

**NATURAL AREAS IN
THE CITY OF EDMONTON**
◆
**ASSESSMENT OF
CONSERVATION VALUE
AND POTENTIAL**

Prepared for

The City of Edmonton
Community Services Department
Edmonton, Alberta

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EXECUTIVE SUMMARY

Systematic classification and ranking in order of importance, or setting priorities, is a fundamental ingredient of environmental planning because it encourages the efficient allocation of limited resources. In an urban context, such as in the City of Edmonton, these limited resources must be used to deal with essentially 'limitless' issues such as urban natural area management. Such a scenario necessitates that an integral part of our systematic approach for dealing with management issues entail the development of a ranking system to allow for setting priorities and policies for future management actions.

The City of Edmonton has embarked on an effort to inventory, rank, acquire, and manage natural areas as part of a civic strategy rooted in the City's new municipal development plan. The City has recognized that protecting urban natural areas not only contributes to the conservation of biological diversity, but also provides valuable opportunities for human enjoyment. However, limited fiscal resources, conflicting land uses, disparate land ownership, and the limitations of management agencies to effectively manage a large number of land parcels all impose limits on the number of areas that can be set aside and managed as conservation areas. A method of prioritizing and choosing between all candidate areas is required.

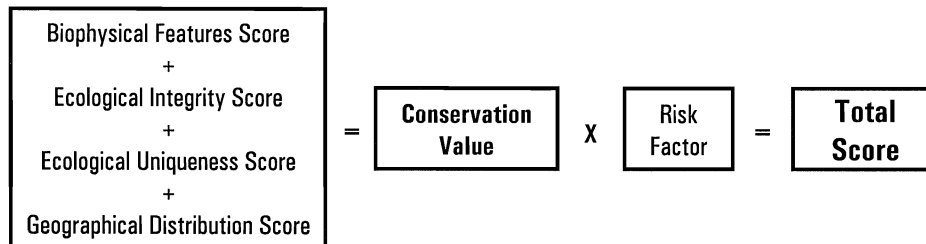
The inventory and ranking of these natural areas for conservation is just one phase in the overall prioritization process that the City of Edmonton will implement. Ultimately, the prioritization of candidate areas by the City will take into account economic, social, and political agendas. However, these factors have not been considered in this project, which had the objective of evaluating and ranking numerous candidate areas for their conservation potential and threat. This project did, however, add the variable of human use to the already complex equation of evaluating urban natural areas, thus exacerbating the difficulties inherent in evaluating fragmented, isolated, and disturbed patches.

The evaluation framework developed and herein described considers the pervasive influence of man together with the ecological features and characteristics of natural areas and communities. Human impact and conservation value were first evaluated separately and then combined to form a two-tiered evaluation scheme. In essence, the evaluation score was based largely on the potential natural conservation value of each site, which was then modified by a numerical value that represented the human impact, or potential threat, to the site.

In developing the scoring methodology, much consideration was given to the benefits of using weighted versus non-weighted scores for natural features, and it was decided that the distinct inconsistency of available data for most of these features rendered any potential weighting far too subjective and potentially biased.

Numerical scores (quantitative expressions of site value) were determined for each candidate conservation area on the basis of five criteria sets: biophysical features, ecological integrity, ecological uniqueness, geographical distribution, and land use pressure. The first four of these criteria sets were used to determine the natural conservation value of each site, and the fifth was used to determine the potential threat or risk inherent to the site due to present and planned urbanization processes. Within the context of the evaluation scheme, these

criteria interacted in the following manner:



Economic factors associated with acquiring and managing potential candidate conservation areas were not considered in the above-described evaluation scheme for two reasons. Firstly, economic or fiscal values within the context of private land management are largely speculative. Both assessed and market land values are affected by numerous extrinsic factors and the costs associated with both purchasing and managing a given site to adequately conserve the resources within it (i.e., engineering considerations) are dynamic and impractical to estimate other than through detailed site by site assessments. Secondly, and perhaps primarily, the inclusion of economic feasibility at this stage of the ranking process was discouraged because they would modify the natural conservation value, and potentially disguise or mask natural values. Economic factors and other socio-political considerations should only be taken into account after areas are first ranked by natural conservation and risk values.

A total of 65 candidate conservation areas were evaluated in this project, encompassing a variety of natural elements, landscapes, and urbanized settings. Of the 65 sites evaluated, two - NW 288 (Triple 5 Farm Wetland) and NW 7009 (the remaining portion not included within Lewis Estates Golf Course) - were found during field visits to be severely impacted and were categorized as “lost” and omitted from the evaluation. The remaining 63 sites were evaluated and ranked for their potential conservation value and imminent risk from urbanization.

The following report details the methodology, criterion descriptions, evaluation process, and study results.

ACKNOWLEDGEMENTS

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We would also like to thank Dave Rudge and Bob Priebe (City of Edmonton, Community Services Department) for reviewing early drafts and providing input to the project. Kevin Ryan, also of the Community Services Department, facilitated the transfer of digital base files for production of graphics and maps. Maps and graphics included in the report were completed by Myron Karpiak and Della Clish, of Geowest Environmental Consultants Ltd.

Numerous members of local special interest and citizens advisory groups also provided comment and input into preliminary phases of this project. City of Edmonton Councilors Alan Bolstad and Michael Phair chaired an Environmental Initiatives Committee, through which input was solicited, and Lindsay Cherney and Don Hussey, representing the Urban Development Institute, also provided comments.

ASSESSMENT OF CONSERVATION VALUE AND POTENTIAL OF CANDIDATE NATURAL AREAS IN THE CITY OF EDMONTON

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PART I

INTRODUCTION AND BACKGROUND

1. PROJECT BACKGROUND

Geowest Environmental Consultants Ltd. was retained by The City of Edmonton, Community Services Department, to assess and prioritize existing natural areas within the City's municipal boundaries for future conservation action. This final report, along with the accompanying map and database, present the background, methodology, results, and discussion ensuing from this project.

1.1 Context and Justification

The conservation of natural areas in and around Edmonton is a topic that has garnered much attention over the past 25 years. The impetus to develop a system of natural areas anchored by the North Saskatchewan River Valley and Ravine System has been evident since before the City's 1982 annexation of surrounding lands (for example, see DLF 1973, Carlyle et al. 1976). Included within these annexed lands were a variety of naturally vegetated and relatively undisturbed sites that had the potential to contribute significantly to the conservation of natural environments within the City of Edmonton and to the meet other recreational and educational goals of the public. In response to this potential, the *Urban Natural History Interpretive Sites In and Adjacent Edmonton* (Ealey 1986) was prepared, in which a total of 1,049 sites were identified and described.

In 1992, the City of Edmonton Planning and Development Department produced the document entitled *Environmentally Sensitive and Natural Areas Protection Within Edmonton's Table Lands: Policy and Implementation Background Study*, proposing that the City's natural sites be identified and classified as the basis for future recognition and protection. In response to this identified need, the City commissioned an *Inventory of Environmentally Sensitive and Significant Natural Areas, City of Edmonton* for the City's table lands alone (Geowest 1993). The purpose of this project was to update the inventory completed by Ealey (1986) and to describe, evaluate, and classify the relative significance of identified sites within the table lands.

That inventory formed the basis of *Policy C467 - Conservation of Natural Areas in Edmonton's Table Lands*.

While that policy has proven successful to some extent, it has generally been acknowledged that further efforts are required in order for the Administration to become more proactive in saving sites from urban development.

In an effort to move in such a direction, the City of Edmonton Community Services Department is preparing a strategy to recommend to City Council the best approach to conserve natural areas (Kostashuk and Priebe 1999, in prep). That strategy will include the following elements:

1. A prioritized list of sites to be considered for retention;
2. A summary of "tools" that can be used to acquire sites for conservation; and
3. An appropriate acquisition / funding strategy.

This project was completed in order to address the first stage of the above-noted process. The development and implementation of this strategy is consistent with strategic priorities identified in *Plan Edmonton:*

Edmonton's Municipal Development Plan (City of Edmonton 1998) to preserve and enhance the river valley, natural areas, and open spaces and to recognize the importance of linkages within the urban fabric.

1.2 The Role of Urban Natural Areas

Biodiversity conservation has been termed the tidal wave of the 1990s, as scientists and citizens alike are beginning to understand the significance of 'undisturbed' natural habitats, areas, and sites for the maintenance of ecological integrity and sustainability. Even from a utilitarian perspective, we all need places to seek solitude, enjoy recreation, and experience nature close to home. With more and more urban land being developed to accommodate our growing population, protecting and managing natural areas has become increasingly important and equally difficult. In most cases, resource development has been driven by economic incentives, with little attention given to the ecological constraints associated with such development. As a result of this trend, natural areas in urban centers such as the City of Edmonton are becoming increasingly restricted to relatively small, isolated, remnant, and fragmented areas.

While traditional concepts from the fields of landscape ecology and conservation biology tend to exhort the advantages of large, connected, linked, functional, resistant, and resilient landscapes for protected areas, such expressions are not realistically applicable to urban natural area conservation, at least to a large extent. Although we do attempt to maximize each of these characteristics in the natural areas we choose to conserve, the reality is that many of the areas that we must concentrate on are small, remnant habitats. As 'remnants', they possess three important characteristics (Bowers 1999):

1. They are small in size;
2. They comprise only a small fraction of the area of their vegetation type that existed in the past (in most cases, this will mean that the remnants of a particular type are few in number); and
3. Without active management, they are not sustainable in the long run.

However, this does not undermine the significance of these habitats. These small natural areas, even though they are remnants, contribute significantly to the overall conservation agenda in numerous ways, including (City of Edmonton 1992):

1. Natural areas in a City perform important "urban work". They protect the water supply and support natural drainage, reduce flooding by absorbing run-off, provide habitat for flora and fauna, and help to reduce air and noise pollution.
2. Natural areas in a City are ideal outdoor classrooms or laboratories. Schools, interest groups, field naturalists, and individuals can use such areas for environmental education. With the introduction of interpretive programs, man's place in the natural world can be better understood and appreciated.

3. A well-managed natural area can give a community a sense of place or identity and can become a source of pride. Furthermore, a green space or range of forest can give strength to urban form that might otherwise be a monotonous sprawl.
4. The recreation function of an urban natural area is perhaps its most frequently mentioned aspect. Some recreation experiences are exclusive to natural areas (i.e., natural viewing and appreciation). Many authors have stressed the psychological and emotional needs of contact with nature. Natural areas can be effective in providing temporary escapes from the pressures and tensions of urban life.

1.3 Project Objectives

The overall goal of this project was to develop and apply evaluation criteria to numerous candidate natural areas within the City of Edmonton and to prioritize them by their relative conservation values. In order to meet this overall goal, numerous specific objectives were identified as follows:

1. Develop the site evaluation criteria and the prioritization process.
2. Update the 1993 inventory of natural areas, incorporating any new available information such as existing or potential land uses, or the implementation of Area or Neighborhood Structure Plans.
3. Apply site evaluation and prioritization criteria to each site in accordance with the approved process.
4. Prioritize the candidate sites for conservation value and risk value in accordance with the approved process.

It is expected that the results of this project will provide a more definitive and prioritized listing of the conservation value of extant natural areas than has been completed to date for the City of Edmonton. Through the criteria described herein and the application of the criteria, these results provide the rationale and justification for the City to direct limited monetary resources towards conservation efforts within its municipal boundaries.

2. REGIONAL SETTING OF THE CITY OF EDMONTON

The study area for this project was approximately 357 sq. km. of public and private lands occurring on Edmonton's table lands (those suburban and agricultural lands outside the North Saskatchewan River Valley and Ravine System, which were annexed to the City of Edmonton on January 1, 1982). Figure 1 depicts the study area boundary. The following description of the study area builds upon that originally presented in Geowest (1993).

2.1 Physiography

Alberta's provincial land classification scheme has been developed and refined over the past two decades. The land classification currently in use by the Alberta government has recently been revised by Achuff (1992), AEP (1994), and Strong and Thompson (1995) and is based on natural or biogeographic features such as geology, landform, hydrology, soil, climate, and vegetation. This land classification scheme results in fairly broad delineations called Natural Regions, each of which is further sub-divided into Natural Subregions. Six Natural Regions and 20 Natural Subregions have been recognized in Alberta and, recently, Strong and Thompson (1995) further divided the Natural Subregions into Ecodistricts, based on distinctive physiographic and/or geological patterns.

The City of Edmonton is situated within the Parkland Natural Region, lying at the extreme northwestern fringe of the Central Parkland Natural Subregion. Within the Central Parkland Natural Subregion, the City is encompassed by two ecodistricts, the Leduc Plain (terrestrial) Ecodistrict and the North Saskatchewan River Valley (fluvial) Ecodistrict. The Leduc Plain Ecodistrict is characterized as an undulating lacustrine and morainal plain with slopes ranging from 0 to 5%. The North Saskatchewan River Valley Ecodistrict is a fluvial unit that includes only the river valley terraces and slopes within the City boundaries. Slopes within this ecodistrict range as high as 70% (Strong and Thompson 1995), in areas where the river valley is deeply incised.

2.2 Landforms, Bedrock and Surficial Geology

The Edmonton area is underlain by Upper Cretaceous bentonitic sandstones, sandy shales and bentonitic clays and coal seams of the Edmonton Formation (Bowser *et. al.*, 1962). These bedrock formations are commonly exposed along the North Saskatchewan River Valley and Ravine System (i.e., Whitemud, Blackmud, Mill, lower Horsehills and Oldman creeks, etc.). Bedrock strata are mantled with thick glacial and post-glacial deposits of variable origin, including moraine, glaciolacustrine, pitted deltaic and eolian materials.

With the exception of the southeast corner of the city, fine-textured glaciolacustrine materials from glacial Lake Edmonton occur extensively throughout most of the city and mantle the underlying bedrock strata. Surface

Figure 1: *Study Area Boundary (City of Edmonton Table Lands and Municipal Boundary)*

expression is level to very gently undulating (0-5% slopes). Textures are considerably heavier than those associated with the lighter-textured morainal materials in the southeast, varying from silty clays to heavy clays. Soils commonly include moderately well to imperfectly drained Orthic Black Chernozems of the Malmo series (Bowser *et.al.* 1962). Black Solodized Solonetz and Black Solonetzic soils of the Wetaskiwin and Duagh series respectively, occur in the Namao area of northeast Edmonton where parent materials are considerably more saline in nature. Dark Gray Luvisols of the Mico series occur in the northwest corner of the city adjacent to Big Lake.

Coarser-textured alluvial-lacustrine materials occur within the northeast corner of the city adjacent the North Saskatchewan River valley. Textures vary from loams to sandy loams and loamy sand. Typical soils include well-drained Orthic Black Chernozems of the Peace Hills and Ponoka series.

"Dead-ice" morainal deposits occur extensively within the southeast corner of the city. These deposits have a very pronounced "hummocky" surface expression (5-30% slopes) and are derived primarily from the Edmonton and Paskapoo formations. They are generally only slightly stony in nature. Because of the hummocky "knob and kettle" nature of this landscape, extensive organic accumulations have developed in depressional topography, giving rise to a tremendous diversity of landscapes within the southeast corner of the city. These deposits are part of the larger Cooking Lake - Beaverhill morainal complex to the east. Typical soils include moderately well to well-drained Orthic Black Chernozems of the Angus Ridge series.

An extensive area of sandy eolian materials derived from pitted deltaic materials occurs in the southwest corner of the city, west of the North Saskatchewan River valley. This is part of a larger sand dune complex that originates west of the city in the vicinity of Highway 60. Surface expression is commonly undulating and ridged, with parent materials being very susceptible to erosion when ground vegetation is removed. Soils typically include well to rapidly drained Orthic and Eluviated Eutric Brunisols of the Culp series.

These interesting geological features and landforms of the Edmonton area are also summarized in Roed (1978).

2.3 Hydrology

Three major drainages are present within the Edmonton area, affecting local hydrological conditions to varying degrees. These include the post-glacial Sturgeon and North Saskatchewan river valleys and the buried pre-glacial Stony Valley. Bibby (1974) found that the Sturgeon, North Saskatchewan and Stony Valley all have the highest expected groundwater yields within the study area.

The Stony Valley represents the most important aquifer in the Edmonton area (Ceroici 1979). It trends northeast from the northwest corner of the study area and is commonly overlain by 45 m of surficial materials and is floored by fine- to medium-grained sands, known as Saskatchewan sands, as well as by gravels that lie unconformably on Upper Cretaceous bedrock and are overlain by till. These pre-glacial gravels and sands reach 21 m in thickness in the Devon area. The significance of the Stony Valley pre-glacial channel to the annexed

lands within the city of Edmonton may lie in the occurrence of significant wetlands or wetland complexes in or adjacent to the aquifer. Numerous contact springs and seepages are found along the North Saskatchewan River valley. The general direction of groundwater flow is toward the Stony Valley and the North Saskatchewan River valley, which act as line sinks, inducing flow toward themselves.

The North Saskatchewan River Valley Ravine System is the dominant physiographic feature within the City boundaries. The North Saskatchewan River valley winds its way through the City of Edmonton for 48 km in a southwest-northeast direction. The river valley system also includes three major ravines, 19 secondary ravines, and numerous tributaries for a total length of over 103 km of ravines (refer to Figure 1). The North Saskatchewan River Valley and Ravine System is the largest and most continuous expanse of urban parkland in North America

Numerous small wetlands have developed within the Edmonton area in response to the relatively fine-textured nature of most parent materials and variable topographic conditions. In addition, a number of permanent water bodies have also formed as a result of post-glacial events, including Kinokama Lake in the northwest, Moran Lake in the northeast and the Southeast Corner Slough in the southeast corner of the city. Water levels in these wetlands are highly variable and are influenced to a great deal by annual precipitation amounts and fluctuating groundwater levels.

2.4 Flora

Although the City of Edmonton is located within the Parkland Natural Region, it lies at the northern fringe of the Region, where it approaches the border of the Boreal Forest Natural Region (Boreal Dry Mixedwood Natural Subregion). As a result, there is some incidence of transition between parkland and mixedwood habitats, however the majority of the area is characteristic of parkland environment, with a mixture of native grassland (historically) and deciduous forest communities. Most upland, forested areas within the region are characterized by a continuous cover of deciduous forest, usually dominated by aspen. In areas where moister and cooler conditions prevail (such as ravines, river valleys, or north-facing slopes), coniferous cover, most often white spruce, and other deciduous species such as balsam poplar and white birch, are also present. In wet, poorly drained peatland locations, black spruce and tamarack are common canopy species, although this bog-type habitat itself is somewhat limited within the Edmonton area.

Vegetation communities trending toward the Boreal Dry Mixedwood Subregion are evidenced by the fact that a more favorable moisture regime beneath the deciduous forest canopy supports the growth of a diverse herbaceous and shrubby understory, as compared to areas south of Edmonton, where grassland areas are more prominent. Undeveloped lands within the City of Edmonton support a high diversity of vegetation communities including upland aspen, aspen - balsam poplar - white birch deciduous forests, mixedwood aspen - balsam poplar - white spruce forest, white spruce and white spruce - black spruce coniferous forest stands, black spruce - tamarack muskeg, and various shrubland and wetland vegetation complexes associated with stream channels, moist depressional sites, small sloughs, and wetland margins.

The presence of relatively undisturbed, old (in excess of 100 years) forest stands composed primarily of white spruce or a mixture of white spruce, balsam poplar, and aspen is quite uncommon in the City's table lands. These stands generally exist as isolated "woodlands" that have been spared from urban, industrial or agricultural development to this point. They generally contain a rich assemblage of plant species with numerous snags, fallen trees and patches of various understory plant communities, thus providing numerous habitat niches for a variety of wildlife, particularly avifauna. As a result, these mature and old-growth forested stands are a significant and vulnerable component of the City's landscape.

Wetland vegetation communities tend to be the most diverse and are associated with a range of wetland types including ephemeral depressional sites, small shallow lakes and sloughs, bogs, fens and several larger lakes. Lakes and large wetlands generally have successional zones of shoreline vegetation that occur in concentric rings around open water. These zones generally progress shoreward from cattail through to bulrush, sedge, reed grass, willow and upland forest. Drainage or in-filling of wetlands is a common occurrence that has severely impacted many sites within the City and examples of undisturbed wetland communities are rare.

A number of uncommon plant species and communities occur in the Edmonton area. For example, marl pools formed by the pooling of calcium-rich groundwater are often associated with fens or muskegs and support an extremely rich diversity of plant species, including several brown mosses, numerous sedges, rushes, ferns, and uncommon grasses such as bog mulhy grass (*Muhlenbergia glomerata*). Based on a recent query of the Alberta Natural Heritage Information Center's Plant Species of Special Concern database (1999), other rare or uncommon species known to occur within the City of Edmonton include flat-topped white aster (*Aster umbellatus*), Canadian rice grass (*Oryzopsis canadensis*), and smooth sweet cicely (*Osmorhiza longistylis*). Numerous additional rare or uncommon species have been documented within 100 km of the City of Edmonton and may occur here if suitable habitats and conditions persist (see Appendix E).

Detailed descriptions of vegetation communities within the City of Edmonton can be found in publications such as Carlyle et al. (1974), Ealey (1986), Russel and Spiers (1984), Johnson et al. (1991), and Geowest (1993). These sources document plant species and communities at a variety of scales.

2.5 Fauna

The diversity of habitats present in the Edmonton area results in an equally diverse assemblage of both resident and migrant wildlife species in the vicinity. A total of 226 vertebrate species have been reported to occur within the City of Edmonton boundaries, including some species of birds that only occur as migrants and others that are seasonal residents (either summer or winter).

Based on provincial mammal distributions detailed in Smith (1993), 49 species of mammals have been recorded in Edmonton. However, this includes extralimital sightings and specimens such as gray wolf (*Canis lupus*), black bear (*Ursus americanus*), and bushy-tailed woodrat (*Neotoma cinerea*), which rarely occur within the City's municipal boundaries. Nonetheless, a high diversity of mammal species can be expected to occur

in the City of Edmonton and surrounding area. Mammal assemblages include typical urban-adapted species such as little brown bats (*Myotis lucifugus*) and red squirrel (*Tamiasciurus hudsonicus*). Agricultural activities in surrounding rural and suburban areas have benefited species such as Richardson's ground squirrel (*Spermophilus richardsonii*) that inhabits pasture lands, grain fields and hay meadows. Conversely, species such as northern flying squirrel (*Glaucomys sabrinus*) that require continuous tracts of undisturbed forest are also present in the City where suitable habitats exist.

Of the provincially nesting bird species identified by Semenchuk (1992), Bovey (1990), Fisher and Acorn (1998), and MacGillivray and Semenchuk (1998), over half occur in Edmonton during the breeding season. Edmonton's nesting bird species include 73 passerines (songbirds) and 70 non-passerine species, including waterfowl, raptors, and woodpeckers. However, the Edmonton area is also known for its winter bird populations, as evidenced by the world re-known Edmonton Christmas Bird Count, which consistently records over 40 species in the Edmonton area (Stelfox and Fisher 1998). Many of these species are year-round residents of the area, but some, such as the snowy owl (*Nyctea scandiaca*) are winter-only residents, descending south from their arctic breeding grounds in the fall and returning north in the spring.

In the Edmonton area, diverse environments such as grasslands, mixedwood forests, deciduous forests, tall shrubby wetland margins, wetland emergent zones, riparian zones, and open water provide habitat for a variety of avifauna species, including the forest-dependent pileated woodpecker (*Dryocopus pileatus*), the edge inhabitant brown headed cowbird (*Molothrus ater*), and numerous water-dependent ducks, geese, gulls, and terns. Colonial nesting species such as great blue heron (*Ardea herodias*) and numerous grebe species (*Podiceps* spp.) are also present on some well-protected and insulated wetlands within the City boundaries.

Numerous significant (rare or uncommon) species also occur within the City of Edmonton's municipal boundaries, including the golden-crowned kinglet (*Regulus satrapa*) and black-crowned night heron (*Nycticorax nycticorax*). Neither of these species was recorded to nest in the Edmonton area during the five years of data collection for the Alberta Breeding Bird Atlas project (Semenchuk 1992), but both have since been recorded nesting within sites identified as significant natural areas within the City (Geowest 1993).

Fish species recorded within Edmonton waters (27 species) amount to 36 percent of the provincial list of fish species and hybrids. Virtually none of these species occur in the waters of the table lands, because most of these wetlands freeze to the bottom or lose too much oxygen over the winter as a result of decomposition of vegetation. The majority of the 27 fish occurring within the City boundaries are likely to be found in the North Saskatchewan River valley and in larger lakes such as Big Lake.

Overall, the transitional location of the City between the parkland habitats of south-central Alberta and the boreal forest of northern Alberta results in species with affinities to both types of environments occurring here. Species considered more typical of boreal forest environments, including northern long-eared bat (*Myotis septentrionalis*), heather vole (*Phenacomys intermedius*), Canada lynx (*Lynx canadensis*), Philadelphia vireo (*Vireo philadelphicus*), and mourning warbler (*Oporornis philadelphia*) reach the southern limits of their provincial ranges in the Edmonton area. Conversely, species with affinities to grassland or parkland habitats

of southern Alberta, such as prairie shrew (*Sorex haydeni*), white-tailed jack rabbit (*Lepus townsendii*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), long-eared owl (*Asio otus*), Cooper's hawk (*Accipiter cooperii*), American avocet (*Recurvirostra americana*), and tiger salamander (*Ambystoma tigrinum*), all approach the northern limits of their provincial ranges in the Edmonton area.

2.6 Urban Development and Land Use

The municipal boundary of the City of Edmonton encompasses an area of approximately 700 square kilometers. Within the City's vast boundaries, the extent of development can be viewed as a continuum extending from relatively undeveloped, rural areas at the outskirts of the City through to areas that are predominantly urban, such as the downtown core. Along this continuum, human population density progressively shifts from low to high, and the condition of natural areas shifts from perforated to non-existent.

Although combinations of land uses and developmental pressures are common throughout much of the City, some general trends are evident. In northeast Edmonton (outward from the Transportation and Utility Corridor), the landscape is dominated by agricultural activity (cropland and grazing land) with some country residential and homestead development. This area also has a combination of suburban development with a "business and employment area" that is largely industrial. Suburban development generally occurs closer to the center of the City, but in southwest and portions of southeast Edmonton, it extends to the southern municipal boundary. Some agricultural and Environmental Restricted Development Area, most of which is associated with the floodplain of the North Saskatchewan River valley, also occurs in the southwest. Bisecting these developments through the entire extent of the City, is the North Saskatchewan River Valley and Ravine System itself, within which development is highly controlled.

In anticipation of expected growth within the next 20 years, the City of Edmonton has prepared a land development concept that represents the desired land development structure for various areas of the City (City of Edmonton 1998). It is against this background that natural areas must be conserved.

PART II

PROJECT METHODOLOGY

3. PROJECT METHODOLOGY

The methodology for the Assessment of Conservation Value and Potential for Natural Areas in the City of Edmonton was developed through an iterative process of criteria development, refinement, and application.

Concepts from the field of multi-criteria decision-making (MCDM) were investigated for their relevance and potential application to this project. However, the final methodology implemented in this process was dictated by the time constraints associated with the project.

One of the primary challenges of the project was to ensure a balance between the ecological processes and the human or urbanization processes affecting the value of a given site. This challenge was met by developing a multi-tiered evaluation approach that will allow the City of Edmonton to further refine and update the prioritized listing as new developments affect a particular site in the years to come.

3.1 Identification of Candidate Conservation Areas

In 1993, the City of Edmonton commissioned Geowest Environmental Consultants Ltd. to complete the *Inventory of Environmentally Sensitive and Significant Natural Areas, City of Edmonton* (Geowest 1993, 1993b). That two-part report identified a total of 269 “natural areas”, 31 “significant natural areas”, and 71 “environmentally sensitive areas” within the City’s table lands and the North Saskatchewan River valley. The sites assessed and ranked in the present study were selected from these previously identified sites.

Those sites classed as “natural areas” in the previous study were considered too small and isolated to contribute significantly to the City’s conservation agenda and were, therefore, omitted at the outset. Even in the original inventory (Geowest 1993, 1993b) sites classed as “natural areas” were not described in detail. Seventeen of the 71 ESAs originally identified were within the North Saskatchewan River Valley, and are managed by the City of Edmonton as components of the North Saskatchewan River Valley and Ravine System. These 17 sites, therefore, were also omitted from the present study. The remaining 85 sites, comprised of significant natural areas and environmentally sensitive areas within the table lands alone, were targeted for further evaluation and ranking. Of these 85 sites originally identified by Geowest (1993, 1993b), 6 have since been identified by the City of Edmonton as severely impacted by development or planning and are considered “lost”, while an additional 14 sites have been conserved, either fully or partially in some manner (Table 1).

As a result of omitting these 20 sites from the evaluation, a total of 65 (of the original 85) candidate conservation areas were assessed for the present study. Upon investigation, it was discovered that two of these sites were too detrimentally impacted to merit consideration as candidate conservation areas. They, too, were omitted from the final assessment, which then included a total of 63 sites. Lastly, two sites that were previously considered as separate sites, were amalgamated into a single site for this project (originally identified as NW 7035 and NW 110, these sites are now referenced by the single site notation NW 7035). As a result, a total of 62 candidate conservation areas were assessed and ranked in this project.

Table 1- Environmentally Sensitive and Significant Natural Areas That Have Changed Status Since Originally Identified in 1993	
Lost (severely impacted by development or statutory plan approvals)	Conserved (fully or partially)
NE 8084 (unnamed)	NE 235 (East Fraser Woodland)
NE 8089 (unnamed)	NE 8010 (Meridian Street Woodland)
NE 8083 (unnamed)	NE 8096 (unnamed)
NW 7050 (Potter Green South Natural Area)	NE 8099 (unnamed)
NW 7051 (North Poundmaker Industrial Complex)	NE 8080 (unnamed)
NW 7017 (112 Street Wetland Complex)	NE 8081 (unnamed)
	NE 8082 (unnamed)
	NE 246 (unnamed)
	NE 247 (unnamed)
	SE 5010 (Southeast Corner Slough Natural Area)
	SW 6002 (Ogilvie Ridge Wetland)
	NW 7009 (unnamed)
	NW 7026 (Kinokamau Lake)
	NW 302 (Winterburn Woodland)

3.2 Literature Review and Information Sources

Given the broad focus of information that was compiled for each site in particular, and for the prioritization process in general, it follows that a variety of information sources were consulted over the course of the project. Primary information sources included:

- interviews and communications with environmental planners in other municipalities;
- interviews and communications with local naturalists;
- review by both environmental and developmental stakeholder groups;
- general literature review;
- site-specific literature review;
- interpretation of aerial photographs; and
- City of Edmonton files and databases.

An initial literature review and interview process was undertaken to determine the current state of knowledge of natural area ranking within an urban planning context. The literature review entailed searching journal abstracts, web sites, and other pertinent sources of up-to-date information.

Brief interviews were also conducted with planners in various North American jurisdictions who appeared to have attempted similar projects. In addition, two (2) existing stakeholder groups, one representing land developers and the other representing environmental interests, were given opportunity for input into criteria and process development. The Urban Development Institute is a national, non-profit association representing the development industry, while the ad-hoc Environmental Initiatives Committee is an informal committee comprised of representatives from a variety of local environmental organizations. Input from individual members of these groups was incorporated into the final product as much as possible. The results of these interviews and communications, in conjunction with the literature review, aided in developing the criteria and overall application process.

This project relied heavily on, and built upon, information collected for the previous inventory (Geowest 1993, 1993b). In particular, site descriptions and biophysical characterizations were taken largely from the original report, and were augmented with new data as available from numerous sources.

Changes in internal and external land uses were investigated through the interpretation of aerial photography in conjunction with file data and field visits to the site. Three different sets of black and white 1:5,000 scale aerial photos (1990, 1995, and 1997) were compared to assess changes to the site boundary itself and changes in land uses that may have affected the site since it was originally identified in 1993. Aerial photography was also used to determine the physical regional connectivity and the hydrological (or ecological) connectivity of the site.

The assessment of land use / management “stress” for each of the sites was accomplished largely through the City of Edmonton’s POSSE (Public One-Stop Service) information system. Site locations were scaled off of existing maps and their locations were then “searched” on POSSE by title area. Information sourced from the system included “zoning”, ownership, civic address and legal description, adjacent land uses and the site’s current status with respect to planning activity.

Specific sources of information used to define and apply the criteria are further described in “Part III - Description of Site Assessment Criteria and Process” under the appropriate criterion.

3.3 Field Reconnaissance Visits

During a five-day period in July of 1999, brief field visits were conducted to each of the 65 sites being evaluated in the study. The purpose of the site visits was to confirm and update the following information:

- site boundary;
- internal and adjacent land uses;
- site naturalness and integrity;
- access condition; and
- site description.

Neither detailed nor reconnaissance biophysical surveys of any kind were conducted during these field visits, although incidental wildlife sightings and cursory plant diversity observations were documented. During initial inventory in 1993, most sites were surveyed in detail and it was assumed that, unless the site had been further impacted from either internal or extraneous sources, the biophysical features of the site would not have changed.

In addition, the field visits were also used to describe and classify the site in terms of new criteria that were developed specifically for this project.

3.4 Development of Evaluation and Prioritization Criteria

On the basis of the literature review and interviews / communications, site evaluation criteria were defined. The overall goal of this task was to develop appropriate sets of qualitative and quantitative criteria that could be used as a tool in the comparison of candidate conservation areas. While a purely quantitative and objective set of criteria was desirable, it was also recognized that some level of subjectivity would be inherent in a criteria-based ranking scheme.

Numerous elements (criteria) were chosen to reflect the conservation values and risk / threat potential of each site being evaluated. These elements were grouped into five major criteria sets, as described in Table 2, on the following page. *Plan Edmonton*, the City's municipal development plan, envisions a need to "encourage the conservation and integration of natural areas that are sustainable and feasible" and to develop "access and recreational use opportunities while protecting the natural environment" (City of Edmonton 1998). The criteria listed below were selected because they reflect these primary objectives of the City of Edmonton in completing this project.

Table 2: Criteria and Criteria Sets Developed for Assessing Candidate Conservation Areas	
CRITERIA SET	CRITERIA
Biophysical Features	Level of Significance Habitat Diversity Faunal Species Richness Significant Landforms Elemental Rarity Hydrological Function
Ecological Integrity	Size Connectivity Ecosystem Resistance / Resilience Naturalness
Ecological Uniqueness	Occurrence Within Quarter Occurrence Within Other Conserved Areas
Geographical Distribution	Proximity to NSRV Proximity to Other Candidate Conservation Areas
Land Use Pressure	Development Horizon Existing Plans Expected Land Use / Development Scenario Land Ownership Current Accessibility

3.5 Development of Site Evaluation Process

There are no panaceas, or universally accepted methods, to the difficult task of setting conservation priorities or ranking candidate sites such as is being undertaken in this study. Different organizations can be expected to have differing goals and, therefore, different ways of establishing priorities. Each system has its own strengths and weaknesses, with the major point of departure being the objective for which the system was designed.

Fine-filter approaches that target individual species for conservation are useful tools in setting conservation priorities and management guidelines for large areas. However, through establishment of the previously mentioned criteria, we have attempted to merge fine and coarse-filter approaches that concentrate on geographic patterns of richness, endangerment, and significance, albeit at a local scale.

Both weighted and non-weighted criteria were applied during the evaluation process. Higher weight value for a criterion indicates more importance is placed on that criterion. These weights represent the value judgements and preference structure of decision makers. Ideally, if using the concepts of multi-criteria decision making (MCDM), a process known as Analytic Hierarchy Process (AHP) would be applied to obtain consensus weights in order to minimize subjectivity and maximize consistency and validation. However, AHP requires the following: (a) formulation of a multi-disciplinary decision group; (b) multiple rounds of discussion; and (c) statistical validity through consistency tests and variance analyses. Clearly, the timeframe allotted for this project did not allow the implementation of such a rigorous process.

Therefore, the process developed for this project was done so on the basis of experiences in other jurisdictions and built upon a limited amount of input received from the two public stakeholder groups.

PART III

SITE ASSESSMENT

CRITERIA AND PROCESS DEFINITIONS

4. OVERALL APPROACH

The present conservation area evaluation and ranking scheme describes a method of developing criteria to rank and select in a systematic manner the most significant of numerous identified natural areas within the City of Edmonton's municipal boundaries. In doing so, we have applied a multi-tiered approach to evaluate candidate conservation areas based on numerous factors in isolation. These factors were then considered cumulatively in determining an overall "conservation value" for each site. The conservation value is a representation of the inherent biological and ecological values of the site.

The second tier of the evaluation scheme evaluated each site in the context of existing and future land use and management pressures. Numerous factors such as land use, current planning, and land ownership were used to determine a "risk factor" for each site. The risk factor was then applied as a modifier (multiplicatively) to the conservation value from Tier One to arrive at an overall score for each site.

The overall evaluation and model framework implemented is graphically represented in Figure 2.

