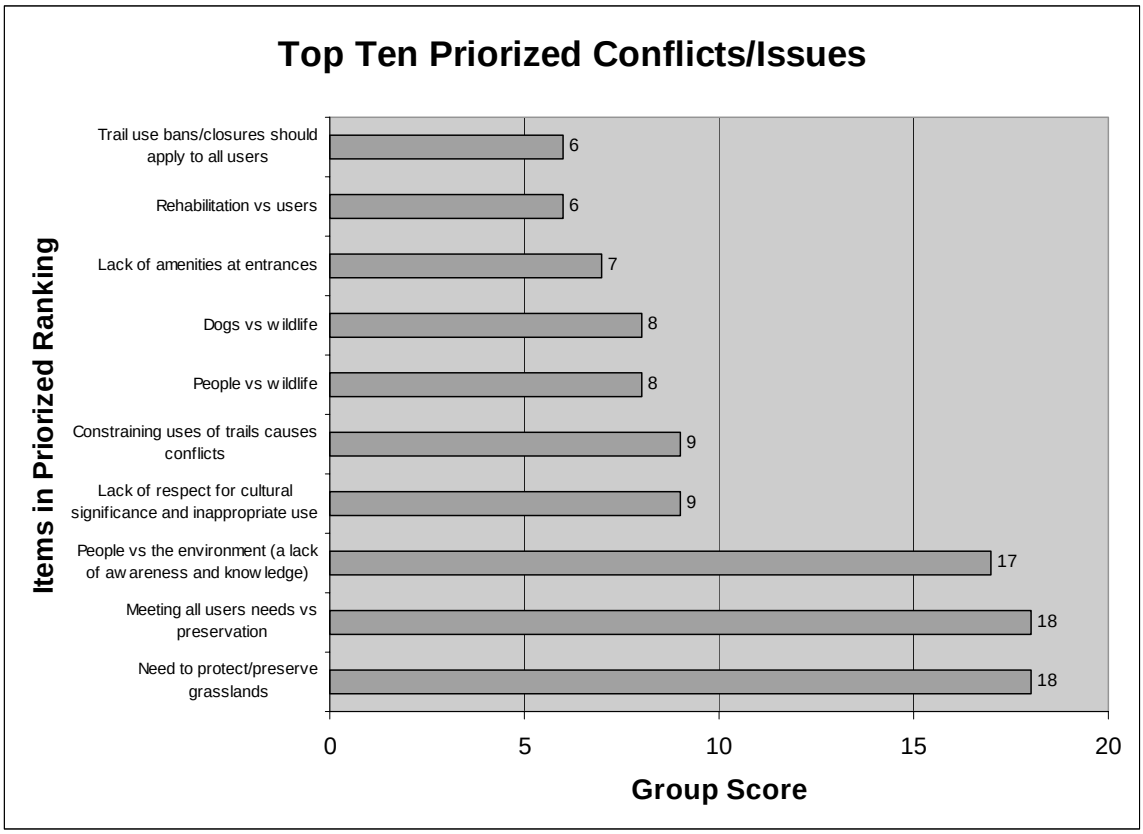


Figure A 1 High Priority Conflicts/Issues

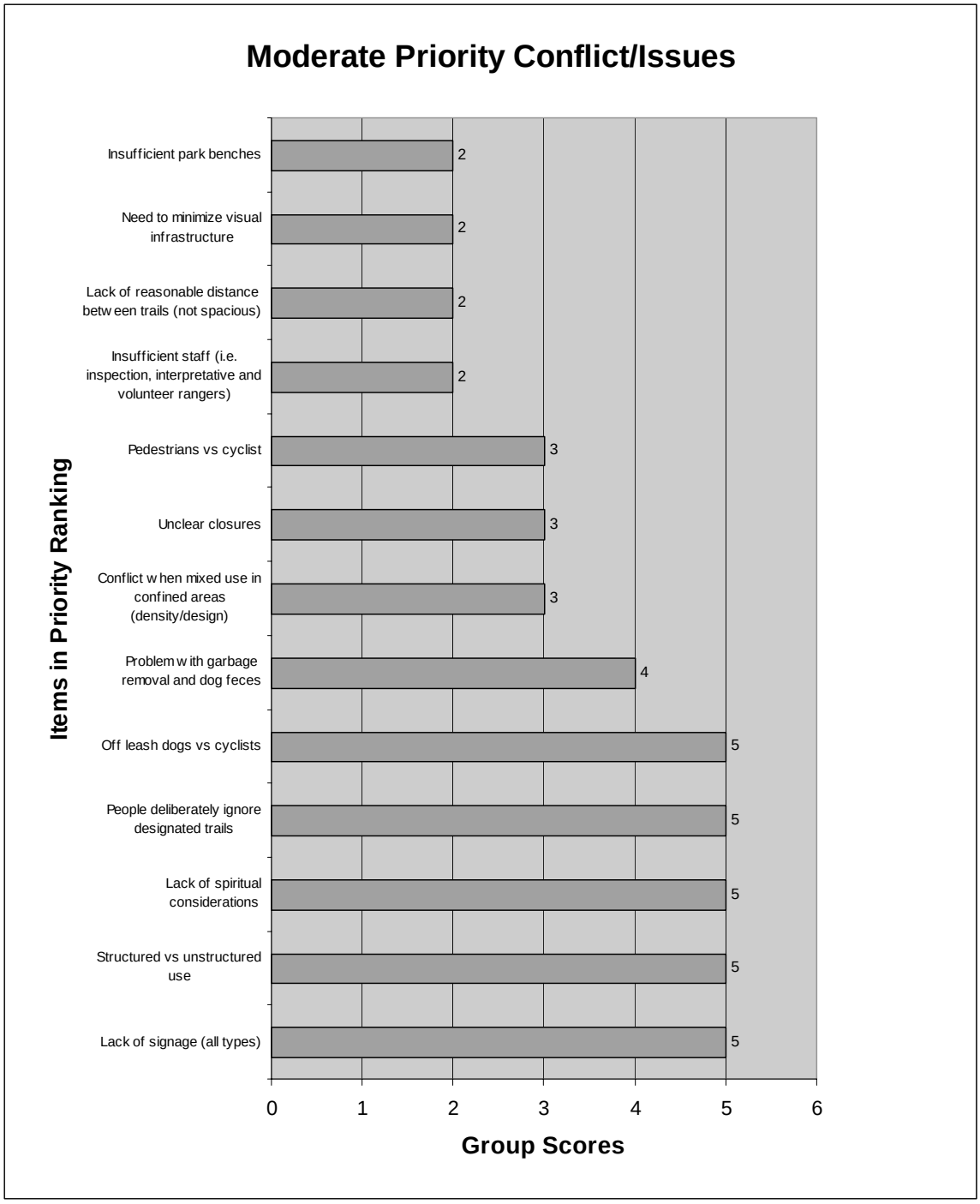


Figure A 2 Moderate Priority Conflicts/Issues

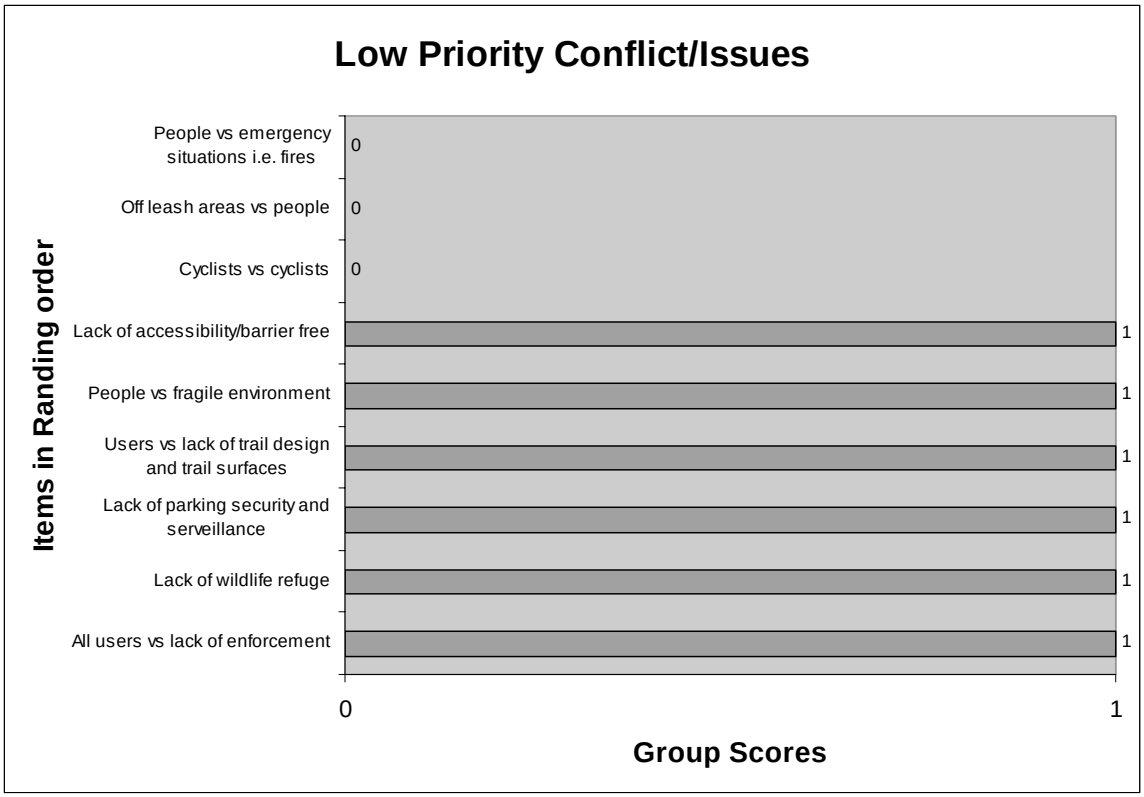


Figure A 3 Low Priority Conflict/Issues

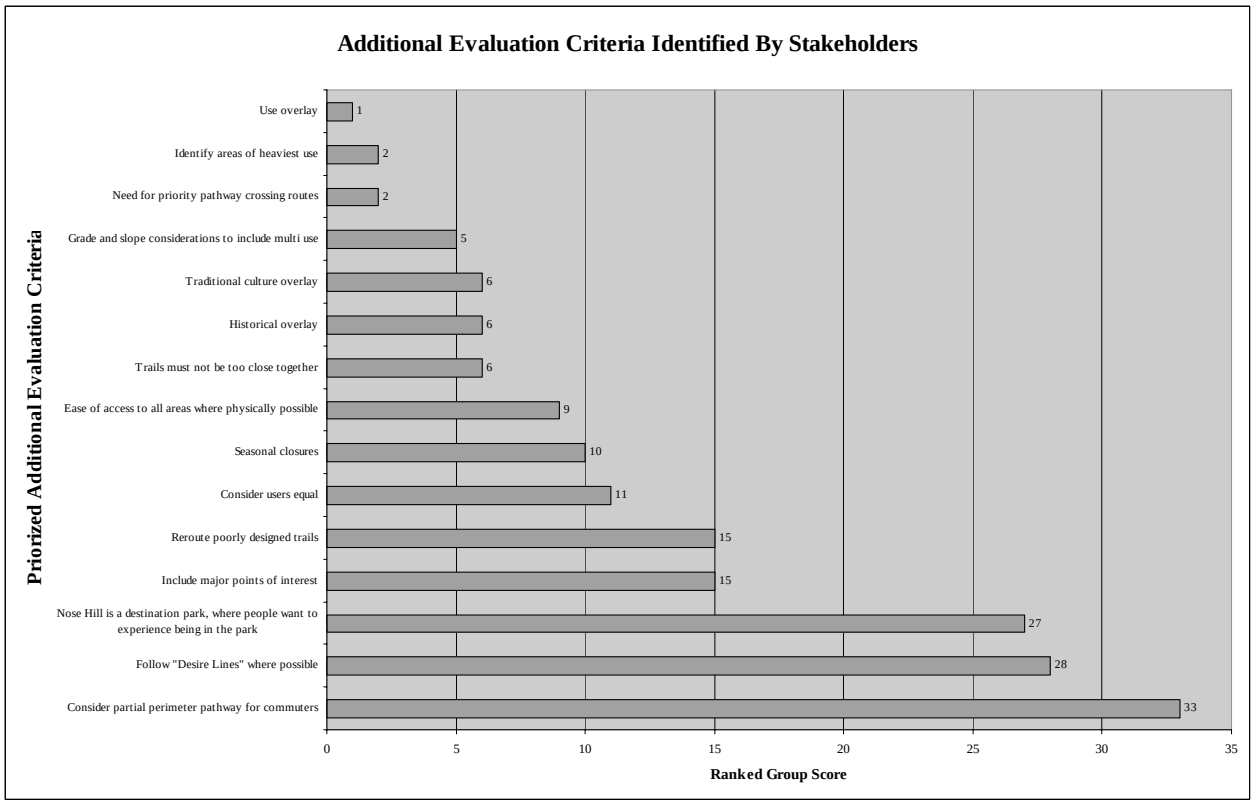
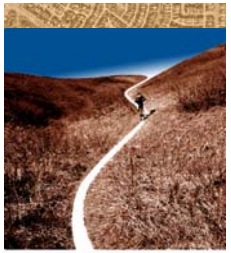


Figure A 4 Stakeholder suggested route evaluation criteria

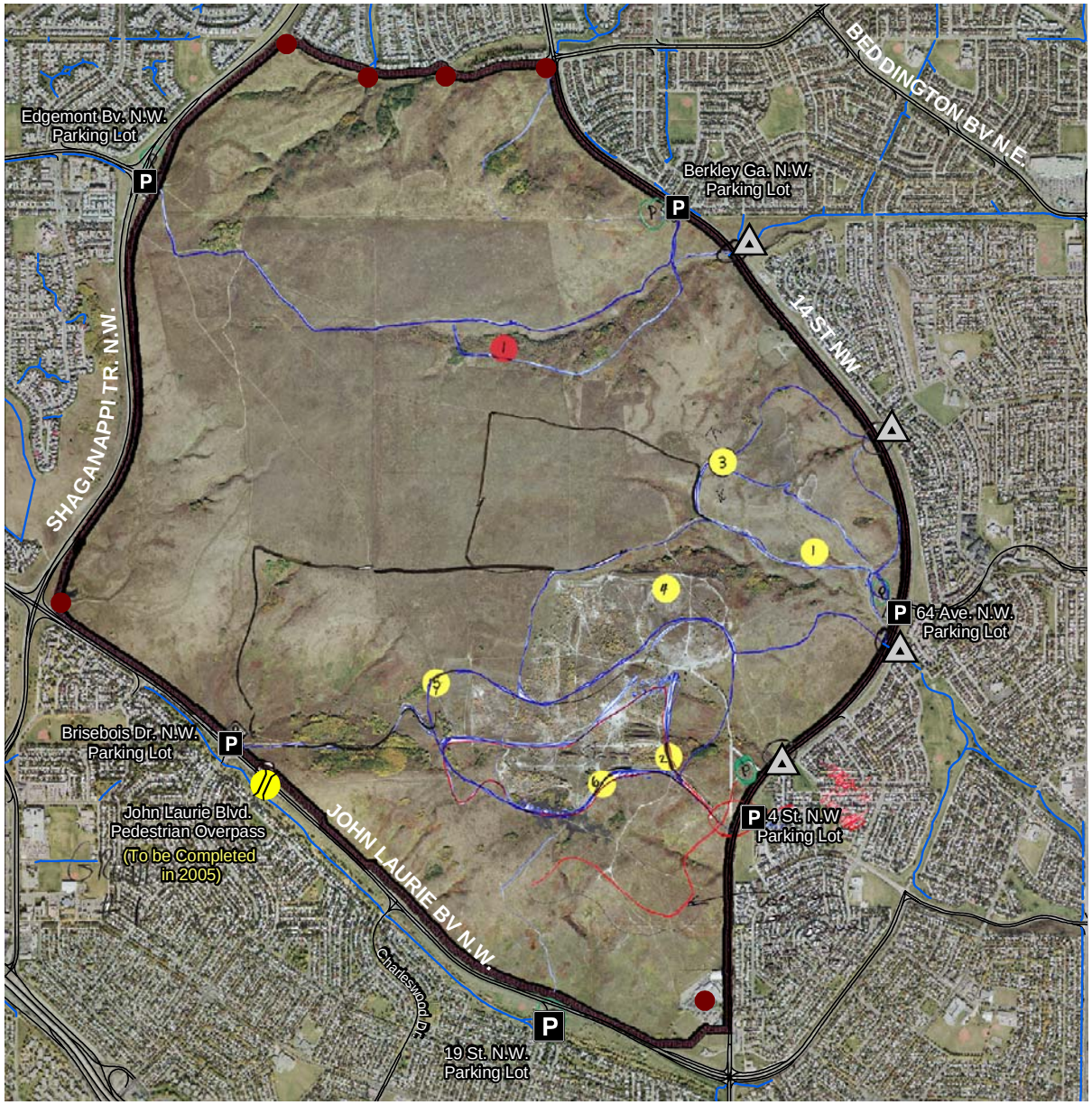
Stakeholder Input Meeting # 2

Copies of the three stakeholder input group maps created during the second stakeholder meeting are presented on the following pages. On these maps, stakeholder groups identified special features, park attractions and suggested park routes and amenities.



NOSE HILL PARK

North



Map B 1
Results of Stakeholder Input Group Mapping Exercise - Group # 1

Map Legend

Group #3 Results

- Stakeholder Identified Attractions (Note #'s Identified the Specific Feature of Attraction)
- Stakeholder Identified Avoidance Areas
- Stakeholder Identified Route
- Stakeholder Identified Route
- Stakeholder Identified Route / Potential Interpretive Trail

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Nose Hill Natural Environment Park Stakeholder Meeting # 2 - June 24, 2004. Data Mapped by Stakeholder Input Group # 1. Aerial photography base map acquired in 2003 by Parks.

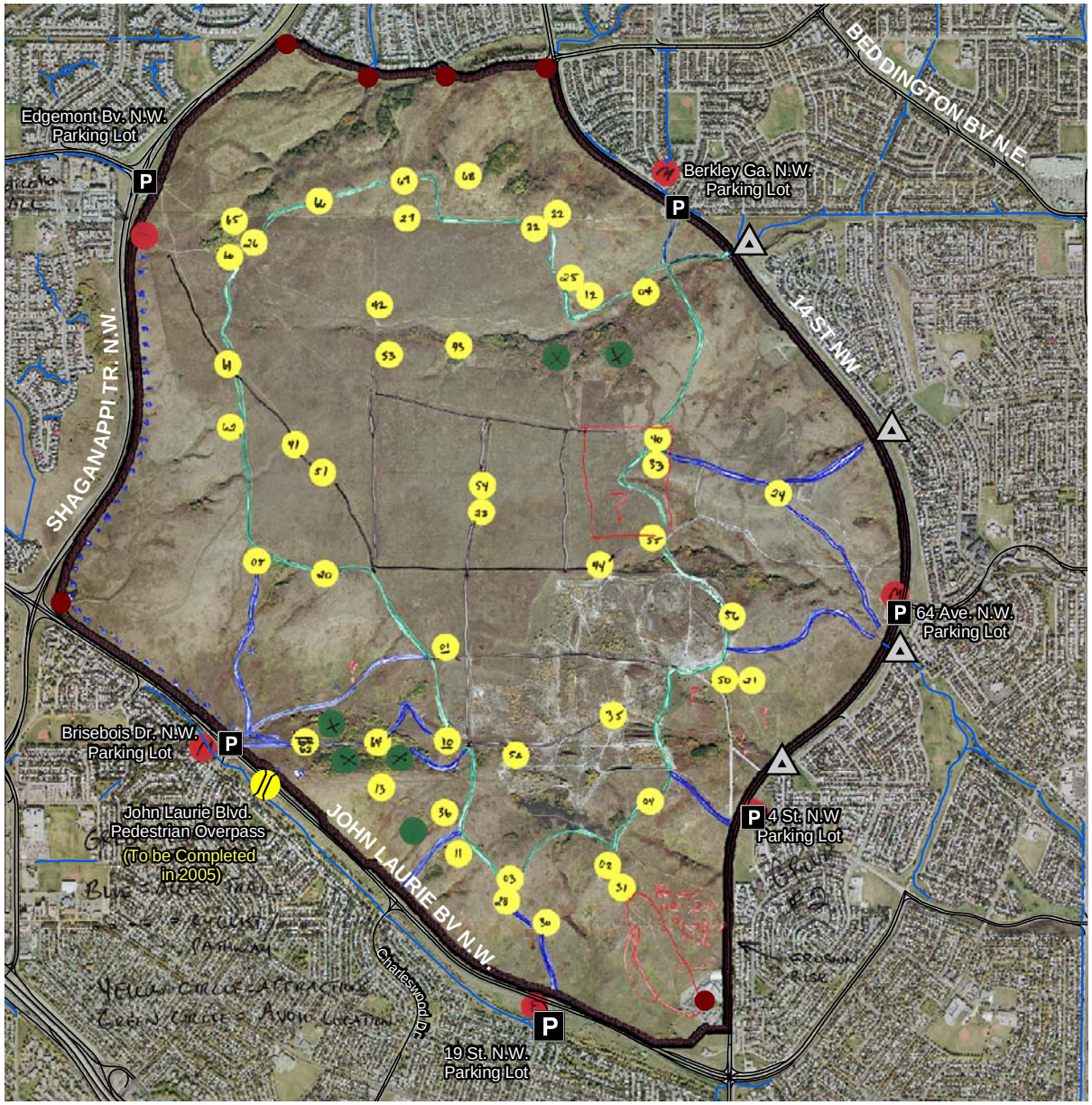
PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters

NOSE HILL PARK



North

Map B 2
Results of Stakeholder Input Group Mapping Exercise - Group # 2

Map Legend

Group #2 Results

- Stakeholder Identified Attractions (Note #'s Identified the Specific Feature of Attraction)
- Stakeholder Identified Avoidance Areas
- Stakeholder Identifed Facilities
- Stakeholder Identified Upper Peripheral Route
- Stakeholder Identified Connector Route
- Stakeholder Suggested Pathway
- Stakeholder Suggested Travel Route / Pathway
- Route Flagged for Further Investigation / Field Work