4.1 Tier One: Conservation Value

Overall conservation value was assigned on the basis of numerous criteria, which have been grouped into the following criteria sets:

- biophysical features
- ecological integrity
- ecological uniqueness / representivity
- geographical distribution

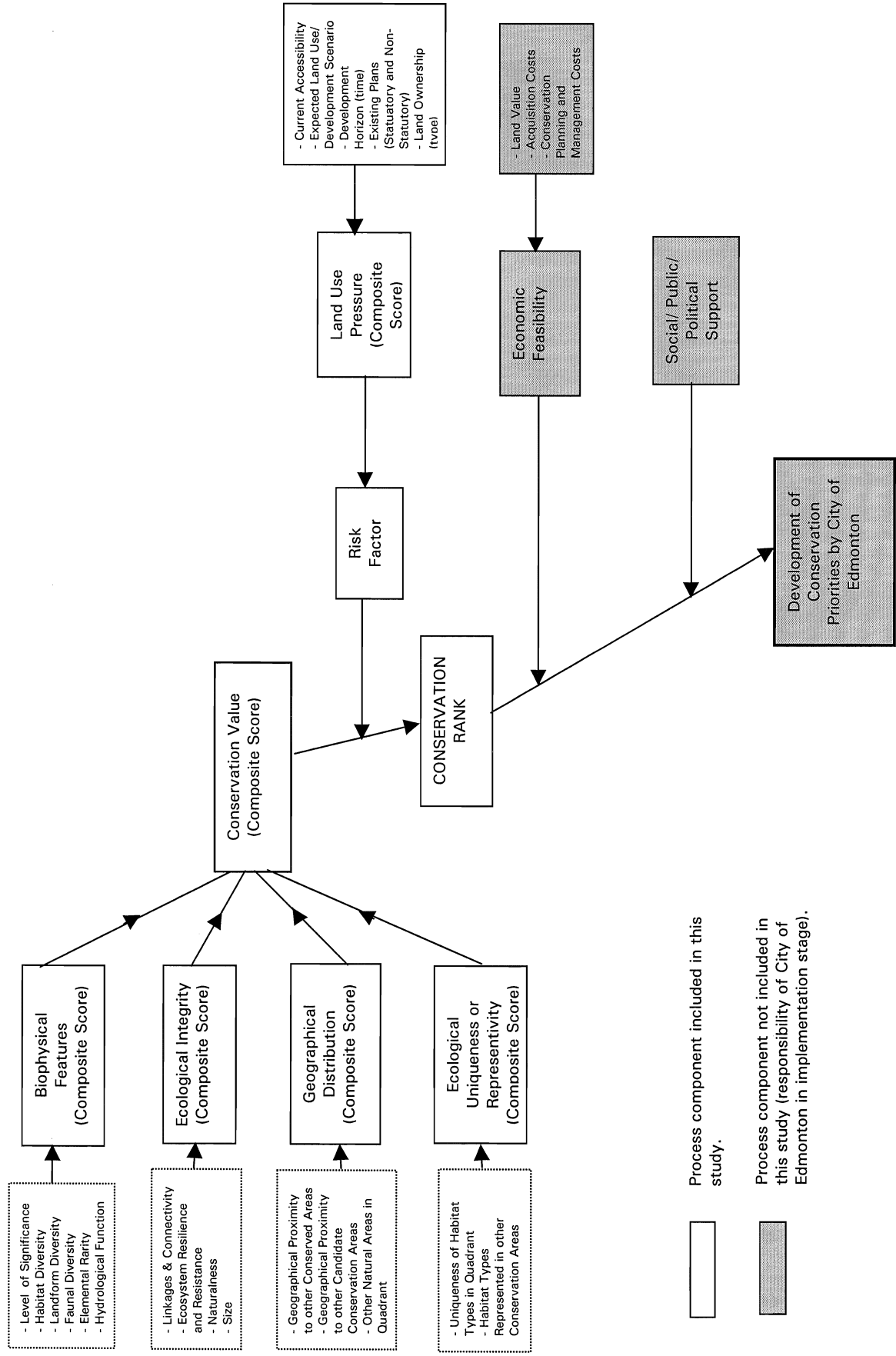
The following sections (4.1.1 to 4.1.4) describe these criteria sets and their component criteria.

4.1.1 Biophysical Features Criteria

Several criteria that qualify biophysical features of each candidate conservation area were developed. Specifically, these criteria were:

- level of significance
- habitat diversity
- faunal species richness
- elemental rarity
- hydrological function

Figure 2. PROCESS MODEL FOR EVALUATING & RANKING CANDIDATE CONSERVATION AREAS



4.1.1.1 Level of Significance

Environmentally-defined level of significance is primarily a function of rarity and geographic scale, often reflecting the geographic context of the site (Westworth et al. 1991). As part of the 1993 Inventory project (Geowest 1993), each site was assigned a level of significance, in accordance with a classification scheme as follows:

Table 3: LEVELS OF SIGNIFICANCE	
LEVEL OF SIGNIFICANCE	DEFINITION
Local	Site contains natural features that are considered sensitive or significant from a local perspective. These include sites that have intrinsic appeal due to community interest.
Regional	Site contains natural landscapes, features, or species that have limited distribution in the region or that are the best examples of a feature in that region.
Provincial	Site contains natural landscapes, features, or species that are of limited distribution in Alberta or that are the best examples of a feature in Alberta.
National	Site contains natural landscapes, features, or species that are of limited distribution in Canada or that are the best examples of a feature in Canada.

The level of significance, as assessed for each site during the 1993 Inventory, is a cumulative measure of the importance of the site as determined through considerations of the biophysical features and ecological uniqueness of the site. For purposes of this project, every site's level of significance was scored as follows:

- Locally Significant 10 points
- Regionally Significant 20 points
- Provincially Significant 30 points
- Nationally Significant 40 points

4.1.1.2 Habitat Diversity

Diversity can refer to community, habitat, or species diversity. In this case, we are referring to an estimation of habitat diversity based on field observations of the site in 1993 and again in 1999. Habitat diversity of each site was described using broadly defined, physiognomically-based nomenclature for 13 'habitat types' as follows:

Table 4: DESCRIPTION OF HABITAT TYPES	
WETLAND / RIVERINE HABITAT TYPES	
Limnetic	open standing water zone of wetlands and lakes (deepest water zone of the wetland) usually without aquatic vegetation
Littoral	standing water zone of intermediate depth with some free-floating aquatic vegetation
Lentic Emergent	wetland zone characterized by shallow standing water with rooted emergent vegetation such as cattails, reeds, and sedges.
Non-vegetated shoreline	relatively flat, non-vegetated shorelines of wetlands (such as mud flats)
Lotic	flowing water zone of riverine habitats (i.e., rivers and creeks)
Lotic Riparian	floodplain and associated terraces of rivers and creeks that are created and maintained by the effects of adjacent aquatic habitats (i.e., flooding)
Bog / Fen	areas composed mainly of peat derived from moss or sedge and other organic materials, often occurring in complexes with forested habitats
Wet Meadow	wetland margin zone of wet grasses and sedges created and maintained by groundwater flow or through periodic flooding and drying events from adjacent aquatic habitats
FORESTED HABITAT TYPES	
Closed Deciduous	pure upland stands of deciduous forests, dominated by balsam poplar, aspen, and white birch overstories
Closed Coniferous	pure upland stands of coniferous trees, dominated by white spruce, black spruce, tamarack, or jack pine overstories in some instances
Closed Mixedwood	upland forested stands with combinations of coniferous and deciduous tree species in both upper and lower canopies
Tall Shrub	upland shrublands dominated by shrub species (such as willow) in the overstory canopy (no treed canopy overhead)
OTHER HABITAT TYPES	
Grassland	relatively dry natural grassland habitats without tree canopy cover

These habitat types were identified on the premise that each houses within it a suite of resident fauna, which rely on that habitat type for provision of either primary or secondary life requisites. The relative value of some habitats over others was not taken into account during this evaluation. For example, riparian environments are widely acknowledged as being among the most diverse and productive habitats within any given ecosystem. However, for purposes of identifying solely the ***total number of habitat types occurring within each candidate conservation area***, each habitat type was considered equally and a score of 10 was provided for each habitat type present. The assumption was made that the most diverse sites (in terms of number of habitat types) would provide habitat for the most number of wildlife species and would have the greatest potential to contain rare or significant elements.

Although there are limitations inherent in such an assumption, its use here was consistent with this project's goal to ensure that areas offering the greatest range of ecological values were afforded an appropriate priority in the conservation evaluation scheme.

4.1.1.3 Faunal Species Richness

Species richness differs from species diversity in that richness is only a measure of the total number of species occurring at a site, while diversity is a measure of the occurrence AND relative abundance of species occurring at a site. Any assessment of faunal species diversity would require extensive information on the distribution of species, both within and outside the site under investigation.

However, there is a general paucity of field data on species distributions within the City's municipal boundaries. In addition, the information that does exist is not uniformly available for all sites under consideration. Some sites have been sampled sufficiently to record most of the resident species, while some have been sampled so poorly that only a small fraction of the resident species have been recorded. Some sites have attracted much attention from naturalists and taxonomists, while others are hidden away on private property, having never been surveyed. The use and comparison of such data in assessing species diversity, and even species richness, is bound to be ill-fated.

Therefore, we relied on a surrogate measure of species richness that was available at a more consistent level of detail. In order to address the problems associated with disparate information sources (private enthusiasts to naturalists clubs to professional biologists) and confidence limits (professional publications to word-of-mouth), and varying sampling intensities (well sampled to never sampled), we chose to evaluate **POTENTIAL** species richness rather than **actual, realized, or reported** species richness. In doing so, we hope to avoid the pitfall of identifying a site as species-poor, when in reality it only appeared species-poor because it had been under-sampled.

The habitat types identified for each candidate conservation area were used as the basis for evaluating potential species richness. The existence of wildlife species in each of these 13 habitat types was predicted on the basis of the literature. Primary and secondary habitats were defined for each of the 45 species of mammals, 191 species of birds, and 6 species of herpetiles that geographic ranges indicate may be found within the City's municipal boundaries (number of species based on geographic ranges identified in Smith (1993) for mammals, Semenchuk (1992) for breeding birds, and Russell and Bauer (1993) for amphibians and reptiles). Habitat affinities for each of these species were identified in the context of the 13 habitat types used in assessing habitat diversity. Arthropods were omitted from this evaluation due to the extremely restricted nature of available data. Fishes were also omitted because, while Nelson and Paetz (1992) indicate that over 25 fish species are recorded in Edmonton waters, virtually none of them occur in the waters of the table lands where all of the candidate conservation areas are located. Most of these wetlands freeze to the bottom or lose too much oxygen over the course of the winter to house fish populations.

In assessing habitat use, a distinction was made between primary habitats and secondary habitats. For each species, at least one primary habitat type was identified upon which that species was obligately dependent. Other habitat types that may be used facultatively were assumed to provide some habitat value and were considered to be secondary habitats for that given species. The table presented in Appendix D shows the total numbers of primary and secondary habitat affinities for each species by habitat type.

As a means of giving higher weight to habitats supporting primary use over those supporting secondary use, a weight of 2 was assigned to the total number of primary users. On the basis of these total numbers of primary and secondary habitat users, each habitat type was given a species richness score for every taxa, calculated as:

$$\text{Species Richness (Mammals)} = \text{Total Number of Primary Habitat Users (2)} + \text{Total Number of Secondary Habitat Users}$$

Each of the resulting species richness scores (one each for birds, mammals, and herpetiles) for each habitat type was then viewed as a constant value. Each habitat type's species richness score was weighted in accordance with the areal extent of that habitat type within the candidate conservation area being evaluated. Consider the following example:

Site No. NE 221 is comprised of 2 habitat types, closed deciduous forest and wet meadow occurring in a 70:30 ratio, respectively.

Closed Deciduous Forest has Species Richness Values of 121 (birds), 49 (mammals), and 8 (herpetiles), yielding a cumulative total of 178. This value is a constant for the Closed Deciduous Forest habitat type.

Wet Meadow has Species Richness Values of 26 (birds), 18 (mammals), and 2 (herpetiles), yielding a cumulative total of 46. This value is a constant for the Wet Meadow habitat type.

The habitat types occur in a 70:30 ratio, therefore the Closed Deciduous Forest species richness value of 178 is given a weighting of 0.7 and the Wet Meadow species richness value of 46 is given a weighting of 0.3, yielding the following:

$$\text{Faunal Species Richness} = 178 (0.7) + 46 (0.3) = 124.6 + 13.8 = 138.4$$

In order to facilitate inclusion into the overall site evaluation, this value was further divided by a value of 10, bringing its value to a similar magnitude as those of other criteria. Thus:

$$\text{Faunal Species Richness} = 178 (0.7) + 46 (0.3) = 124.6 + 13.8 = 138.4 / 10 = 13.8$$

4.1.1.4 Elemental Rarity

Elemental rarity provided a measure of the conservation status of elements (i.e., flora and fauna) that potentially occur in each candidate conservation area. For this project, we defined 'rarity' as a multi-faceted concept that included rarity, endangerment, and fragility. By expanding the definition of rarity, we were able to include:

- i. species that have a widespread provincial, national, or continental range, but are locally infrequent or uncommon;

- ii. species that occur in large aggregations, but only in a few localities (e.g., colonial nesting birds);
- iii. species that have narrow, specialized habitat requirements;
- iv. species that occur in the Edmonton area at the periphery of their range;
- v. species that rely on, or have affinities to, habitats that are at risk or declining;
- vi. species that are particularly sensitive and intolerant to human disturbance; and
- vii. species that are either provincially or federally listed as being “at risk” or “of management concern” for one or a combination of the foregoing reasons.

These ‘rare’ species are assumed to represent that part of our City’s natural heritage that is most likely to become locally threatened in the absence of conservation measures. Therefore, our evaluation scheme followed the lead of numerous (and, indeed, most) others in including elemental rarity among the primary criteria used in the assessment of candidate areas for conservation (for example, see Adamus and Clough 1978, Fuller 1980, Turpie 1995, Woinarski et al. 1996, Freitag et al. 1997, Hacker et al. 1998, Nantel et al. 1998, Cofre and Marquet 1999).

In order to identify elements as “rare”, a number of sources were consulted, the most prominent being:

- *Canadian Species At Risk - April 1999* (COSEWIC 1999) for lists of nationally vulnerable, threatened, and endangered native species of plants and animals;
- *The Status of Alberta Wildlife* (AEP 1996) for status lists of red, blue, and yellow-listed vertebrate species in Alberta; and
- *A Checklist of the Rare Vascular Plants in Alberta* (Packer and Bradley 1984) for checklists, habitat associations, and distributional maps for rare native species in Alberta.

Distributional context was used to assess rarity of elements, and species of national rarity assumed priority over those of provincial rarity, which in turn assumed priority over those of regional or local rarity.

Based on the aforementioned information sources, rare or otherwise significant species potentially occurring in the vicinity of the City of Edmonton were identified along with their habitat affinities. Literature reviews, expert interviews, and Alberta Natural Heritage Information Center (ANHIC) database searches for records of these rare elements provided insight into known occurrences within the study area. However, as one would expect for rare species, there is a paucity of data on many identified taxa. Therefore, we have used *potential* occurrence based on habitat affinities of rare taxa to quantify the elemental rarity of each candidate conservation area.

Potentially occurring rare elements were grouped as either provincially or federally listed, and numerically counted. An elemental rarity score was given to each site, on the following basis:

- Potential habitat for up to 20 provincially listed species 5 points
- Potential habitat for over 20 provincially listed species 10 points
- Potential habitat for a federally listed species 5 points per species

4.1.1.5 Hydrological Function

Wetlands and associated riparian areas play a significant role in maintaining structure and functionality of ecosystems. Aside from providing habitat for a diversity of wildlife species, wetland and aquatic ecosystems also attenuate flood peaks and storm flow, modify water quality, control sedimentation, control point and non-point pollutants, and provide groundwater recharge and discharge to the water table. These types of hydrological functions associated with a number of different types of wetlands and riparian areas, are the most basic values from which all others stem. Primary productivity, wildlife habitat, and nutrient cycling in a wetland or wetland complex all are dependent on the presence and movement of water through the system.

Streams and watercourses provide high-energy environments wherein the movement of water provides watershed-level connectivity between the watercourse and adjacent terrestrial and aquatic habitats both upstream and downstream. In such cases, the significance of the watercourse is relatively apparent. However, some wetland environments, such as bogs and fens, have minimal water flow energy, yet play critical roles in the balancing of local hydrological regimes by providing carbon and surface water sinks and reservoirs. For this project, it was considered imperative that the hydrological value of such sites not be lost or overshadowed by other criteria (such as connectivity, which is an equally valuable criterion in other respects).

It was understood that the extent to which wetlands and riparian areas contribute nutrients and energy to surrounding ecological systems varies with the type and location of the site. Therefore, each candidate conservation area was evaluated as to its hydrological function or role using the following definitions and scoring values:

Table 5: EVALUATION OF HYDROLOGICAL FUNCTION		
Hydrological Function	Definition	Score
High	wetland or watercourse with surface water (overland) connection to other wetlands or watercourses; or stand-alone wetlands with permanent water tables at or above the surface	10 points
Moderate	wetland with groundwater contribution to local drainage basin	5 points
Low	isolated ephemeral wetland occurring only in depressional topography; or upland forested sites with no aquatic component	0 points

4.1.2 Ecological Integrity Criteria

The concept of ecological integrity has been in use for some time, as Aldo Leopold introduced the concept in 1949 as follows: “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community.” Even though this concept has existed for decades, there remains considerable ambiguity regarding the definition and application of the term. For this project, we have chosen a more recent definition proposed by Karr and Dudley (1981), who described ecological integrity as:

...the capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition and functional organization comparable to that of the natural habitat of the region.

Specific factors that contribute to ecological integrity include a variety of parameters, of which size, connectivity, ecosystem resilience and resistance, and naturalness were selected as criteria against which to evaluate candidate conservation areas. Ecological integrity may also be affected by other factors such as watershed completeness and replicability, however these concepts were thought to be too difficult to describe and evaluate, even qualitatively. Therefore, they were not included in the evaluation process.

4.1.2.1 Size

The candidate conservation areas evaluated in this project ranged in size from under 3 ha to almost 50 ha. In evaluating the conservation areas, we assumed that the larger the area, the more valuable it would be for conservation purposes. This assumption was reflected in the evaluation scheme for rating size, or area:

- 1 - 5 ha 2 points
- 5.1 - 15 ha 4 points
- 15.1 - 30 ha 8 points
- + 30.1 ha 16 points

We make a case for large conservation areas because larger areas will tend to house a greater diversity of habitats and, subsequently, support more species and larger populations than smaller areas, thus reducing the probability of local extinctions. Conservation areas within the suburban and urban setting will never be large enough to accommodate minimum dynamic areas (i.e., natural disturbance regimes and internal colonization sources) or effective minimum viable populations, at least for larger mobile species. However, they can be made large enough to meet the needs of area-sensitive wildlife species (e.g., flying squirrel, pileated woodpecker), to provide buffering for internal stand dynamics to proceed without extrinsic influence, and to shield the site interior from non-native invasive species.

The above factors have been cited in support of larger conservation areas. The assumption implicit in the above evaluation scheme is that the size of a site is directly proportional to its value and, therefore, doubling

the size of the site will double the value of the correlating score.

4.1.2.2 Connectivity

“Landscape linkages” are sometimes narrowly understood as linear corridors of habitat that physically connect larger habitat patches in a landscape mosaic. In fact, landscape linkages have a much broader definition and application involving linkages of habitats, species, communities, and ecological processes at multiple spatial and temporal scales.

The City of Edmonton’s dominant physiognomic feature is the North Saskatchewan River Valley and Ravine System, including Blackmud, Whitemud, Mill, and Horsehills creeks. Ecologically, these features are linked through the region’s hydrological regime. Other natural areas in the region are also connected to these sites - either through surface water flow, linear vegetation corridors, or physiographic features - to form an ecological network of natural areas within the City.

Landscape linkages differ from movement corridors in that linkages allow the complete range of community and ecosystem processes to continue to operate within it through time. While such landscape linkages may certainly serve as movement or dispersal corridors for some plant and animal species, they also provide an avenue for ecological processes such as the flow of energy, nutrients, water, and disturbances. This “connectivity” of ecological processes is equally as important as is the “connectivity” of wildlife habitat.

In recognition of the diversity of potential linkages and landscape connectivity, we have developed the following evaluation and rating scheme for application to each candidate conservation area:

- Stepping stone or staging patch to other or between other natural areas 2 points
- Component of a habitat complex 2 points
- Continuous corridor linking other natural areas 4 points
- Watershed-level linkage 6 points
- Linkage to North Saskatchewan River Valley 6 points

Note that for the connectivity criteria evaluation and scoring, a given site may have any number or combination of these characteristics.

4.1.2.3 Ecosystem Resistance and Resilience

The concept of ecological integrity, as applied to the candidate conservation areas, should include an evaluation of the stability and resilience of the chosen area(s). Colinvaux (1986) defined ecosystem stability simply as an ecosystem where the chance of a species becoming extinct is low. For an ecosystem to be stable, it must exhibit both *resistance*, or the ability to avoid displacement by stress or disturbance, and *resilience*,

or the ability to return to its former state after it has been disturbed.

In the context of this project and the site evaluations, ecosystem resistance and resilience were used to reflect the ability of each candidate conservation area to tolerate use and disturbance. Since specific ecosystems may exhibit different thresholds to the same disturbance, the level of resistance and resilience was predicted based on the occurrence of specific habitat types and specific seral stages.

Resistance and resilience to soil and topography impacts, to vegetation impacts, to surface water impacts, and to groundwater impacts were evaluated for each candidate conservation area. The overall level of resistance / resilience was determined based on the composite structure of the site (i.e., homogenous forested sites were more resistant to surface water impacts than forested wetland complexes which were still more resistant to those same impacts than a pure wetland site). In considering upland forested sites, seral stage was a determining factor in evaluating resistance / resilience. Young, homogenous aspen forests are more resilient to vegetation impacts than are old growth mixedwood stands. That is, a young aspen stand, if disturbed, will return to that state in the next 25 years, whereas a coniferous mixedwood stand, if disturbed, would likely take 4 or 5 times as long to return to its previous state.

Given these conceptual guidelines concerning ecosystem development (and replaceability) in upland forests and wetlands, the following evaluation scheme was used to describe ecosystem resistance and resilience for each of the candidate conservation areas (Table 6):

Table 6: Evaluation of Ecosystem Resistance and Resilience		
IMPACT	SITE CHARACTERISTIC	SCORE
Ground Water Surface Water Soil / Topography	Homogenous upland landscape	5
	Forested site with minor wetland inclusions	4
	Upland forested / wetland complex	3
	Wetland with forested margins	2
	Open wetland	1
Vegetation	Homogenous young deciduous forest	5
	Mature deciduous forest	4
	Young deciduous forest with wetlands	3
	Mature deciduous forest with minor wetland component	2
	Wetland	1
	Old growth mixedwood forest	
Wetland / old growth forest complex		

4.1.2.4 Naturalness

There are intuitive ideas about what “naturalness” means, but it is one of the most difficult concepts to quantify (Usher 1986). Assuming that natural sites free from human influence simply do not exist within the urban and suburban setting of the City’s municipal lands, “naturalness”, as we have defined it here, becomes a reflection of the degree of anthropogenic disturbance.

A primary by-product of ecosystem disturbance, and one of the principal threats to successful conservation, is the invasion of non-native species. Biological invasion is an important agent of habitat disruption and represents a major threat to long-term viability of many natural ecosystems. This is particularly evident in fragmented, cultural landscapes such as Edmonton’s table lands, where agricultural and industrial fringes and small natural areas occur adjacent one another.

Biological invasion is often followed by functional disruption of previously relatively natural ecosystems. Therefore, the presence of invading species, both plant and animal, is a suitable indicator for the degree of naturalness of any given site. The degree of “naturalness” was quantified for each candidate conservation area, based on the extent, type, and proximity of disturbance factors and on the presence (or lack) of invasive species. The following rating scheme was used for the “naturalness” criterion:

Table 7: Evaluation of Naturalness	
Description	Score
Site is undisturbed and has high area:edge ratio. Natural vegetation with relatively few invading species. Surrounding land use is compatible with conservation	16
Surrounding land use has low or no impact on site. Some potential for edge effects and disturbance on site.	8
Surrounding land use has impacted site. High potential for edge effects and invading non-native species.	4
Site is highly disturbed. Surrounding land uses have had large impact on the site and are not compatible with conservation.	2

4.1.3 Ecological Uniqueness Criteria

The concept of ecological uniqueness, or representivity, is one of the fundamental tenets of identifying and evaluating areas for conservation. Numerous researchers and protected areas systems have advocated that species, features, or ecosystems that are most below representation threshold merit highest priority in an evaluation framework (Pressey and Logan 1998, Woinarski et al. 1996). By giving conservation priority to areas that have as-of-yet unrepresented or poorly represented features, we may address deficiencies on local

or regional scales.

Table 8: EVALUATION OF ECOLOGICAL UNIQUENESS (REPRESENTIVITY)		
Scale of Representation	Level of Representation	Score
Occurrence of habitat type or feature within the City Quarter	Common	2
	Uncommon	8
	Rare	16
Occurrence of habitat type or feature in other Conserved Areas within the City, including the North Saskatchewan River Valley and Ravine System	Well Represented	2
	Moderately Represented	4
	Poorly Represented	8
	Not Represented	16

The above evaluation scheme for ecological uniqueness places priority on areas that are rare occurrences within the City quarter (SE, SW, NE, or NW) and on areas that are least represented in other conserved areas within the City limits.

4.1.4 Geographical Distribution Criteria

It is the intent of the City of Edmonton to preserve and enhance the natural environment and open spaces, while developing access and recreational use opportunities for its citizens (City of Edmonton 1999). Currently, the North Saskatchewan River valley and ravine system fulfills this role for a number of the City’s patrons.

However, the River Valley and ravine system is not equally accessible to residents in all parts of the City. Therefore, there is impetus for the City to select conservation areas in such a manner so as to provide a balanced network of conservation areas placed throughout the City of Edmonton.

In order to meet this need, we used three specific criteria that would, cumulatively, provide an overall score for the Geographical Distribution of each candidate conservation area. The three criteria, and their associated scoring systems, were as follows:

(1) Proximity to the North Saskatchewan River Valley

- 0 - 1 km 2 points
- 1.1 - 5 km 4 points
- 5.1 - 10 km 6 points
- + 10 km 8 points

(2) Proximity to other candidate conservation areas (other options for conservation)

- 0 - 1 km 2 points
- 1.1 - 5 km 4 points
- 5.1 - 10 km 6 points
- + 10 km 8 points

(3) Number of natural areas (conserved and candidate) in City quarter

- + 16 sites 2 points
- 11 - 15 sites 4 points
- 0 - 10 sites 6 points

4.2 Tier Two: Land Use Pressure

Human influence is perhaps the most pervasive factor affecting conservation planning and management and is that much more influential in fragmented urban and suburban environments. In order to ensure that planning and land use factors were given due consideration, a second tier of site evaluation was implemented, comprised of a set of land use and management criteria. Because they do not affect the inherent biological or ecological value of a site, however, these criteria were not integrated with the conservation value from Tier 1. Rather, these criteria provided an indication of the ‘stresses’ acting upon the candidate conservation areas, either from development pressures or from other forms of human intervention. Together, these criteria were used to formulate a ‘risk factor’ for each site, which was then applied to the conservation value from Tier 1 of the assessment process.

The specific land use pressures criteria used were defined first by the consultants and then reviewed by City’s administrative staff and two public stakeholder groups. This review served to confirm the selection of criteria and refine the specific details of the criteria within the final assessment framework. The resulting criteria that were used included:

- Development Horizon (Timing);
- Existing Plans;
- Expected Land Use/Development Scenario;
- Land Ownership (Type); and
- Current Accessibility

Unlike the criteria used in Tier One (Conservation Value), the above-mentioned criteria used for Tier Two (Land Use Pressures) could be fairly consistently described in terms of their relative impact on natural areas. Input received through the public review processes, although limited, served to verify this supposition and was

used in determining the relative ordering of these criteria. Based on the relative ordering of the criteria, each criterion was assigned a “weighted value” for the purpose of calculating a final score (risk factor) for each site.

4.2.1 Development Horizon / Timing

Development horizon refers to the estimated length of time before the site is likely to be exposed to disturbance for the purpose of urban development. For this project, the following scoring scheme was used to evaluate the development horizon:

- 1 – 2 years 5 points
- 3 – 5 years 4 points
- 6 – 10 years 3 points
- Beyond 10 years 2 points

The development horizon is an indicator of the relative urgency of conservation action. The maximum number of points (5) are allotted to those candidate areas that are at most IMMEDIATE risk. Development horizon is the most heavily weighted of the Land Use Pressures criteria, with a weight of 0.100.

4.2.2 Existing Plans (Statutory/Non-statutory; Proposed/Approved)

This criterion refers to the existence of plans and / or the presence of planning activity, potentially leading to development on titled lands within which each site is contained. In decreasing order of development for which planning has been completed, following are the scoring and rating protocols for the presence of existing plans:

- Plan of Subdivision 5 points
- Neighbourhood Structure Plan (NSP) / Outline Plan 4 points
- Area Structure Plan (ASP) 3 points
- Other Plans / Planning Documents 2 points
- None 1 point

The assumption can be made that if a Plan of Subdivision has been approved, the natural area is on the verge of having its future decided. This criterion was assigned a weight of 0.085.

4.2.3 Expected Land Use / Development Scenario

Refers to the anticipated form of urban development (i.e., land use) that is planned for the vicinity of the candidate conservation area, or the form of development that is likely to occur, on titled lands within which each site is contained. The following scoring system was applied for the expected land use criterion:

- Residential 5 points
- Commercial 4 points
- Industrial 3 points
- Institutional 2 points
- Open space 1 point
- Unknown 1 point

This criterion was assigned a weight of 0.070.

4.2.4 Land Ownership

Refers to the most current indication of land ownership type on titled lands within which each candidate conservation area is contained. Ordered in decreasing likelihood that land ownership will influence development on the site, following are the descriptions and scoring used for the land ownership criterion:

- Corporate (Land Development) 5 points
- Individual (Land Development) 4 points
- Corporate (Other) 3 points
- Individual (Other) 2 points
- Other 1 point

Land ownership was assigned a weight of 0.050.

4.2.5 Current Accessibility

The extent to which titled lands within which each site is contained is currently exposed to various forms of urban development (ordered in terms of the extent to which current accessibility to a site is likely to influence the potential of any form of human impact on that site.)

- High density urban development 5 points
- Low density urban development 4 points
- Transportation System (vehicular) 3 points
- Transportation system (non-vehicular) 2 points
- None 1 point

Current accessibility was assigned a weight of 0.050.

4.3 Application of Criteria

All candidate conservation areas were rated against each of the aforementioned criteria to attain an overall score. Criteria were scored on the basis of the field investigation, developed species and status lists, urban planning agendas, and literature reviews (as applicable).

In Tier One of the evaluation framework, the composite Conservation Value scores were determined by simply adding the scores of each component criteria set (i.e., biophysical features, ecological integrity, ecological uniqueness, and geographical distribution). A strength of this modeling framework is that the resultant numerical score can stand alone as a representation of the relative ecological value of the site in comparison to other natural areas within the City. Candidate conservation areas were first ranked in order of this conservation value alone.

However, the model used for this project also included a fifth criteria set - land use pressures. The Land Use Pressure criteria set comprises Tier Two of this evaluation framework, and is intended to highlight those sites with pending developmental pressures. Land Use Pressure criteria (that were evaluated independently from Conservation Value criteria) were translated to “Risk Factors” through the use of weighted values as described in the preceding section, and were then APPLIED TO the Conservation Value score. The Land Use Pressure score was calculated as having a value between 0 and 2.

The process of applying the combination of Conservation Value and Land Use Pressures evaluation criteria to candidate conservation areas was undertaken in a manner so as to ensure that Conservation Value remained the most influential aspect of the rating for each site. The intent of the Land Use Pressure criteria set is to upgrade those sites that are at immediate risk, not to downgrade those without immediate pressures (i.e., all sites should have a minimum score equal to, or greater than, the site’s conservation value). In order to effectively incorporate this requirement into the overall evaluation framework, all Land Use Pressure scores calculated to be less than 1 were considered to be equal to 1 when used as Risk Factors. Therefore, total scores for “Risk Factors” ranged from 1 to 2. In this way, sites ranked by Conservation Value alone could be displaced on the overall ranking by sites moving up due to high risk factors, however, no individual site would be downgraded due to a LACK of developmental pressures.

In addition, the application of Risk Factors was not intended to radically alter the ranking of sites. Conservation Value should remain of utmost importance, with Risk Factors appropriately displacing some sites in favor of others.

The selection of evaluation criteria for both tiers of the framework, and the process for application was based on numerous assumptions. These assumptions are a reflection of the value judgements of decision-makers. Assumptions used in this evaluation framework are presented in Table 9, on the following page.

Table 9: Criteria Assumptions Used in Site Evaluation	
Criteria	Assumption Statement
Level of Significance	Local, Regional, Provincial, and National Significance (previously defined) are increasingly significant and rated higher
Habitat Diversity	Higher number of habitat types present are rated higher
Faunal Diversity	Higher potential numbers of species (based on occurrence and relative abundance of preferred habitat types) are rated higher.
Significant Landform	Sites with significant landforms are rated higher.
Elemental Rarity	Potential occurrence of listed taxa (flora, fauna) is rated higher. Potential occurrence of federally listed species is rated higher than provincially listed species.
Hydrological Function	Contribution to regional hydrology is rated higher than contribution to local hydrology.
Size	Larger the site, higher it is rated (within a range of sizes)
Connectivity	Connectivity to River Valley is viewed as regional connectivity and rated highest. Ecological linkage rated higher than only physical linkage.
Ecosystem Resistance and Resilience	Sites resistant and resilient to impacts (i.e., not sensitive) are rated higher.
Naturalness	Sites in natural state (vegetative cover, hydrology, etc.) are rated higher.
Representation Within City Quarter	Sites with features that are rare in the City quarter are rated higher
Representation Within Conserved Areas	Sites containing features not represented in other conserved areas are rated higher.
Proximity to the North Saskatchewan River Valley	Sites further from the North Saskatchewan River Valley are rated higher.
Proximity to Other Candidate Conservation Areas	Sites further from other candidate conservation areas are rated higher.
Number of Natural Areas (Conserved and Candidate) in City Quarter	Sites in City quarter with least options for conservation are rated highest.
Development Horizon	Areas with most immediate impending development are rated higher (higher risk).
Existing Plans	Areas in most advanced stages of planning are rated higher (higher risk).
Expected Land Use / Development Scenario	Sites expected to be developed for commercial purposes are rated higher (higher risk).
Land Ownership	Sites owned by commercial land developer are rated higher (higher risk).
Current Accessibility	Sites with most access by high density population is rated highest (highest risk)

PART IV

RESULTS & ANALYSIS

5. OVERVIEW OF RESULTS

Of the sites initially evaluated in this project, two were determined to be so severely impacted that they were omitted from the list of candidate conservation areas. Site NW 288 (Triple 5 Farm Wetland), formerly an 8.9 ha wetland, has been largely drained and excavated by Carma Developers in preparation for development of a residential pond. It was no longer considered viable as a wetland site. The site originally identified by Geowest (1993) as NW 7009, has been partially conserved within Lewis Estates Golf Course. The northern portion of this site contains the marl pools that have been incorporated within the golf course, with the developer making a commitment to “*retain existing vegetation and hydrological conditions*” (Mackenzie Associates Consulting Group Ltd. 1994). The City of Edmonton considers this portion of the site “conserved”, and this assessment project was to consider only that portion of the site not included within the golf course. In doing so, it was found that the remainder of the site had significantly deteriorated as a result of clearing and adjacent changes in water levels. The concomitant decrease in size of the site, by negating that portion within the golf course, resulted in its omission from the list of candidate conservation areas. Both of these sites have been categorized as “lost”.

The 62 remaining sites were evaluated against the previously described criteria. Final ratings and rankings are presented in the site evaluation database (included as Appendix A). Table 10 (following two pages) presents the results of the Tier One evaluation of Conservation Value alone. Of particular note is the fact that some sites have emerged atop the ranking due to their large size, some due to the presence of regionally significant elements, while other relatively small, yet diverse, natural areas are also represented. Note that also presented in Table 10 is the Risk Factor of the site, which has been used in subsequent development of the Tier Two assessment and re-ranking.

The majority of sites assessed for this project were found to be in similar condition as when they were originally identified in 1993 (Geowest 1993). A comparison of three sets of aerial photography (1993, 1995, and 1997) indicated progressively drier conditions, and changes to most wetland characteristics reflected this observation. However, for the most part, existing land uses have not further infringed upon many of the sites in question. Notable exceptions were NW 132, which has been subjected to in-filling, heavy dumping, and overall site deterioration, and NW 8094 (Mayliewan Parkland Complex), which has been considerably impacted by adjacent agricultural land uses.

Table 10: Relative Conservation Values and Ranks of Candidate Areas				
Rank	Conservation Value	Site No.	Site Name	Risk Factor
1	182.3	SE 5007	SE 5007	0.56
2	179.7	NE 8094	Mayliewan Parkland Complex	1.59
3	173.5	NW 7035	NW 7035	0.86
4	170.7	SE 5004	Southeast Natural Area	0.56
5	169.6	SE 5016	SE Woodland Natural Area	1.12
6	166.2	NW 7012	Stoney Industrial Complex	1.17
7	162.3	NW 7004	NW 7004	0.81
8	162.2	NE 8093	Little Mountain	1.24
9	156.9	NE 8002	Manning Freeway - Fort Rd. Woodlot	0.51
10	156.5	NW 7021	215 St. Natural Area	1.26
11	154.5	NW 384	Section 19 Woodlot	0.90
12	153.7	NW 7010	Winterburn School Natural Area	1.72
13	147.7	NW 318	Triple Acres Natural Area	1.09
14	145.7	NW 7018	Northwest Wetland	0.46
15	141.3	NE 8	Alberta Railway Museum Wetland	0.61
16	141.1	NW 89	Northwest Boundary Complex	0.71
17	139.4	SE 5012	Meridian St. TWP Rd. 515 Natural Area	0.56
18	139.3	SE 244	H.14 - Sherwood Park/Cloverleaf	1.00
19	139.1	SE 5090	Mill Creek Reach	1.50
20	137.1	SE 5002	SE Mixedwood Natural Area	0.66
21	137.0	NW 65	156 St. - St. Albert Tr. Natural Area	1.12
22	136.8	SE 5008	34 St and Ellerslie Rd. Natural Area	0.51
23	134.7	NE 2	North Namao Wetland	0.61
24	133.9	SE 238	Maple Ridge Natural Area	1.10
25	133.7	SW 6001	SW Mixedwood Natural Area	0.66
26	130.4	NW 7024	167 Ave. Wetlands	1.41
27	129.8	NE 10	Hwy 37 - Meridian St. Parkland	0.56
28	128.9	NW 355	23 Ave. Wetland	0.56
29	128.7	SE 5094	Fulton Creek	1.40
30	127.9	NW 7011	Winterburn Crossing Wetlands	1.62
31	127.7	NE 8005	Meridian St. Creek Woodland	0.61
32	127.5	NE 8011	Horsehills Woodland	0.66
33	127.4	SW 86	Southwest Highland	1.39
34	124.8	NW 275	Hillview Natural Area	1.25
35	123.8	NE 8097	Evergreen Wetland Complex	1.17
36	123.4	SE 107	34 Street Wetland	0.51
37	123.1	SW 1	41 Ave SW - 184 St. Woodland	0.56
38	120.9	SE 5009	SE 5009	0.51
39	120.8	NW 139	Kinokamau Lake Woodland	0.76
40	120.0	SE 5015	SE 5015	1.00
41	119.8	NW 204	East Winterburn Natural Area	1.22
42	117.8	NE 52	NE 52	0.61
43	117.5	SE 20	SE Wetland Natural Area	0.51
44	117.3	NW 339	Woodbend Ravine Woodlot	0.66
45	116.9	NW 7060	Henry Singer Sports Field	1.17
46	116.1	NW 254	Normandeau Gardens Natural Area	1.42
47	115.4	NE 24	Namao Wetland	0.51
48	115.0	SW 2	Southwest Wetland	0.51
49	113.4	NE 8003	Horsehills Complex	0.51

Table 10: Relative Conservation Values and Ranks of Candidate Areas				
Rank	Conservation Value	Site No.	Site Name	Risk Factor
50	110.4	SW 74	North Virginia Park Woodland	0.61
51	109.8	NE 221	153 Ave. - Meridian St. Woodland	0.61
52	109.5	NW 7016	Northwest Mature Woodland	1.31
53	106.3	NW 132	NW 132	1.36
54	101.0	SE 5098	SE 5098	1.30
55	99.8	NE 8006	Celanese Canada Woodland	0.81
56	98.7	SW 31	Virginia Park Woodland	0.64
57	97.8	SW 8	Southwest Deciduous Woodland	0.46
58	93.1	SE 5093	SE 5093	1.40
59	88.8	NE 133	CNR - 17 Street Woodland	0.66
60	87.8	NE 8091	NE 8091	1.17
61	87.8	SW 26	U of A Farm Woodland	0.51
62	76.9	NW 7090	Mistatim Lagoons	1.22

The above-ranked sites listed in order of decreasing Conservation Value scores, were then multiplied by their respective "Risk Factors", yielding a re-ordering of sites, as presented in Table 11 below.

Table 11: Overall Rank of Candidate Conservation Areas				
Rank	Conservation Value X Risk Factor	Site No.	Site Name	Conservation Rank
1	285.7	NE 8094	Mayliewan Parkland Complex	2
2	264.2	NW 7010	Winterburn School Natural Area	12
3	208.5	SE 5090	Mill Creek Reach	19
4	207.2	NW 7011	Winterburn Crossing Wetlands	30
5	201.0	NE 8093	Little Mountain	8
6	197.1	NW 7021	215 St. Natural Area	10
7	194.4	NW 7012	Stoney Industrial Complex	6
8	189.9	SE 5016	SE Woodland Natural Area	5
9	183.7	NW 7024	167 Ave. Wetlands	26
10	182.2	SE 5007	SE 5007	1
11	180.1	SE 5094	Fulton Creek	29
12	177.0	SW 86	Southwest Highland	33
13	173.4	NW 7035	NW 7035	3
14	170.7	SE 5004	Southeast Natural Area	4
15	164.8	NW 254	Normandeau Gardens Natural Area	46
16	162.2	NW 7004	NW 7004	7
17	161.0	NW 318	Triple Acres Natural Area	13
18	156.9	NE 8002	Manning Freeway - Fort Rd. Wood	9
19	155.9	NW 275	Hillview Natural Area	34
20	154.4	NW 384	Section 19 Woodlot	11
21	153.4	NW 65	156 St. - St. Albert Tr. Natural Area	21
22	147.2	SE 238	Maple Ridge Natural Area	24
23	146.1	NW 204	East Winterburn Natural Area	41
24	145.7	NW 7018	Northwest Wetland	14
25	144.8	NE 8097	Evergreen Wetland Complex	35
26	144.6	NW 132	NW 132	53

Table 11: Overall Rank of Candidate Conservation Areas				
Rank	Conservation Value X Risk Factor	Site No.	Site Name	Conservation Rank
27	143.4	NW 7016	Northwest Mature Woodland	52
28	141.3	NE 8	Alberta Railway Museum Wetland	15
29	141.0	NW 89	Northwest Boundary Complex	16
30	139.4	SE 5012	Meridian St. TWP Rd. 515 Natural A	17
31	139.3	SE 244	H.14 - Sherwood Park/Cloverleaf	18
32	137.1	SE 5002	SE Mixedwood Natural Area	20
33	136.8	NW 7060	Henry Singer Sports Field	45
34	136.7	SE 5008	34 St and Ellerslie Rd. Natural Area	22
35	134.6	NE 2	North Namao Wetland	23
36	133.7	SW 6001	SW Mixedwood Natural Area	25
37	131.3	SE 5098	SE 5098	54
38	130.3	SE 5093	SE 5093	58
39	129.8	NE 10	Hwy 37 - Meridian St. Parkland	27
40	128.9	NW 355	23 Ave. Wetland	28
41	127.7	NE 8005	Meridian St. Creek Woodland	31
42	127.5	NE 8011	Horsehills Woodland	32
43	123.4	SE 107	34 Street Wetland	36
44	123.0	SW 1	41 Ave SW - 184 St. Woodland	37
45	120.8	SE 5009	SE 5009	38
46	120.8	NW 139	Kinokamau Lake Woodland	39
47	119.9	SE 5015	SE 5015	40
48	117.8	NE 52	NE 52	42
49	117.4	SE 20	SE Wetland Natural Area	43
50	117.2	NW 339	Woodbend Ravine Woodlot	44
51	115.4	NE 24	Namao Wetland	47
52	114.9	SW 2	Southwest Wetland	48
53	113.4	NE 8003	Horsehills Complex	49
54	110.4	SW 74	North Virginia Park Woodland	50
55	109.8	NE 221	153 Ave. - Meridian St. Woodland	51
56	102.7	NE 8091	NE 8091	60
57	99.8	NE 8006	Celanese Canada Woodland	55
58	98.7	SW 31	Virginia Park Woodland	56
59	97.8	SW 8	Southwest Deciduous Woodland	57
60	93.8	NW 7090	Mistatim Lagoons	62
61	88.8	NE 133	CNR - 17 Street Woodland	59
62	87.8	SW 26	U of A Farm Woodland	61

The “Risk Factor”, calculated as previously described, performed adequately in its role as a *modifier* of the Conservation Value ranking, in that it did not radically alter the ranking. The largest increase in rank position was experienced by NW 254 (Normandeau Gardens Natural Area), which increased 29 places from # 44 on the Conservation Value rank to an overall rank of # 15, NW 7011 (Winterburn Crossing Wetlands), which climbed 25 spots from # 29 on the Conservation Value list to # 4 on the overall rank, and NW 7016 (Southwest Mature Woodland), which also climbed 25 spots from # 52 on the Conservation Value list to # 27 on the overall ranked list. The most marked downward displacements were NE 8 (Alberta Railway Museum Wetland), NW 89 (Northwest Boundary Complex), SE 5012 (Meridian Street, Township Road 515 Natural

Area), and SE 244 (Highway 14 / Sherwood Park Cloverleaf), all of which dropped 14 positions in moving from the Conservation Value list to the overall ranked list.

Of the 62 sites that were evaluated and ranked, 35 had Risk Factors less than or equal to 1, while the remaining 27 sites were considered to have some level of developmental pressure (i.e., Risk Factor greater than 1). The highest Risk Factor was associated with NW 7010 (Winterburn School Natural Area), with a Risk Factor of 1.72 and NW 1011 (Winterburn Crossing Wetlands), with a Risk Factor of 1.62. These sites were numbers 2 and 4 in the overall ranking.

Generally, it was noted that Candidate Conservation Areas in the lower half of the Conservation Value ranking had low displacements of 0 to 12 positions after application of the Risk Factor. Therefore, it can be established that the Risk Factor successfully accented high-risk sites, without compromising the overall purpose of identifying and ranking sites for conservation purposes.

6. INTERPRETATION AND APPLICATION

This site evaluation and ranking exercise represents one of a series of steps that will be required in order for the City of Edmonton to manage and conserve a suite of natural areas within its municipal boundaries. Eventual management of these sites may include any number of a variety of tools, such as preservation, use, modification, restoration, intervention, or natural succession (City of Edmonton 1992), although the inherent qualities or features of any given site may limit or prohibit some of these options.

Before the City can implement a conservation area or natural area management plan for a specific site, numerous questions will need to be answered. The original inventory completed in 1993 addressed the elementary questions “*Where are Edmonton’s existing natural areas, and what is significant about them?*”. Following from that project, this present study addresses two subsequent critical questions: (i) “*How does a given natural area compare to others in terms of its environmental significance?*”; and (ii) “*What are the potential land use and planning threats to each site and how imminent are they?*”. Clearly, these questions can be answered with scientific information on the nature, distribution, and status of biophysical elements and municipal planning considerations.

The answers to these questions were used to rank all of the previously identified candidate conservation areas. However, conservation is a policy-oriented concept and, therefore, must include social, political, and fiscal elements in addition to the fundamental environmental considerations described in this report. Ultimately, all of these considerations will influence conservation priorities developed by the City in the near future. Emerging disciplines such as “ecological economics” (*sensu* Edwards and Abivardi 1998) will play a significant role in determining these conservation priorities.

The evaluation model used in this study should be viewed as a decision-making aid, or tool. The model has been used to organize available information in a logical and systematic manner for use by planners and policy makers. The results of this site ranking process, together with other tools, expertise, knowledge, and extraneous pressures, can then be used to set **priorities**.

6.1 The Framework

The results of this study have yielded a very specific product, that is, a relative ranking of sites based on evaluation criteria that reflect value judgements. These criteria were applied to the sites through what is essentially a modeling process. It is important to understand that the predictions of all models are wrong, simply because models are, by definition, abstractions or representations of the real world. The value and utility of this model should be measured in terms of the City’s ability to use the model to make a better, more informed decision or to communicate the basis for that decision.

Certainly, the relative and absolute significance of each criterion, its quantification, and its application are

debatable. It is not uncommon to hear ecologists express concern that the current state of knowledge is inadequate to make recommendations for managing complex ecological systems, particularly those impinged by human systems. Of course, knowledge is imperfect - any science has uncertainties, and ecology is no exception. However, at any time during the maturation of a science, there is a prevailing wisdom or opinion that is useful at that time. Such wisdom was used to support decisions made in this study and was the basis for assembling current scientific knowledge relevant to conservation planning.

Finally, the products of this study must be viewed within the context and scope of the overall objective. The purpose of scoring and ranking candidate conservation areas was to provide the City with information to steer conservation efforts towards sites contributing most to regional biodiversity and sites most in need of active management. Neither the results nor the methodology used for this project should be extracted and presented out of this context.

6.2 The Process

Ideally, an assessment of the conservation value of natural areas requires extensive information on the nature, distribution, and status of species, communities, and features. However, this information is not consistently available for the suite of criteria that must be used in the evaluation, and collecting it first-hand for this purpose is prohibitively expensive. Therefore, numerous generalizations were implemented, as follows.

Firstly, sites were only compared to the level of the least well known or least documented, thus setting a practical limit for inclusion of data. For example, information collected from bird surveys for a particular site cannot be used to augment a site's score if a similar level of survey does not exist for all other sites. Some sites, such as SW 6001, are intensively surveyed by local naturalists, yet in an effort to maintain objectivity of the evaluation, such data was not be included in the final assessment.

Secondly, in the absence of field surveys to inventory biological resources, surrogate measures of biodiversity were determined for each site (as in Wessels et al. 1999). A number of habitat types were identified, and potential wildlife species presence was predicted based on the occurrence of these habitat types. The implication is not that all of these species occur at a site, but rather that the habitat, or vegetation, communities, are capable of housing these species.

Thirdly, and as a corollary to the second point listed above, the precautionary principle was adopted to ensure that uncertainty, predictions, or generalizations of data did not negatively affect the score of a site for any given criterion. The precautionary principle suggests that, for a given variable for which there is incomplete data, we should use the estimate (providing it is credible) that yields the highest possible score (Burgman et al. 1999, IUCN 1994). Application of the precautionary principle in this model can be seen in the scores for faunal diversity, where the likelihood of species occurrence is not considered - only the maximum potential number of species occurring is considered.

While every attempt has been made to keep the scoring system as objective as possible, it is also important to incorporate both quantitative and qualitative information. This is an advantage of this model, as it does not necessarily eliminate or omit criteria that are too difficult to quantify or value. Therefore, this site evaluation and scoring model did not eliminate all subjectivity, but rather attempted to control when and where subjectivity and judgement were allowed to enter the assessment procedure.

Quantification was achieved through a combination of points-scoring and measurement of continuous variables. Quantification using continuous variables was possible for those attributes that could be conveniently and meaningfully measured (for example, number of habitat types present, land ownership, municipal planning level, *et cetera*). Quantification using points-scoring was necessary for attributes that could not be readily measured (for example, connectivity, ecosystem resilience, and naturalness). The points scoring process was somewhat arbitrary, essentially giving numbers in place of adjectives (i.e., for the Hydrology criterion, 10 points for High and 5 points for Moderate). Professional judgement of project biologists was relied upon to determine critical thresholds between attribute scores. While there are drawbacks to including discretionary features, the flexibility and advantage of including a wider variety of attributes, even when they are arbitrarily scored, far outweighs these drawbacks *for the purposes of this project*.

6.3 The Results

The site evaluation and ranking process will contribute to developing a consensus about the relative urgency, timing, and sequencing of conservation actions by the City. Moreover, the ranking process contributes to the justification for subsequent resource allocation decisions. However, users of this report must exercise caution when interpreting the results of the ranking process outside the context of this project.

Of primary note is the fact that each of the 63 candidate conservation areas is considered significant, and has previously been identified as such (Geowest 1993, 1993b). Within the urban setting of the City of Edmonton, conservation action is going to be largely opportunistic. That is, opportunities to conserve any given site will not be overlooked simply due to a site's potentially low position on the ranked list. If circumstances become favorable to conserve the number 63 ranked site (or any other), that particular site will be conserved first. The ranked list is only to provide a guide to sites that the City should actively pursue, with limited funds, if all else remains equal.

The numerical scores themselves should also not be misinterpreted. Overall numerical scores of the candidate conservation areas are ordinal, not cardinal. If the score of one site is 50 percent higher than another, it does not imply that the first site is 50 percent more significant.

7. RECOMMENDATIONS

The primary strength of this site evaluation and ranking process is that it has been designed to be responsive and dynamic. That is, it is easy to conduct when required and to update when new information becomes available. The utility of this feature became evident even during the short duration of this project, as five sites were added to the list of candidate conservation areas in mid-project stream due to changes and amendments to planning applications affecting those sites. Such variation is expected to be typical of most sites. Therefore, it is recommended that the City re-visit these ratings and re-rank at regular intervals.

The current ranking of candidate conservation areas is based on a combination of the inherent ecological value as well as the status of planning and development activity on and around each area. Given that planning activity is ongoing and constantly changing, the City should fully anticipate the need to update its priorities for conservation areas from time to time. The process of assigning numerical scores and ordering sites is easily facilitated within the Excel spreadsheet format presently used. In addition, most of the data used to feed into the site evaluation is easily accessible for inclusion in the spreadsheet. One notable exception is the land parcel ownership and planning information housed in the City's POSSE data system. While POSSE and its resources proved to be extremely valuable in this exercise, the sites were not geographically referenced within the system and, as a result, its use and application was awkward and time consuming.

Extraction of data from POSSE for conservation planning purposes would be a relatively easy and efficient task if the sites were to be geographically referenced within POSSE. Sites could then be called up on the system on an individual basis and, in a matter of minutes, most of the Land Use information required to re-evaluate the site could be displayed. In this manner, the City would have at its disposal the means to evaluate and confirm, at any time, the values assigned to any or all of the candidate conservation areas within its municipal boundary.

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APPENDIX A

SITE EVALUATION

DATABASE

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		BIOPHYSICAL FEATURES														SCORE						
Site No.	Site Name	Significance	Diversity	Lim	Lit	Len	Non	Lot	Rip	Fen	Dec	Mix	Con	Shr	Gra	Mea	Total	Landforms	Faunal Diversity	Elemental Rarity	Score	
NE 10	Hwy 37 - Meridian St. Parkland	10									1			1	1		30	0	148.3	14.8	15	69.8
NE 133	CNR - 17 Street Woodland	10									1						10	0	178.0	17.8	5	42.8
NE 2	North Nannao Wetland	10	1										1			1	50	0	106.5	10.7	15	85.7
NE 221	163 Ave. - Meridian St. Woodland	10									1					1	20	0	138.4	13.8	5	48.8
NE 24	Nannao Wetland	10									1			1	1	1	40	0	64.3	6.4	15	71.4
NE 52	Bocock Woodland	10									1						10	10	178.0	17.8	5	52.8
NE 8	Alberta Railway Museum Wetland	10	1	1	1						1						50	0	122.9	12.3	15	87.3
NE 8002	Manning Freeway - Fort Rd. Wood	10	1								1						40	0	159.7	16.0	15	81.0
NE 8003	Horsehills Complex	10									1			1	1		30	0	153.5	15.4	15	70.4
NE 8005	Meridian St. Creek Woodland	10									1			1	1		30	0	157.1	15.7	15	70.7
NE 8006	Celanese Canada Woodland	10									1						10	0	178.0	17.8	5	42.8
NE 8011	Horsehills Woodland	10									1			1	1		40	0	165.1	16.5	15	81.5
NE 8091	NE 8091	10									1						10	0	178.0	17.8	5	42.8
NE 8093	Little Mountain	10									1			1	1		40	0	151.6	15.2	15	80.2
NE 8094	Maylewan Parkland Complex	10	1	1	1						1					1	60	0	76.7	7.7	15	92.7
NE 8097	Evergreen Wetland Complex	10	1								1			1	1		40	0	137.8	13.8	15	78.8
NW 132	Glendale Wetland	10									1			1	1		40	0	133.3	13.3	15	78.3
NW 139	Kinokamau Lake Woodland	10									1			1	1		30	0	168.2	16.8	15	71.8
NW 204	East Winterburn Natural Area	10	1								1			1	1		40	0	137.8	13.8	15	78.8
NW 254	Nommandeu Gardens Natural Area	10									1			1	1		20	0	161.0	16.1	15	61.1
NW 275	Hillview Natural Area	10	1								1			1	1		50	0	117.8	11.8	15	86.8
NW 318	Triple Acres Natural Area	10									1			1	1		20	10	167.4	16.7	15	71.7
NW 339	Woodbend Ravine Woodlot	10									1			1	1		20	0	182.5	18.3	5	53.3
NW 355	23 Ave. Wetland	10	1								1			1	1		50	0	109.1	10.9	15	85.9
NW 384	Section 19 Woodlot	10									1			1	1		30	0	164.8	16.5	15	71.5
NW 65	156 St. - St. Albert Tr. Natural Area	10									1			1	1		40	0	150.2	15.0	15	80.0
NW 7004	Freeman Woodland	10									1			1	1		40	0	162.9	16.3	15	81.3
NW 7010	Winterburn School Natural Area	10	1								1			1	1		50	0	146.5	14.7	15	89.7
NW 7011	Winterburn Crossing Wetlands	10	1								1			1	1		50	0	99.3	9.9	15	84.9
NW 7012	Stoney Industrial Complex	10									1			1	1		60	0	161.6	16.2	15	101.2
NW 7016	Northwest Mature Woodland	10									1			1	1		20	0	164.8	16.5	5	51.5
NW 7018	Northwest Wetland	10	1	1	1						1			1	1		60	0	107.0	10.7	15	95.7
NW 7021	215 St. Natural Area	10	1	1	1						1			1	1		50	0	145.0	14.5	15	89.5
NW 7024	167 Ave. Wetlands	10	1								1			1	1		50	0	93.5	9.4	15	84.4
NW 7035	Grocery People Woodland Complex	10	1	1	1						1			1	1		60	0	154.9	15.5	15	100.5
NW 7060	Henry Singer Sports Field	10									1			1	1		40	0	88.8	8.9	5	63.9
NW 7090	Mistilium Lagoons	10	1	1	1						1			1	1		20	0	98.5	9.9	10	49.9
NW 89	Northwest Boundary Complex	10	1								1			1	1		50	0	150.7	15.1	15	90.1
SE 107	34 Street Wetland	10	1								1			1	1		40	0	124.4	12.4	15	77.4
SE 20	SE Wetland Natural Area	10	1								1			1	1		30	0	114.6	11.5	15	66.5
SE 238	Maple Ridge Natural Area	10	1								1			1	1		50	0	138.6	13.9	15	88.9
SE 244	H.14 - Sherwood Park/Cloverleaf	10									1			1	1		40	0	173.3	17.3	15	82.3
SE 5002	SE Mixedwood Natural Area	10									1			1	1		40	0	181.1	18.1	15	83.1
SE 5004	Southeast Natural Area	10									1			1	1		40	10	97.3	9.7	15	84.7
SE 5007	Korolik-Kozub Natural Area	20	1	1	1						1			1	1		60	0	142.7	14.3	15	109.3
SE 5008	34 St and Ellerslie Rd. Natural Area	10	1	1	1						1			1	1		40	0	157.6	15.8	10	75.8

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		BIOPHYSICAL FEATURES													SCORE						
Site No.	Site Name	Significance	Lim	Lit	Len	Non	Lot	Rip	Fen	Dec	Mix	Con	Shr	Gr	Mea	Total	Landforms	Faunal Diversity	Elemental Rarity	SCORE	
																		Score			
SE 5009	Henschel Wetlands	10	1		1					1			1			40	0	108.7	10.9	15	75.9
SE 5012	Mendian St. TWP Rd. 515 Natural A	10	1		1				1				1			40	0	134.2	13.4	15	78.4
SE 5015	Hurstwood Woodland	10							1				1			30	0	159.9	16.0	15	71.0
SE 5016	SE Woodland Natural Area	10	1	1	1				1	1	1		1			60	0	155.7	15.6	15	100.6
SE 5090	Mill Creek Reach	10					1	1					1			40	0	110.6	11.1	15	76.1
SE 5093	SE 5093	10	1		1								1			20	0	111.0	11.1	5	46.1
SE 5094	Fulton Creek	10					1	1					1			40	0	126.6	12.7	15	77.7
SE 5098	SE 5098	10			1				1						1	30	0	120.3	12.0	10	62.0
SW 1	41 Ave SW - 184 St. Woodland	10					1				1					20	0	180.8	18.1	5	53.1
SW 2	Southwest Wetland	10			1								1			20	0	129.0	12.9	15	57.9
SW 26	U of A Farm Woodland	10											1			10	0	178.0	17.8	5	42.8
SW 31	Virginia Park Woodland	10											1			20	0	187.0	18.7	5	53.7
SW 6001	SW Mixedwood Natural Area	10											1			30	0	187.0	18.7	5	63.7
SW 74	North Virginia Park Woodland	10			1								1			30	0	184.1	18.4	10	68.4
SW 8	Southwest Deciduous Woodland	10											1			10	0	178.0	17.8	5	42.8
SW 86	Southwest Highland	10											1			20	10	143.7	14.4	10	64.4

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		ECOLOGICAL INTEGRITY					Ecosystem Resistance and Resilience					Hydrological Function			SCORE
Site No.	Site Name	Size	Connectivity	Groundwater	Surface Water	Soil/Topo	Vegetation	Buffering	Total	Hydrological Function	Naturalness	Score			
NE 10	Hwy 37 - Meridian St. Parkland	8	0	5	5	5	5	2	22	0	4	34			
NE 133	CNR - 17 Street Woodland	4	2	5	5	4	4	1	20	0	4	30			
NE 2	North Nmapo Wetland	4	8	1	1	1	1	5	5	10	8	35			
NE 221	153 Ave. - Meridian St. Woodland	4	4	4	4	4	4	1	17	0	16	41			
NE 24	Nmapo Wetland	4	0	1	1	1	1	1	5	5	8	22			
NE 52	Bocock Woodland	2	6	5	5	5	5	1	17	0	16	41			
NE 8	Alberta Railway Museum Wetland	4	0	2	2	2	2	1	8	10	8	30			
NE 8002	Manning Freeway - Fort Rd. Wood	8	0	4	4	4	4	2	16	10	16	50			
NE 8003	Horsehills Complex	4	0	3	3	3	3	1	11	0	4	19			
NE 8005	Meridian St. Creek Woodland	4	14	3	3	4	4	1	14	5	8	45			
NE 8006	Celanese Canada Woodland	4	2	5	5	5	5	2	21	0	16	43			
NE 8011	Horsehills Woodland	4	2	4	4	4	4	3	16	0	8	30			
NE 8091	Horsehills Woodland	4	0	5	5	5	5	1	21	0	4	29			
NE 8093	Little Mountain	8	0	4	4	4	4	2	16	0	16	40			
NE 8094	Maylewan Parkland Complex	16	10	1	1	2	2	2	7	10	4	47			
NE 8097	Evergreen Wetland Complex	2	2	3	3	3	3	1	11	0	8	23			
NW 132	Glendale Wetland	2	2	1	1	1	1	1	5	5	2	16			
NW 139	Kinokamau Lake Woodland	2	6	4	4	4	4	3	17	0	8	33			
NW 204	East Winterburn Natural Area	2	0	2	2	2	2	1	8	5	8	23			
NW 254	Normandeau Gardens Natural Area	4	2	4	4	4	4	2	15	0	16	37			
NW 275	Hillview Natural Area	2	2	3	3	3	3	1	11	5	4	24			
NW 318	Triple Acres Natural Area	8	8	5	5	5	5	1	14	0	16	46			
NW 339	Woodbend Ravine Woodlot	4	14	5	5	5	5	3	20	0	8	46			
NW 355	23 Ave. Wetland	4	2	1	1	1	1	1	5	10	8	29			
NW 384	Section 19 Woodlot	8	14	5	5	3	2	2	17	0	16	55			
NW 65	156 St. - St. Albert Tr. Natural Area	4	2	4	4	4	4	2	16	5	16	43			
NW 7004	Freeman Woodland	8	14	4	4	4	4	1	15	10	16	63			
NW 7010	Winterburn School Natural Area	16	4	3	3	3	3	1	13	5	8	46			
NW 7011	Winterburn Crossing Wetlands	4	4	2	2	2	2	1	8	5	8	29			
NW 7012	Stoney Industrial Complex	2	2	4	4	4	4	1	14	5	8	31			
NW 7016	Northwest Mature Woodland	8	4	4	4	4	4	3	18	0	8	38			
NW 7018	Northwest Wetland	8	4	2	2	2	2	1	8	10	4	34			
NW 7021	215 St. Natural Area	4	8	4	4	4	4	2	16	5	16	49			
NW 7024	167 Ave. Wetlands	4	2	2	2	2	2	1	8	10	4	28			
NW 7035	Grocery People Woodland Complex	16	4	4	4	4	4	3	18	5	8	51			
NW 7060	Henry Singer Sports Field	8	0	1	1	1	1	1	5	10	8	31			
NW 7090	Mistatim Lagoons	8	0	1	1	1	1	2	6	5	2	21			
NW 89	Northwest Boundary Complex	4	2	4	4	4	4	2	16	5	8	35			
SE 107	34 Street Wetland	4	2	2	2	2	2	1	8	10	8	32			
SE 20	SE Wetland Natural Area	4	2	1	1	1	1	1	5	10	16	37			
SE 238	Maple Ridge Natural Area	4	6	1	1	1	1	1	5	10	8	33			
SE 244	H.14 - Sherwood Park/Cloverleaf	2	0	4	4	4	4	1	14	5	16	37			
SE 5002	SE Mixedwood Natural Area	4	4	5	5	5	5	2	18	0	8	34			
SE 5004	Southeast Natural Area	16	2	3	3	3	3	2	13	5	8	44			
SE 5007	Korolik-Kozub Natural Area	16	8	3	3	3	3	1	12	5	8	49			
SE 5008	34 St and Ellerslie Rd. Natural Area	4	4	3	3	3	3	1	11	10	16	45			

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		ECOLOGICAL INTEGRITY										SCORE
Site No.	Site Name	Size	Connectivity	Groundwater	Surface Water	Soil/Topo	Vegetation	Buffering	Total	Hydrological Function	Naturalness	SCORE
SE 5009	Henschel Wetlands	2	8	2	2	2	1	1	8	5	8	31
SE 5012	Mendian St. TWP Rd. 515 Natural A	4	8	2	2	2	1	2	9	10	16	47
SE 5015	Hurstwood Woodland	4	2	3	3	4	5	2	17	0	8	31
SE 5016	SE Woodland Natural Area	8	8	4	4	4	1	2	15	0	16	47
SE 5090	Mill Creek Reach	8	16	1	1	1	1	1	5	10	8	47
SE 5093	SE 5093	2	10	1	1	1	1	1	5	10	8	35
SE 5094	Fulton Creek	4	8	1	1	1	1	1	5	10	8	35
SE 5098	SE 5098	2	0	2	2	2	4	1	11	0	8	21
SW 1	41 Ave SW - 184 St. Woodland	2	14	5	5	5	1	1	17	5	8	46
SW 2	Southwest Wetland	2	8	1	1	1	1	1	5	10	8	33
SW 26	U of A Farm Woodland	4	2	5	5	5	5	1	21	0	4	31
SW 31	Virginia Park Woodland	4	0	5	5	5	1	1	17	0	8	29
SW 6001	SW Mixedwood Natural Area	8	0	5	5	5	2	3	20	0	16	44
SW 74	North Virginia Park Woodland	4	0	4	4	4	1	1	14	0	8	26
SW 8	Southwest Deciduous Woodland	4	0	5	5	5	3	1	19	0	16	39
SW 86	Southwest Highland	4	6	5	5	5	5	1	21	0	8	39

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION	GEOGRAPHICAL LOCATION			SCORE	ECOLOGICAL UNIQUENESS			SCORE	
	Site No.	Site Name	# Nat. Areas		Occurrence of Habitat Type		Within Quadrant		Within City
					Proximity	CCAs			
NE 10	Hwy 37 - Meridian St. Parkland	2	4	4	10	8	8	16	
NE 133	CNR - 17 Street Woodland	4	2	4	10	2	4	6	
NE 2	North Nampa Woodland	2	4	4	10	2	2	4	
NE 221	163 Ave. - Meridian St. Woodland	2	2	4	8	8	4	12	
NE 24	Nampa Woodland	2	4	4	10	8	4	12	
NE 52	Bocock Woodland	2	2	4	8	8	8	16	
NE 8	Alberta Railway Museum Wetland	4	4	4	12	8	4	12	
NE 8002	Manning Freeway - Fort Rd. Wood	4	2	4	10	8	8	16	
NE 8003	Horsehills Complex	2	2	4	8	8	8	16	
NE 8005	Meridian St. Creek Woodland	2	2	4	8	2	2	4	
NE 8006	Celanese Canada Woodland	2	4	4	10	2	2	4	
NE 8011	Horsehills Woodland	4	2	4	10	2	4	6	
NE 8091	NE 8091	4	4	4	12	2	2	4	
NE 8093	Little Mountain	2	4	4	10	16	16	32	
NE 8094	Mayview Parkland Complex	6	6	4	16	16	8	24	
NE 8097	Evergreen Wetland Complex	2	4	4	10	8	4	12	
NW 132	Glendale Wetland	2	2	2	6	2	4	6	
NW 139	Kinokamau Lake Woodland	2	2	2	6	2	8	10	
NW 204	East Winterburn Natural Area	4	2	2	8	2	8	10	
NW 254	Nommandeau Gardens Natural Area	2	2	2	6	8	4	12	
NW 275	Hillview Natural Area	4	2	2	6	2	4	6	
NW 318	Triple Acres Natural Area	2	2	2	6	8	16	24	
NW 339	Woodbend Ravine Woodlot	2	2	2	6	8	4	12	
NW 355	23 Ave. Wetland	2	4	2	8	2	4	6	
NW 384	Section 19 Woodlot	2	4	2	8	16	4	20	
NW 65	156 St. - St. Albert Tr. Natural Area	4	4	2	10	2	2	4	
NW 7004	Freeman Woodland	2	2	2	6	8	4	12	
NW 7010	Winterburn School Natural Area	4	2	2	8	2	8	10	
NW 7011	Winterburn Crossing Wetlands	4	2	2	8	2	4	6	
NW 7012	Stoney Industrial Complex	4	4	2	10	16	8	24	
NW 7016	Northwest Mature Woodland	8	6	2	16	2	2	4	
NW 7018	Northwest Wetland	4	4	2	10	2	4	6	
NW 7021	215 St. Natural Area	4	2	2	8	2	8	10	
NW 7024	167 Ave. Wetlands	6	4	2	12	2	4	6	
NW 7035	Grocery People Woodland Complex	2	2	2	6	8	8	16	
NW 7060	Henry Singer Sports Field	8	6	2	16	2	4	6	
NW 7090	Mistatim Lagoons	6	4	2	12	2	4	6	
NW 89	Northwest Boundary Complex	2	2	2	6	2	8	10	
SE 107	34 Street Wetland	4	2	2	8	2	4	6	
SE 20	SE Wetland Natural Area	4	2	2	8	2	4	6	
SE 238	Maple Ridge Natural Area	2	2	2	6	2	4	6	
SE 244	H.14 - Sherwood Park/Cloverleaf	4	2	2	8	8	4	12	
SE 5002	SE Mixedwood Natural Area	4	2	2	8	8	4	12	
SE 5004	Southeast Natural Area	4	4	2	10	16	16	32	
SE 5007	Koroluk-Kozub Natural Area	4	2	2	8	8	8	16	
SE 5008	34 St and Ellerslie Rd. Natural Area	2	2	2	6	8	2	10	

CONSERVATION VALUE
129.8
88.8
134.7
109.8
115.4
117.8
141.3
157.0
113.4
127.7
99.8
127.5
87.8
162.2
179.7
123.8
106.3
120.8
119.8
116.1
124.8
147.7
117.3
128.9
154.5
137.0
162.3
153.7
127.9
166.2
109.5
145.7
156.5
130.4
173.5
116.9
76.9
141.1
123.4
117.5
133.9
139.3
137.1
170.7
182.3
136.8

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		GEOGRAPHICAL LOCATION			SCORE	ECOLOGICAL UNIQUENESS		SCORE
Site No.	Site Name	Proximity	# Nat. Areas	CCAs		Occurrence of	Habitat Type	
		Parks			Within Quadrant	Within City		
SE 5009	Henschel Wetlands	2	2	4	2	4	6	120.9
SE 5012	Meridian St. TWP Rd. 515 Natural A	2	2	4	2	4	6	139.4
SE 5015	Hurstwood Woodland	4	2	2	8	2	10	120.0
SE 5016	SE Woodland Natural Area	4	2	4	8	4	12	169.6
SE 5090	Mill Creek Reach	2	2	2	8	2	10	139.1
SE 5093	SE 5093	2	2	2	2	4	6	93.1
SE 5094	Fulton Creek	2	2	2	8	2	10	128.7
SE 5098	SE 5098	2	2	2	8	4	12	101.0
SW 1	41 Ave SW - 184 St. Woodland	2	2	4	8	4	12	123.1
SW 2	Southwest Wetland	2	2	4	8	4	12	114.9
SW 26	U of A Farm Woodland	2	2	2	2	2	4	87.8
SW 31	Virginia Park Woodland	2	2	2	2	4	6	98.7
SW 6001	SW Mixedwood Natural Area	2	2	2	8	8	16	133.7
SW 74	North Virginia Park Woodland	2	2	2	2	4	6	110.4
SW 8	Southwest Deciduous Woodland	2	2	4	2	2	4	97.8
SW 86	Southwest Highland	2	2	4	8	4	12	127.4

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		LAND MANAGEMENT CRITERIA										SCORE				Conservation Value X Risk Factor	RANK
Site No.	Site Name	Development Points	Horizon Score	Existing Points	Plans Score	Expected Points	Land Use Score	Land Ownership Points	Current Points	Accessibility Score	Risk Factor						
NE 10	Hwy 37 - Meridian St. Parkland	2	0.200	1	0.085	1	0.070	1	0.050	3	0.150	0.56	129.8	39			
NE 133	CNR - 17 Street Woodland	2	0.200	1	0.085	1	0.070	3	0.150	3	0.150	0.66	88.8	61			
NE 2	North Namao Wetland	2	0.200	1	0.085	1	0.070	2	0.100	3	0.150	0.61	134.7	35			
NE 221	163 Ave. - Meridian St. Woodland	2	0.200	1	0.085	1	0.070	1	0.050	3	0.150	0.61	109.8	55			
NE 24	Namao Wetland	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	115.4	51			
NE 52	Bocock Woodland	2	0.200	1	0.085	1	0.070	2	0.100	3	0.150	0.61	117.8	48			
NE B	Alberta Railway Museum Wetland	2	0.200	1	0.085	1	0.070	2	0.100	3	0.150	0.61	141.3	28			
NE 8002	Manning Freeway - Fort Rd. Wood	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	157.0	18			
NE 8003	Horsehills Complex	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	113.4	53			
NE 8005	Meridian St. Creek Woodland	2	0.200	1	0.085	1	0.070	2	0.100	3	0.150	0.61	127.7	41			
NE 8006	Celanese Canada Woodland	2	0.200	1	0.085	1	0.070	3	0.150	6	0.300	0.81	99.8	57			
NE 8011	Horsehills Woodland	2	0.200	1	0.085	1	0.070	2	0.100	4	0.200	0.66	127.5	42			
NE 8091	NE 8091	3	0.300	3	0.255	3	0.210	5	0.250	3	0.150	1.17	102.7	56			
NE 8093	Little Mountain	5	0.500	3	0.255	4	0.280	1	0.050	3	0.150	1.24	201.1	5			
NE 8094	Maylewan Parkland Complex	5	0.500	4	0.340	5	0.350	5	0.250	3	0.150	1.59	285.7	1			
NE 8097	Evergreen Wetland Complex	4	0.400	3	0.255	1	0.210	3	0.150	3	0.150	1.17	144.8	25			
NW 132	Glendale Wetland	4	0.400	3	0.255	5	0.350	3	0.150	4	0.200	1.36	144.6	26			
NW 139	Kinokamau Lake Woodland	3	0.300	1	0.085	1	0.070	5	0.250	1	0.050	0.76	120.8	46			
NW 204	East Winterburn Natural Area	4	0.400	3	0.255	3	0.210	3	0.150	4	0.200	1.22	146.1	23			
NW 254	Normandeau Gardens Natural Area	5	0.500	3	0.255	3	0.210	5	0.250	4	0.200	1.42	164.9	15			
NW 275	Hillview Natural Area	4	0.400	3	0.255	5	0.350	2	0.100	3	0.150	1.25	156.0	19			
NW 318	Triple Acres Natural Area	3	0.300	1	0.085	5	0.350	3	0.150	4	0.200	1.09	161.0	17			
NW 339	Woodbend Ravine Woodlot	2	0.200	1	0.085	1	0.070	3	0.150	5	0.150	0.66	117.3	50			
NW 355	23 Ave. Wetland	2	0.200	1	0.085	1	0.070	3	0.150	1	0.050	0.56	128.9	40			
NW 384	Section 19 Woodlot	2	0.200	1	0.085	3	0.210	5	0.250	3	0.150	0.90	154.5	20			
NW 65	156 St. - St. Albert Tr. Natural Area	3	0.300	3	0.255	3	0.210	3	0.150	4	0.200	1.12	153.5	21			
NW 704	Freeman Woodland	4	0.400	1	0.085	1	0.070	2	0.100	3	0.150	0.81	162.3	16			
NW 7010	Winterburn School Natural Area	5	0.500	3	0.255	8	0.560	5	0.250	3	0.150	1.72	264.3	2			
NW 7011	Winterburn Crossing Wetlands	4	0.400	3	0.255	8	0.560	3	0.150	5	0.250	1.62	207.2	4			
NW 7012	Stoney Industrial Complex	4	0.400	3	0.255	3	0.210	3	0.150	3	0.150	1.17	194.4	7			
NW 7016	Northwest Mature Woodland	4	0.400	3	0.255	5	0.350	3	0.150	3	0.150	1.31	143.4	22			
NW 7018	Northwest Wetland	2	0.200	1	0.085	1	0.070	1	0.050	1	0.050	0.46	145.7	24			
NW 7021	215 St. Natural Area	4	0.400	3	0.255	5	0.350	2	0.100	3	0.150	1.26	197.2	6			
NW 7024	167 Ave. Wetlands	5	0.500	3	0.255	5	0.350	3	0.150	3	0.150	1.41	183.8	9			
NW 7035	Grocery People Woodland Complex	4	0.400	1	0.085	1	0.070	5	0.250	1	0.050	0.86	173.5	13			
NW 7060	Henry Singer Sports Field	3	0.300	3	0.255	3	0.210	5	0.250	3	0.150	1.17	136.8	23			
NW 7090	Mistatim Lagoons	3	0.300	3	0.255	3	0.210	5	0.250	4	0.200	1.22	93.8	38			
NW 89	Northwest Boundary Complex	3	0.300	1	0.085	0	0.070	2	0.100	3	0.150	0.71	141.1	29			
SE 107	34 Street Wetland	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	123.4	43			
SE 20	SE Wetland Natural Area	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	117.5	49			
SE 238	Maple Ridge Natural Area	3	0.300	1	0.085	3	0.210	5	0.250	5	0.250	1.10	147.2	22			
SE 244	H. 14 - Sherwood Park/Cloverleaf	3	0.300	1	0.085	3	0.210	5	0.250	3	0.150	1.00	139.3	31			
SE 5002	SE Mixedwood Natural Area	2	0.200	1	0.085	1	0.070	5	0.250	1	0.050	0.66	137.1	32			
SE 5004	Southeast Natural Area	2	0.200	1	0.085	1	0.070	2	0.100	2	0.100	0.56	170.7	14			
SE 5007	Koroluk-Kozub Natural Area	2	0.200	1	0.085	1	0.070	2	0.100	2	0.100	0.56	182.3	10			
SE 5008	34 St and Ellerslie Rd. Natural Area	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	136.8	34			