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

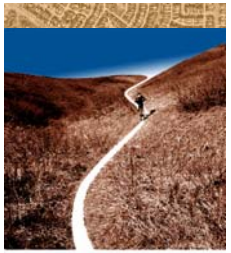
Data Source: Nose Hill Natural Environment Park Stakeholder Meeting # 2 - June 24, 2004. Data Mapped by Stakeholder Input Group # 2. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

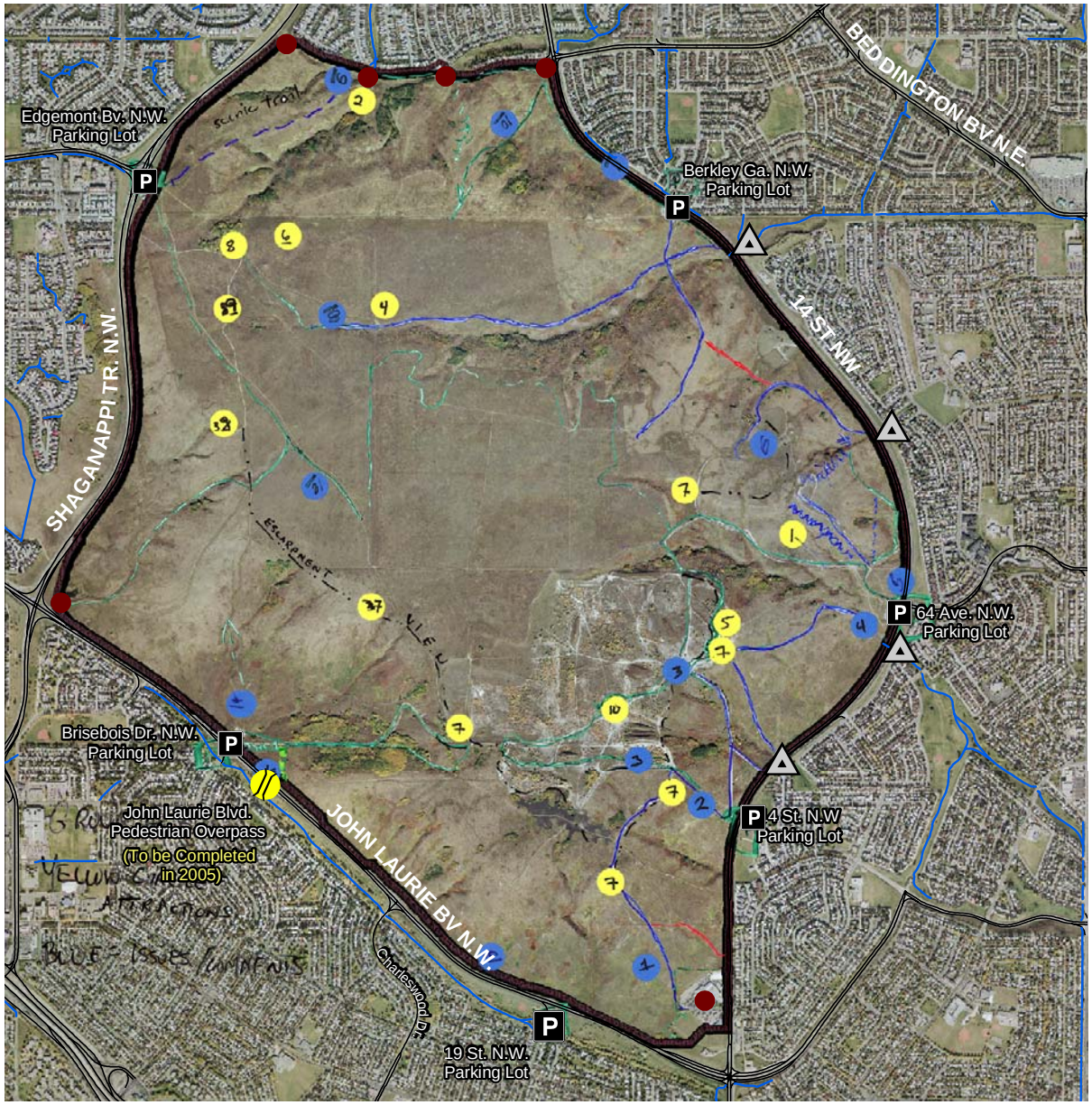
0 250 500 1,000 1,500

Meters



NOSE HILL PARK

North



Map B 3
Results of Stakeholder Input Group Mapping Exercise - Group # 3

Map Legend

Group #3 Results

- Stakeholder Identified Attractions (Note #'s Identified the Specific Feature of Attraction)
- Stakeholder Identified Issues / Concerns
- Stakeholder Identified Route
- Stakeholder Identified Route
- Stakeholder Identified Route
- Stakeholder Identified Escarpment View
- Stakeholder Identified Scenic Trail

Base Information

- Parking Facility
- Park Entry Tunnel
- Minor Entrance Point
- Pedestrian Overpass (Construction 2005)
- Existing Regional Pathways
- Major Roads

Data Source: Nose Hill Natural Environment Park Stakeholder Meeting # 2 - June 24, 2004. Data Mapped by Stakeholder Input Group # 3. Aerial photography base map acquired in 2003 by Parks.

PLANNING + DESIGN INC

THE CITY OF CALGARY Parks

0 250 500 1,000 1,500

Meters

Stakeholder Input Meeting # 3

The following information was compiled as a result of stakeholder input meeting # 3. Compiled information includes comments expressed by stakeholders during the field trip to Nose Hill Park and the responses provided through the stakeholder questionnaire issued during meeting # 3.

A. STAKEHOLDER FIELD TRIP COMMENTS

A. First Stop (off John Laurie Boulevard and Brisebois Drive)

There was group consensus for the following:

1. Designate the "old road" that runs east from the Brisebois parking lot to the upper plateau (route segments 2.05 and 2.06 on concept map), thereby replacing the major route designation suggested in the concepts for route segment 15.07 (running north from the Brisebois parking lot).

2. The group also suggested that route 15.07 be closed and rehabilitated due to its close proximity to environmentally sensitive vegetation, and that route 2.16 (northwest of parking lot) be designated as the minor trail leading onto the plateau from Brisebois parking lot.

3. Trails going straight up the slope will need to be rehabilitated

4. Comments about trail width, and many felt that it is more cost effective to go wider rather that narrower as increased use of narrow trails may need to be widened

5. request direction from stakeholders on trail width…what is desirable

B. Second Stop (Edgemont Boulevard and Shaganappi Drive)

1. The stakeholders commented on the similar look of the granular trail mix and the aggregate pathway surface.

2. Suggestion to use sandstone rocks for barriers, seating and so on as rocks have a natural appeal

3. The stakeholders asked why a particular trail was cut. It was explained that it was not cut, but the extended use this undesignated trail had trampled the ground and stunted the grass

4. It was indicated that trail mix is desirable for some mountain bikes, as the surface is softer (when compared to asphalt surface)

5. Comments were made about the trails not having any maintenance over the years…and Parks staff commented that there had been some ongoing trail maintenance that was not noticed by the public

6. Some stakeholders commented that garbage cans should be at the parking lots, as dog owners are more likely to pooper scoop if they can drop garbage in cans at the trailheads

7. Friends of Nose Hill have a concern about washrooms being placed anywhere in the park as there is a threshold concern and fear that one facility will lead to more and more facilities

8. Dog owners are interested in having an off leash area close to the trailheads where possible

C. Third Stop (14th Street Access)

1. Interest in having the parking lot at the top of the plateau for accessibility reasons and to improve the visitor experience
   *possibly include in the emails as an option

D. The following points were brought forward by individuals as suggestions:

1. Link the trail/pathway from Calgary Winter Club to the pathways south of the park

2. There were general questions about how to develop routes to the top of the escarpment and yet consider slope issues and habitat concerns

E. Overall Feedback

1. The mood of the group was more positive in the outdoor setting
2. The group would like to have other field trips to help ground the concepts out in the field

B. STAKEHOLDER INPUT QUESTIONNAIRE

In October of 2004, stakeholder organizations were asked to complete a questionnaire. They were asked to consult with their respective organizations and to fill out the questionnaire reflecting the views of their organization. In some cases stakeholder representatives engaged a broad base of members, consulted with their executives, consulted with several organization members, and/or in some cases individuals responded to the questionnaire.

A total of seventeen stakeholder organizations returned the questionnaires. The following information summarizes the stakeholder feedback that was collectively recorded.

The summary of the information gathered from the stakeholders is not statistically reliable and should only be used to show stakeholder views pertaining to the questions asked.

Trailheads

#1. Should the Charleswood Drive and John Laurie Boulevard NW trailhead as described in Section 3.1.1 be closed?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
3	1	2	8	2

Parking Facilities

#2. Should Edgemont Drive (Boulevard) parking lot be expanded, as described in Section 3.1.1 on page 19?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
	1	1	11	4

#3. Should 14th Street parking lot be expanded in upper and lower areas as described in Section 3.1.2, on page 20.

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
3		1	8	5

Multi-Use Zone

#4. The most desired options for the multi-use zone as described in Section 3.1.3. on page 20 is?

- The responses were fairly consistent with the following ranking

Ranking	Concept
Third	Current Multi-Use Zone (no change)
Second	Alternative A Multi-Use Zone
First	Alternative B Multi-Use Zone

* Note 8 respondents ranked Alternative B as their number 1 alternative

Upper Plateau Route

#**5.** Should there be an upper plateau route incorporated into the routing concepts to help delineate the location of the multi-use zone and should the proposed route be defined by using one of the two alternative multi-use zones?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
3	2		6	6

#6. Should a unique surface material be used to distinguish the upper plateau route from all other routes?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
3	2	1	7	3

Connecting Routes

#7. What do you feel about identifying connecting routes from entry points up to and across the upper plateau?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
1		4	6	5

#8. Should there be more or less connecting routes?

- Majority have No Opinion, therefore this question should be revisited.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
	1	11	6	

#9. Identify which routes should be removed (information mapped by stakeholders – not included in Appendix)

#10. Identify where routes should be added (information mapped by stakeholders – not included in Appendix)

Off-Site Regional Pathway

#11. Should there be an off-site perimeter pathway developed outside the Park boundary, along MacEwan Glen Drive and east of 14th Street as identified in Section 3.1.5. on page 21 and Map 3.1?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
2		4	4	7

Surfacing Concepts

#12. Ranked surfacing materials for the **Upper Plateau Route**.

- The following ranking was quite consistent.

Ranking	Surfacing Materials for Upper Plateau Route
1	Hard Top (Pavement, Special Aggregate or Asphalt)
3	Fine Granular Trail Mix / Crushed Limestone or
2	Upgraded Existing Tread

* Note: 7 respondents ranked Hard Top as #1, 5 respondents ranked Upgraded Existing Tread as #2, and the respondents ranked Fine Granular Trail Mix and Crushed Limestone as # 3.

#13. Ranked surfacing materials for **Major Routes**.

- No Consistent Agreement of surfacing on Major Routes – the responses were all over the map without any clear priority.

Ranking	Surfacing Materials for Major Route
	Pavement with Special Aggregate (A or B) Regional Pathway (Asphalt Surface) Crushed Limestone Fine Granular Trail Mix Upgraded Existing Tread

#14. Ranked surfacing materials for **Minor Routes**.

- There was significant variance, and should be revisited. The following ratings showed the general trends and priorities, however the ranking was not clear.