CITY OF EDMONTON - PRIORITIZATION OF CANDIDATE CONSERVATION AREAS

SITE INFORMATION		LAND MANAGEMENT CRITERIA												SCORE	
Site No.	Site Name	Development Points	Horizon Score	Existing Plans Points	Score	Expected Points	Land Use Score	Land Ownership Points	Score	Current Points	Accessibility Score	Risk Factor	Conservation Value X Risk Factor	RANK	
SE 5009	Henschel Wetlands	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	120.9	45	
SE 5012	Meridian St. TWP Rd. 515 Natural A	2	0.200	1	0.085	1	0.070	3	0.150	1	0.050	0.56	139.4	30	
SE 5015	Hurstwood Woodland	3	0.300	1	0.085	3	0.210	3	0.150	5	0.250	1.00	120.0	47	
SE 5016	SE Woodland Natural Area	3	0.300	3	0.255	3	0.210	5	0.250	2	0.100	1.12	189.9	8	
SE 5090	Mill Creek Reach	5	0.500	4	0.340	3	0.210	5	0.250	4	0.200	1.50	208.6	3	
SE 5093	SE 5093	4	0.400	4	0.340	3	0.210	5	0.250	4	0.200	1.40	130.3	38	
SE 5094	Fulton Creek	4	0.400	4	0.340	3	0.210	5	0.250	4	0.200	1.40	180.1	11	
SE 5098	SE 5098	3	0.300	4	0.340	3	0.210	5	0.250	4	0.200	1.30	131.3	37	
SW 1	41 Ave SW - 184 St. Woodland	2	0.200	1	0.085	1	0.070	2	0.100	2	0.100	0.56	123.1	44	
SW 2	Southwest Wetland	2	0.200	1	0.085	1	0.070	2	0.100	1	0.050	0.51	114.9	52	
SW 26	U of A Farm Woodland	2	0.200	1	0.085	1	0.070	1	0.050	2	0.100	0.51	87.8	62	
SW 31	Virginia Park Woodland	2	0.200	1	0.085	1	0.070	3	0.150	2	0.100	0.64	98.7	58	
SW 6001	SW Mixedwood Natural Area	2	0.200	1	0.085	1	0.075	3	0.150	3	0.150	0.66	133.7	36	
SW 74	North Virginia Park Woodland	2	0.200	1	0.085	1	0.070	3	0.150	2	0.100	0.61	110.4	54	
SW 8	Southwest Deciduous Woodland	2	0.200	1	0.085	1	0.070	2	0.100	2	0.100	0.56	97.8	59	
SW 86	Southwest Highland	5	0.500	4	0.340	5	0.350	3	0.150	1	0.050	1.39	177.0	12	

APPENDIX B

SITE EVALUATION

DATA SHEET

**ASSESSMENT OF CONSERVATION POTENTIAL OF
CANDIDATE CONSERVATION AREAS, City of Edmonton**

SITE EVALUATION FORM

SITE REF. NO.:

DATE:

SITE NAME (if different):

SURVEYOR(S):

GENERAL COMMENTS

I. BIOPHYSICAL FEATURES

		Points	Weight	Score
IA. Level of Significance: (check one only)	International	_____ x	50	
	National	_____ x	40	
	Provincial	_____ x	30	
	Regional	_____ x	20	
	Local	_____ x	10	
	Total	1 x	_____	_____

IB. Habitat Diversity: (check all that apply)	Limnetic	_____ ()	Closed Deciduous	_____ ()
	Littoral	_____ ()	Closed Mixedwood	_____ ()
	Lentic Emergent	_____ ()	Closed Coniferous	_____ ()
	Non-veg. Shoreline	_____ ()	Tall Shrub	_____ ()
	Lotic	_____ ()	Grassland	_____ ()
	Lotic Riparian	_____ ()	Wet Meadow	_____ ()
	Fen	_____ ()		
	Total No.	_____ x	10	_____

IC. Significant Landforms: (list each)	x 10 points	
	x 10 points	
Total (cumulative points)		_____

ID. Faunal Diversity:	Habitat Type	B	M	HF	Total	Weight	Score
	Limnetic						
	Littoral						
	Lentic Emergent						
	Non-veg. Shoreline						
	Lotic						
	Lotic Riparian						
	Fen						
	Closed Deciduous						
	Closed Mixedwood						
	Closed Coniferous						
	Tall Shrub						
	Grassland						
	Wet Meadow						
Total (cumulative score)					_____		

IE. Elemental Rarity:	# Provincially Listed Taxa	_____ x 10	_____
	# Federally Listed Taxa	_____ x 30	_____
Total (cumulative points)			_____

TOTAL SCORE FOR BIOPHYSICAL FEATURES (IA + IB + IC + ID + IE) _____

II. ECOLOGICAL INTEGRITY

	Points	Weight	Score	
IIA. Size:				
1 - 5 ha	2 points	x 1	_____	
5.1 - 15 ha	4 points	x 1	_____	
15.1 - 30 ha	8 points	x 1	_____	
30.1 + ha	16 points	x 1	_____	
<hr/>				
IIB. Connectivity:				
Staging patch between SNAs	2 points	x 1	_____	
Component of Habitat Complex	2 points	x 1	_____	
Continuous Corridor Linking SNAs	4 points	x 1	_____	
Watershed-level Linkage	6 points	x 1	_____	
Linkage to NSRV	6 points	x 1	_____	
Total (cumulative score)			_____	
<hr/>				
IIC. Ecosystem Resistance and Resilience:				
Resistance / resilience to groundwater flow impacts (High) 5 4 3 2		1 (Low)	_____	
Resistance / resilience to surface water flow impacts (High) 5 4 3 2		1 (Low)	_____	
Resistance / resilience to soil and topography impacts (High) 5 4 3 2		1 (Low)	_____	
Resistance / resilience to vegetation impacts (High) 5 4 3 2		1 (Low)	_____	
Buffering Capacity:	High	3 points	_____	
	Moderate	2 points	_____	
	Low	1 point	_____	
Total (cumulative score)			_____	
<hr/>				
IID. Hydrological Function				
	High	10 points	_____	
	Moderate	5 points	_____	
	Low	0 points	_____	
<hr/>				
IIE. Naturalness	16	8	4	_____
<hr/>				
TOTAL SCORE FOR ECOLOGICAL INTEGRITY (IIA + IIB + IIC + IID + IIE)			_____	

III. GEOGRAPHICAL LOCATION

		Points	Weight	Score
IIIA. Proximity to NSRVS:				
	0 - 1 km	2 points	x	1
	1.1 - 5 km	4 points	x	1
	5.1 - 10 km	6 points	x	1
	10 + km	8 points	x	1
<hr/>				
IIIB. Proximity to Other Candidate Conservation Areas:				
	0 - 1 km	2 points	x	1
	1.1 - 5 km	4 points	x	1
	5.1 - 10 km	6 points	x	1
	10 + km	8 points	x	1
<hr/>				
IIIC. Presence of Other Natural Areas / Sites in Quadrant:				
	16 + sites	2 points	x	1
	11 - 15 sites	4 points	x	1
	6 - 10 sites	6 points	x	1
	0 - 5 sites	8 points	x	1
<hr/>				
TOTAL SCORE FOR GEOGRAPHICAL LOCATION (IIIA + IIIB + IIIC + IIID)				_____

IV. ECOLOGICAL UNIQUENESS (REPRESENTIVITY)

IVA. Occurrence / Presence of Habitat Type Within the Quadrant:				
	Common	2 points	x	1
	Uncommon	8 points	x	1
	Rare	16 points	x	1
<hr/>				
IVB. Occurrence / Presence of Habitat Type in Other Conserved Areas Within City:				
	Well Represented	2 points	x	1
	Moderately Represented	4 points	x	1
	Under-represented	8 points	x	1
	Not Represented	16 points	x	1
<hr/>				
TOTAL SCORE FOR ECOLOGICAL UNIQUENESS (IVA + IVB)				_____

V. LAND USE PRESSURE

	Points	Weight	Score
VA. Development Horizon			
1 - 2 years	5		
3 - 5 years	4		
6 - 10 years	3		
10+ years	2	0.100	_____
<hr/>			
VB. Existing Plans (Statutory / Non-Statutory, Proposed / Approved)			
Plan of Subdivision	5		
Neighborhood Structure Plan / Outline Plan	4		
Area Structure Plan (ASP)	3		
Other Plans / Planning Docs	2		
None	1	0.085	_____
<hr/>			
VC. Expected Land Use / Development Scenario			
Residential	5		
Commercial	4		
Industrial	3		
Institutional	2		
Open Space	1		
Unknown	1	0.070	_____
<hr/>			
VD. Land Ownership (Type)			
Corporate (Land Developer)	5		
Individual (Land Developer)	4		
Corporate - Other	3		
Individual - Other	2		
Other	1	0.050	_____
<hr/>			
VE. Current Accessibility			
To high density urban development	5		
To low density urban development	4		
To vehicular transportation system	3		
To non-vehicular transportation system	2		
Low to none	1	0.500	_____

TOTAL SCORE FOR LAND USE PRESSURE (VA + VB + VC + VD + VE)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

APPENDIX C

DESCRIPTIONS OF

CANDIDATE CONSERVATION AREAS

SITE DESCRIPTIONS OF CANDIDATE CONSERVATION AREAS

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NE 8	33
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Northwest Edmonton

NW 7035	88
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NW 288	106
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NW 7010	111
NW 7024	113
NW 7018	115
NW 339	117
NW 139	119
NW 384	121
NW 7021	123
NW 65	125
NW 7004	127
NW 7011	129
NW 7090	131
NW 7060	133
NW 7016	135

NAMAO WETLAND (NE 24)

Size: 11.45 ha

Site Location:

Northwest of the corner of 227 Avenue and 50 Street
[SE 26 T 54 R 24 W4M]

Site Description:

- Relatively healthy ephemeral wetland complex (relatively dry);
- Vegetation consists primarily of willow/sedge communities;
- Possible native grasses on dry upland portions within wetland area;
- Vegetation developed on poorly drained Orthic Gleysols;
- Soils developed on very gently undulating glaciolacustrine and lacustrine material with textures ranging from clay loams to clay;
- Ten bird species observed during survey in 1993, including mallard, American crow, American robin, vesper sparrow, Lincoln's sparrow, savannah sparrow, clay-colored sparrow, red-winged blackbird, brown-headed cowbird, and red-tailed hawk;
- Some attempts have been made to convert land into cultivation;
- Although high diversity of willow species, site is not used by deer because of openness of site and surrounding land uses including Namao Air Force Base;
- Wetland probably provides temporary habitat for staging waterfowl and some brood-rearing habitat potential.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

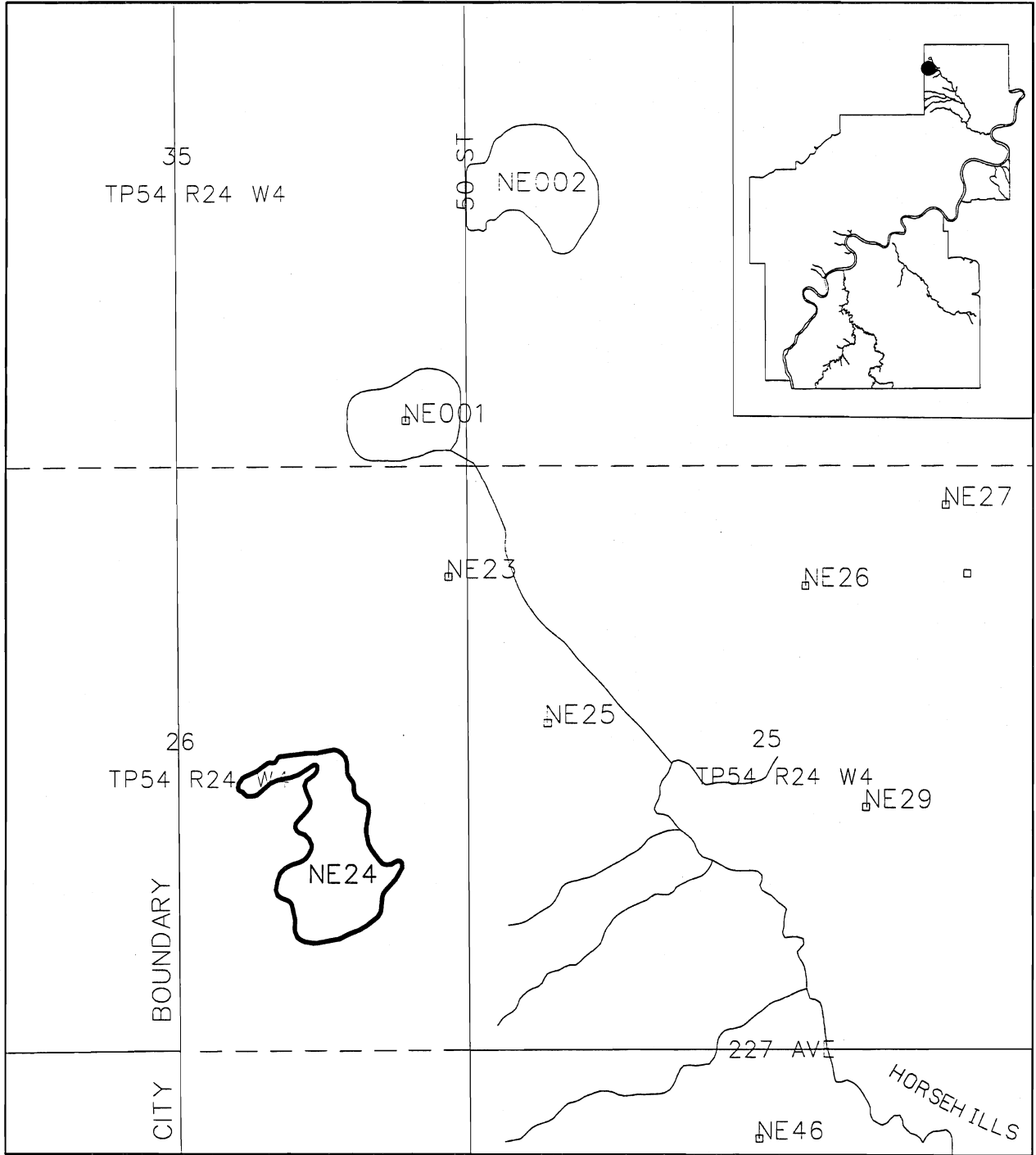
- diversity of willow species
- provides some waterfowl habitat
- presence of native grass species
- has moderate local hydrological function

Existing Land Use / Management:

- Surrounding land uses solely agricultural hayfields, but is cultivated right to edge of site;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	71.4	Conservation Value	115.4
Ecological Integrity	22	Conservation Rank (out of 62)	47
Geographical Location	10	Risk Factor	0.51
Ecological Uniqueness	12	Overall Score	115.4
		Overall Rank (out of 62)	51

Site Map - NE 24



NE 8091

Size: 13.97 ha

Site Location:

0.8 km north of 167 Avenue between 50 Street and 66 Street
[N ½ Sec 2 TP54 R24 W4M]

Site Description:

- Remnant woodlot parcel that extends for nearly 1.6 km between 50 Street and 66 Street;
- Stand varies in age with younger even-aged aspen 8-12 m occurring in the west and older, more mature aspen-balsam poplar occurring within the eastern portion;
- Aspen and balsam poplar to 18 m along eastern edge;
- Diversity of understory increases from west to east with age of stand;
- Approximately 50 – 75 m in width;
- The narrow, continuous nature of this stand provides a critical corridor for wildlife movement within northern Edmonton. It provides habitat for local wildlife species such as white-tailed deer and songbirds;

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

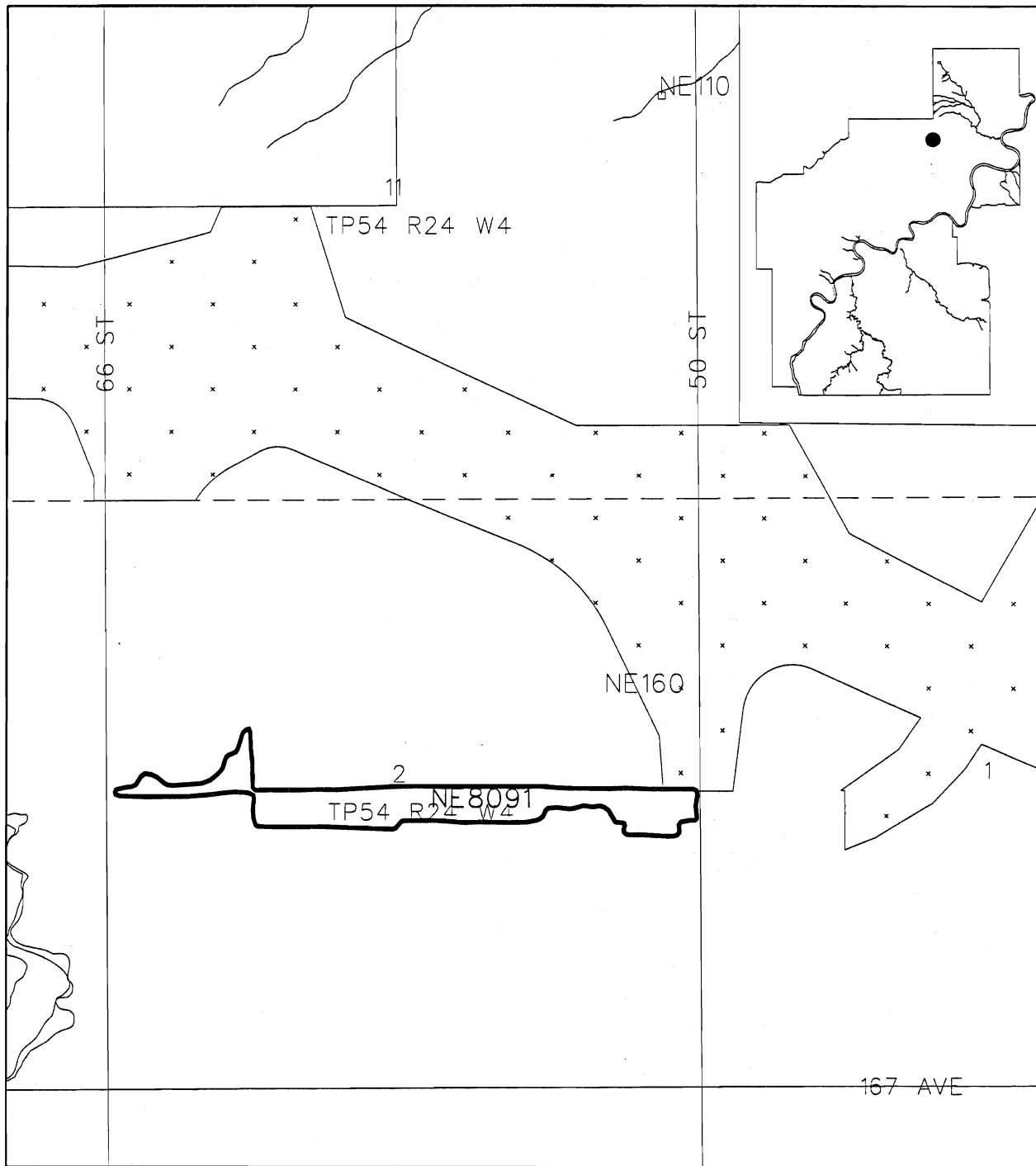
- good example of aspen and aspen-balsam poplar communities
- provides habitat for local wildlife
- provides a critical linking function to other ESA/SNAs within northeast Edmonton

Existing Land Use / Management:

- Surrounded land uses include cultivated fields.
- Pilot Sound Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	42.8	Conservation Value	87.8
Ecological Integrity	29	Conservation Rank (out of 62)	60
Geographical Location	12	Risk Factor	1.17
Ecological Uniqueness	4	Overall Score	102.7
		Overall Rank (out of 62)	56

Site Map - NE 8091



HORSEHILLS WOODLAND (NE 8011)

Size: 6.58 ha

Site Location:

0.8 km south of 195 Avenue NE on 9th Street NE; extends south to include woodland on south side of CNR tracks
[NE 9 T 54 23 W4M]

Site Description:

- Complex of a large, mature balsam poplar-aspen stand, a small willow/sedge wetland, improved pasture and a small area of native grass;
- Balsam poplar-aspen stand characterised by relatively open overstories giving rise to extremely lush and well-developed tall shrub layer (7-8 m tall) – tall shrubs include red-osier dogwood, saskatoon, cherry, gooseberry, snowberry, rose, elderberry, willow, low-bush cranberry and honeysuckle;
- Ephemeral wetland has water on a season basis;
- Moderately well drained Orthic Black Chernozems developed on very gently undulating glaciolacustrine plain; loamy sands over sandy loams; wetland areas characterised by Orthic Humic Gleysols;
- White-tailed deer, moose and fox commonly observed by local residents;
- Heavy use by ungulates indicated by extensive browsing on most shrub species within stands and extensive game trails;
- Diversity of communities, especially understory species gives rise to “critical” habitat for ungulates and avian resources;
- 17 species of birds noted including western wood-pewee, pileated woodpecker, flycatchers and American goldfinch, red-tailed hawk, alder and least flycatchers, blue jay, black-capped chickadee, house wren, American robin, warbling vireo, yellow warbler, common yellowthroat, vesper and brown-headed cowbird, and common grackle;

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

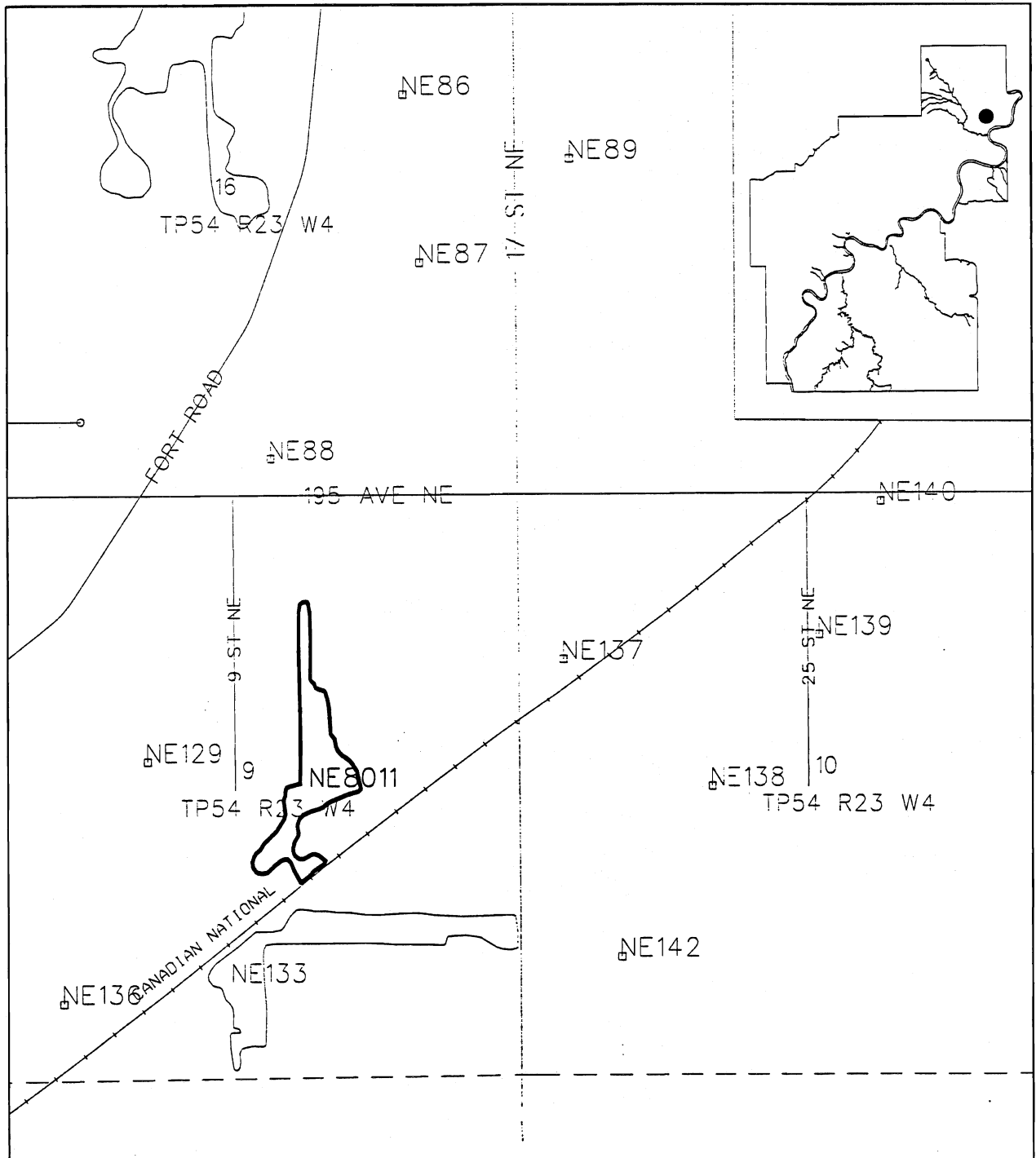
- good example of mature balsam poplar stand with excellent shrub diversity
- provides linkages between other ESA/SNAs within tablelands

Existing Land Use / Management:

- Surrounded land uses include country residential, cultivated fields and improved pasture and a railway right-of-way.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	81.5	Conservation Value	127.5
Ecological Integrity	30	Conservation Rank (out of 62)	32
Geographical Location	10	Risk Factor	0.66
Ecological Uniqueness	6	Overall Score	127.5
		Overall Rank (out of 62)	42

Site Map - NE 8011



NORTH NAMAO WETLAND (NE 2)

Size: 8.50 ha

Site Location:

2.4 km north of 227 Avenue on east side of 50 Street
[W1/2 36 TP54 R24 W4M]

Site Description:

- Large, relatively healthy wetland complex composed mainly of sedges and, to a much lesser extent, willows and cattails;
- Most willow appears to be dead -- this may be result of changes to local water tables;
- Wetland appears to be ephemeral in nature;
- Forms headwater area of Horsehills Creek drainage.
- Poorly drained Orthic Gleysols and Orthic Humic Gleysols have developed on nearly level to depressional lacustrine materials;
- Clay loams over clay;
- Water levels at or very near the surface for a significant portion of the year;
- Site appears to have already been negatively impacted by the construction of 50 Street, which has split this once larger wetland into two distinctive units, the western portion of which is considerably drier;
- Unique combination of sedges, grasses, cattails and willows may provide waterfowl nesting habitat;
- Red-winged blackbirds frequent the site.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance:

Local

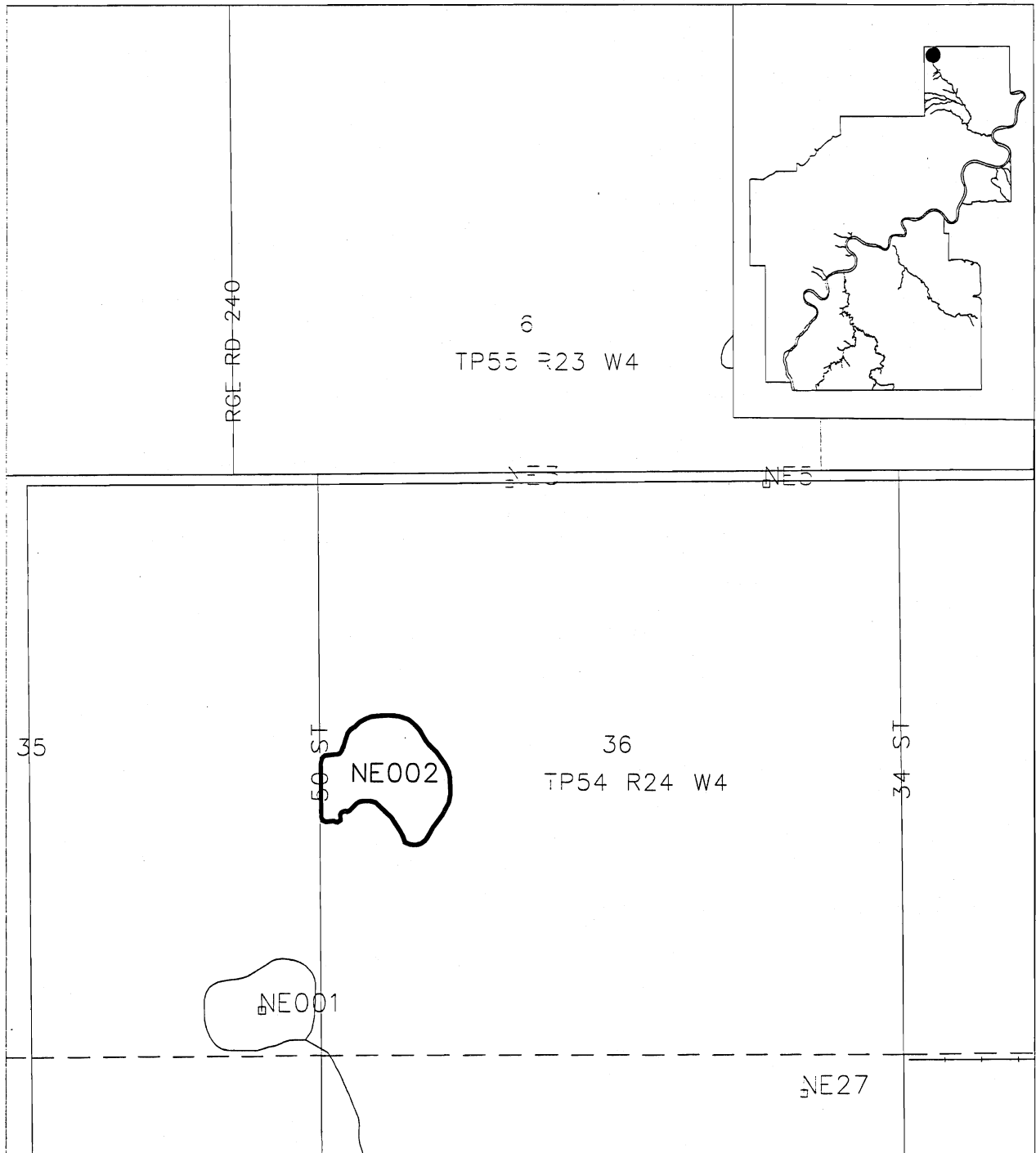
- example of sedge meadow
- ephemeral wetland
- provides critical function in maintaining or balancing local hydrological regime
- groundwater discharge area

Existing Land Use / Management:

- Surrounding land uses include roads (50 Street) and cultivated fields;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	85.7	Conservation Value	134.7
Ecological Integrity	35	Conservation Rank (out of 62)	23
Geographical Location	10	Risk Factor	0.61
Ecological Uniqueness	4	Overall Score	134.7
		Overall Rank (out of 62)	35

Site Map - NE 2



153 AVENUE - MERIDIAN STREET WOODLAND (NE 221)

Size: 5.30 ha

Site Location:

Corner of 153 Avenue and Meridian Street
[SE32, T 53 R 23 W4M]

Site Description:

- Upland deciduous forest and wet meadow complex;
- Upland forests composed of aspen with a dense Manitoba maple understorey and aspen-balsam poplar with dense red-osier dogwood thickets;
- Interior wet meadow consists mainly of sedges and grasses such as rough hair grass and reed grass;
- Low shrub and forb layers poorly developed due to dense Manitoba maple and dogwood thickets;
- Upland forest developed on moderately well drained Orthic Black Chernozems, while meadows developed on poorly drained Orthic Humic Gleysols;
- Nearly level to very gently undulating glaciolacustrine plain;
- Loamy sands overlying sandy clay loams;
- Compositional diversity of flora provides unique habitat conditions for white-tailed deer (extensive deer tracks throughout site as well as heavy browsing on maple, dogwood and willow);
- In conjunction with sites immediately to the north and south (i.e., NE 8005), provides critical links between upland sites and the adjacent North Saskatchewan River Valley and Ravine system; Presence of oak fern is indicative of moist, rich conditions.

Current Condition: Essentially unchanged since 1993 inventory.

Level of Significance: Local

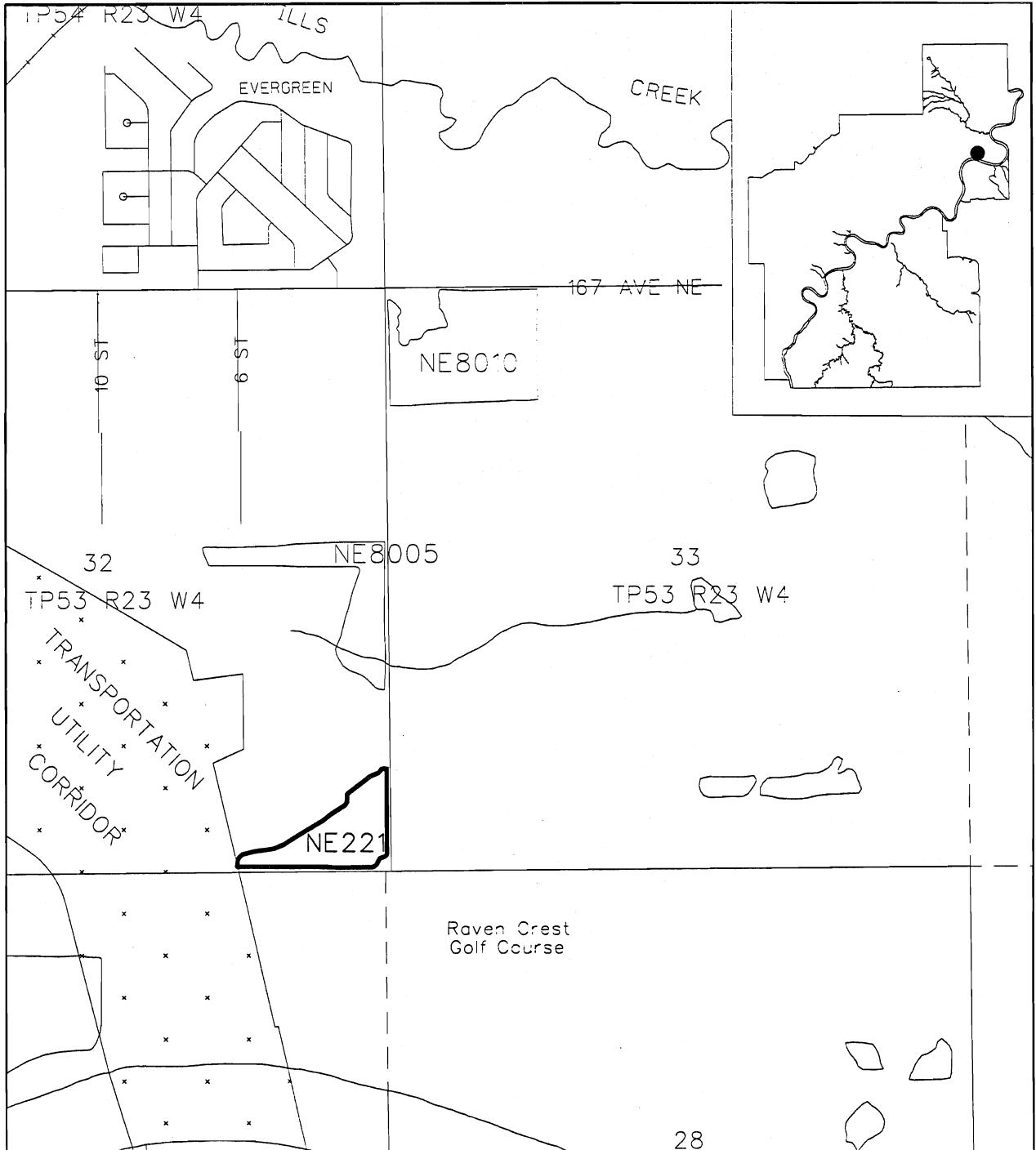
- good example of upland deciduous stand with interior wet meadow
- significant plant species
- provides habitat for local ungulates
- provides links to other natural areas identified within table lands

Existing Land Use / Management:

- Site bordered by cultivated fields and roadways (153 Avenue and Meridian Street);
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	48.8	Conservation Value	109.8
Ecological Integrity	41	Conservation Rank (out of 62)	51
Geographical Location	8	Risk Factor	0.61
Ecological Uniqueness	12	Overall Score	109.8
		Overall Rank (out of 62)	55

Site Map - NE 221



MERIDIAN STREET CREEK WOODLAND (NE 8005)

Size: 6.35 ha

Site Location:

0.8 km north of 153 Avenue on Meridian Street
[NE 32, T 53 R 23 W4M]

Site Description:

- Headwater area for an unnamed stream that runs east towards the North Saskatchewan River Valley and Ravine System;
- Diverse vegetation composed of pioneer shrublands, aspen and aspen-balsam poplar communities; Pioneer shrubland community of primarily rose and snowberry and, to a lesser extent, elderberry and silverberry, has developed on old pasture land;
- Other areas consist primarily of aspen stands with dense grassy understories of brome and sweet grass and aspen-balsam poplar stands with understories of red-osier dogwood.
- Vegetation communities have developed on well drained Orthic Black Chernozems;
- Parent materials consist of level to very gently undulating glaciolacustrine loams and sandy loams overlying sandy clay loams;
- Provides a physical "stepping stone" habitat patch to the North Saskatchewan River Valley and Ravine System;
- Extensive evidence of deer use, including "hedging" of palatable shrub species (saskatoon, willow, etc.), pellets and numerous "beds";
- Nine bird species observed at site including northern orioles, Lincoln's and clay-colored sparrows, least flycatcher, house wren, American robin, warbling and red-eyed vireos, and yellow warbler.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

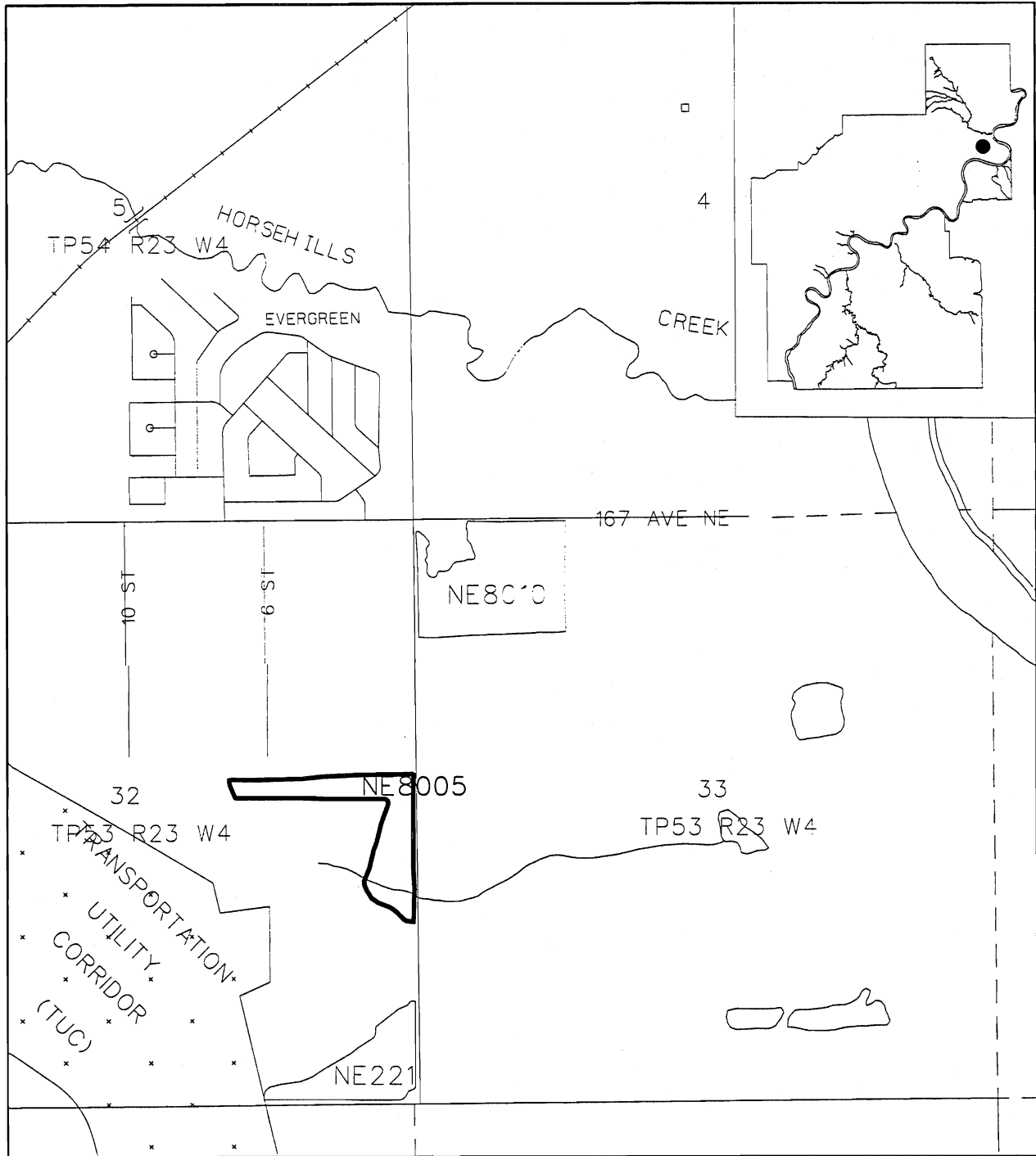
- diverse deciduous vegetation communities
- provides habitat for local wildlife species
- provides critical linking function with adjacent sites (NE 221) to the North Saskatchewan River Valley

Existing Land Use / Management:

- Adjacent land uses include roadways (Meridian Street) and pastureland;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	70.7	Conservation Value	127.7
Ecological Integrity	45	Conservation Rank (out of 62)	31
Geographical Location	8	Risk Factor	0.61
Ecological Uniqueness	4	Overall Score	127.7
		Overall Rank (out of 62)	41

Site Map - NE 8005



CELANESE CANADA WOODLAND (NE 8006)

Size: 6.90 ha

Site Location:

1 km north of Yellowhead Trail, west of Meridian Street within Celanese Canada property
[NE 17 T 53 R 23 W4M]

Site Description:

- Healthy, undisturbed aspen-balsam poplar stand within the Celanese Canada property;
- Well-developed understorey of high-bush cranberry, low-bush cranberry, red-osier dogwood and dewberry (excellent example of vertical structure within a stand);
- Some snags around perimeter;
- Vegetation developed on moderately well drained Black Solodized Solonetz;
- Soils developed on nearly level to very gently undulating glaciolacustrine materials;
- Loams over sandy clay loams;
- As of 1993 Inventory, a year-round population of 10-12 white-tailed deer inhabited the stand;
- Dogwood and cranberry "hedged" by overbrowsing;
- Site does not appear to be negatively impacted by the surrounding industrial land.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

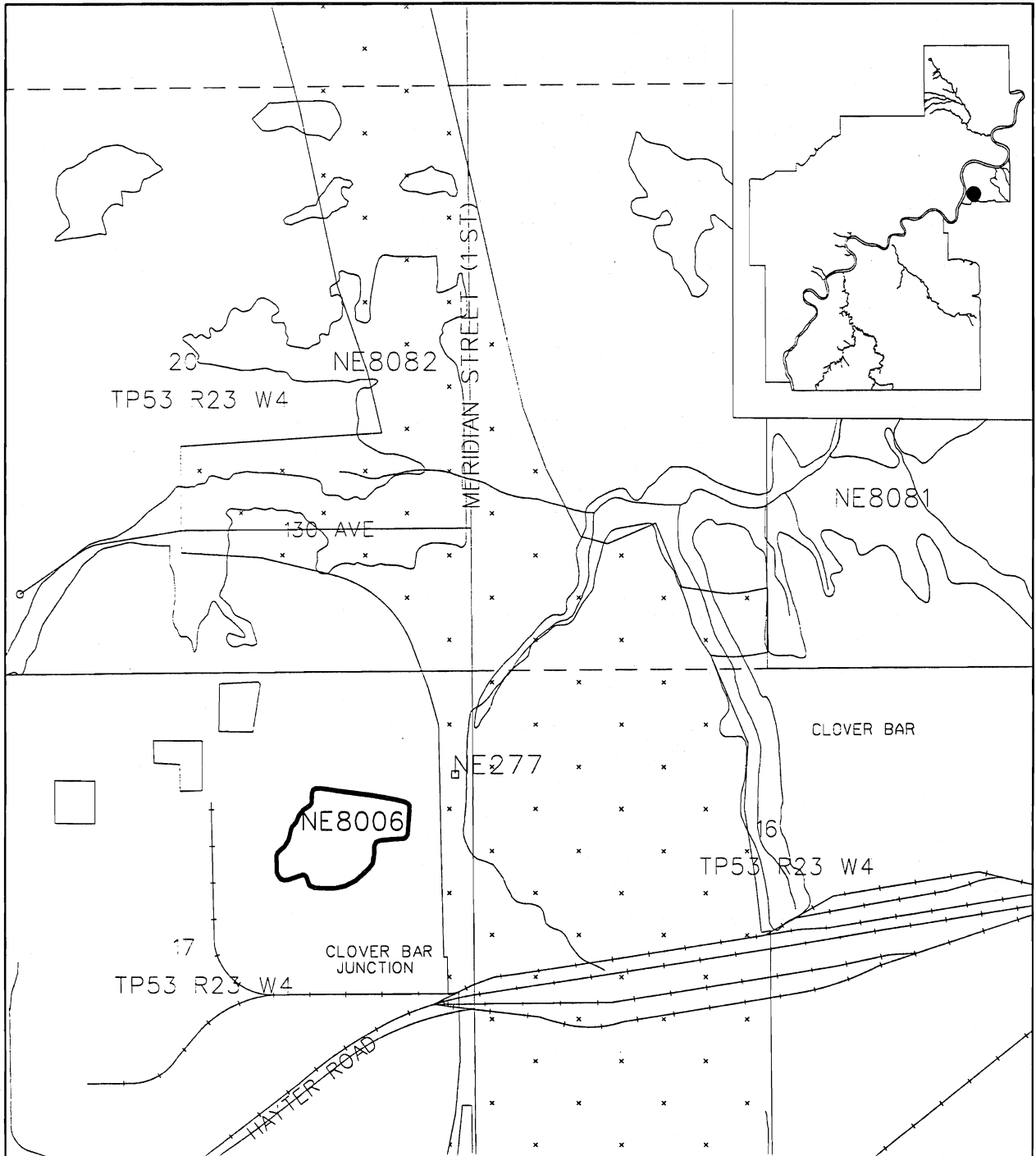
- good example of mature aspen-balsam poplar community with excellent structure
- provides habitat for local wildlife

Existing Land Use / Management:

- Celanese Canada is maintaining site for wildlife habitat;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	42.8	Conservation Value	99.8
Ecological Integrity	43	Conservation Rank (out of 62)	55
Geographical Location	10	Risk Factor	0.81
Ecological Uniqueness	4	Overall Score	99.8
		Overall Rank (out of 62)	57

Site Map - NE 8006



NE 52

Size: 4.05 ha

Site Location:

2 km north of Manning Freeway on 18 Street
[SW 20 T 54 R 23 W4M]

Site Description:

- Healthy, undisturbed aspen-balsam poplar stand;
- Remnant stand has a very "boreal" appearance with a number of significant snags and considerable deadfall;
- Diverse understorey of red-osier dogwood with lesser amounts of rose, ash, saskatoon, low-bush cranberry, snowberry, Manitoba maple, choke cherry, pin cherry, and gooseberry;
- Vegetation developed on well drained Dark Gray Luvisols;
- Soils developed on gently rolling morainal materials;
- Textures vary from loamy sand and sand overlying sandy clay loam;
- Possible kame moraine;
- Lake to northeast of site is within the North Saskatchewan River Valley and Ravine System and is considered important for waterfowl habitat;
- Site is the highest point in northeast Edmonton and offers a tremendous view point;
- Because the site is adjacent to the North Saskatchewan River Valley and Ravine System, it provides a critical linking function, especially for movement of wildlife between the lake to the northeast and the Bocock Woodland.

Current Condition: Essentially unchanged since 1993.

Level of Significance: Local

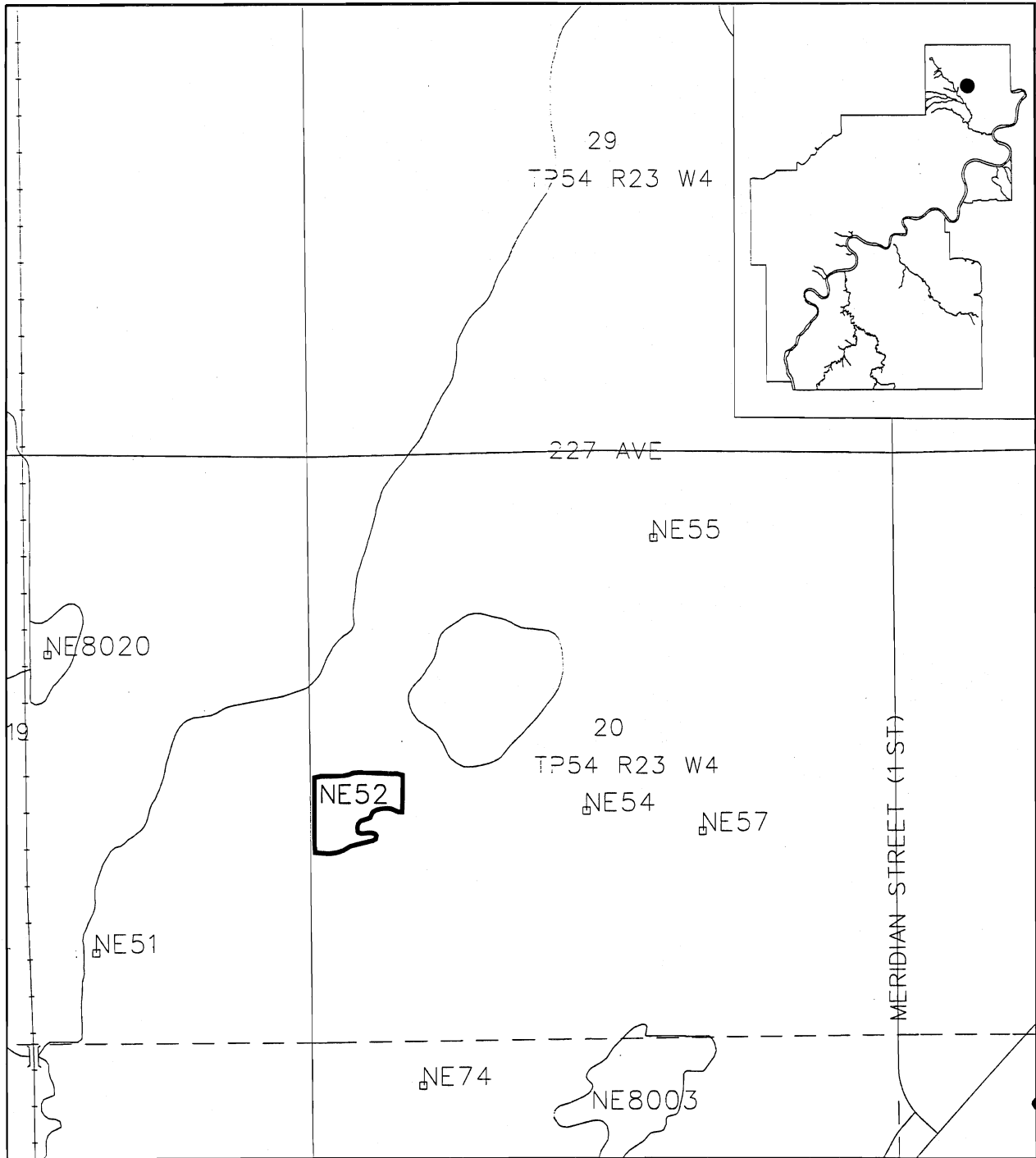
- good example of mature aspen-balsam poplar community
- significant landform feature
- link to North Saskatchewan River Valley and Ravine System
- significant visual corridors from site

Existing Land Use / Management:

- Adjacent land is largely agricultural field, but also includes a residence;
- Landowner (T. Bocock) is very environmentally conscious and has expressed his desire to retain the site as a natural area;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	52.8	Conservation Value	117.8
Ecological Integrity	41	Conservation Rank (out of 62)	42
Geographical Location	8	Risk Factor	0.61
Ecological Uniqueness	16	Overall Score	117.8
		Overall Rank (out of 62)	48

Site Map - NE 52



HORSEHILLS COMPLEX (NE 8003)

Size: 7.4 ha

Site Location:

0.8 km north of Horsehills Rd between 18 Street and Meridian Street
[NE 17 T 54 R 23 W4M]

Site Description:

- Upland - wetland complex surrounded by cultivated fields and large hayfield in centre of site;
- Wetland areas consist primarily of willow/sedge-grass while upland stands are comprised of balsam poplar-aspens;
- Well-developed understory of saskatoon and choke cherry with balsam poplar to 20 m in height;
- Soils consist of poorly drained Orthic Humic Gleysols in wetland areas and moderately well to imperfectly drained Orthic Black Chernozems under deciduous stands;
- Soils developed on nearly level to very gently undulating glaciolacustrine materials;
- Textures vary from loamy sands and sandy loams over sandy clay loams and sandy clays.
- Ephemeral wetland is likely dry most years;
- May provide temporary habitat for waterfowl in the spring.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

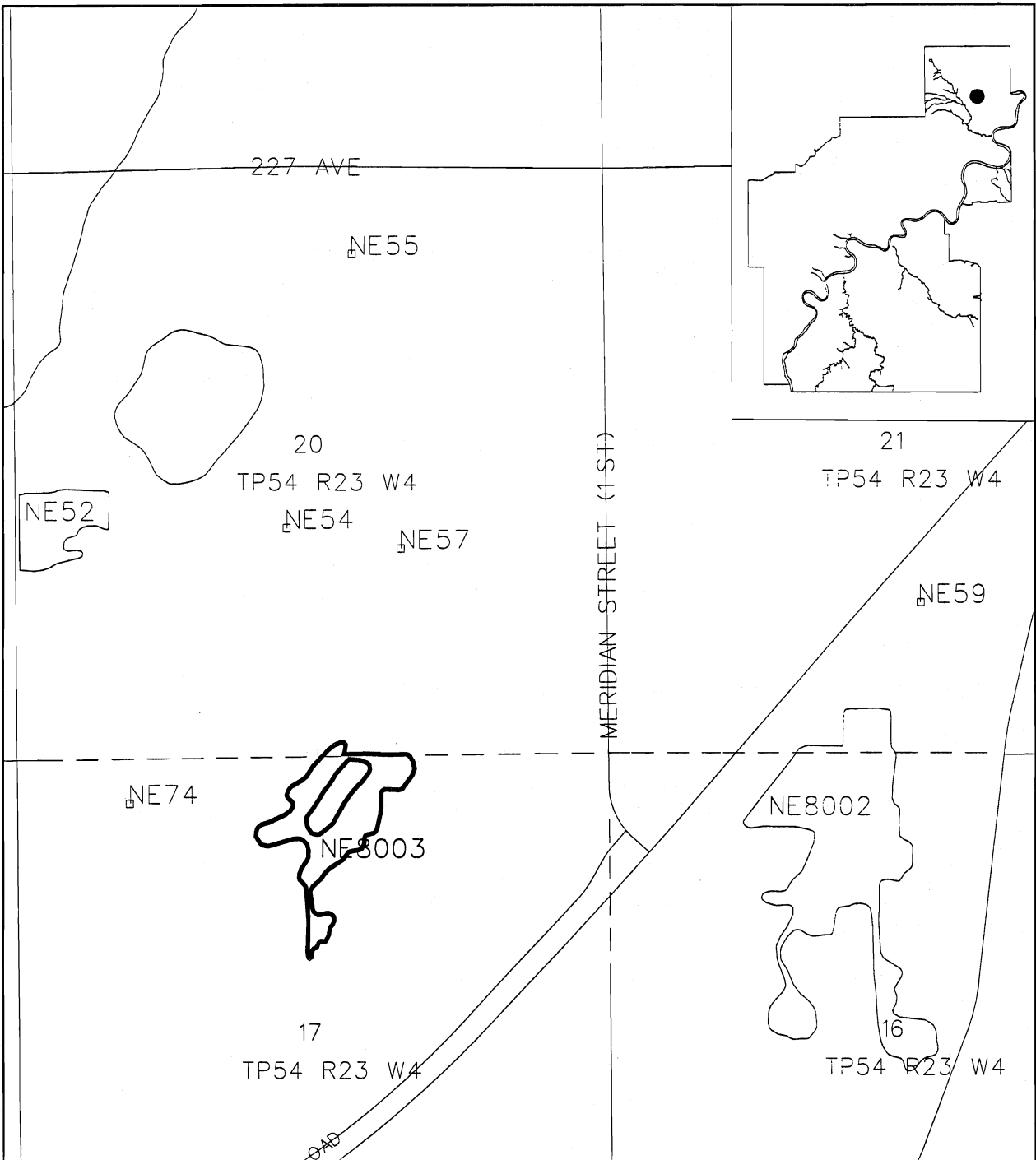
- good example of two vegetation communities including the willow/sedge and aspen-balsam poplar types
- potential waterfowl nesting habitat

Existing Land Use / Management:

- Large tract of hayfield in centre of site takes up majority of the site;
- Surrounding land uses are agricultural fields on all sides;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	70.4	Conservation Value	113.4
Ecological Integrity	19	Conservation Rank (out of 62)	49
Geographical Location	8	Risk Factor	0.51
Ecological Uniqueness	16	Overall Score	113.4
		Overall Rank (out of 62)	53

Site Map - NE 8003



HORSEHILLS WOODLAND (NE 8011)

Size: 6.58 ha

Site Location:

0.8 km south of 195 Avenue NE on 9th Street NE; extends south to include woodland on south side of CNR tracks
[NE 9 T 54 R 23 W4M]

Site Description:

- Complex of a large, mature balsam poplar-aspen stand, a small willow/sedge wetland, improved pasture and a small area of native grass;
- Balsam poplar-aspen stand characterized by relatively open overstories giving rise to extremely lush and well-developed tall shrub layer (7-8 m tall), including red-osier dogwood, saskatoon, cherry, gooseberry, snowberry, rose, elderberry, willow, low-bush cranberry and honeysuckle;
- Rather "decadent" appearance to deciduous stands;
- Ephemeral wetland has water on a seasonal basis;
- Moderately well drained Orthic Black Chernozems developed on very gently undulating glaciolacustrine plain;
- Loamy sand over sandy loams;
- Wetland areas characterized by poorly drained Orthic Humic Gleysols;
- White-tailed deer, moose and fox commonly observed by local residents;
- Heavy use by ungulates indicated by extensive browsing on most shrub species within stands and extensive game trails;
- 17 species of birds noted including western wood-pewee, pileated woodpecker, American goldfinch, red-tailed hawk, alder and least flycatchers, blue jay, black-capped chickadee, house wren, American robin, warbling vireo, yellow warbler, common yellowthroat, vesper and white-throated sparrows, northern oriole, brown-headed cowbird, and common grackle.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

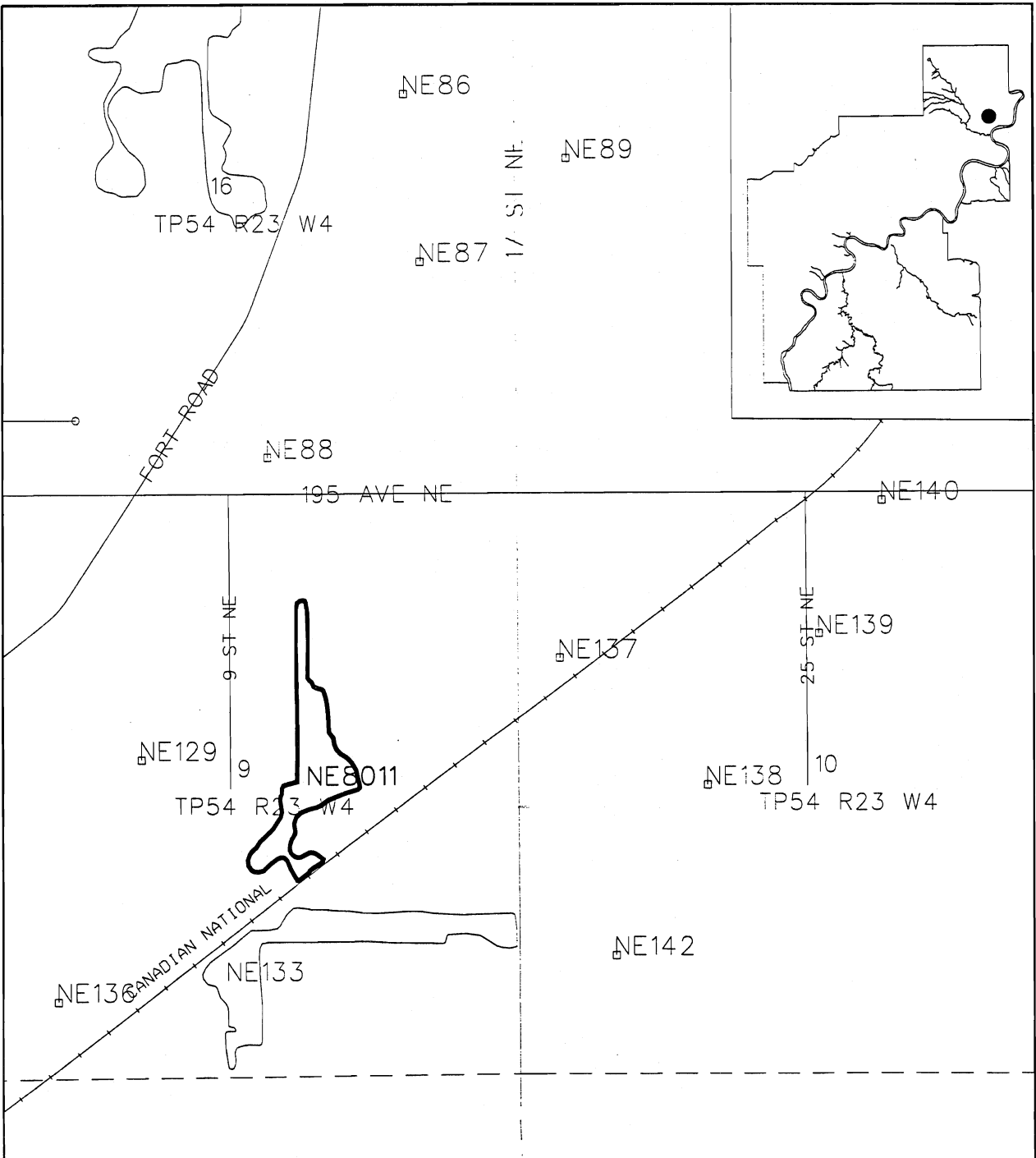
- good example of mature balsam poplar stand with excellent shrub diversity
- provides habitat for local ungulates and birds
- provides linkages between natural areas within tablelands

Existing Land Use / Management:

- Surrounding land uses include country residential, cultivated fields, improved pasture, and a railway right-of-way;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	81.5	Conservation Value	127.5
Ecological Integrity	30	Conservation Rank (out of 62)	32
Geographical Location	10	Risk Factor	0.66
Ecological Uniqueness	6	Overall Score	127.5
		Overall Rank (out of 62)	42

Site Map - NE 8011



CNR - 17th STREET WOODLAND (NE 133)

Size: 8.95 ha

Site Location:

1.0 km south of 195 Ave NE between CNR line and 17th Street NE
[SE 9 TP54 R23 W4M]

Site Description:

- Mature balsam poplar-aspen stand with well-developed shrub understorey of red-osier dogwood, rose, saskatoon, pin cherry, low-bush cranberry, bracted honeysuckle, gooseberry, willow and snowberry;
- Decadent appearance to overstorey;
- Poorly developed herb layer due to dense shrub overstorey;
- Moderately well drained Orthic Black Chernozems have developed on very gently undulating glaciolacustrine materials;
- Loams and sandy loams over sandy loam;
- 17 species of birds noted, including western wood-pewee, pileated woodpecker, flycatchers and American goldfinch, red-tailed hawk, alder and least flycatcher, blue jay, black-capped chickadee, house wren, American robin, warbling vireo, yellow warbler, common yellowthroat, vesper and white-throated sparrows, northern oriole, brown-headed cowbird, and common grackle.
- Long, linear shape results in high edge:area ratio and poor buffering capacity.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

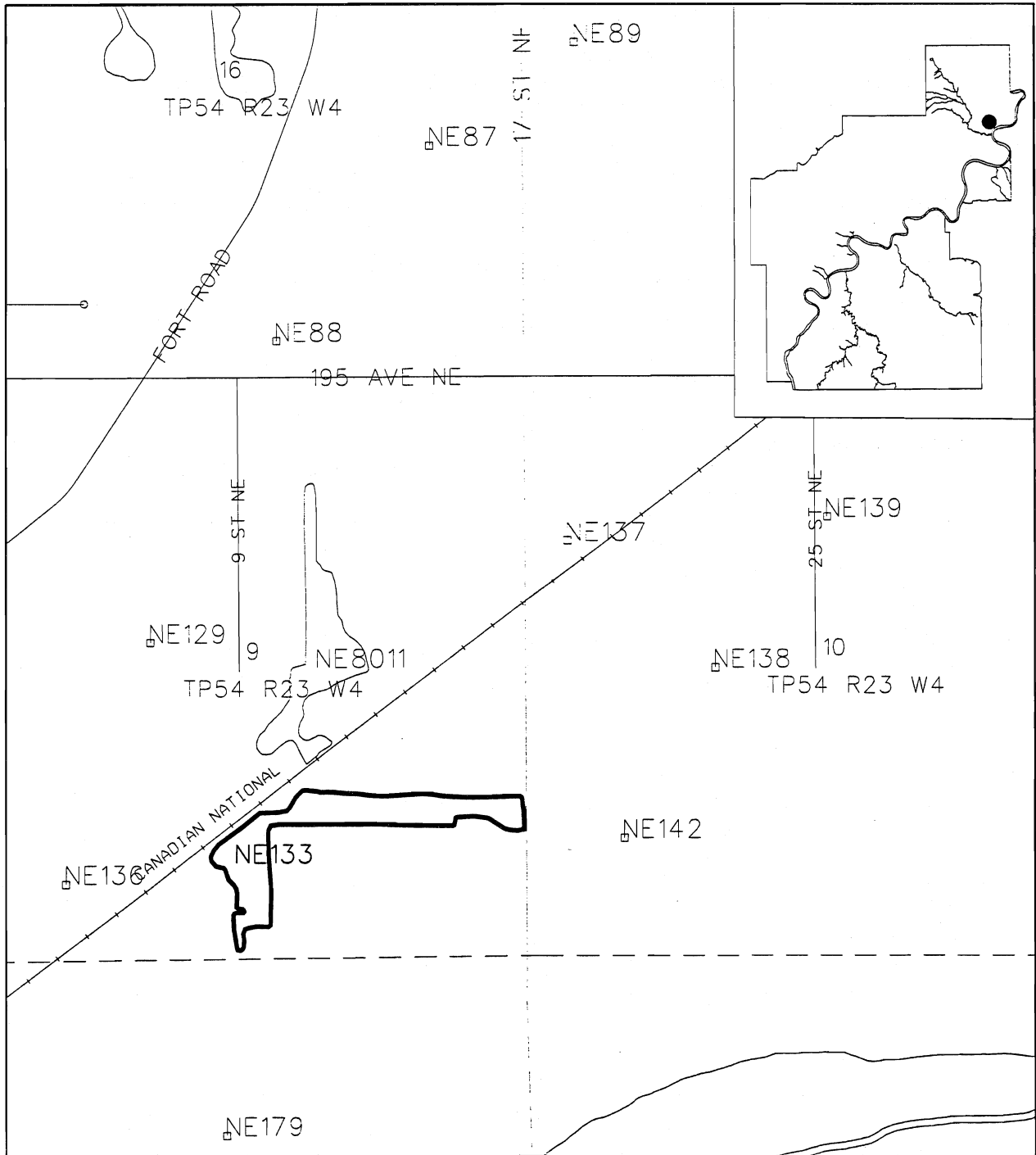
- good example of mature balsam poplar-aspen stand
- provides habitat for local ungulates and terrestrial bird species
- provides linkage between adjacent natural areas and the North Saskatchewan River Valley

Existing Land Use / Management:

- Surrounding land uses include a railway right-of-way (CNR) and cultivated fields;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	42.8	Conservation Value	88.8
Ecological Integrity	30	Conservation Rank (out of 62)	59
Geographical Location	10	Risk Factor	0.66
Ecological Uniqueness	6	Overall Score	88.8
		Overall Rank (out of 62)	61

Site Map - NE 133



HIGHWAY 37 - MERIDIAN STREET PARKLAND (NE 10)

Size: 18.00 ha

Site Location:

Southwest corner of Highway 37 and Meridian Street
[NE 32 T 54 R 23 W4M]

Site Description:

- Relatively healthy complex of "aspen groves" with intermixed grasslands;
- Grasslands do not appear to be grazed, however, interpretation of 1991 air photos suggests that these grasslands may be periodically grazed or even cut (any grazing appears to be by horses);
- Dense grassy understories found within aspen groves;
- Soils include moderately well drained Orthic Black Chernozems and Black Solodized Solonetz;
- Nearly level to very gently undulating glaciolacustrine materials;
- Loam over clay loam;
- 20 bird species observed during 1993 survey, including hairy woodpecker, western wood-pewee, alder and least flycatchers, Eastern kingbird, magpie, American crow, black-capped chickadee, house wren, European starling, warbling and red-eyed vireos, yellow warbler, vesper, savannah, Lincoln, white-throated and clay-colored sparrows, brown-headed cowbird, and northern oriole;
- Presence of savannah and clay-colored sparrows is due largely to their association with grassland components that occur in this site;
- Extensive browsing on palatable shrub species indicates that the area is used quite heavily by white-tailed deer.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

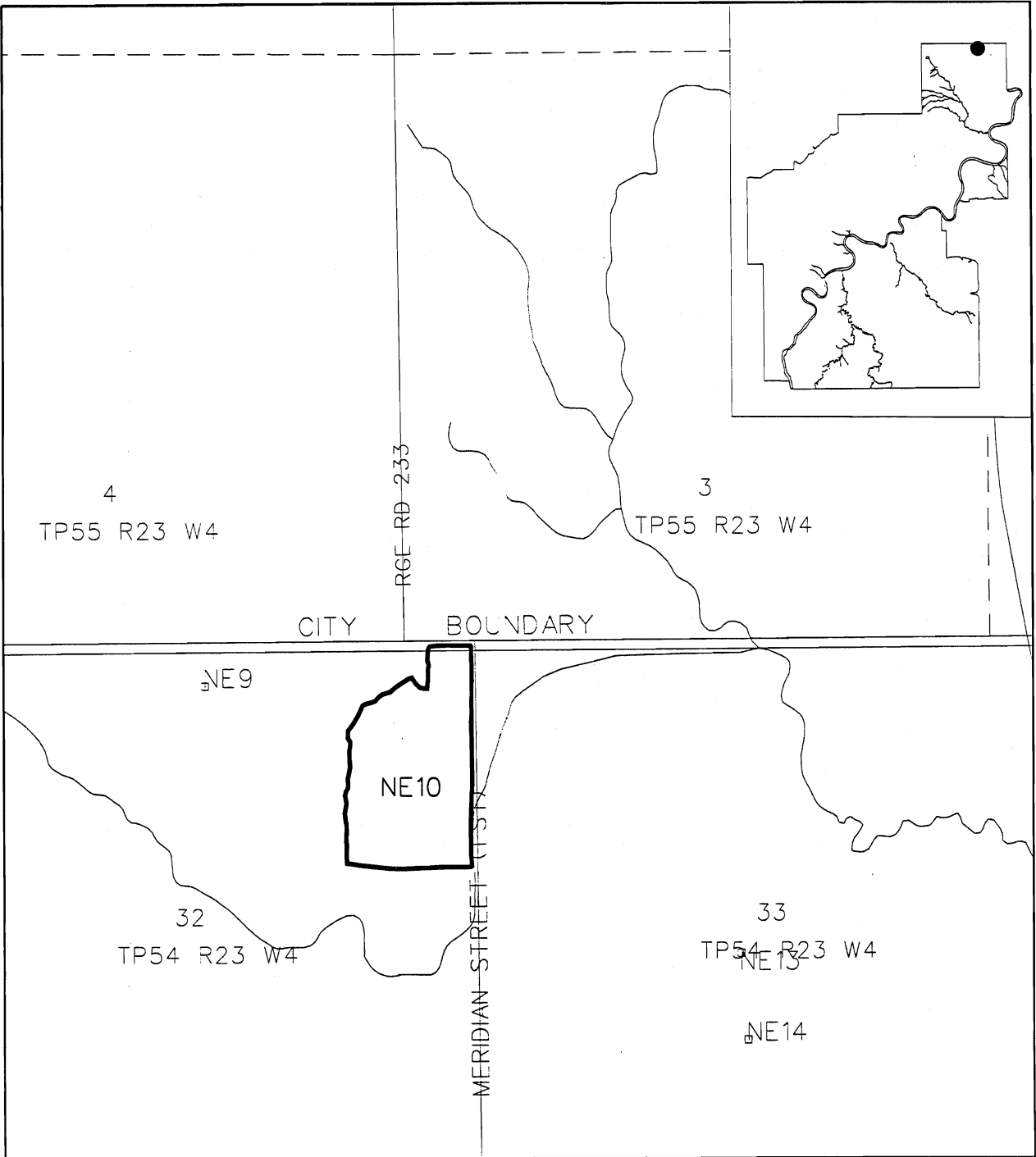
- one of the best examples of remnant aspen parkland ecoregion within city boundary
- provides habitat for local wildlife including white-tailed deer and 20 species of birds

Existing Land Use / Management:

- Surrounding land uses include a major highway and associated roads, cultivated fields, and country residential development;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	69.8	Conservation Value	129.8
Ecological Integrity	34	Conservation Rank (out of 62)	27
Geographical Location	10	Risk Factor	0.56
Ecological Uniqueness	16	Overall Score	129.8
		Overall Rank (out of 62)	39

Site Map - NE 10



LITTLE MOUNTAIN (NE 8093)

Size: 16.12 ha

Site Location:

160TH Avenue and 50th Street
[NW16 TP53 R24 W4M]

Site Description:

- Remnant aspen dominated upland stand adjacent to Little Mountain cemetery; diverse shrub understorey of saskatoon and pin cherry with extensive amounts of Manitoba maple; canopy height varies between 12-15m; largest remnant aspen stand in northeast Edmonton;
- contains typical prairie grasses and wildflowers, including prairie buttercups, early blue violets, slender blue beardtongue, Richardson's alumroot flower, goldenrods, tufted white prairie asters, bergamots, and meadow blazingstars.
- Also includes 3 plant species considered rare in Alberta (Canadian rice grass, Back's sedge, and flat-topped white aster) and numerous uncommon plant species that are found in saline depressions in prairie landscapes, including linear-leaved plantain, saline plantain, gumweed, and Sandberg's bluegrass;
- Numerous large stick nests observed during 1993 inventory at site along with a number of black-billed magpies;
- The isolated nature of this site likely limits its use by ungulates, however other small mammals (coyotes, porcupines, and hares) have been recorded.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

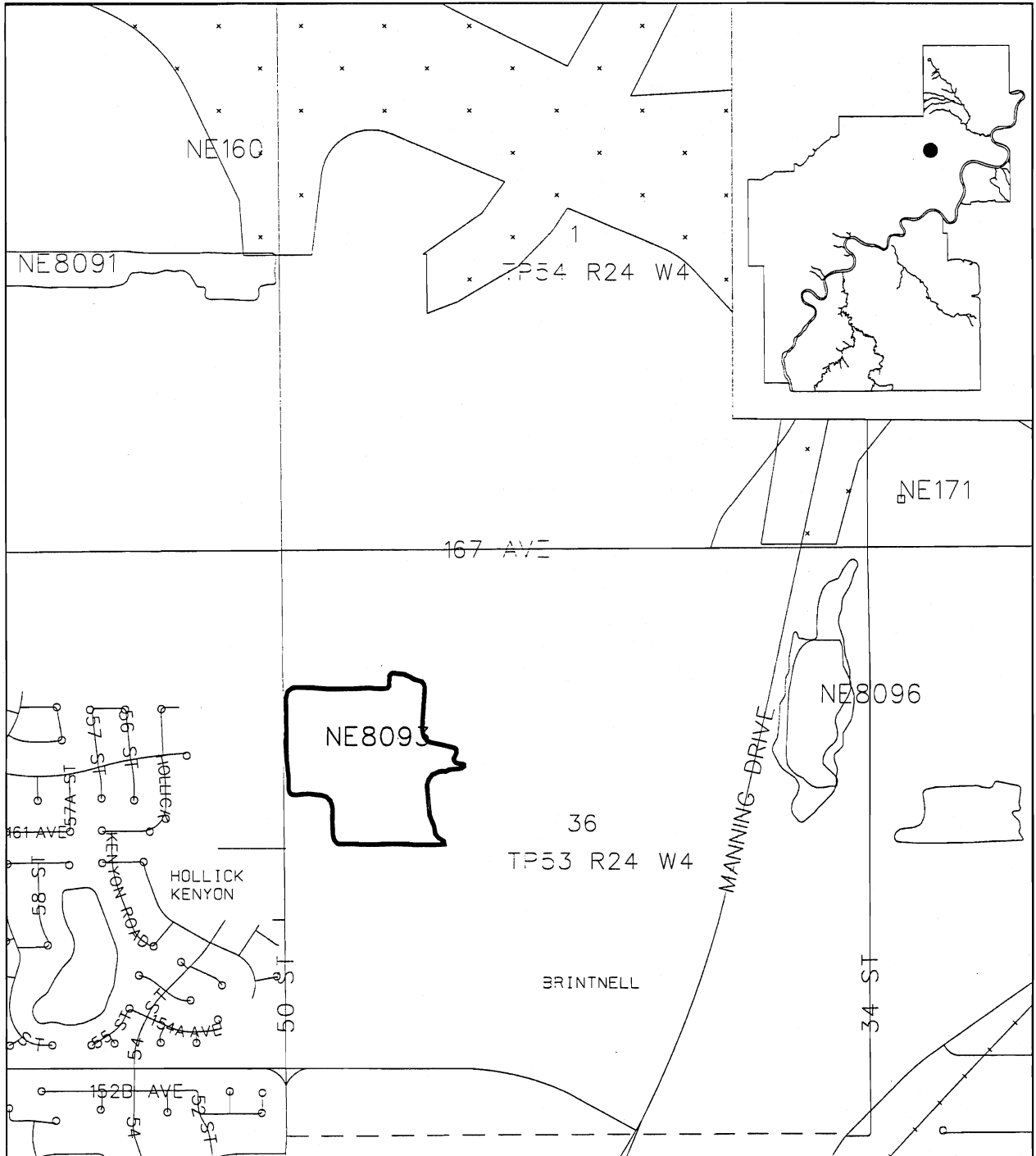
- good remnant example of mature aspen-dominated upland forest;
- numerous rare (Alberta) and uncommon plant species

Existing Land Use / Management:

- Surrounding land uses include Little Mountain Cemetery and cultivated fields.
- Pilot Sound Area Structure Plan and Brintnell Neighborhood Structure Plan in place.
- Considerable attention given to site by Edmonton Natural History Club, who want to conserve site as significant remnant aspen parkland habitat.
- Land swap with owner (Brintnell Developments) recently agreed to with City of Edmonton.