Ranking	Surfacing Materials for Minor Route
3	Hard Top (Pavement, Special Aggregate or Asphalt)
1	Fine Granular Trail Mix / Crushed Limestone or
2	Upgraded Existing Tread

#15. Do you have comments on appropriate route widths?

- Comments vary from wanting wider trails to accommodate multi use in a growing City – to minimal widths to minimize visual impact on the Hill…no significant trends

Preliminary Routing Concepts

#16. What are the ranked desired routing concepts as described in Section 3.3. page 26?

- There was no consistent agreement with the routing concepts as there were no clear priorities
- The responses were all over the map and there were no significant trends and priorities.

Ranking	Concept
	Concept 1 “Minimum Development” Concept 2 “Enhanced Mobility” Concept 3 “Light Commuter” Concept 4 “Recreation and Commuter”

Preliminary Facilities Concepts

#17. Should there be pump-out washrooms at Brisebois Drive, 64th Avenue and Berkley Gate parking lots?

- The majority of respondents agreed with this statement.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
1			8	4

* Note: There were concerns noted about safety and maintenance

#18. Should there be a pump-out washroom in the gravel pit?

- A small majority disagreed with this statement – should be revisited
- The comments were around need, design and appropriate placement. Many support washrooms at the park entrances.

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
4	3		3	2

#19. Should there be trail markers at 200m - 300m intervals along designated trails **outside** of the multi-use zone?

- Slightly More Disagreed with this statement – should be revisited

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
4	3	1	2	3

*Note: Many felt that the markers and design of the markers did not fit in a prairie park and the distance of 200 M between markers was seen as being too close

#20. <u>General comments on preliminary signage concepts</u>.

- There were varying opinions related to design, height, materials and so on. There were some concerns about the visual impact from a distance was raised.

Stakeholder Input Meeting # 4

The following information summarizes the key points presented by the stakeholders:

Calgary Mountain Bike Alliance

- Provide routes for all users
- Conserve resources
- Consider diversity of routes and friendly surfaces that are compatible with different uses

Route Diversity – follow desire lines to get to attractions, routes that provide enjoyable use of the park, and provide circle routes where possible

Surface Treads

- Mountain cyclists prefer softer trail mix over harder surfaces
- Prefer 1.5M trail widths
- Keep routes relatively natural
- Support hardening of route 5.08 before it degrades
- Do not support a porcupine valley pathway

Multi-Use Zone

- Prefer a combination of concept A and concept B
  Recommend to cut off access along brow of the porcupine valley
- Consider larger area for off leash dog activity

Off Site Pathway

- Feel that all recreational users should use the park
- Consult with commuters to find out their needs

Routing Concepts

- Add diversity of routes
- The plan is practical
- CMBA believe that designated routes will reduce trail proliferation and environmental impact
- Suggest routes that meander with gentle curves, which will help to keep the speed down over straight linear routes

Calgary Pathway Advisory Council

- Feel the park is sick as over 30 years of doing nothing has led to the current problems
- Trail 5.8 missing link in north to be completed (High on their pathway priority list, do not remove but rework existing paved route)
- Porcupine Valley trail to be improved
- Nose Hill Management Plan – Zones Management – have a trail to outskirt zones that have sensitive areas to preserve natural state components, no pavement in these zones, yes to crushed gravel
- Parking lots:

    - Shaganappi parking lot - maybe not enlarge, Consider overpass 500M north as the area has already been prepped for an overpass
    - Consider a survey related to parking to find out who is using the parking lot and also find out if adjacent community is a major user and does it warrant an overpass in the future.
- Signage – have a general sign for all natural park areas, such as Edworthy Park Historical Societies sign, or an example such as "Nose Hill Park Natural Environment Area is yours to use and enjoy now and to protect and preserve for the future"
    - Signage for all main entrances

Calgary Winter Club

- Agree with the yellow routing for multi use zone (MUZ Alternative B)
- Consider safety and access for people with a disability
- Consider additional parking
- Support 3.8 – 4a commuter routes

Suggestions:

- Ensure disabled access for Brisebois and Berkley trailheads
- Support washrooms at trailheads
- Like low profile signs
- Consider small # of bends around the multi-use zone
- Provide access to peripheral pathway to Winter Club
- Winter Club are in support of the public using their parking lot for park access

Cambrian Heights Community Association

- The Community Association representative surveyed residents and got a 3% response
- Access is important to the community as they value the natural environment and request similar treatment on the Hill – we see many excellent examples of trail building in Canmore around Grassi Lake, in the Lake O'hara area, Centennial Ridge Trail on Mount Allan, Iceline Trail in Yoho, etc. Not only are there trails built to protect the natural environment, they provide users with a safer and easier walking surface.

The top 5 aspects of the preliminary concepts supported by Cambrian Heights:

- We strongly support the building of the off-site regional pathway along 14th street.
- We support the building of an upper perimeter pathway surfaced in a way that would permit all users to enjoy the spectacular mountain view and which would delineate the multi-use zone. (But we don't want to see pavement everywhere!)
- We strongly support the upgrading of parking facilities for safety, sanitation and convenience. We want washrooms in all parking lots. We request great revision of Hill view Parking Lot (along 14th St. just north of Winter Club): creation of 2 lots, the present upper lot plus a lower lot at the corner of 14th St. where one turns off onto the gravel road, thus allowing for easy police surveillance. One resident asked why parking couldn't be incorporated onto the Pump House Station site at the corner of John Laurie and 14th St, rather than impose on the Winter Club.
- We support an east-west, north-south commuter route through the park. Why shouldn't commuters be able to enjoy cycling through a natural area to and from work?

- We support signage that clearly states Park's expectations for park users. Bylaw information and enforcement should be evident in the park. Signage should also thank users for leaving the park as clean as they found it.

Re: Aspects that we want modified:

- Although we appreciate the City's efforts to rehabilitate certain trails on the Hill, many of us find the trail closure orange netting unsightly, unsafe and confusing.
- We are concerned about suggestion to have an upper plateau washroom because it wouldn't be in easy view of passing motorists and police.
- We oppose removal of pavement in Porcupine Valley unless it is considered to be unsafe. (It seems like an exercise in futility.)
- Additional comments:
  There should be some location markers that people can refer to when calling for emergency help. One suggestion is to have engraved stone markers, about waist high, at regular intervals along the roads and trails, that would specify locations making rescue agencies able to locate the reference points in the park.
  When are the City Police going to be consulted to obtain their input related to security of parking lots and facilities and the Fire Department related to the prevention of uncontrolled burns to safeguard nearby homes.

Dalhousie Community Association and Nose Hill Communities Board

- Do nothing is not a possibility
- They have worked with several community boards to put together a plan that has a common denominator for minimal routing options on the Hill
- This is a proposal for changes to Nose Hill Park that hopefully encompasses continual effort of reclamation of damaged areas, together with some trail development. As well, some parking and other signage additions could be acceptable as long as they do not detract from the character of the Hill.

1. A paved Regional Pathway could be located along the east side of 14th St NW outside the Park boundaries.
2. The clarification of the boundaries of the MUZ A is supportable. However, the addition of MUZ B is not acceptable.
3. The only paved pathway should be the existing one at the Edgemont Boulevard NW parking lot.
4. An interpretive pathway with aggregate surface allows easy access for fires.
5. There would be two types of trails:
   - a 1.5m wide upper plateau trail made of clay-gravel mix (earth tone) – also agree to an upper trail around the top
   - 1m wide designated trails, made of clay-gravel mix (earth tone), covering the most sensitive and damaged areas of the Park.
6. The parking lot at 14 St. NW could be upgraded and expanded
   - No upgrade for Edgemont parking lot as “gangs” have been using this area for inappropriate activities and create a user safety concern
7. User-friendly interpretive information should be designed for each entrance-way with lighting.
8. On-going monitoring should take place on the upper plateau to judge the effectiveness of eliminating undesignated trails. (reclaim trails on the upper plateau).
9. A more active program must be undertaken to reclaim damaged areas of Nose Hill Park

*Signage – at trail junctions have routing map, showing where you are in the Park

Canadian Parks and Wilderness Society

- Not completely support the proposed routing in the proposal, however do support the routing concept as presented by Dalhousie Community Association and the community board collective concept.

Edgemont Community Association

- Support the Dalhousie (community board collective concept)

Friends of Nose Hill

Support:

- Aim to protect the park natural, cultural and visual attributes of the Park
- Support reclamation of disturbed areas
- Increased users led to deterioration of trails and entry points
- Would support routing concept # 1 and also support the merits of the Dalhousie Communities Board collective concept
- Like to see natural trail surfacing – compacted dirt, gravel, limestone,
- Biophysical areas
- Existing access points – only area for services like entry feature signs

Do not support:

- Interior signage and trail markers
- Benches and information signage along interpretive trails
- Native vegetation, boulders, etc. to focus visitors to keep on trails
- Pathway on outside of perimeter

Need to educate park users and the public
Emphasize working together
The executive of F of NH have not discussed designated trails

Huntington Hills Community Association

- Their organization is impressed with the stakeholder engagement process and support all the efforts to date
- Have appreciated the process not just with the end result

Off Leash Calgary Dog Society

- Support the Dalhousie, community board collective concept
- In the stakeholder questionnaire – question # 16, ranking # 5 as #1
- Statement #2 on Page 67 of routing proposal – “Dog Use on Coulees” – Off Leash Calgary Dog Societies’ stance is noted on their web site www.geocities.com/offleashcalgary
- Not accepting comments from parks on designated trails

North Haven Community Association

A quick summary of the North Haven Community Association is to leave the park as natural as possible.

- Preliminary Routing Concepts (Question 16)

Concept 1 "Minimum Development" was chosen as "most desirable", while all other choices were rated "least desirable"

- Surfacing Concepts: (Questions 12/13/14)
  Upper plateau route/Major route and minor route, the "most desirable" choice for each route is "upgrade existing trail"
- We "strongly disagree" with the suggestions of pump-out washrooms (question 17) and in-park washroom (question 18). In general, concern over maintenance issue with the washrooms, if you put them in, they need to be appropriately serviced. It can be quite an effort and expense to have them installed.
- Additional comments on the preliminary trail pathway plan:
  Trail markers could be used as an alternate to mark the upper route trail. Instead of trying to differentiate the trail surface, a post every 300m or 400m could be used to indicate the general line that delimits the upper trail.
- Connecting Routes:
  No need to alter trails from North Haven tunnel entrance, we did not feel strongly about question 9 and 10, just leave it as is.
- Parking Facilities (Questions 2 and 3)
  We agree with the expansion of the Edgemont parking. Make the area bicycle and pedestrian friendly, ease the access for bicycles and pedestrians, not just making more rooms for cars.
- Strongly disagree with the expansion of the lower parking lot on 14th street
- Agree with the expansion of the upper parking lot on 14th street. But not to the installation of picnic area and washrooms for the same reason mentioned earlier.