SITE RATING AND RANK			
Biophysical Features	80.2	Conservation Value	162.2
Ecological Integrity	40	Conservation Rank (out of 62)	8
Geographical Location	10	Risk Factor	1.24
Ecological Uniqueness	32	Overall Score	201.1
		Overall Rank (out of 62)	5

Site Map - NE 8093



EVERGREEN WETLAND COMPLEX (NE 8097)

Size: 18.00 ha

Site Location:

Situated between 34 Street and Fort Road, 0.8 km north of 153 Avenue
[NW 33 TP53 R23 W4M]

Site Description:

- Mature aspen-balsam poplar woodland with remnant dugout in centre; poplar and aspen to 15 m; diverse shrub understorey of red-osier dogwood, bracted honeysuckle, rose, aspen, and snowberry;
- Dugout provides year-round habitat for beaver, beaver lodges in banks; most aspen and balsam poplar within 5.10m of dugout have been cut by beaver resulting in heavy cover of regenerating aspen and fallen trees;
- Red-osier dogwood has been heavily browsed by white-tailed deer; numerous stick nests; black-capped chickadees and black-billed magpies observed during 1993 inventory.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

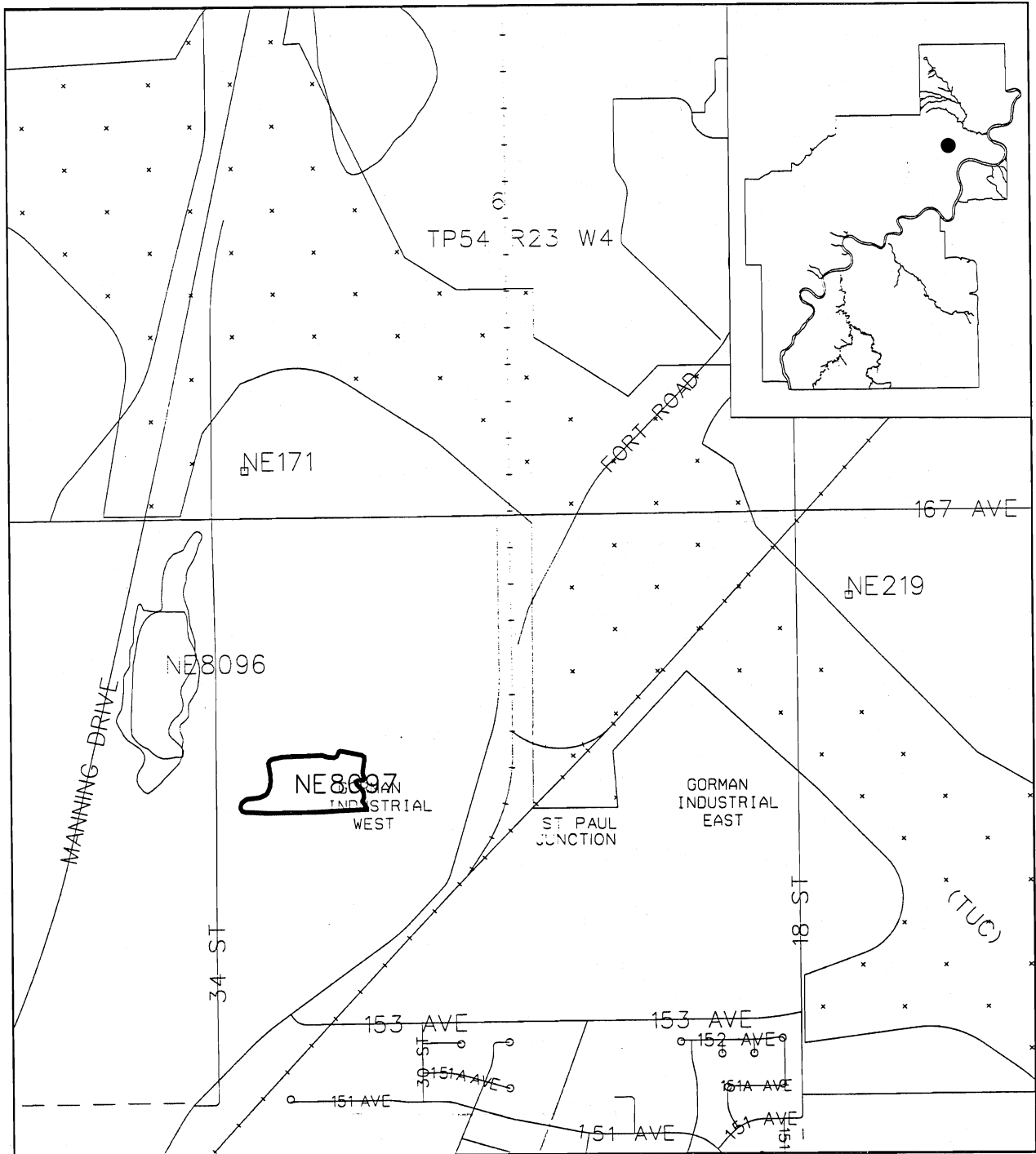
- provides habitat for local wildlife, including beaver, white-tailed deer and a number of songbirds

Existing Land Use / Management:

- Surrounding land uses include the Evergreen Cemetery, a major transmission line to the south and market gardens to the north. The dugout in the center of the site appears to be used for irrigation purposes.
- Pilot Sound Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	78.8	Conservation Value	123.8
Ecological Integrity	23	Conservation Rank (out of 62)	35
Geographical Location	10	Risk Factor	1.17
Ecological Uniqueness	12	Overall Score	144.8
		Overall Rank (out of 62)	25

Site Map - NE 8097



MANNING FREEWAY – FORT ROAD WOODLAND (NE 8002)

Size: 21.31 ha

Site Location:

Between the Manning Freeway and Fort Road west of 211 Avenue and Fort Road
[NE 16 T 54 R 23 W4M]

Site Description:

- Complex area composed mainly of upland deciduous forest with several small wetlands, some of which are permanent in nature; upland communities include balsam poplar / red-osier dogwood and aspen-balsam poplar / red-osier dogwood-saskatoon / wild sarsaparilla;
- Willow / sedge wetlands; open water wetlands have a cattail / willow fringe.
- Upland communities have developed on moderately well to imperfectly drained Orthic Black Chernozems derived from glaciolacustrine materials;
- Willow / sedge communities developed on poorly drained Orthic Humic Gleysols; textures vary from loams and sandy loams overlying sandy clay loams; possible marl deposits underlying wetlands; area completely surrounded by agricultural lands;
- Diversity of flora provides exceptional habitat for white-tailed deer; evidence of deer includes tracks and extensive browsing on palatable shrub species, including red-osier dogwood and saskatoon; most of the upland forest consists of young aspen and balsam poplar, however, a portion of the area is composed of decadent balsam poplar;
- A permanent water body provides seasonal habitat for northern shovelers, mallards, and blue-winged teal;
- Twenty-one bird species were noted during the 1993 inventory, including red-tailed hawk, northern oriole, pileated woodpecker, western wood-pewee, eastern phoebe, least flycatcher, magpie, black-capped chickadee, house wren, American robin, warbling vireo, yellow warbler, vesper sparrow, song sparrow, red-winged blackbird, brown-headed cowbird, American goldfinch, and clay-colored sparrow.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

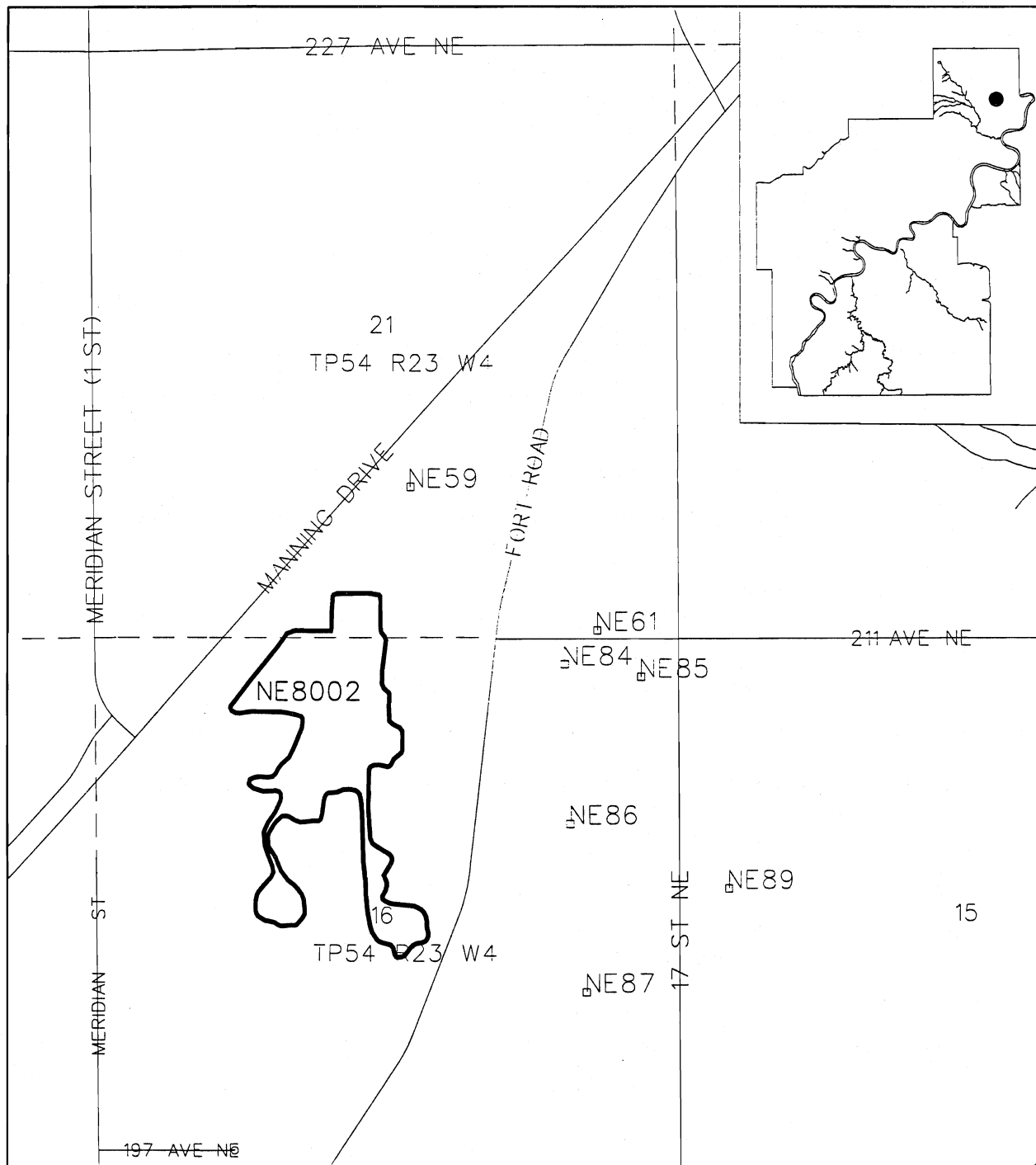
- high plant species diversity
- "old growth" balsam poplar
- permanent open water body
- high habitat diversity
- best continuous "natural area" in northeast Edmonton

Existing Land Use / Management:

- Surrounding areas consist of mainly cultivated and rough pasture.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	81.0	Conservation Value	157.0
Ecological Integrity	50	Conservation Rank (out of 62)	9
Geographical Location	10	Risk Factor	0.51
Ecological Uniqueness	16	Overall Score	157.0
		Overall Rank (out of 62)	18

Site Map - NE 8002



ALBERTA RAILWAY MUSEUM WETLAND (NE 8)

Size: 12.08 ha

Site Location:

1.6 km north of 227 Avenue, 0.8 km east of 34 Street along railway tracks
[SW 31 T 54 R 23 W4M]

Site Description:

- Ephemeral wetland adjacent the Alberta Railway Museum;
- Wetland had been drained regularly during late 1980s and early 1990s in an attempt to provide water for irrigation on surrounding horticultural lands;
- Invasive, weedy species on site include golden dock, rough cinquefoil, prickly annual sow thistle, annual hawk's beard, marsh ragwort, flixweed marsh skullcap and northern willowherb;
- Well-developed ring of decadent willow and balsam poplar;
- Soils include primarily poorly drained Orthic Humic Gleysols, Orthic Gleysols, and, to a lesser extent, Typic Mesisols;
- Thin organic veneers overlying glaciolacustrine materials;
- Silty clay loams and clay loams;
- Previously provided breeding and nesting habitat for Canada geese and a number of duck species and white-tailed deer used the wetland frequently in the past, however there local employees have not observed any such activity for many years now;
- 20 bird species observed at site during 1993 Inventory, including Canada geese, mallard, killdeer, spotted sandpiper, Wilson's phalarope, least flycatcher, tree and barn swallows, magpie, house wren, American robin, warbling vireo, yellow warbler, vesper and Lincoln's sparrows, red-winged blackbird, brown-headed cowbird, northern oriole and common grackle, while black tern, American coot, and yellow-headed blackbird were also recorded on visits in 1999.

Current Condition: Agricultural encroachment and drainage of the wetland has ceased since the 1993 Inventory. Other site characteristics remain unchanged. Site has high potential for restoration, since it is isolated from further disturbance.

Level of Significance: **Local**

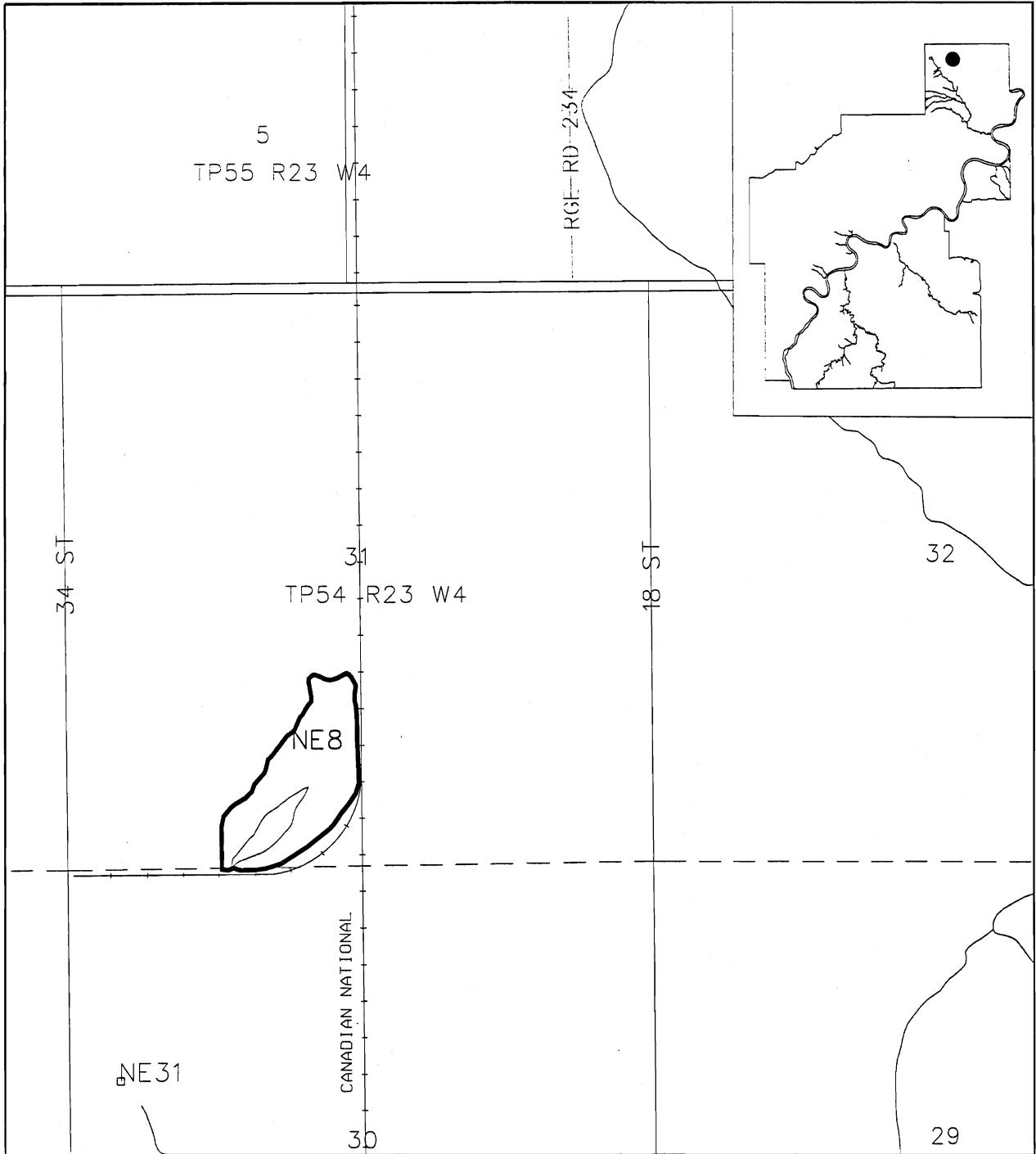
- ephemeral wetland that provides critical function in maintaining or balancing local hydrology
- provides critical waterfowl habitat
- good terrestrial and shorebird habitat

Existing Land Use / Management Considerations:

- Surrounding land uses include the Alberta Railway Museum, cultivated fields, and irrigated horticultural lands;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	87.3	Conservation Value	141.3
Ecological Integrity	30	Conservation Rank (out of 62)	15
Geographical Location	12	Risk Factor	0.61
Ecological Uniqueness	12	Overall Score	141.3
		Overall Rank (out of 62)	28

Site Map - NE 8



MAYLIEWAN PARKLAND COMPLEX (NE 8094 / 8095)

Size: 52.52 ha

Site Location:

Between 66 and 82 Street, north and south of 167 Avenue
[N ½ Sec 34 TP 53 R24; SE 3 TP 54 R24 W4M]

Site Description:

- Relatively undisturbed native aspen parkland - one of the best within City limits;
- large complex consisting of ephemeral creek, riparian meadow, and aspen shrubland;
- large sedge meadow occurs to the north of 167 Avenue, while area to the south consists of better drained upland vegetation of willow and aspen;
- white-tailed deer, songbirds, and raptors observed at site, but not identified;
- excellent example of parkland succession both on well-drained and poorly-drained topography;
- site remains in mostly native condition, except for a portion of the site south of 167 Avenue that has been drained and cultivated;

Current Condition: Essentially unchanged since 1993 Inventory, with exception of area south of 167 Avenue that has been drained and filled.

Level of Significance: **Local**

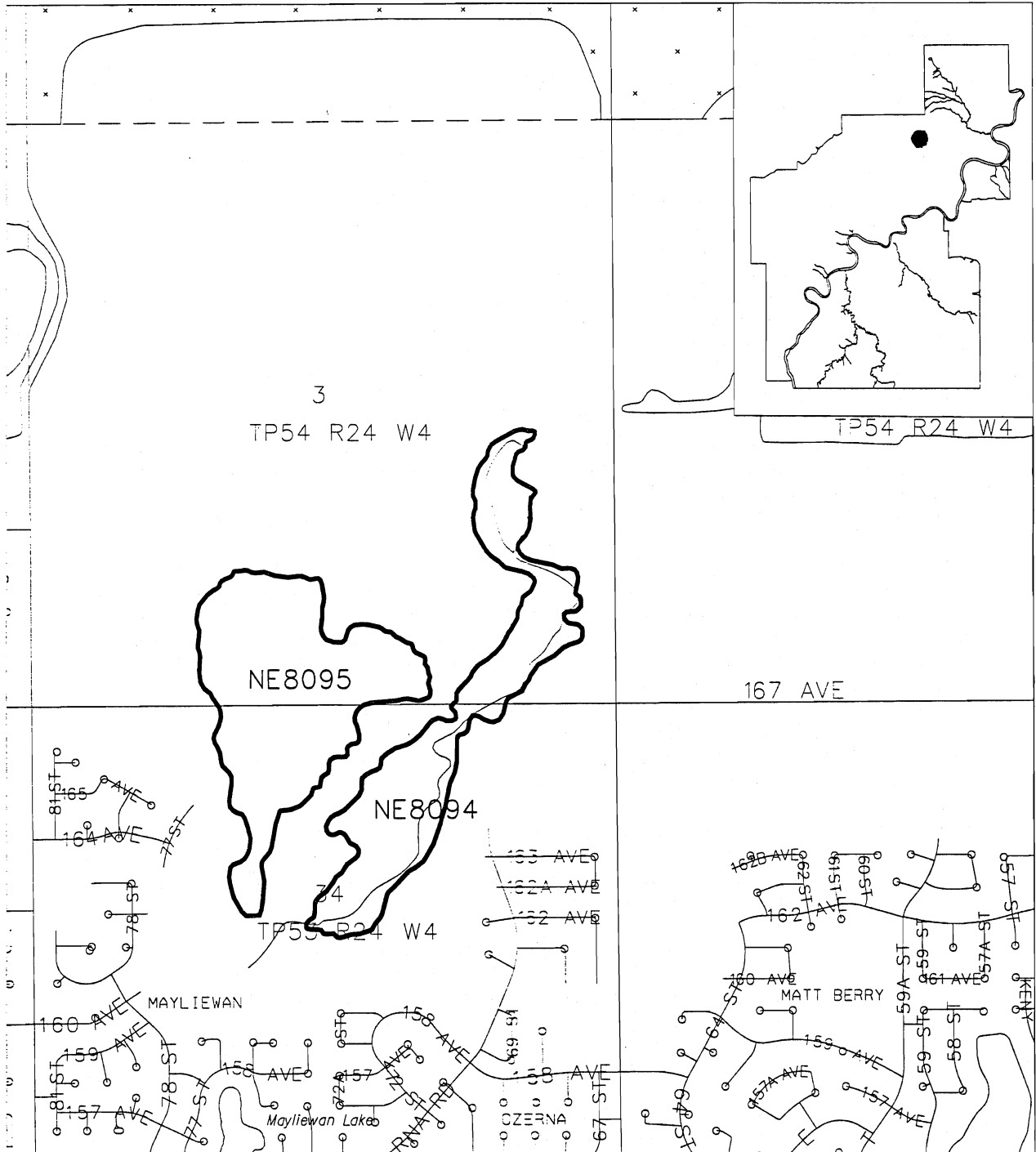
- excellent example of aspen parkland within the table lands of Edmonton
- good example of variable drainage regimes within aspen parkland environment
- provides critical function in maintaining or balancing local hydrology
- significant wildlife habitat for locally important species

Existing Land Use / Management:

- Surrounding land uses include country residential and cultivated fields;
- Agricultural encroachment is extensive on all sides and 167 Avenue bisects the site in half;
- Lake District ASP in place.

SITE RATING AND RANK			
Biophysical Features	92.7	Conservation Value	179.7
Ecological Integrity	47	Conservation Rank (out of 62)	2
Geographical Location	16	Risk Factor	1.59
Ecological Uniqueness	24	Overall Score	285.7
		Overall Rank (out of 62)	1

Site Map - NE 8094 / 8095



SE 5007

Size: 48.92 ha

Site Location:

Southwest of Ellerslie Road and 34 Street SW
[Sec 24 TP51 R 24 W4M]

Site Description:

- Relatively healthy upland/wetland complex;
- Upland forest consists primarily of mature aspen and aspen-balsam poplar;
- Homogeneous shrub understory of snowberry, beaked hazelnut, wild raspberry and rose;
- Manitoba maple has been introduced;
- Diverse forb and grass layers;
- Wetland composed of willow/sedge with cattails in open water areas;
- Some balsam poplar along wetland fringes;
- In the western half of this unit, upland deciduous stands are two-aged with older balsam poplar (approximately 70 yrs old) and younger aspen (25 - 30 yrs old), where the older balsam poplar provide good snag habitat;
- Moderately well drained Orthic Black Chernozems have developed on hummocky morainal materials where slopes range from very gently undulating to gently undulating and rolling (0 - 9 % slopes);
- Poorly drained Orthic Humic Gleysols are associated with wetland topography;
- Thin organic veneers have developed where water levels have lowered;
- Loams and silt loams overlying clays and sandy clays;
- Water table at or near surface around wetland;
- Diversity of vegetation cover provides excellent year-round habitat for ungulates, especially white-tailed deer and, to a lesser extent, moose;
- Balsam poplar regeneration and red-osier dogwood heavily browsed by deer and moose;
- Wetlands with open water provide breeding and nesting habitat for waterfowl;
- Great blue herons, a sensitive species, previously observed within this complex, however they have not been seen for a few years;
- Numerous wildlife species observed at site, including waterfowl (mallard, blue-winged teal, northern shoveler, ruddy duck), raptors (red-tailed hawks), shorebirds (killdeer and spotted sandpiper), colonial nesters (black terns), and terrestrial song birds (common yellowthroat, white-throated sparrow, clay-colored sparrow, vesper sparrow, savannah sparrow, Le Conte's sparrow, Lincoln's sparrow, song sparrow, American robin, black-capped chickadee, American crow, red-winged blackbird, yellow-headed blackbird, northern orioles, brown-headed cowbird, American goldfinch, alder and least flycatchers, tree and barn swallows, house wren, cedar waxwing, yellow warbler and warbling and red-eyed vireos);
- Area also provides an excellent example of hummocky morainal deposits and the characteristic vegetation composition and structure common in aspen parkland areas;
- The proximity of this site with other natural areas results in favourable travel corridors being established between sites to the west and sites within the counties of Strathcona and Leduc.

Current Condition:

Although relatively drier than when originally identified in 1993, the site itself has not changed much. Adjacent land uses have not *further* infringed on site. In previous years, land use changes on adjacent properties have resulted in changes to the natural flow regime of both surface and subsurface water. It is apparent from field and air photo examination that these changes have contributed significantly to the lowering of water levels within the wetland and hence may have affected the disappearance of sensitive species such as the great blue heron. In addition, continued lowering of water levels within the wetlands will negatively impact waterfowl species, as key nesting and breeding habitat will be lost.

Level of Significance:

Regional

- best example of contiguous habitat within the table lands of Edmonton
- good example of upland deciduous communities and willow/sedge and open water/cattail communities
- high plant species diversity

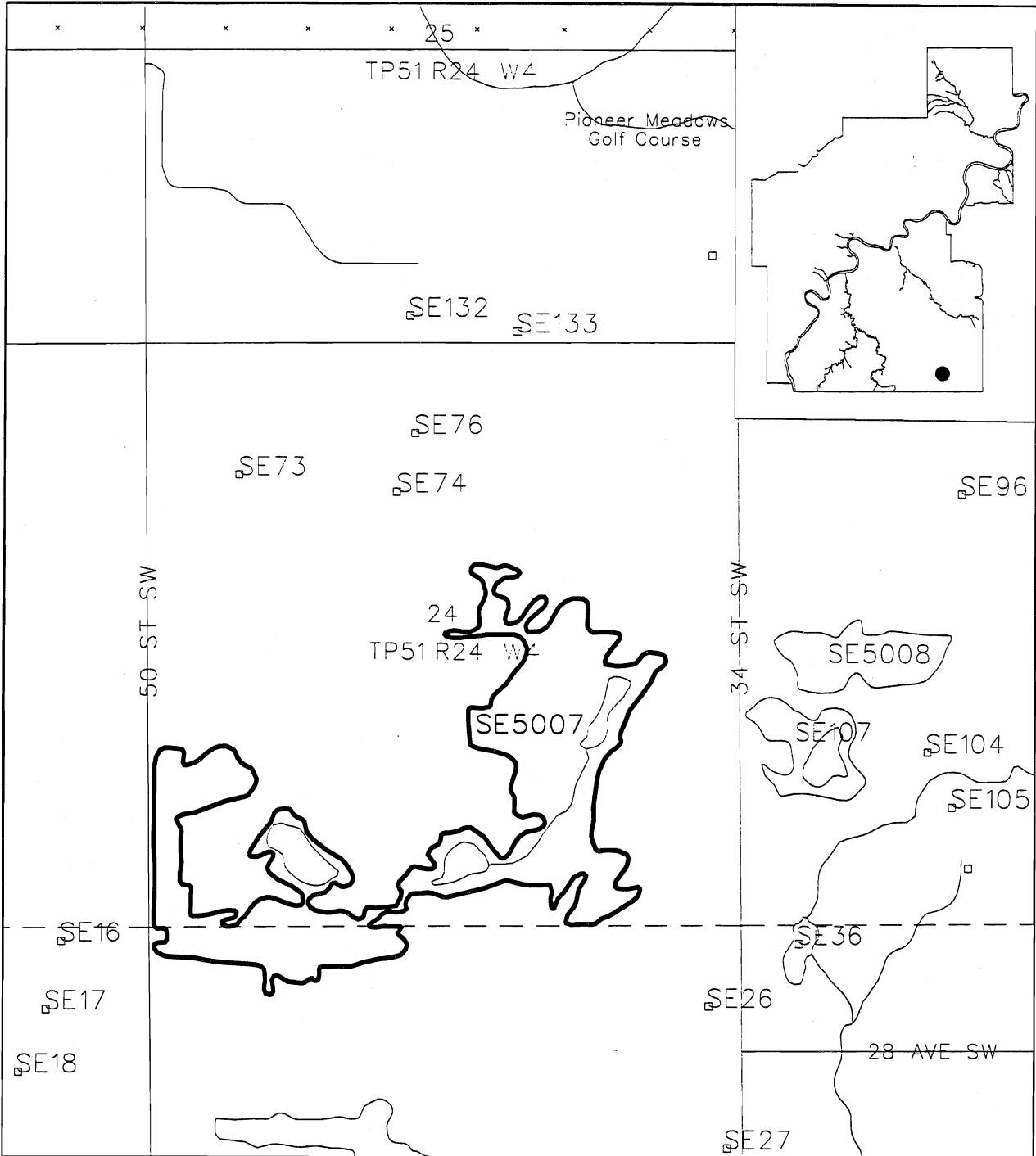
- high habitat diversity
- high wildlife species diversity
- sensitive wildlife species
- provides good example of hummocky morainal deposits and resulting vegetation
- provides critical function in maintaining or balancing local hydrology
- permanent open water
- provides physical and visual links with other natural areas within Edmonton's table lands

Existing Land Use / Management:

- Surrounding land uses include country residential, pasture land, market gardens, and cultivated fields;
- All landowners consulted during field visits for the 1993 Inventory fully supported conservation actions for this area;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	109.3	Conservation Value	182.3
Ecological Integrity	49	Conservation Rank (out of 62)	1
Geographical Location	8	Risk Factor	0.56
Ecological Uniqueness	16	Overall Score	182.3
		Overall Rank (out of 62)	10

Site Map - SE 5007



SOUTHEAST NATURAL AREA (SE 5004)

Size: 49.62 ha

Site Location:

Extreme southeast corner of city, between 17 St SW and Meridian St, north of 41 Avenue SW
[S 1/2 17 T 51 R 23 W4M]

Site Description:

- Hummocky morainal complex with aspen-balsam poplar groves occurring on upland sites and willow/sedge wetland occupying lowland depressional topography;
- Much of the upland forest area has been cleared and seeded to improved pasture;
- Upland forests comprised of aspen-balsam poplar forests with occasional white birch;
- Consistent understories of saskatoon, beaked hazelnut, snowberry, rose, choke cherry and honeysuckle;
- Wetland areas, some of which are ephemeral, consist of a willow fringe around mainly sedges;
- Pronounced hummocky moraine landform;
- Soils range from well drained Orthic Black Chernozems and Dark Gray Luvisols on upland sites to poorly drained Orthic Humic Gleysols and Orthic Gleysols;
- Textures range from silt loams to silty clay loams and silty clays with occasional sandy clay lenses;
- Hummocky morainal deposits that form this environmentally sensitive area are part of the larger Cooking Lake Moraine, also known as the "Beaverhill Uplands" to the east;
- The Beaverhill Uplands have been classified as "nationally significant" because they provide critical habitat for waterfowl breeding and staging (Westworth et al. 1991);
- This area provides one of the best examples within Alberta of stagnant, dead-ice morainal deposits and their associated hydrological and vegetation characteristics.
- Willows surrounding adjacent wetland have been heavily browsed by white-tailed deer, moose and hare;
- Numerous red-tailed hawks observed;
- Area also serves as a corridor for wildlife movement between natural areas within southeast Edmonton (i.e., Koroluk Natural Area, Site SE 5007) and similar sites within the counties of Strathcona and Leduc.

Current Condition: Essentially unchanged since 1993 Inventory. Possible exception is further lowering of water levels, as much of wetland fringes are drying. Grazing pressure still appears to be relatively high as most sedges within some wetlands have been grazed quite heavily. However, cattle grazing within upland forests does not appear to have had significant impacts upon understory species composition.

Level of Significance: Local

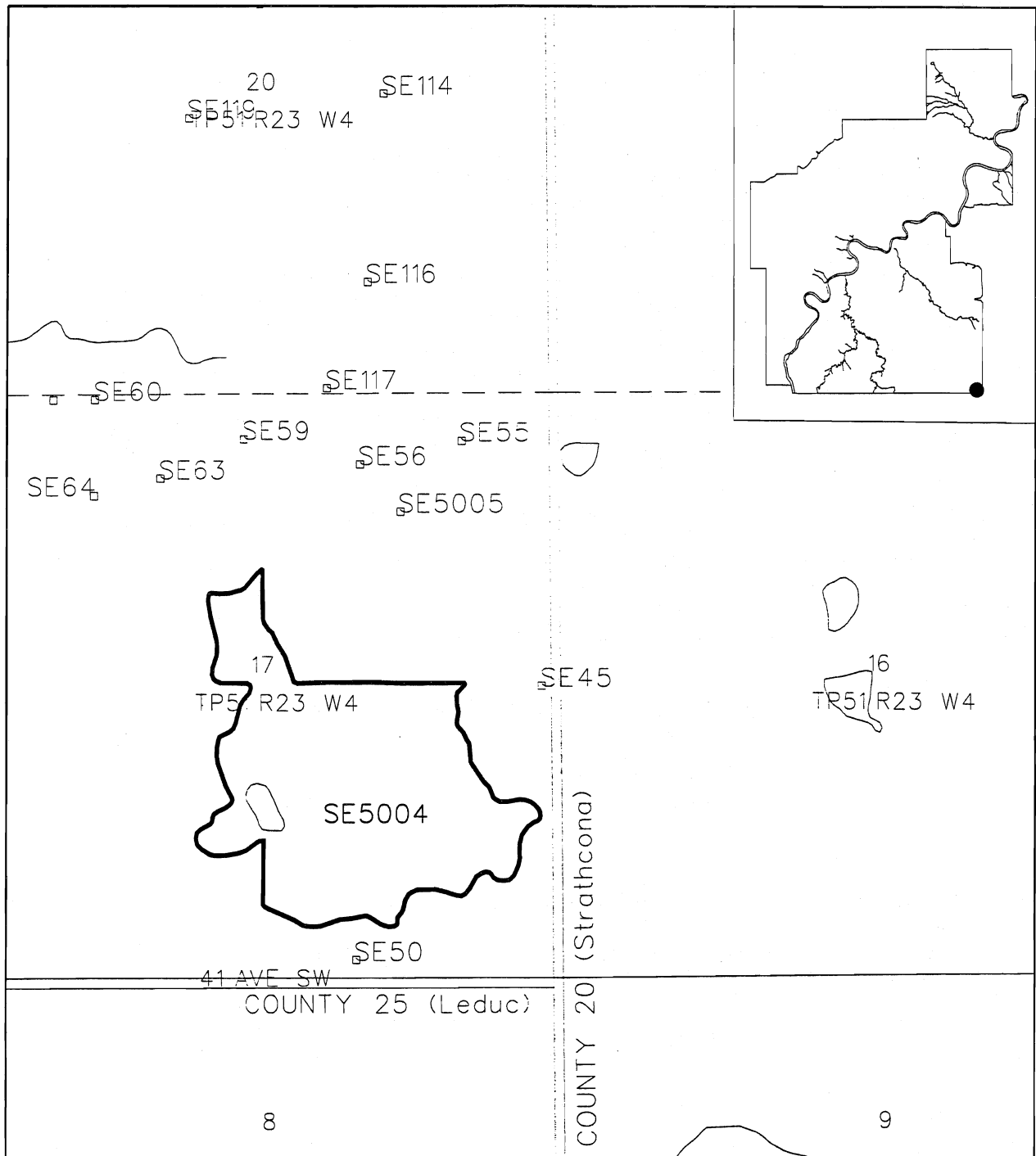
- best example of dead-ice, hummocky moraine in Edmonton city limits
- vegetation diversity
- wildlife habitat diversity
- linking function to natural areas both within and outside of the city of Edmonton
- due to extensive clearing within site, it has been downgraded from regional to local significance.

Existing Land Use / Management:

- Surrounding land uses are primarily pasture land, cultivated fields and, to a lesser extent, country residential development;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	84.7	Conservation Value	170.7
Ecological Integrity	44	Conservation Rank (out of 62)	4
Geographical Location	10	Risk Factor	0.56
Ecological Uniqueness	32	Overall Score	170.7
		Overall Rank (out of 62)	14

Site Map - SE 5004



SOUTHEAST MIXEDWOOD NATURAL AREA (SE 5002)

Size: 14.90 ha

Site Location:

2.0 km south of Ellerslie Road on east side of 50 Street
[W1/2 13 T 51 R 24 W4M]

Site Description:

- Significant upland complex consisting of mixedwood upland forest;
- Mixedwood coniferous-dominated stand comprised of white spruce, balsam poplar and aspen and to a lesser extent white birch;
- Shrub species include low-bush cranberry, rose, wild raspberry, mountain ash, snowberry and beaked hazel, red-osier dogwood, and gooseberry;
- Percent cover and presence of various shrub species is highly dependent upon overstory cover and amount of openings;
- White spruce between 100 - 110 yrs old and between 20 - 24 m in height;
- Most balsam poplar appear decadent and provide excellent snag habitat for birds of prey;
- Mature spruce trees provide good seed source for regeneration;
- Moderately well drained Orthic Black Chernozems have developed in very gently undulating and hummocky morainal materials;
- Loams over silty clays and silty clay loams;
- Complex nature of the vegetation results in high community diversity, ranging from deciduous-dominated portions within the uplands to mixedwood and to coniferous- dominated portions. This, along with the presence of the adjacent wetland, a permanent water body, and surrounding cultivated fields and rough pasture result in extremely critical wildlife habitat;
- Palatable shrub species within the upland areas as well as the willows around the wetland have all been browsed heavily by white-tailed deer and moose.
- 30 different species of birds observed at site during 1993 Inventory included red-tailed hawk, merlin, killdeer, spotted sandpiper, common snipe, western wood-pewee, least flycatcher, swallow, magpies, crows, chickadee, wrens, American robin, warbling and red-eyed vireos, sparrows, blackbirds, brown-headed cowbird, northern oriole, ruby-crowned kinglet, and golden finches (this diversity of species and numbers observed were rarely recorded elsewhere within the table lands area);
- Site is relatively close to other natural areas within southeast Edmonton and as such provides key linkages for wildlife moving between areas.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

- good example of mixedwood-dominated vegetation
- high plant species diversity
- high habitat diversity
- provides critical habitat for a variety of wildlife species
- provides link with other natural areas in table lands

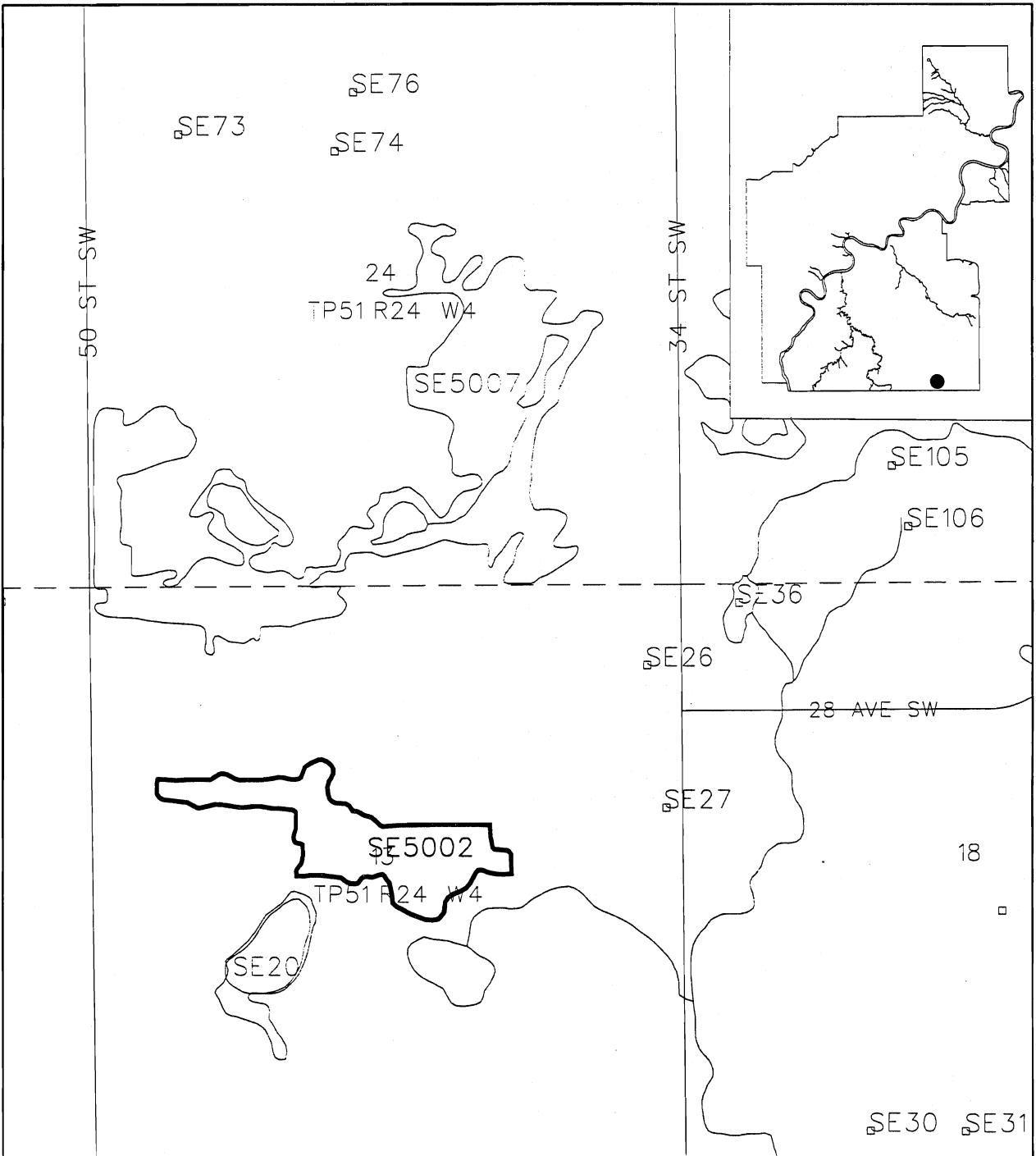
Existing Land Use / Management:

- Surrounding land use includes cultivated fields and rough pasture;
- A trail system has already been established within the mixedwood stand and results in easy access throughout the stand, providing good wildlife viewing opportunities;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK

Biophysical Features	83.1	Conservation Value	137.1
Ecological Integrity	34	Conservation Rank (out of 62)	20
Geographical Location	8	Risk Factor	0.66
Ecological Uniqueness	12	Overall Score	137.1
		Overall Rank (out of 62)	32

Site Map - SE 5002



SOUTHEAST WETLAND NATURAL AREA (SE 20)

Size: 5.87 ha

Site Location:

2.0 km south of Ellerslie Road on east side of 50 Street
[W1/2 13 T 51 R 24 W4M]

Site Description:

- Significant wetland complex consisting of open water with a healthy cattail fringe and partial willow fringe along eastern side;
- Considerable cattail growth within shallow portions of water;
- Sedges and marsh reed grass occur along western side;
- Poorly drained Orthic Gleysols occur adjacent open water in wetland area;
- Loams over silty clays and silty clay loams;
- Open water/wetland complex provides nesting and breeding habitat for a variety of waterfowl species including Canada goose, mallard, blue and green-winged teal, northern shoveler, gadwall, lesser scaup, ruddy duck, eared grebe, and canvasback;
- Foraging habitat exists adjacent wetland;
- This site is relatively close to SE 5007 and other natural areas and, therefore, provides key linkages for wildlife moving between areas.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance:

Local

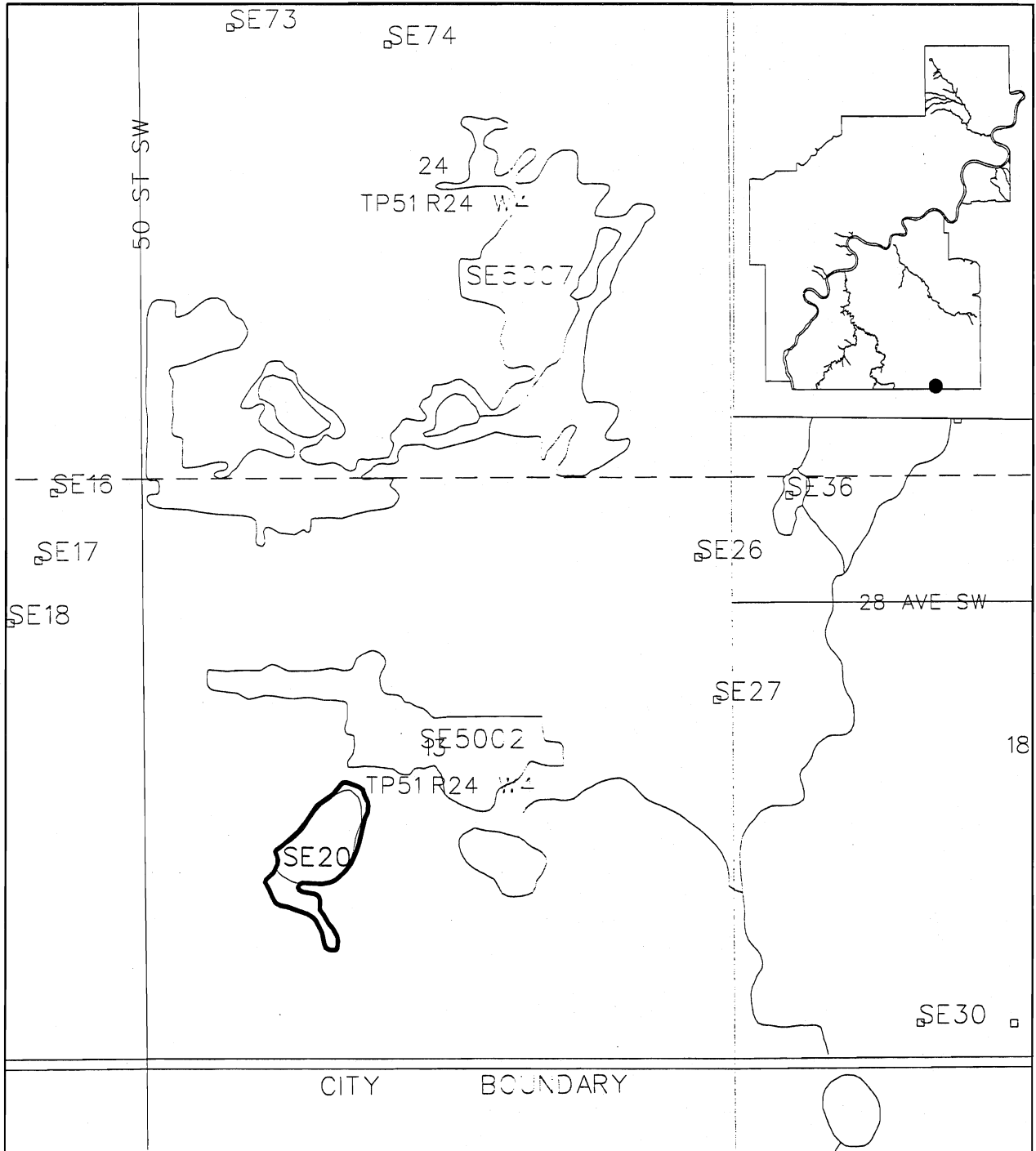
- good example of emergent aquatic vegetation
- high plant species diversity
- critical waterfowl habitat
- permanent water body
- provides link with other natural areas in table lands

Existing Land Use / Management:

- Surrounding land use includes cultivated fields and rough pasture;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	66.5	Conservation Value	117.5
Ecological Integrity	37	Conservation Rank (out of 62)	43
Geographical Location	8	Risk Factor	0.51
Ecological Uniqueness	6	Overall Score	117.5
		Overall Rank (out of 62)	49

Site Map - SE 20



MAPLE RIDGE NATURAL AREA (SE 238)

Size: 7.51 ha

Site Location:

Approximately 2.0 km north of Whitemud Drive on the west side of 17th Street adjacent Maple Ridge Mobile Park
[SE 19 TP 52 R 23 W4M]

Site Description:

- Relatively large permanent water body surrounded by upland balsam poplar-aspen forests;
- Water body is divided into two by a gravel road which is usually flooded during the spring;
- Northern pond is considerably smaller and less diverse vegetationally than southern pond;
- Good emergent aquatic vegetation consisting of mainly cattails, with some rushes and sedges around the perimeter;
- Upland forest consists mainly of balsam poplar with a minor component of aspen;
- Significant snag habitat occurs around the perimeter of the southern water body;
- Some willow occurs immediately adjacent to the shoreline;
- Poorly drained Orthic and Humic Gleysols occur immediately adjacent to open water;
- Water table at approximately 80 - 100 cm adjacent to the shore;
- Loam over silty clays and silty clay loams;
- Upland soils are primarily Orthic Black Chernozems developed on gently to moderately undulating glaciolacustrine clays and silty clays;
- Permanency of the water combined with the diversity of vegetation (emergent aquatics, upland balsam poplar - aspen forests, cultivated fields and pasture land) that occurs within 100 - 200 m provides nesting, breeding and feeding habitat for waterfowl, including Canada goose, mallard, blue-winged teal, northern shovelers, and American wigeon;
- Flooded balsam poplar are providing excellent snag habitat for raptors and cavity-nesting birds;
- A number of small game trails occur throughout the upland forested component of the site and balsam poplar regeneration appears to be browsed uniformly throughout;
- Bird species observed include least flycatcher, barn swallow, American crow, black-billed magpies, black-capped chickadee, house wren, yellow warbler, common yellowthroat, song sparrow, red-winged blackbird, and northern oriole.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: **Local**

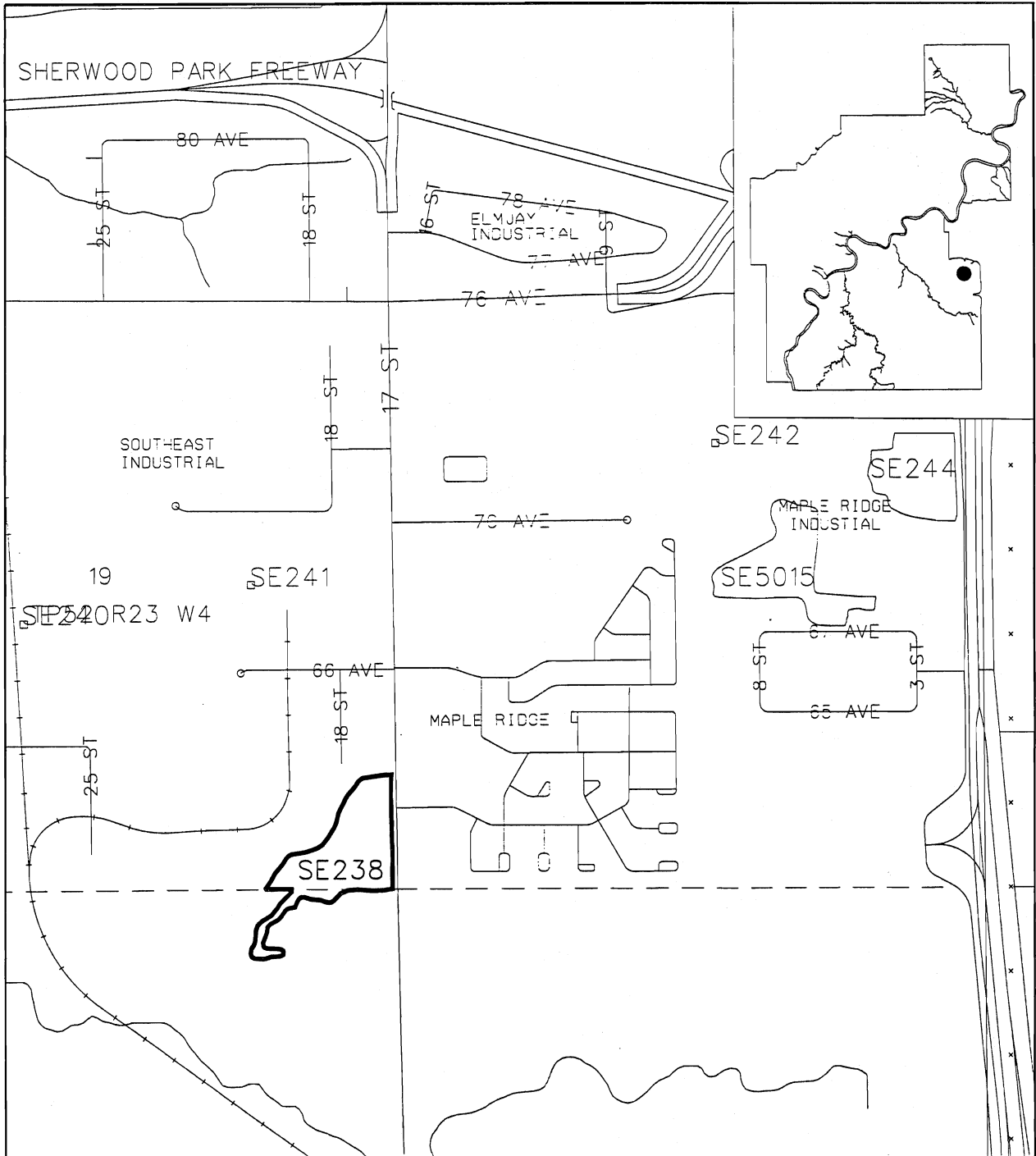
- good example of emergent aquatic vegetation
- high plant species diversity
- provides critical habitat for maintenance of all or significant components of life cycle stages for waterfowl species
- permanent water body of significant size

Existing Land Use / Management:

- Surrounding land uses include industrial developments to the north and southwest, cultivated fields to the west, and the Maple Ridge Trailer Park to the east across 17 Street;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	88.9	Conservation Value	133.9
Ecological Integrity	33	Conservation Rank (out of 62)	24
Geographical Location	6	Risk Factor	1.10
Ecological Uniqueness	6	Overall Score	147.2
		Overall Rank (out of 62)	22

Site Map - SE 238



34 STREET SW AND ELLERSLIE ROAD NATURAL AREA (SE 5008)

Size: 6.52 ha

Site Location:

0.5 km south of Ellerslie Road on east site of 34 Street
[NW 19 TP 51 R 23 W4M]

Site Description:

- Upland forest/wetland complex;
- Upland forest consists of very mature, rather decadent balsam poplar with raspberry, saskatoon, snowberry and pin cherry;
- Forest canopy rather open;
- Excellent snag habitat provided by decadent poplar, especially adjacent wetland;
- Wetland consists of three small permanent ponds with well-developed emergent vegetation comprised mainly of cattails;
- Ponds appear to be drying somewhat due to low water tables;
- Poorly drained Humic Gleysols have developed in very gently undulating and hummocky morainal materials;
- Perched water table within 25 cm of the surface;
- Textures vary from clays to silty clays;
- Peaty phase Humic Gleysols occur immediately adjacent open water;
- One of the best examples in Edmonton of "old growth" deciduous vegetation, characterized by an open canopy with extensive snags;
- Stand estimated to be approximately 100 yrs old;
- Upland balsam poplar stand combined with the wetland vegetation and open water results in a diversity of vegetation that provides important habitat for ungulates and waterfowl;
- White-tailed deer common throughout site and browse almost extensively on raspberry;
- Canada geese and other waterfowl species have consistently nested within the open ponds while snags provide critical perching and nesting sites for raptors;
- Two other natural areas occur in the immediate vicinity, including sites SE 107 to the south and SE 5007 across 34th Street. Therefore, this site provides a key linking function to these other sites and is used by both waterfowl species and ungulates for key habitat.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

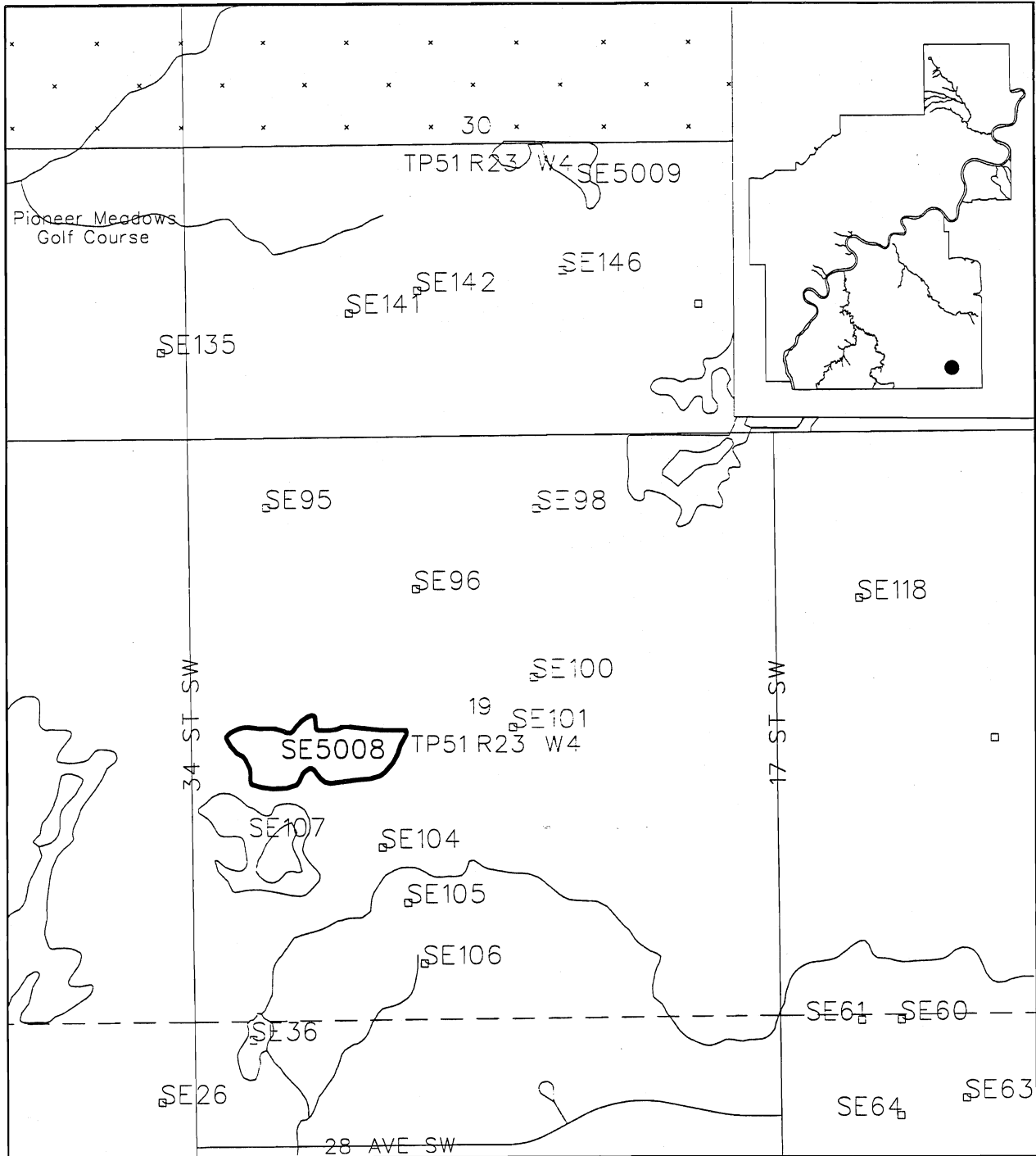
- "old growth" balsam poplar stand
- vegetation diversity
- critical linking function with adjacent natural areas

Existing Land Use / Management:

- Surrounding land uses include country residential and cultivated fields;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	75.8	Conservation Value	136.8
Ecological Integrity	45	Conservation Rank (out of 62)	22
Geographical Location	6	Risk Factor	0.51
Ecological Uniqueness	10	Overall Score	136.8
		Overall Rank (out of 62)	34

Site Map - SE 5008



SE 5098

Size: 4.48 ha

Site Location:

0.5 km east of 75 Street on north side of Whitemud Drive
[SW 13 TP52 R24 W4M]

Site Description:

- Young seral aspen community with aspen varying in height from 4–8m; stand is approximately 8–10m years old and has established itself following construction of Whitemud Drive; canopy densities vary from doghair to very open;
- Some wet meadow areas where cattails have established;
- Open grass meadows with occasional willows;
- Area appears to be heavily utilized by white-tailed deer as evidenced by heavily browsed aspen saplings, red-osier dogwood, and willow and a number of well-developed trails and deer beds; coyote den found at site; black-capped chickadees and red-tailed hawk observed during 1993 survey.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

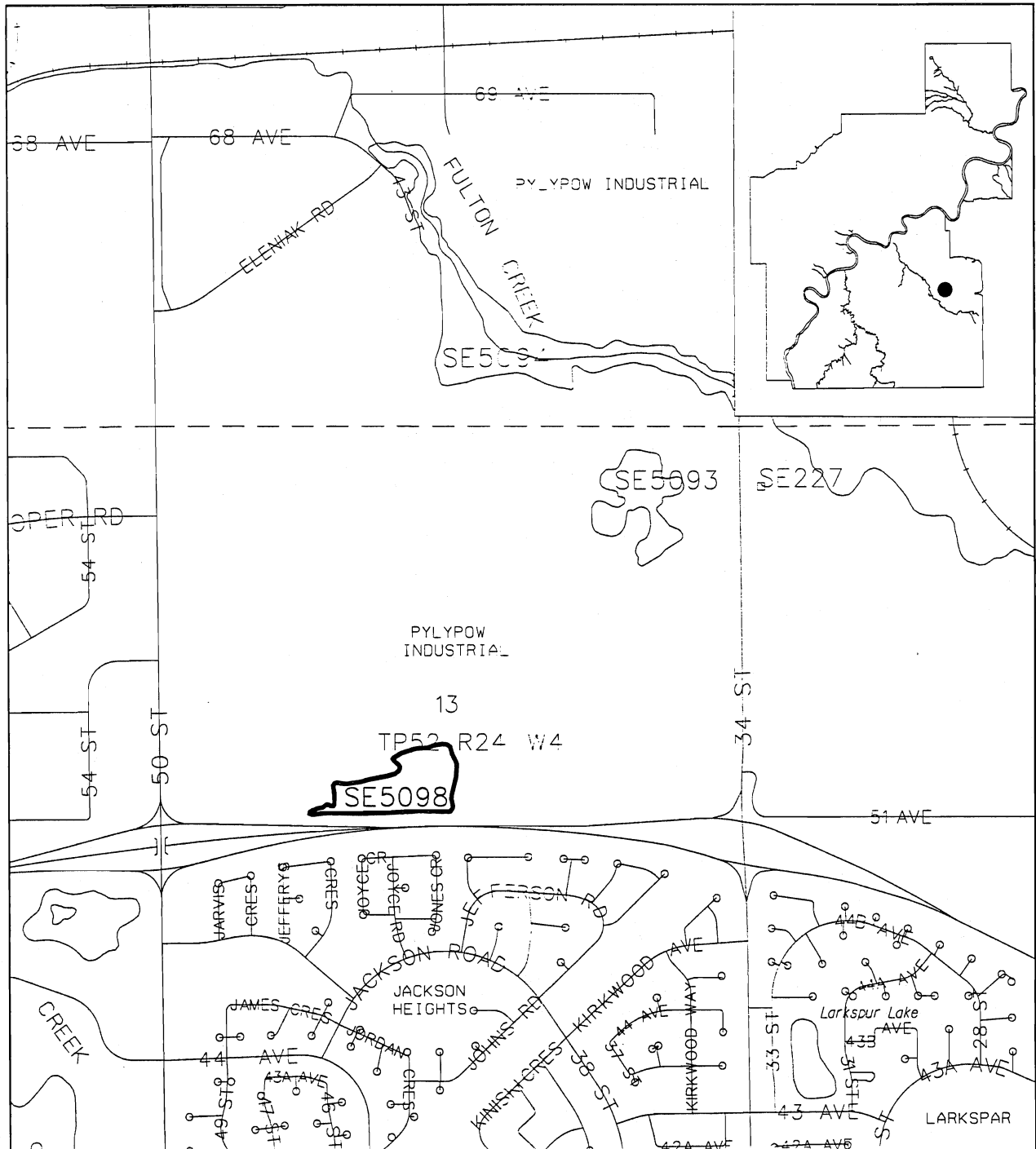
- Good example of young aspen stand
- Provides habitat for local wildlife, especially white-tailed deer
- Provides a corridor for wildlife movement

Existing Land Use / Management:

- Surrounding land uses include Whitemud Drive to the south, cultivated haylands to the north, and light industrial development to the west.
- Southeast Industrial Outline Plan in place.

SITE RATING AND RANK			
Biophysical Features	62.0	Conservation Value	101.0
Ecological Integrity	21	Conservation Rank (out of 62)	54
Geographical Location	6	Risk Factor	1.30
Ecological Uniqueness	12	Overall Score	131.3
		Overall Rank (out of 62)	37

Site Map - SE 5098



FULTON CREEK (SE 5094)

Size: 12.55 ha

Site Location:

East of 34 Street, approximately 1.5 km north of Whitemud Drive
[Sec 24 TP 52 R 24 W4M] Pylypow Industrial Park

Site Description:

- Fulton Creek has previously been designated as a local environmentally sensitive area (O'Leary *et al.* 1993) and has been mapped independently as it passes through a major industrial complex.
- Fulton Creek flows to the southeast and has a well-defined stream course and valley system for most of the reach; water flows are highly variable with minimum flows observed in the late fall;
- Well developed stream bank and flood plain vegetation composed mainly of balsam poplar with understorey of red-osier dogwood; remnant woodland parcel occurs on the south side of the stream course with variable shrubs of red-osier dogwood, rose, snowberry, raspberry, chokecherry, honeysuckle, and saskatoon; canopy height reaches 20m; the richness of the site is indicated by 10 m mountain ash; numerous snags throughout the site.
- Snags provide excellent nest and perching sites for red-tailed hawks; numerous large stick nests observed during 1993 inventory in addition to black-billed magpies and black-capped chickadees; presence of white-tailed deer indicated by feces, light to moderate browsing on red-osier dogwood and other palatable species.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

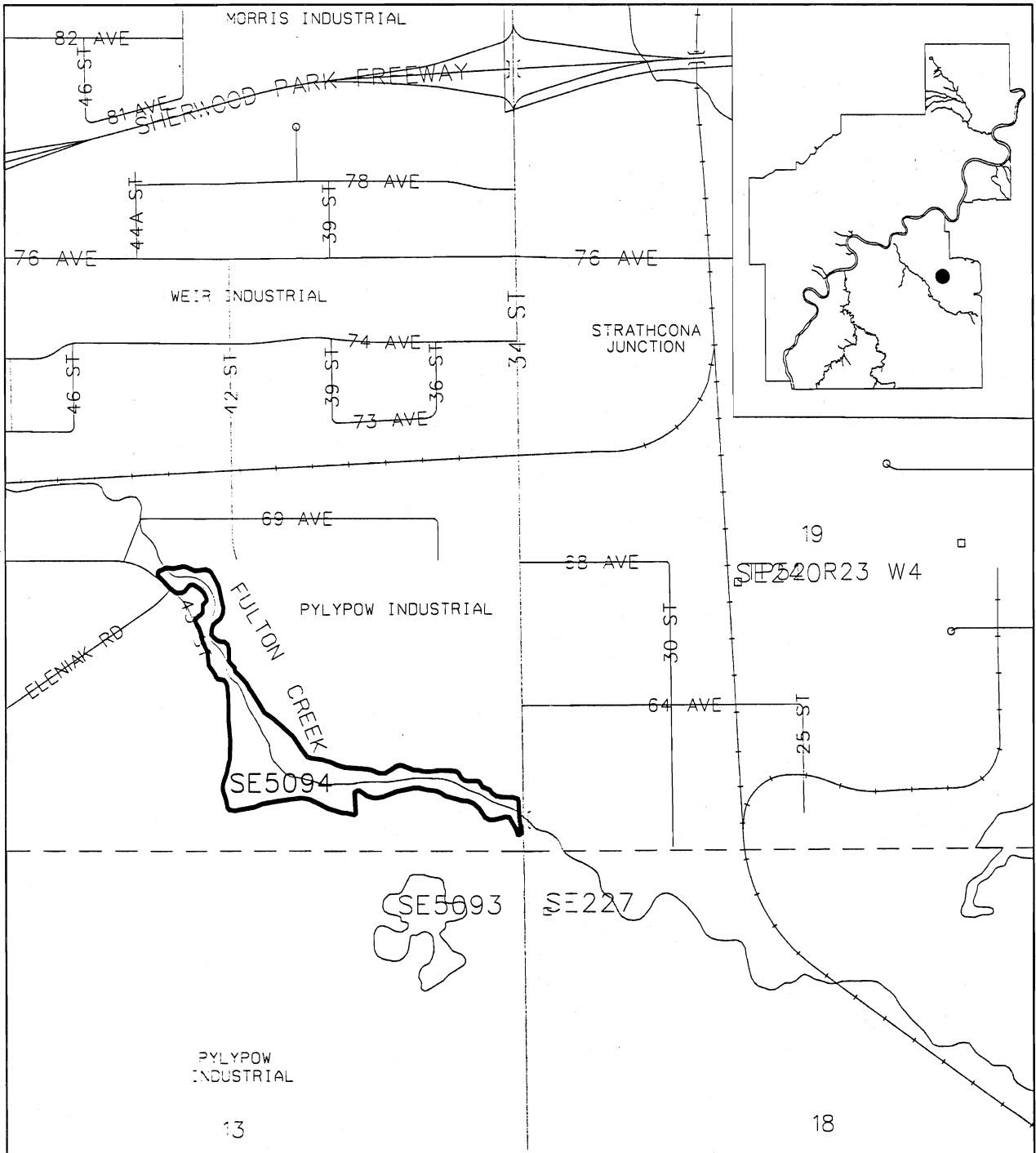
- Possible "oldgrowth" forest
- Good example of riparian balsam poplar community
- Provides habitat for white-tailed deer and birds
- Provides critical linking function to ESA / SNAs identified within and outside the city
- Provides critical function in maintaining or balancing local hydrological conditions

Existing Land Use / Management:

- Surrounding land uses include cultivated hayland and industrial developments to the north. Numerous pipeline crossings and culverts.
- Southeast Industrial Outline Plan in place.