Sandstone MacEwan Community Association

- Support the Dalhousie, community board concept

Seniors Coalition

- No comments

Thorncliffe Greenview Community Association

Support the Dalhousie, community board concept

Additional comments:

- Park to be left as is
- Support minimal plan for trail improvement
- Education of Park users is needed
- Support perimeter pathway outside of the Park
- Support 2 or 3 designated trails from each trail head with granular tread/upgraded tread

Secondary routes – upgraded tread

- Trail reclamation – flexible process to incorporate user needs
- Reevaluate method for trail closures
- Consider seasonal trail closures

Parking lots to be considered for redevelopment maybe not expansion i.e. 64th/Beddington – grade of parking lot could be lowered, materials used for reclamation, entrance embankment along parking lot

- Entrance signage at entrances
- “artificial coulees” to bring people out to trails

Signs – educate public on appropriate trail use, i.e. noxious weeds – encourage visitors to remove weeds

- Profile sign of view from trailhead

Rest rooms and picnic areas at all parking lots
Ongoing process of renewal and discovery

- Need to educate the public to keep on the trails

MUZ – completely free of restrictions
Seasonal restrictions – i.e. no Off leash dogs during the nesting periods

Triwood Community Association/Ward 7 Liaison

- Natural environment park – keep natural
- Minimal development
- Minimal signage
- No internal park signage
- Keep Park visually natural – lines of sight not introduced
- No visible amenities like benches and signs up hill
- No building in Park
- Charleswood parking lot closure – creates a long stretch of no access (people may take down fences anyway)
- Support rehabilitation of trails
- Development in the Park should be open to public input – not just open houses – consider public meetings
- In favour with minimal # of routes

Brentwood Community Association

Exterior: – support pedestrian overpass at Brisebois

- Support regional pathway outside of park boundary to take advantage of lighting, etc.
- Cost of overpass needs to be considered

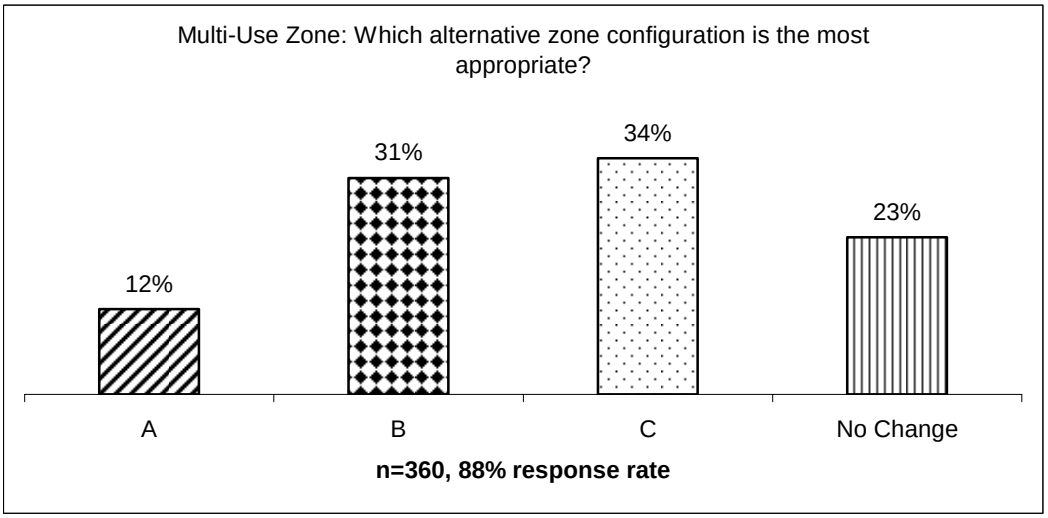
Interior:

- Sign – visually low impact of signage be provided by those needing it
- Community split on concepts – 50/50 – but want balance preference of users
- Strong resistance to designated routes only
- General
- Best management practices for route management
- Presence of plan with not budget may be a problem and may require unnecessary revisiting of plan
- Recommend there be a series of broad and well spaced public meetings to gather public input

Public Meeting # 1

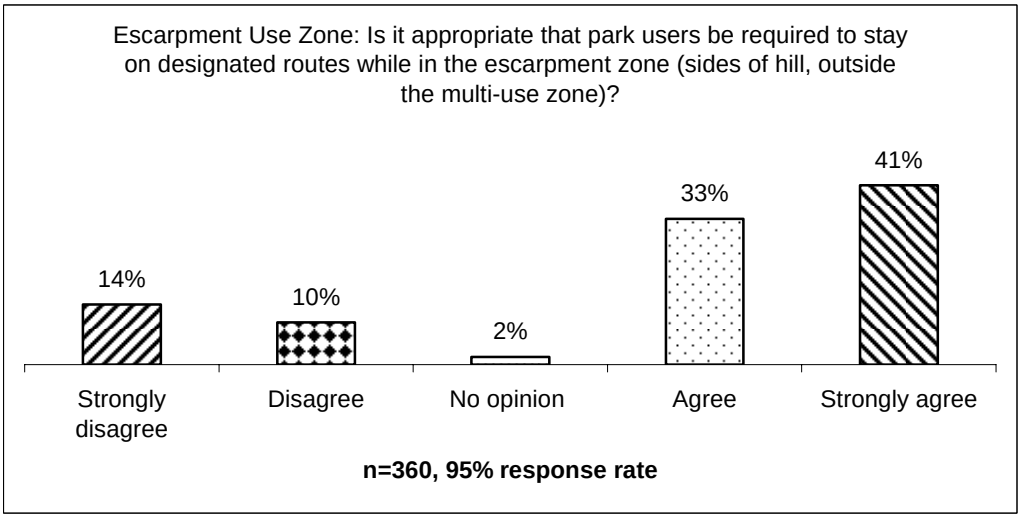
The following information provides a summary of the responses to the alternative routing and facilities components questionnaire distributed at public meeting # 1. In total, 360 questionnaires were received from citizens.

1. Multi-Use Zone:



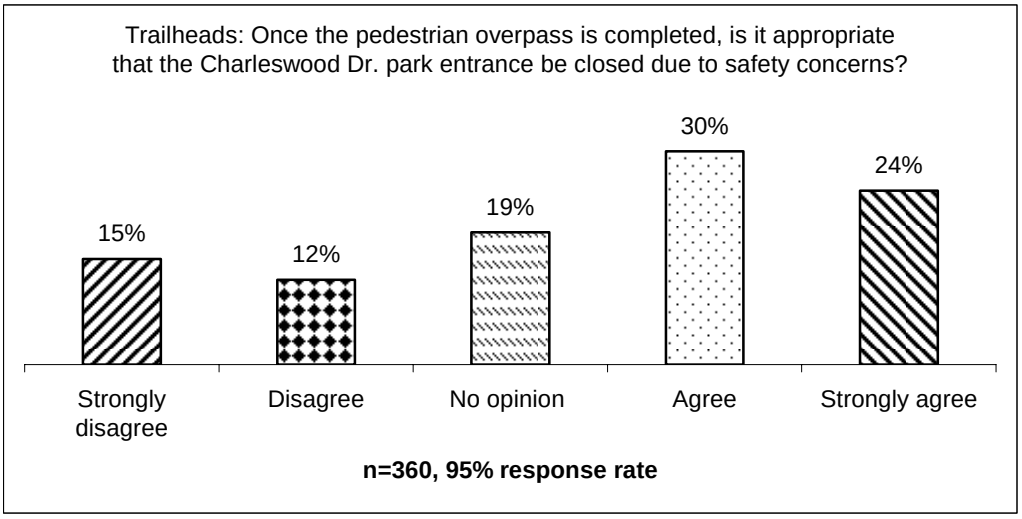
34% of the respondents chose option “Alternative C”
31% of the respondents chose “Alternative B”
23% of the respondents chose “No Change”
12% of the respondents chose “Alternative A”

2. Escarpment Use Zone:



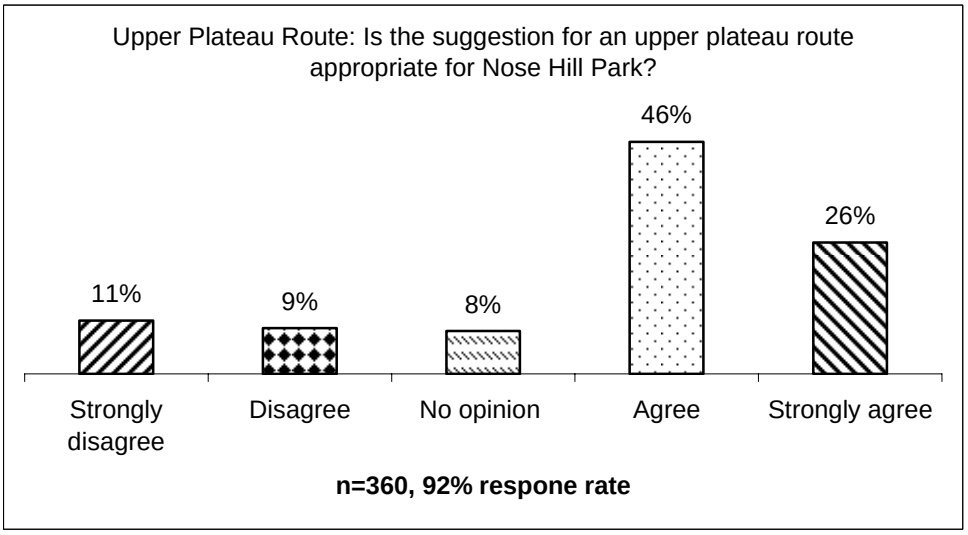
74% of the respondents agreed and 24% disagreed that it is appropriate that park users be required to stay on designated routes while in the escarpment zone.

3. Trailheads:



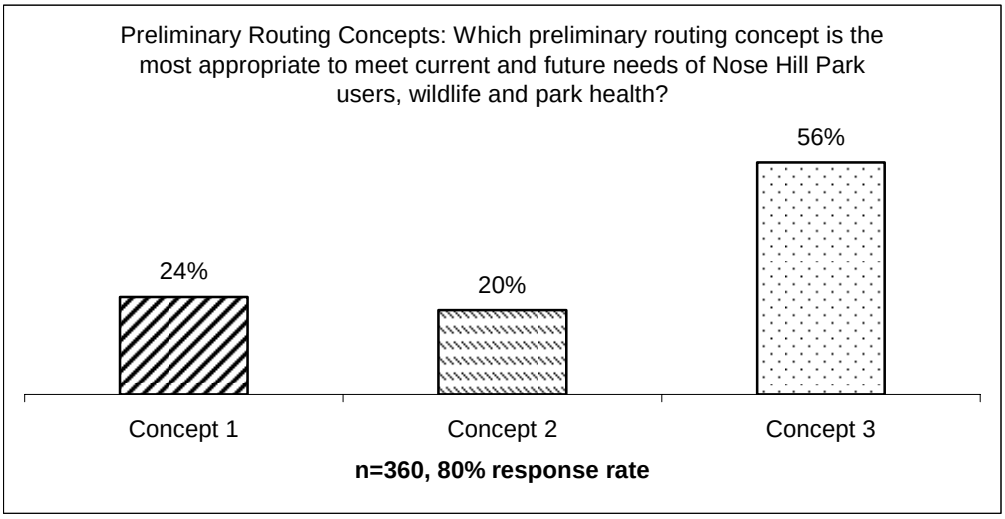
54% of the respondents agreed and 37% disagreed to close the Charleswood Drive park entrance once the pedestrian overpass is completed.

4. Upper Plateau Route:



72% of the respondents agreed and 20% disagreed that is appropriate to have an upper plateau route.

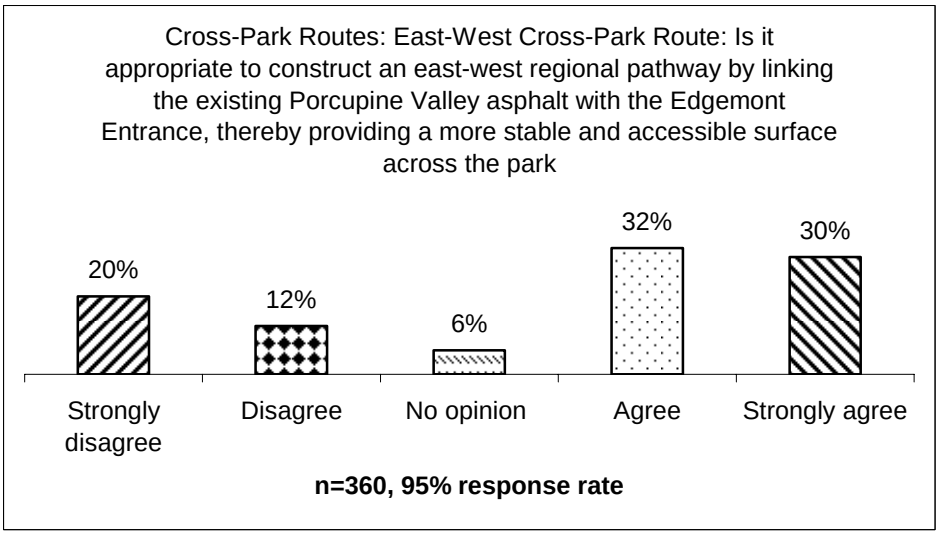
5. Preliminary Routing Concepts:



56% of the respondents chose routing concept #3
24% of the respondents chose routing concept #1
20% of the respondents chose routing concept #2.

6. Cross Park Routes

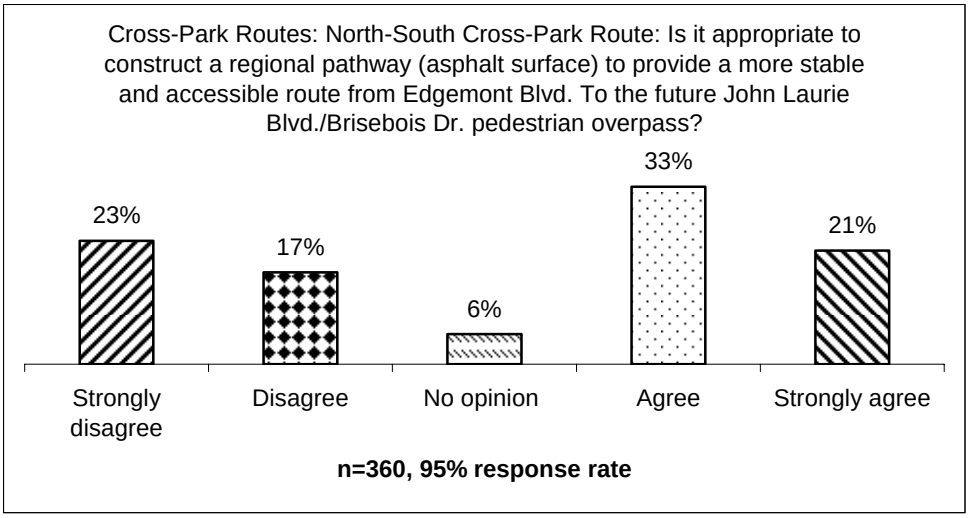
a) East-West Cross-Park Route:



62% of the respondents agreed and 32% disagreed it is appropriate to construct an east-west regional pathway by linking the existing Porcupine Valley asphalt trail with the Edgemont Entrance, thereby providing a more stable and accessible surface across the park.

6. Cross Park Routes

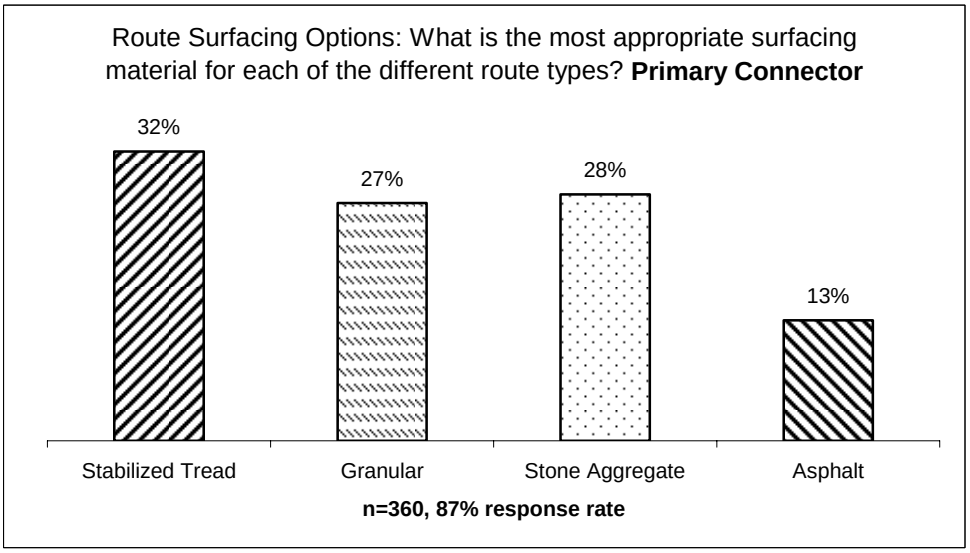
b) North-South Cross-Park Route:



54% of the respondents agreed and 40% disagreed to construct a regional pathway (asphalt surface) to provide a more stable and accessible route from Edgemont Boulevard to the future John Laurie Boulevard/Brisebois Drive pedestrian overpass.

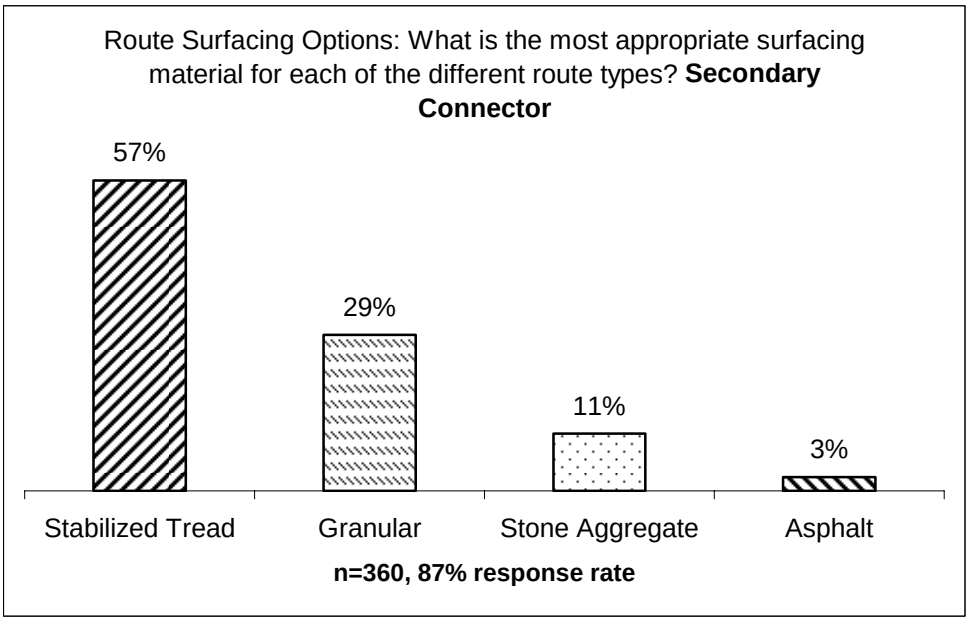
7. Route Surfacing Options

a) Primary Connector Routes:



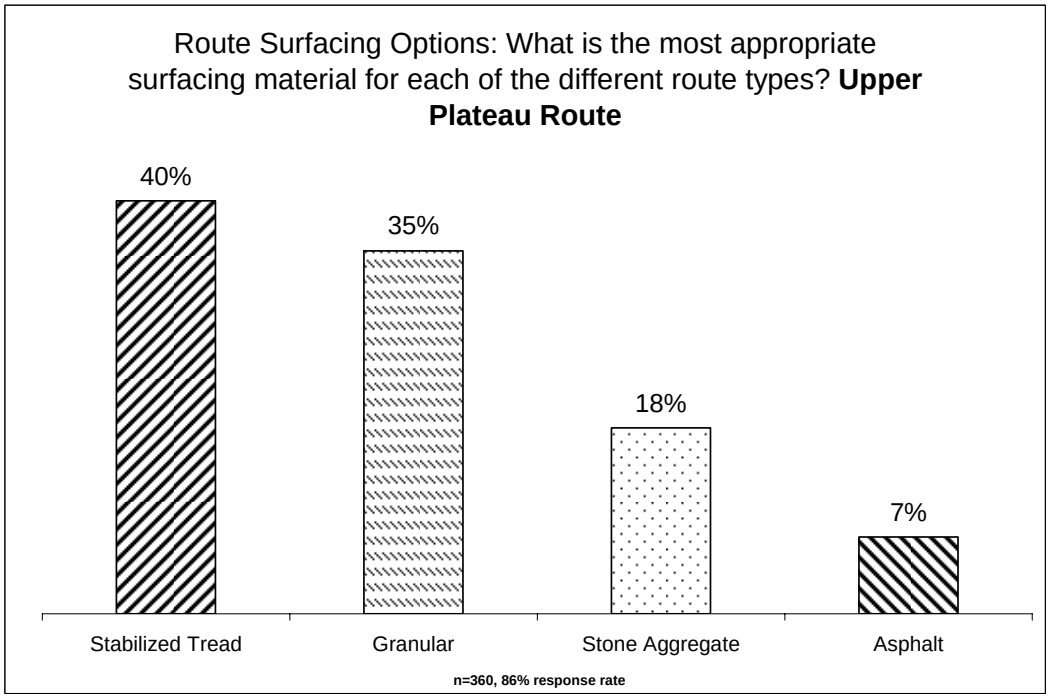
32% Stabilized Tread
28% of the respondents chose Stone Aggregate
27% of the respondents chose Granular
13% of the respondents chose Asphalt

b) Secondary Connector Routes:



57% of the respondents chose Stabilized Tread
29% of the respondents chose Granular
11% of the respondents chose Stone Aggregate
3% of the respondents chose Asphalt

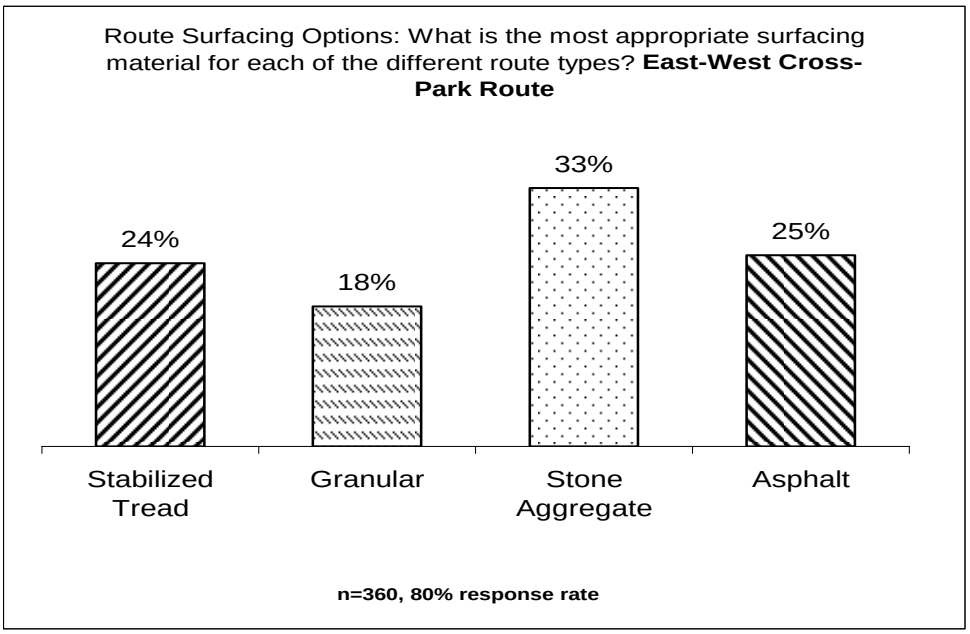
c) Upper Plateau Route:



40% of the respondents chose Stabilized Tread
35% of the respondents chose Granular
18% of the respondents chose Stone Aggregate

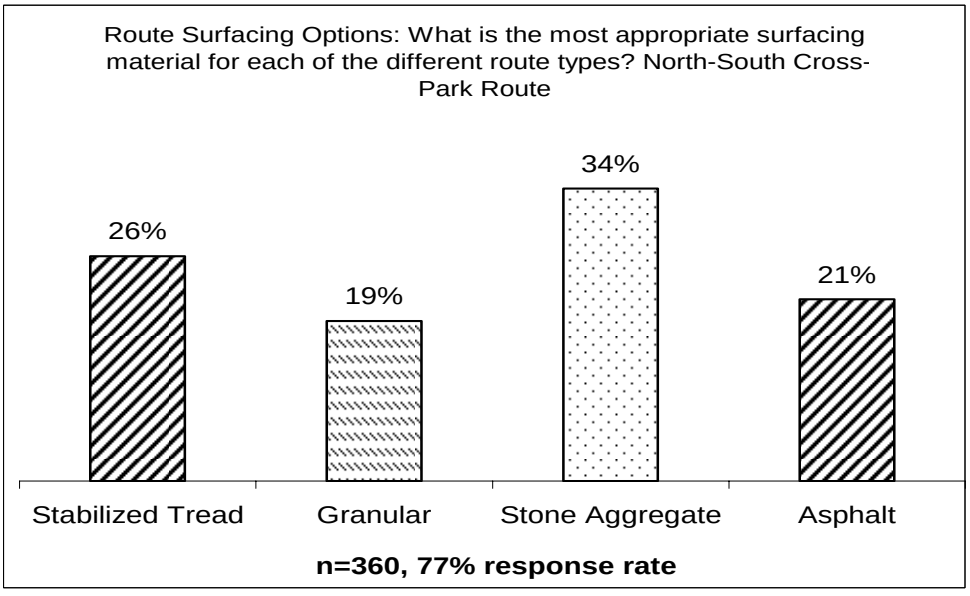
7% of the respondents chose Asphalt

d) East-West Cross-Park Route:



33% of the respondents chose Stone Aggregate
25% of the respondents chose Asphalt
24% of the respondents chose Stabilized Tread
18% of the respondents chose Granular

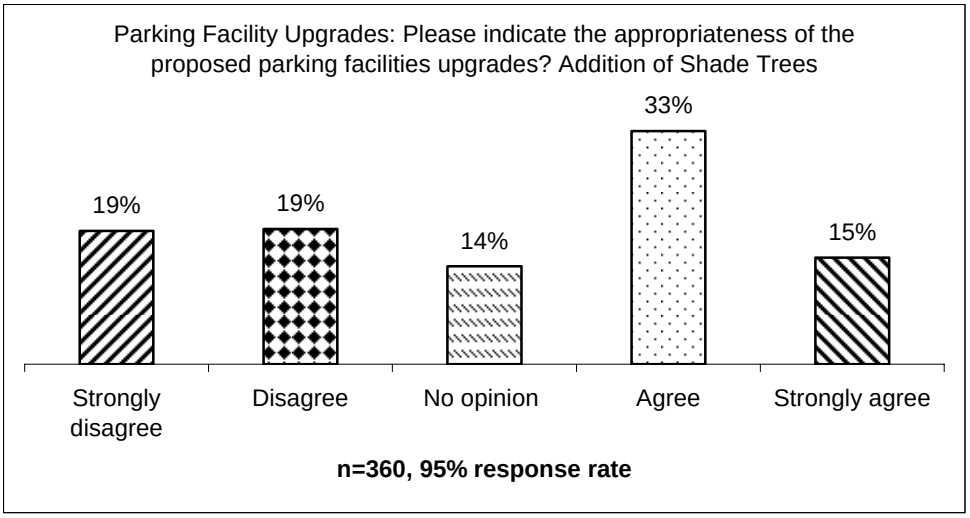
e) North-South Cross Park Route:



34% of the respondents chose Stone Aggregate
26% of the respondents chose Stabilized Tread
21% of the respondents chose Asphalt
19% of the respondents chose Granular

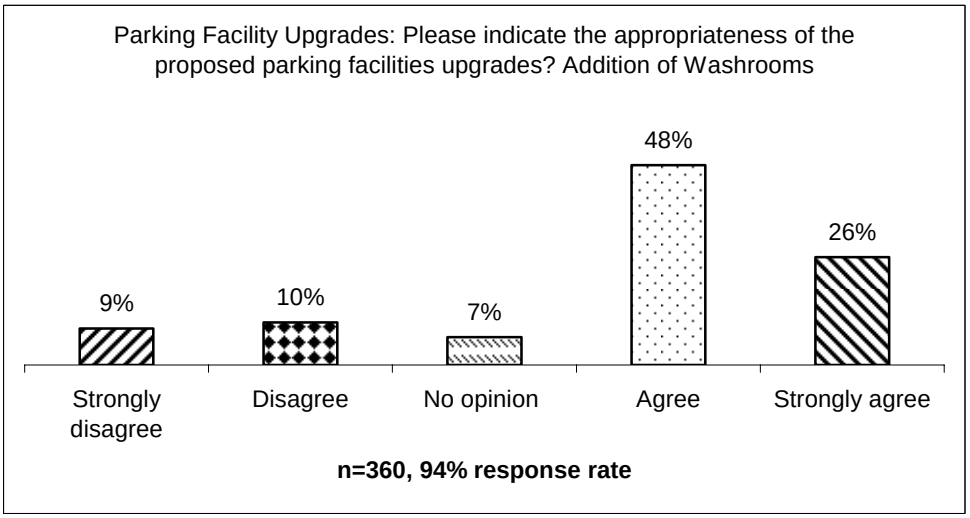
8. Parking Facilities Upgrades

a) Addition of Shade Trees:



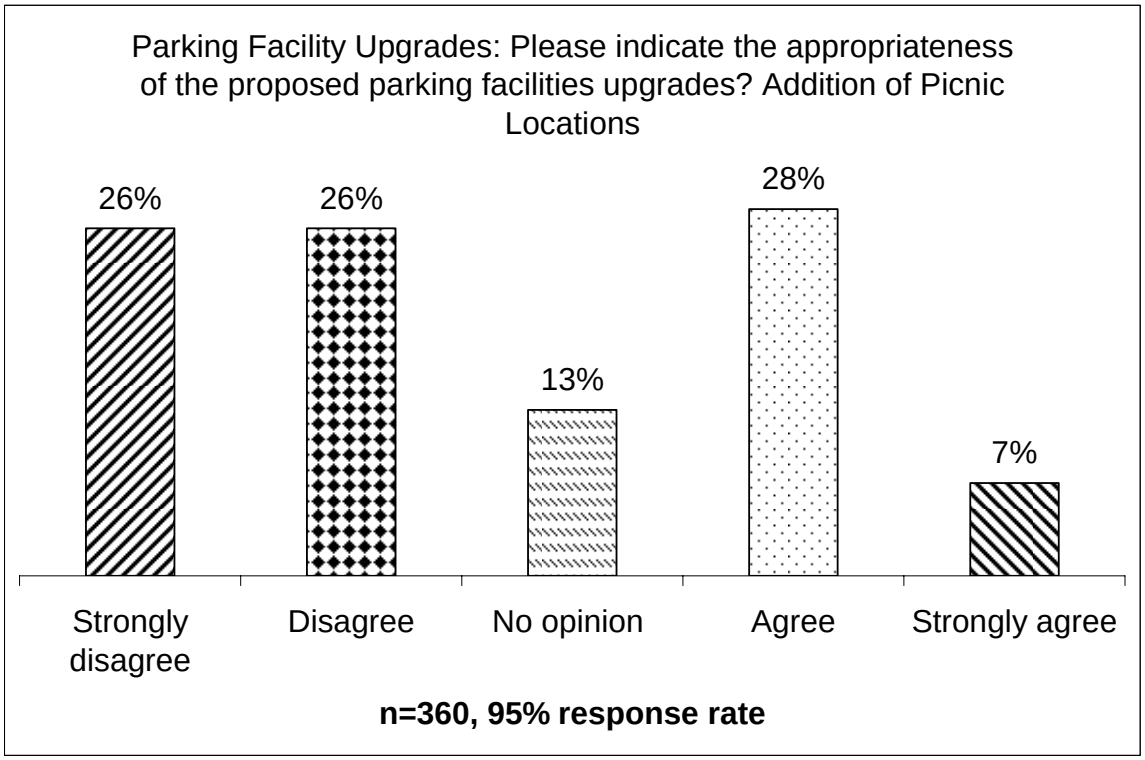
48% of the respondents agreed and 38% disagreed to the appropriateness of shade trees.

b) Addition of Washrooms:



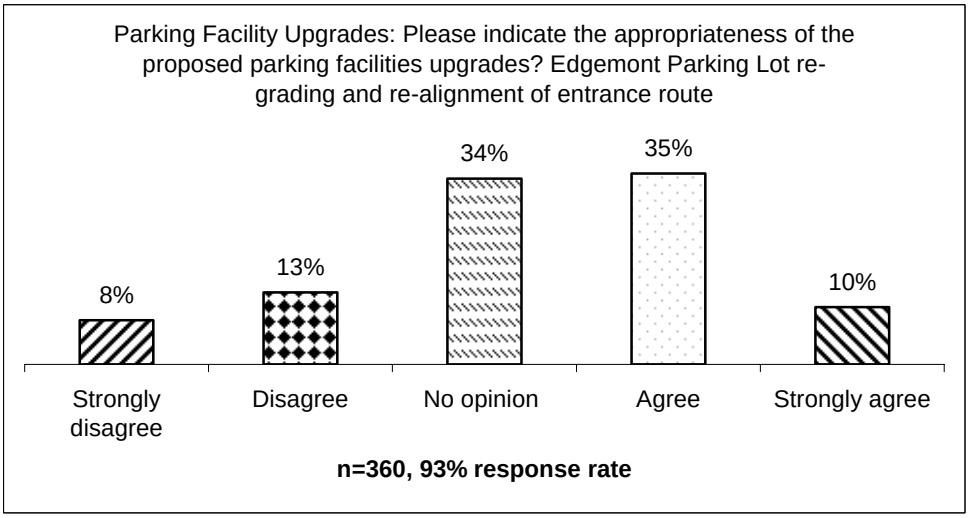
74% of the respondents agreed and 19% disagreed to the appropriateness of washrooms.

c) Addition of Picnic Locations



52% of the respondents disagreed and 35% agreed to the appropriateness of picnic locations.

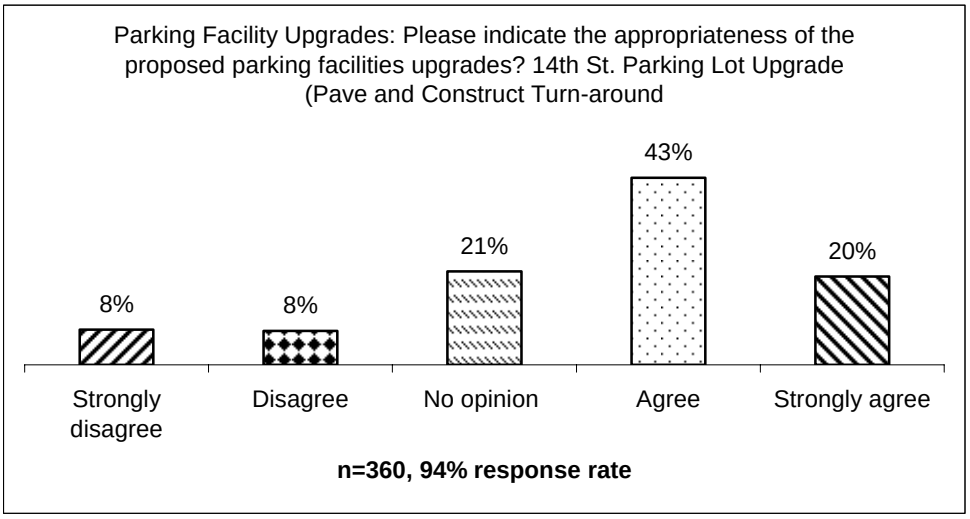
d) Edgemont Parking Lot Re-grading and Re-alignment of Entrance Route



45% of the respondents agreed and 21% disagreed to the appropriateness regarding the re-alignment of the entrance route at the Edgemont Parking Lot.

* Note 34% of respondents checked off “No Opinion”

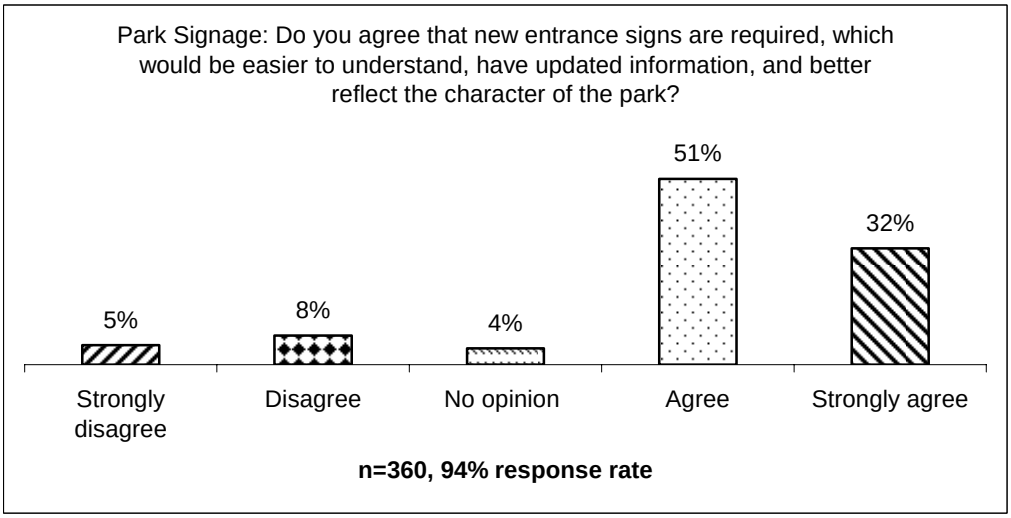
e) 14th St. Parking Lot Upgrade (Pave and Construct Turn-Around)



63% of the respondents agreed and 16% disagreed to the appropriateness of the 14th St. Parking lot upgrade.

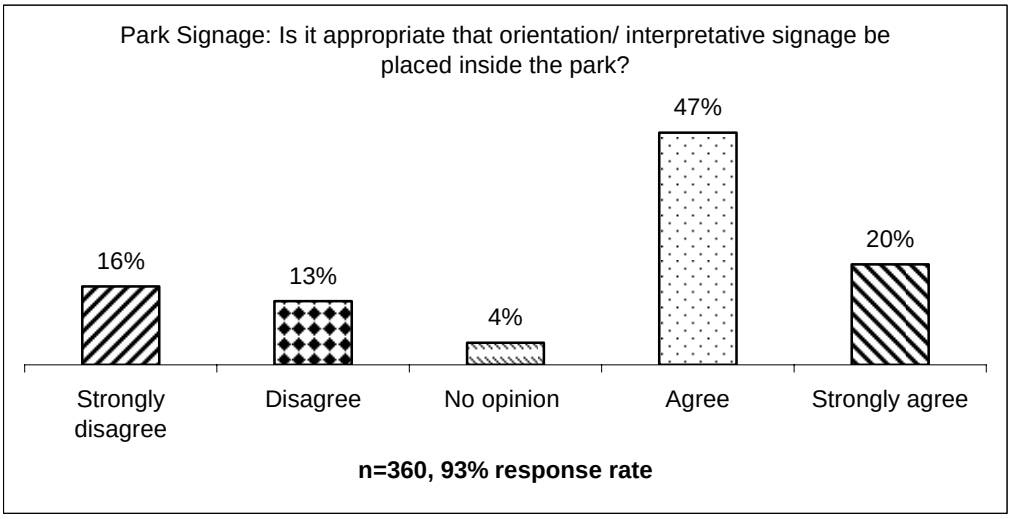
9. Park Signage:

a) New Entrance Signs:



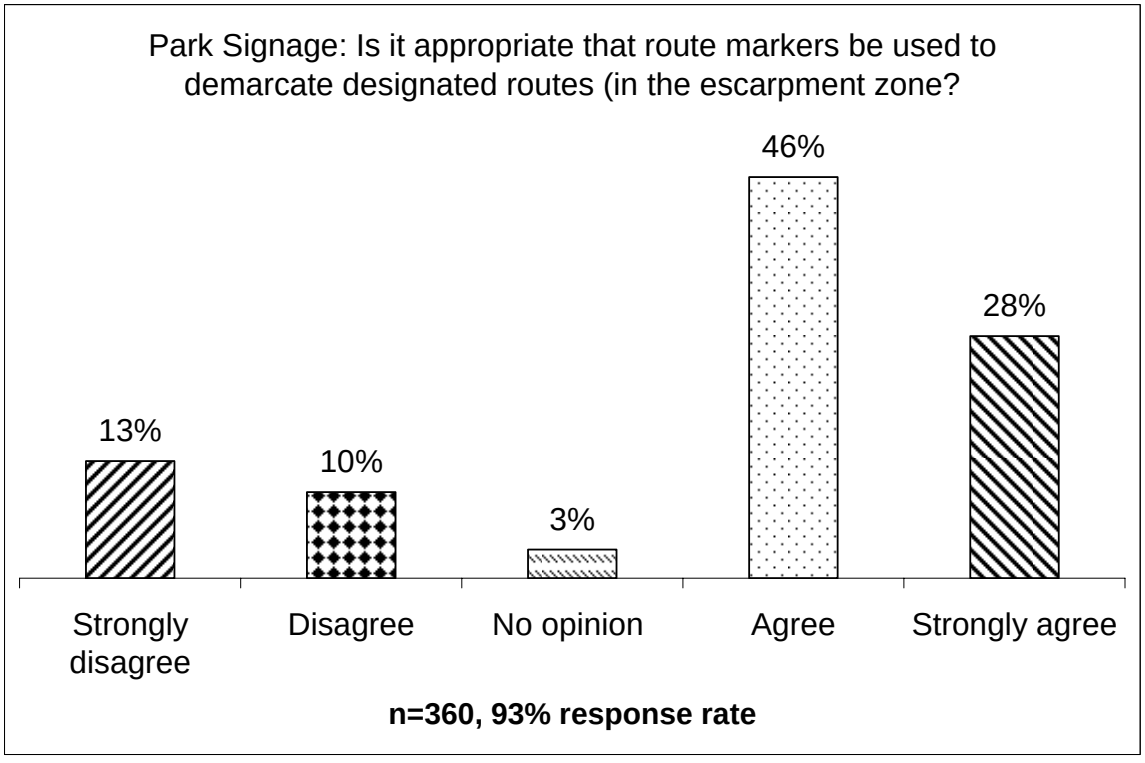
81% of the respondents agreed and 13% disagreed that new entrance signs are required.

b) Orientation and Interpretive Signage:



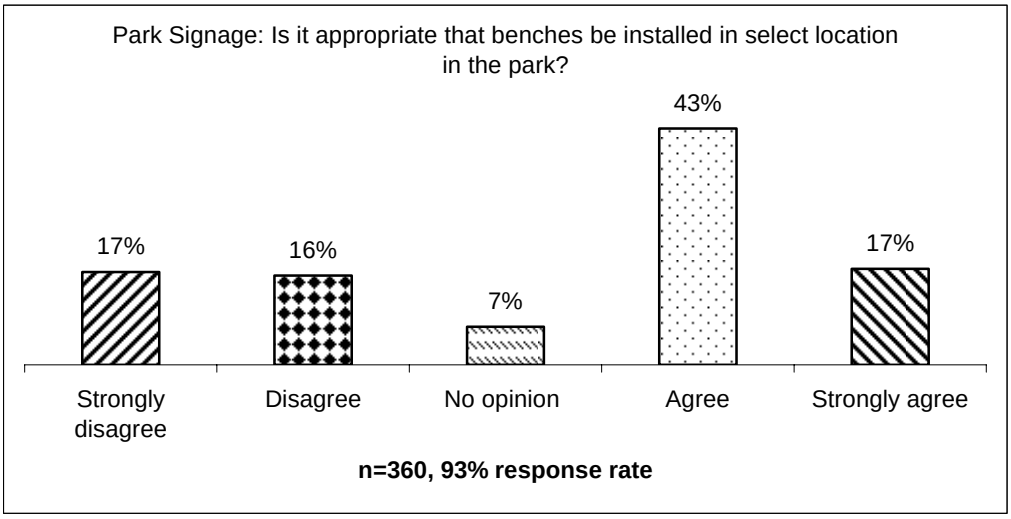
67% of the respondents agreed and 29% disagreed that orientation/interpretive signage be placed inside the park.

c) Route Markers to Demarcate Designated Routes in the Escarpment Zone:



74% of the respondents agreed and 23% disagreed that route markers were appropriate to be used to demarcate designated routes.

Park Benches:



60% of the respondents agreed and 33% disagreed that it is appropriate to install benches in select locations in the park.

* Note 33% agreed, 41% strongly agreed to the question