SITE RATING AND RANK			
Biophysical Features	77.7	Conservation Value	128.7
Ecological Integrity	35	Conservation Rank (out of 62)	29
Geographical Location	6	Risk Factor	1.40
Ecological Uniqueness	10	Overall Score	180.1
		Overall Rank (out of 62)	11

Site Map - SE 5094



34 STREET WETLAND (SE 107)

Size: 5.86 ha

Site Location:

0.7 km south of Ellerslie Road along the east side of 34th Street; immediately south of site SE 5008
[NW 19 TP51 R23 W4M]

Site Description:

- Permanent water body with well-developed ring of willow/sedge and open balsam poplar stand to northwest;
- Drying of pond has exposed mineral soils around edge of open water;
- Some cattail development throughout;
- Relatively undisturbed;
- Poorly drained Orthic Humic Gleysols and Humic Gleysols have developed on mineral soils adjacent open water;
- Wetland has developed in gently undulating and hummocky morainal materials;
- Loams over clay loams and silty clay loams;
- Diversity of vegetation communities that occur within this particular site provides for critical waterfowl habitat, including nesting, rearing and feeding habitat for Canada geese (one nesting pair with two young) and other waterfowl species such as mallard and blue-winged teal;
- Snag habitat that occurs on fringe of balsam poplar stands provides raptor nesting and perch sites;
- Muskrat trails common along margins of wetland;
- Willow and poplar regeneration heavily browsed by deer and numerous deer tracks are found throughout site;
- Site occurs adjacent SE 5008 and SE 5007, both locally significant natural areas. Together, these complexed habitats and natural areas are of regional significance for both ungulate and waterfowl habitat.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

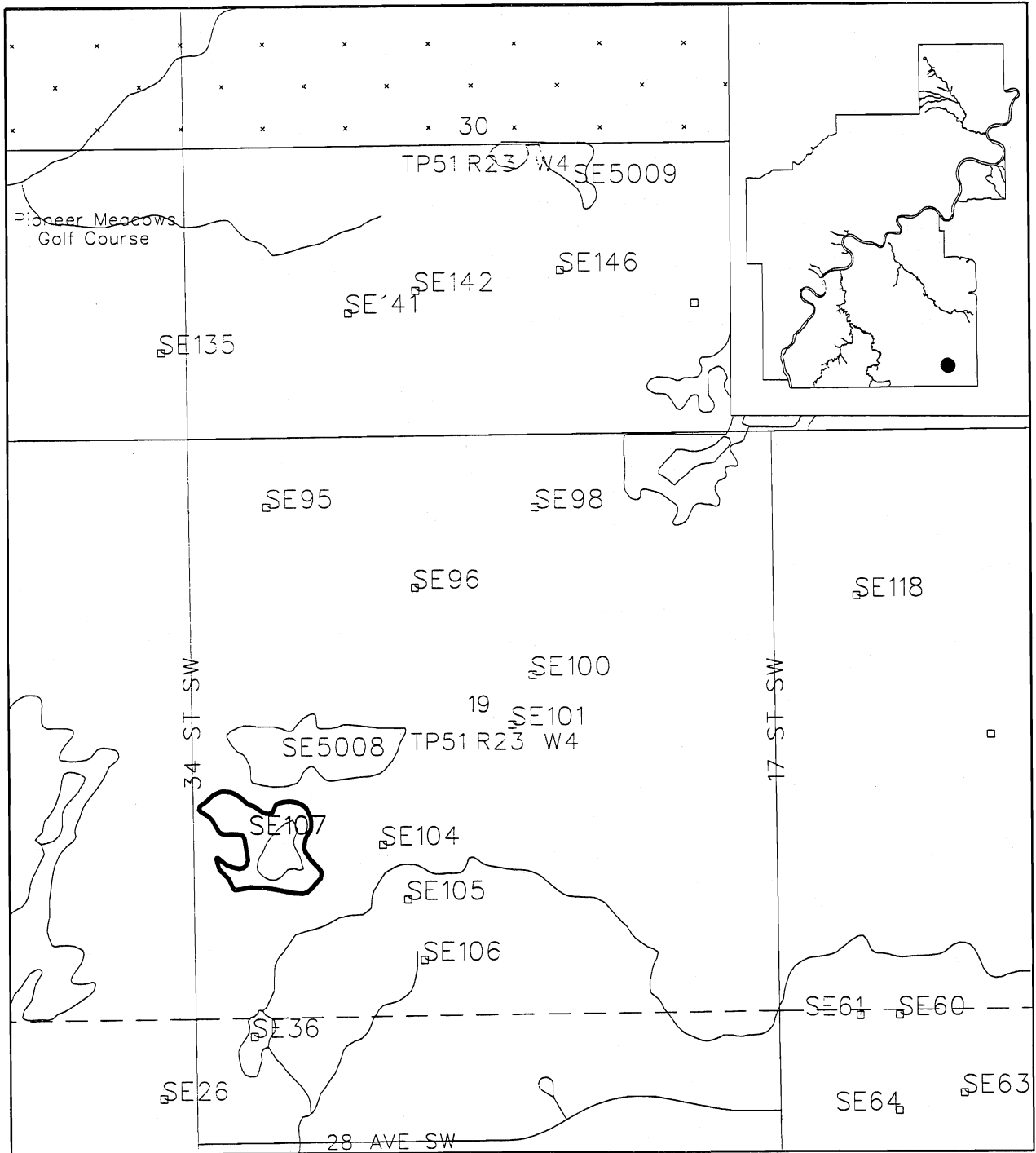
- good example of willow/sedge community
- high plant species diversity
- permanent water body
- provides critical waterfowl habitat
- high habitat diversity
- critical linking function to other natural areas within the vicinity

Existing Land Use / Management:

- Surrounding land uses include country residential, pasture and cultivated fields;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	77.4	Conservation Value	123.4
Ecological Integrity	32	Conservation Rank (out of 62)	36
Geographical Location	8	Risk Factor	0.51
Ecological Uniqueness	6	Overall Score	123.4
		Overall Rank (out of 62)	43

Site Map - SE 107



MERIDIAN ST. - TWP RD 515 NATURAL AREA (SE 5012)

Size: 6.55 ha

Site Location:

1.0 km north of Ellerslie Road; southwest of the corner of Meridian Street and Township Road 515 [NE 29 T 51 R 23 W4M]

Site Description:

- "L"-shaped pothole lake with well-developed fringe of cattails, willows and balsam poplar and aspen;
- Permanent water body which is either spring-fed or maintained by local water table;
- High shrub diversity within balsam poplar-aspen, however, herb layer is poorly developed;
- Shrubs include red-osier dogwood, willow, beaked hazelnut, bracted honeysuckle, low-bush cranberry, snowberry, and choke cherry;
- Very few snags around open water edge;
- Soils vary from moderately well drained Orthic Black Chernozems under the poplar to poorly drained Humic Gleysols around the wetland edge to Typic Mesisols immediately adjacent open water;
- Complex formed in gently to moderately undulating and hummocky morainal materials;
- Silt loams over clay with occasional sandy clay lenses;
- Well-developed adjacent fence rows of aspen and poplar make this site important from a corridor perspective as the site provides critical food and cover requirements for ungulates.

Current Condition: Essentially unchanged since 1993 Inventory

Level of Significance: Local

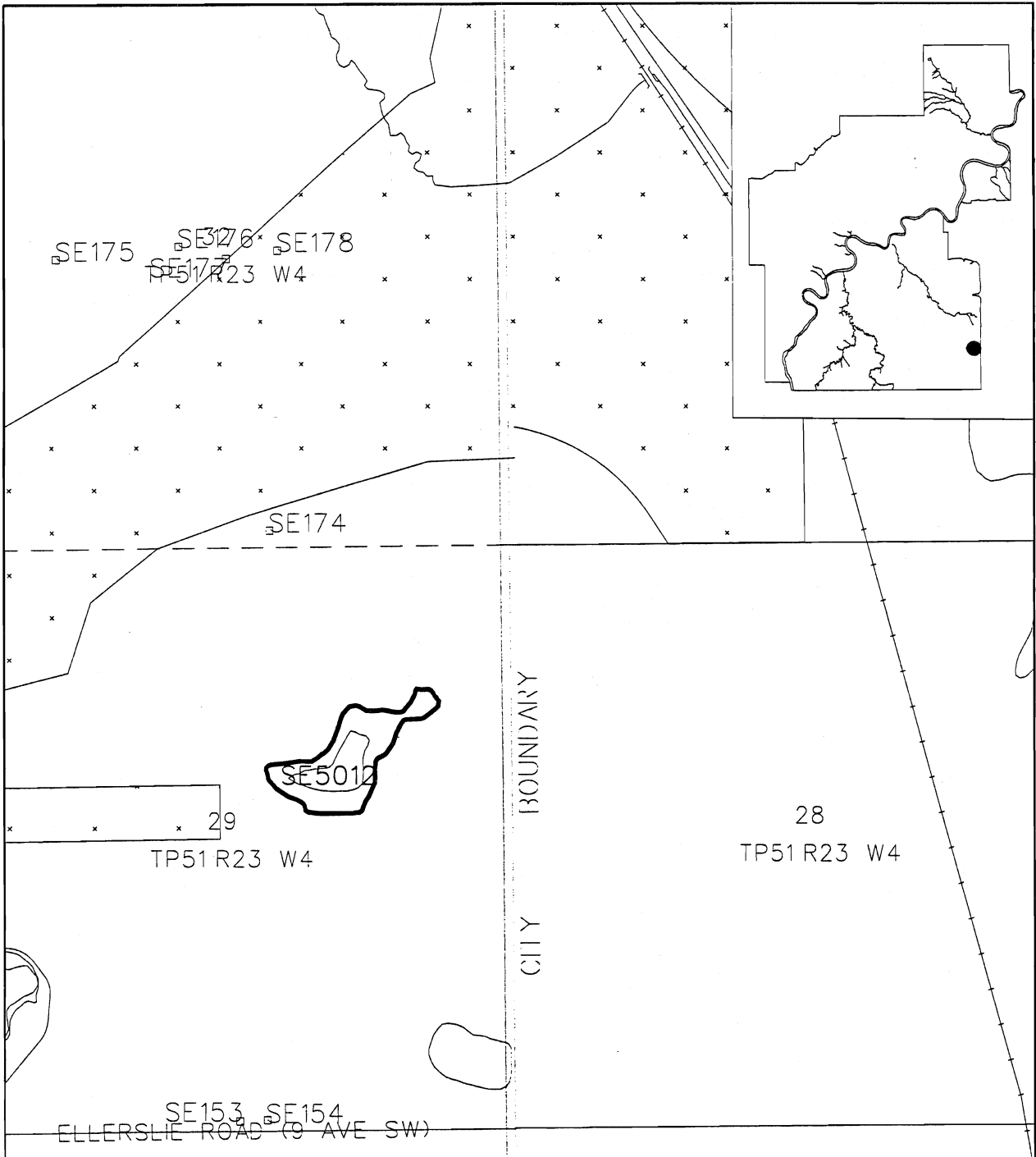
- good example of emergent aquatic and upland balsam poplar communities
- high plant species diversity
- provides critical waterfowl habitat
- permanent open water
- critical linking function to other natural areas

Existing Land Use / Management:

- Primary land use adjacent this site is cultivated fields;
- Because this site is situated in the bottom of a "hummock" it is unlikely that the site will ever be developed;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	78.4	Conservation Value	139.4
Ecological Integrity	47	Conservation Rank (out of 62)	17
Geographical Location	8	Risk Factor	0.56
Ecological Uniqueness	6	Overall Score	139.4
		Overall Rank (out of 62)	30

Site Map - SE 5012



SE 5093

Size: 4.09 ha

Site Location:

1.5 km north of Whitemud Drive on west side of 34th Street
[NE 13 TP52 R 24 W4M]
Plypow Industrial Park

Site Description:

- Isolated wetland with open water and well-developed ring of cattails and sedges;
- Permanent water body – water levels appear to be down somewhat due to hydrological regime;
- Unique combination of permanent, open water, cattail and sedge fringe provides critical waterfowl habitat, especially for nesting and brood rearing habitat;

Current Condition: Grazing replaced by canola crops adjacent to site. The site is relatively secure from disturbances and possesses no forest margins – very open.

Level of Significance: Local

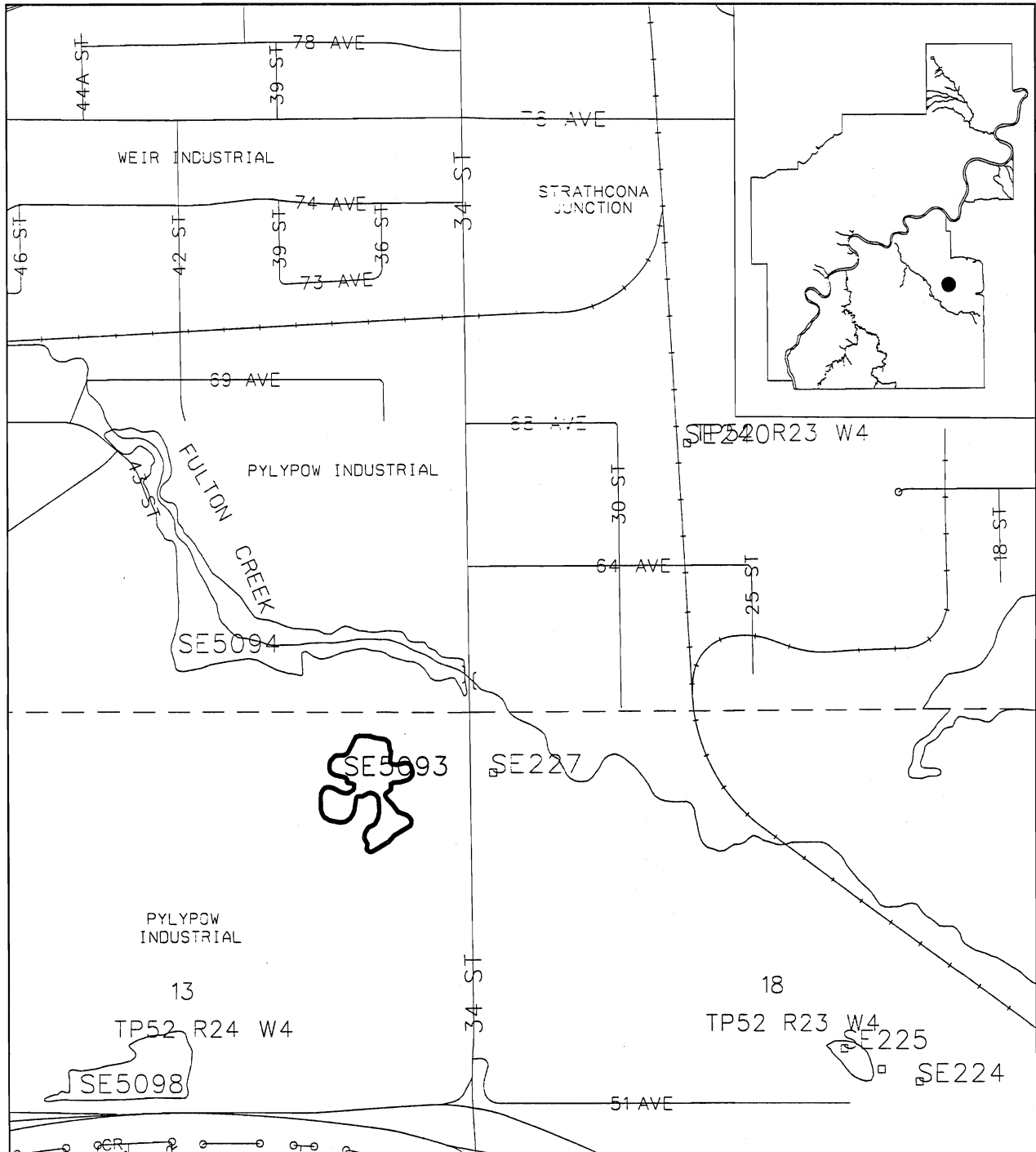
- critical waterfowl habitat
- provides critical hydrological function in maintaining local hydrology

Existing Land Use / Management:

- Surrounded by pasture land that is used by cattle
- Site does not appear to be too negatively affected by grazing pressures
- Southeast Industrial Outline Plan in place.

SITE RATING AND RANK			
Biophysical Features	46.1	Conservation Value	93.1
Ecological Integrity	35	Conservation Rank (out of 62)	58
Geographical Location	6	Risk Factor	1.40
Ecological Uniqueness	6	Overall Score	130.3
		Overall Rank (out of 62)	38

Site Map - SE 5093



MILL CREEK REACH (SE 5090)

Size: 17.54 ha

Site Location:

Mill Creek north of Whitemud Drive
[Sec 14 TP 52 R 24 W4M]
Roper Industrial Park

Site Description:

- Mill Creek Ravine is currently part of the North Saskatchewan River Valley and Ravine System;
- Previously identified as a local environmentally sensitive area (O'Leary *et al.* 1993) due to its location within an industrial complex;
- Meandering stream flows to the north with variable stream width;
- flood plain and valley configuration;
- vegetation varies from balsam poplar to aspen balsam poplar with consistent understory of red-osier dogwood; canopy closure, stand diversity and composition are a function of time since disturbances; numerous snags along stream;
- Stream course and valley provide travel corridor for wildlife, especially terrestrial birds; numerous stick nests along stream course; magpies and blue jays observed during inventory of site
- Very little evidence of use by white-tailed deer; evidence of use by beaver and muskrat in some portions of stream, especially north of 51 Avenue;

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

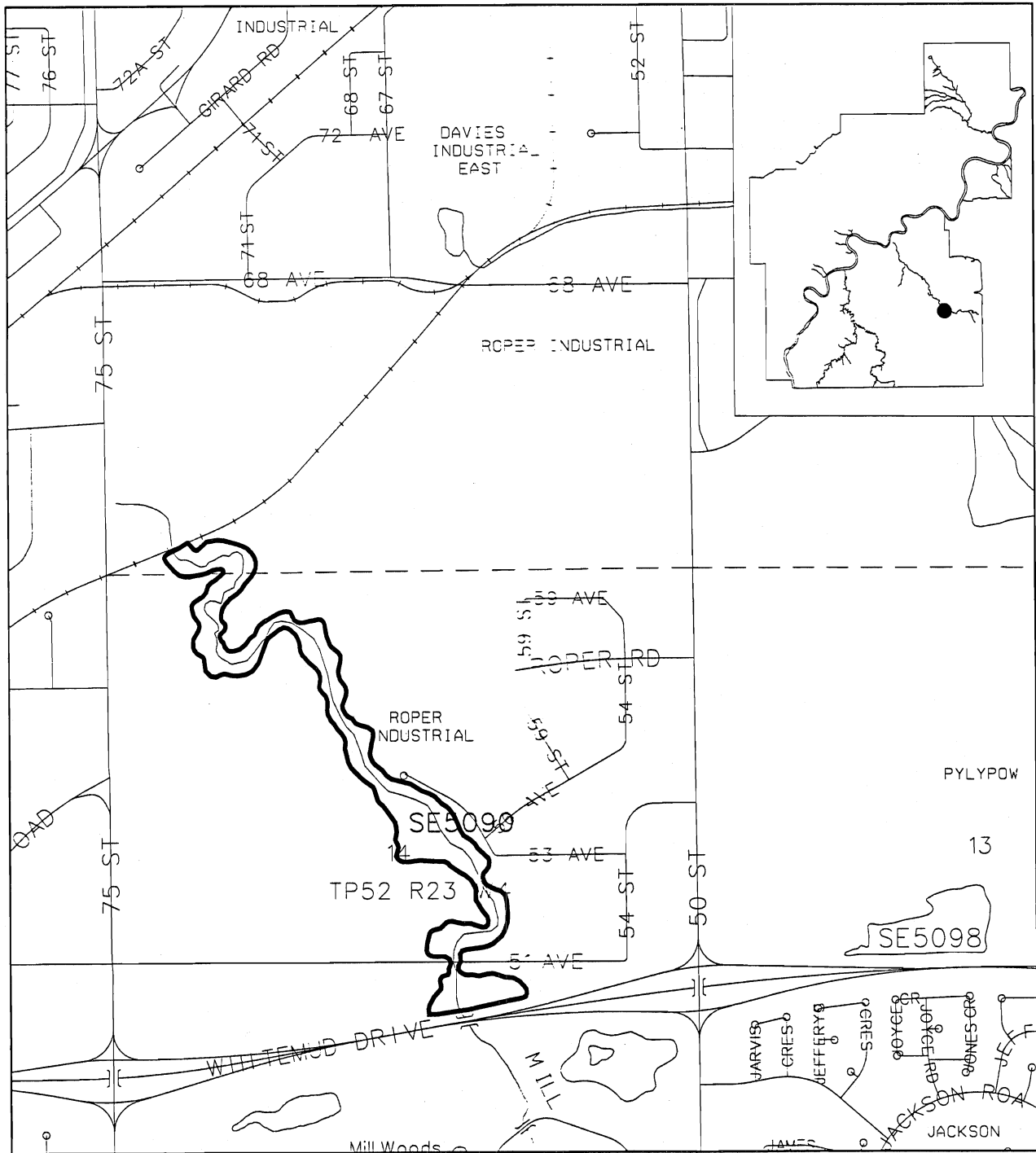
- provides critical linking function to other natural areas identified within and outside of city, including the north Saskatchewan River Valley and Ravine System
- provides critical hydrological function in maintaining local hydrology

Existing Land Use / Management:

- Stream surrounded by industrial developed to the north, east (infrastructure developed but no buildings yet), and wet;
- Possible contamination from snow-dumping site on 51 Avenue, east of 66 Street
- Some dumping and disposal of waste noted along stream course during inventory
- Southeast Industrial Outline Plan in place.

SITE RATING AND RANK			
Biophysical Features	76.1	Conservation Value	139.1
Ecological Integrity	47	Conservation Rank (out of 62)	19
Geographical Location	6	Risk Factor	1.50
Ecological Uniqueness	10	Overall Score	208.6
		Overall Rank (out of 62)	3

Site Map - SE 5090



SE 5009

Size: 2.16 ha

Site Location:

0.8 km north of Ellerslie Road between 17 St and 34 St
[SE 30 TP51 R23 W4M]

Site Description:

- Small permanent water body that extends well into the Restricted Development Area (RDA);
- Excellent emergent aquatic vegetation growth consisting mainly of cattails;
- Open water surrounded by willow/sedge complex and balsam poplar fringe adjacent cultivated fields;
- Water levels appear to be relatively stable;
- Poorly drained Orthic Humic Gleysols and Humic Gleysols have developed adjacent open water;
- Loams over clay loams and loams;
- Gently undulating morainal materials;
- Open water bodies and diverse vegetation communities that make up this site provide important waterfowl habitat (breeding, nesting, and feeding habitat likely in conjunction with other wetlands in area).

Current Condition: Essentially unchanged since 1993 Inventory.

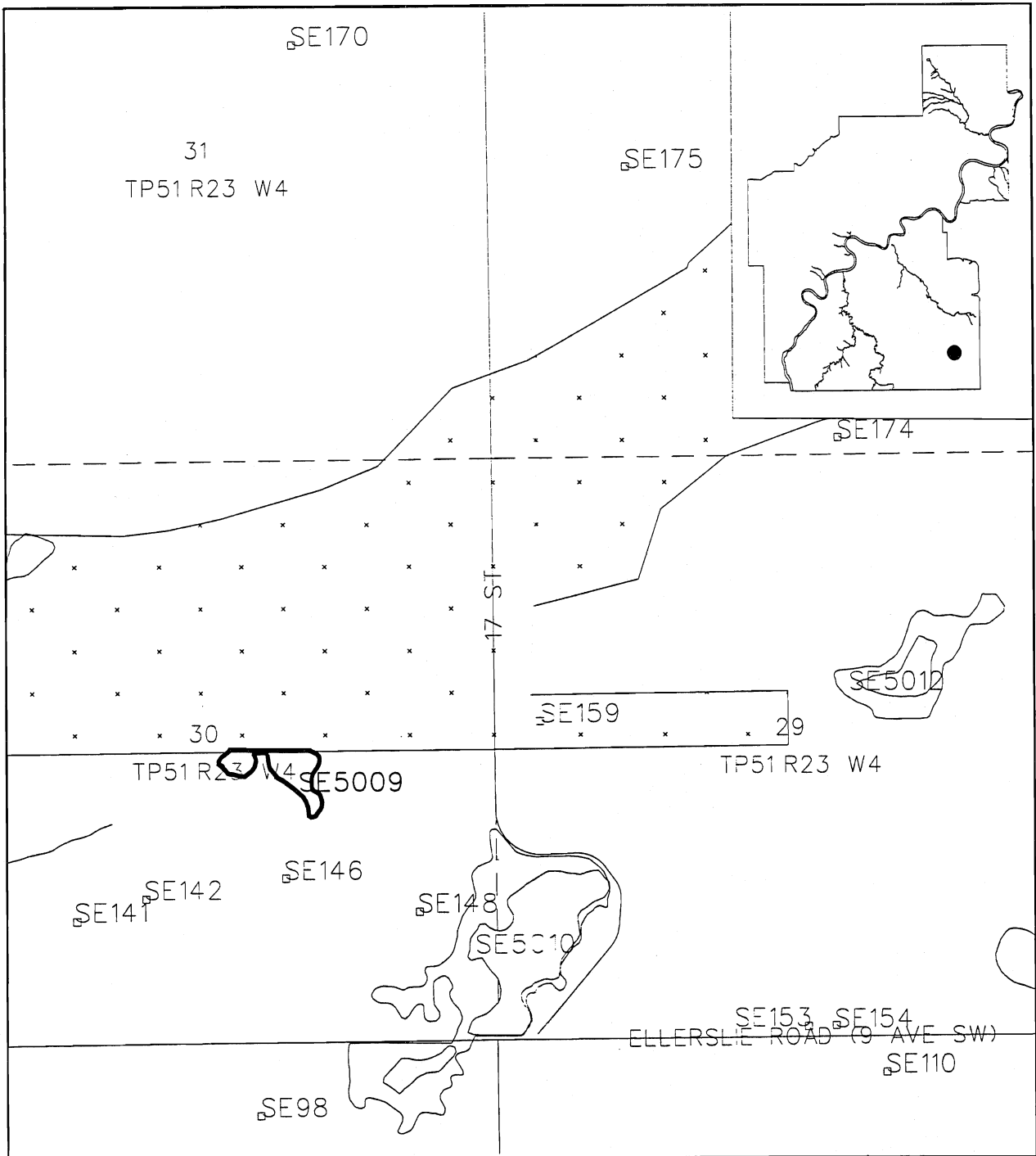
- Level of Significance:** **Local**
- good example of emergent aquatic vegetation
 - high plant species diversity
 - important waterfowl habitat
 - permanent water body

Existing Land Use / Management:

- Surrounding land use includes cultivated fields, a major power transmission line, and the Restricted Development Area;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	75.9	Conservation Value	120.9
Ecological Integrity	31	Conservation Rank (out of 62)	38
Geographical Location	8	Risk Factor	0.51
Ecological Uniqueness	6	Overall Score	120.9
		Overall Rank (out of 62)	45

Site Map - SE 5009



SOUTHEAST WOODLAND NATURAL AREA (SE 5016)

Size: 22.51 ha

Site Location:

North of 41 Avenue SW between 91 St SW and 101 St SW
[SE 16 TP51 R24 W4M]

Site Description:

- Mature, relatively undisturbed mixedwood-dominated stand with minor components of aspen-balsam poplar and wetlands with open water bodies;
- Mixedwood stand comprised mainly of white spruce, balsam poplar and to a lesser extent, aspen;
- White spruce approximately 125 - 130 years of age and 20 m in height;
- Shrubs include saskatoon, red-osier dogwood gooseberry, snowberry and elderberry;
- Heavy cover of Western Canada violet and smooth brome grass noted throughout site;
- Excellent white spruce regeneration, particularly in the western half of the site;
- Portions of the site are comprised of balsam poplar-aspen with abundant balsam poplar regeneration;
- Mountain ash is common in areas of mainly deciduous cover;
- Good horizontal and vertical structures observed within stands;
- Wetland has been enhanced by drainage efforts and the building of a dugout, resulting in deep, permanent water with excellent growth of cattails and sedges in areas adjacent to drainage ditch;
- Good snag and perch habitat provided by mature to over-mature balsam poplar;
- Moderately well to imperfectly drained Orthic Black Chernozems developed on nearly level to very gently undulating glaciolacustrine materials;
- Loams and clay loams over silty clay loams;
- Diversity of habitat should result in excellent wildlife habitat, however, the site does not appear to be overly productive for wildlife (this may be in part due to its isolated location);
- Some light browse by white-tailed deer on dogwood, rose and aspen regeneration, however, the site appears to be underutilized by deer considering the diversity of palatable browse species and habitats;
- 15 bird species recorded within site during 1993 Inventory, which is relatively poor considering the diversity of habitats;
- This stand is an excellent example of "old growth" forest within an urban setting and it may be the oldest stand within the City of Edmonton's table lands.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

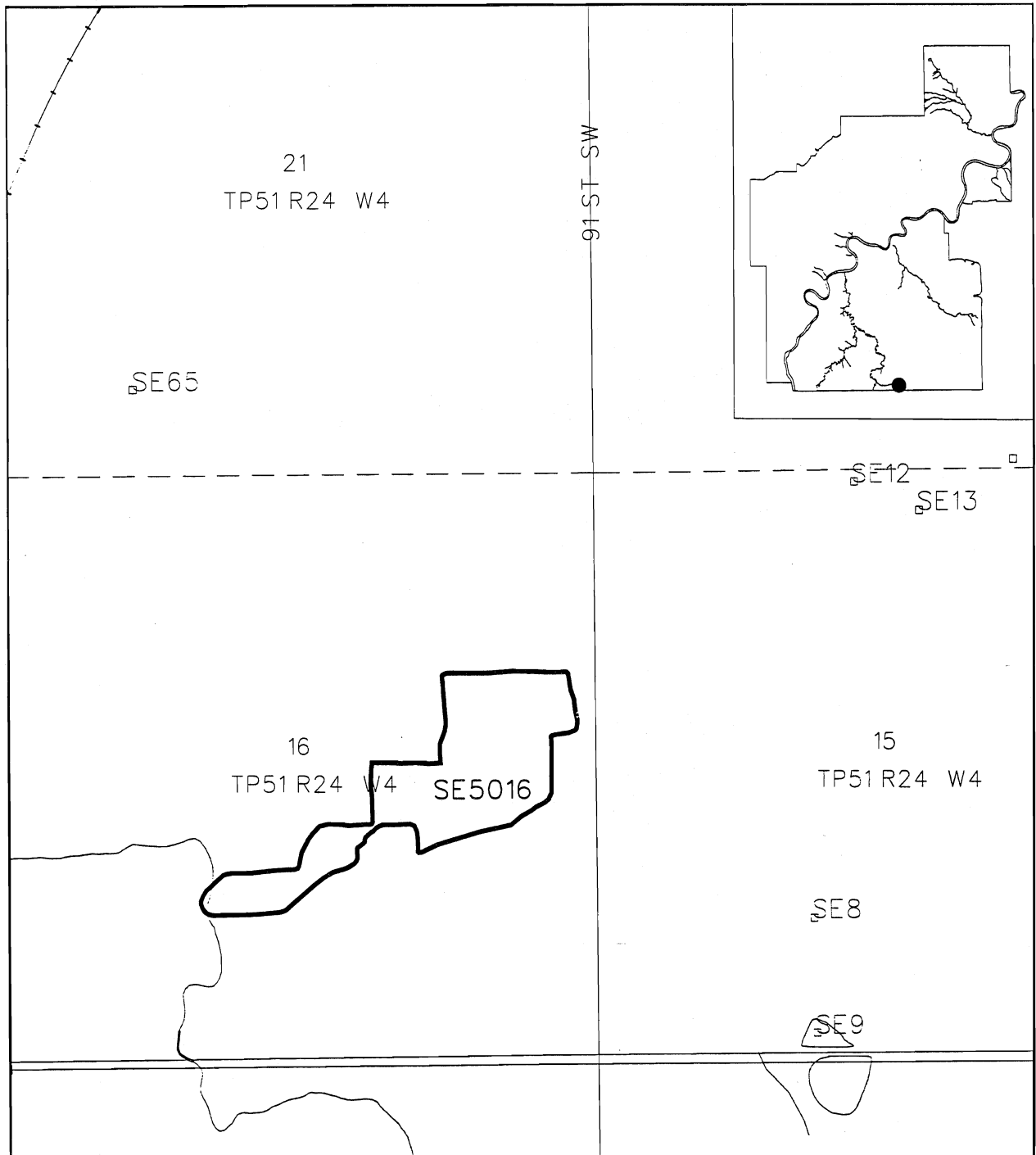
- good example of mature mixedwood vegetation
- permanent water with well-developed cattail vegetation
- "old growth" mixedwood vegetation
- high plant species diversity
- high habitat diversity

Existing Land Use / Management:

- Surrounding land uses include market gardens, cultivated fields, and country residential development;
- Ellerslie Industrial Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	100.6	Conservation Value	169.2
Ecological Integrity	47	Conservation Rank (out of 62)	5
Geographical Location	10	Risk Factor	1.12
Ecological Uniqueness	12	Overall Score	189.9
		Overall Rank (out of 62)	8

Site Map - SE 5016



SE 5015

Size: 6.51 ha

Site Location:

Between 17 St and Meridian St., north of 67 Avenue
[NE 20 T 52 R 23 W4M]

Site Description:

- Relatively young, homogeneous aspen woodlot with two small willow/sedge wetlands around perimeter;
- Some balsam poplar occurs in southern portion;
- Aspen approximately 40 yrs. old, and 10 m in height;
- Saskatoon common understorey species;
- Ephemeral wetlands may have water for short period of time during early spring;
- Moderately well to imperfectly drained Orthic Black Chernozems have developed on level to very gently undulating glaciolacustrine materials;
- Loams over silty clay loams and silty clays;
- Poorly drained Orthic Gleysols occur in two small wetlands;
- Water table in wetlands within 50 - 100 cm of the surface;
- Relatively homogeneous aspen stand provides potential ungulate habitat;
- Some bedding sites observed in willow shrublands and light browsing on shrub species.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

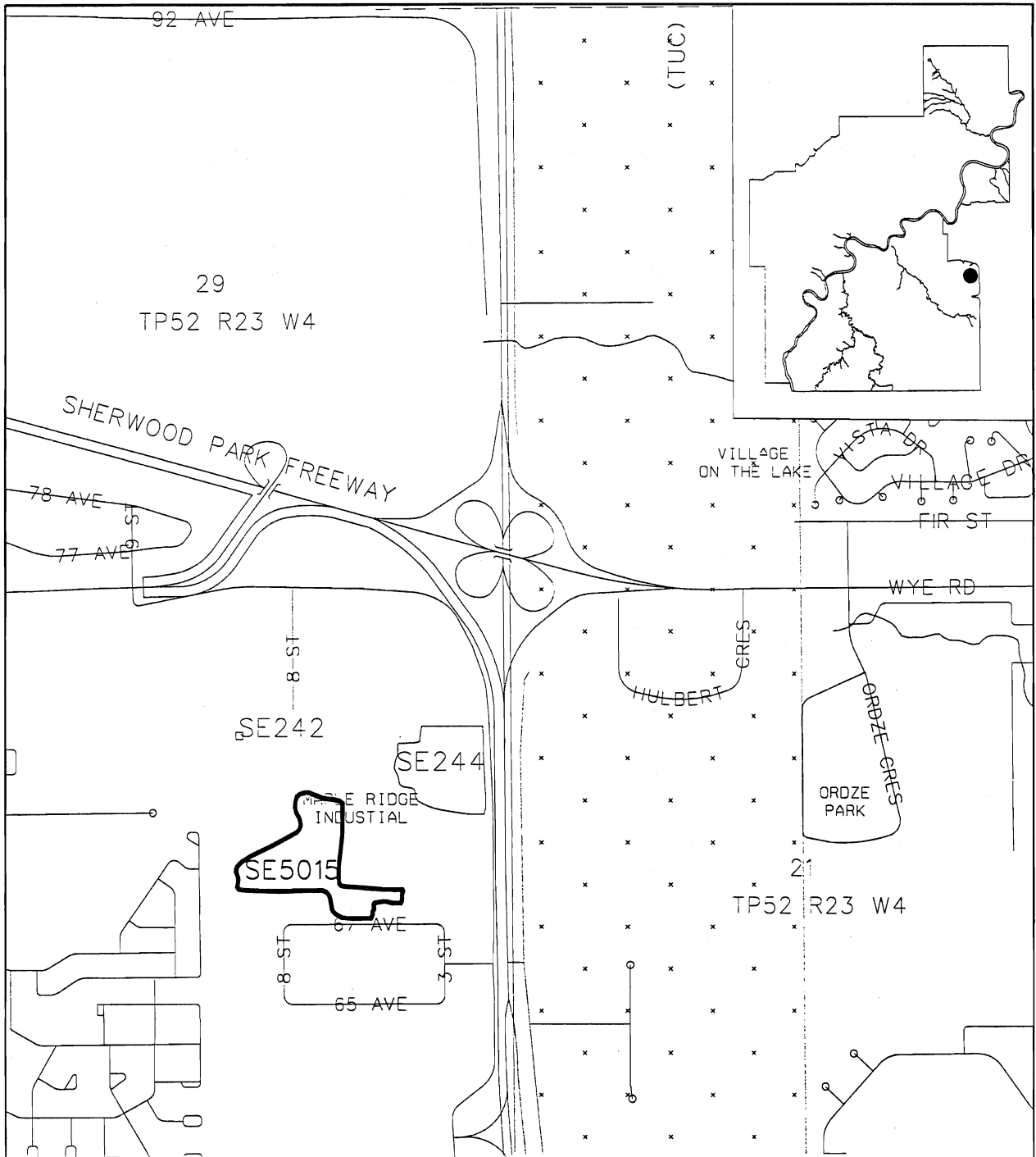
- good example of a young aspen community
- provides habitats for local wildlife
- close proximity to other natural wetlands (such as site SE 244)

Existing Land Use / Management:

- Surrounding land uses include country residential and cultivated fields;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	71.0	Conservation Value	120.0
Ecological Integrity	31	Conservation Rank (out of 62)	40
Geographical Location	8	Risk Factor	1.00
Ecological Uniqueness	10	Overall Score	120.0
		Overall Rank (out of 62)	47

Site Map - SE 5015



HIGHWAY 14 - SHERWOOD PARK CLOVERLEAF NATURAL AREA (SE 244)

Size: 4.98 ha

Site Location:

Immediately southwest of the Highway 14 - Sherwood Park Cloverleaf, south of the school [NE 20 TP52 R23 W4M]

Site Description:

- Mature remnant mixedwood stand with willow/sedge interior;
- White spruce-balsam poplar with some pure pockets of white spruce;
- Remnant balsam poplar around perimeter of interior wetland provides excellent snag habitat;
- Wetland composition varies greatly, from cattails to willow and sedges;
- Imperfectly to poorly drained Gleyed Black Chernozems and Humic Gleysols have developed on level glaciolacustrine materials in response to relatively high water tables;
- Silty clays and silty clay loams;
- Diversity of vegetation communities, ranging from closed coniferous and mixedwood communities to open willow/sedge wetlands provide unique wildlife habitats that support numerous species including white-tailed deer, red fox, coyote, and red squirrel;
- 22 bird species recorded during 1993 Inventory, including red-tailed hawk, downy woodpecker, northern flicker, western wood-pewee, alder and least flycatchers, tree swallow, black-capped chickadee, house wren, American robin, cedar waxwing, European starling, warbling vireo, yellow warble, song sparrow, red-winged blackbird, northern oriole, American goldfinch, clay-colored sparrow, brown-headed cowbird, white-breasted nuthatch and ruby-crowned kinglet.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: **Local**

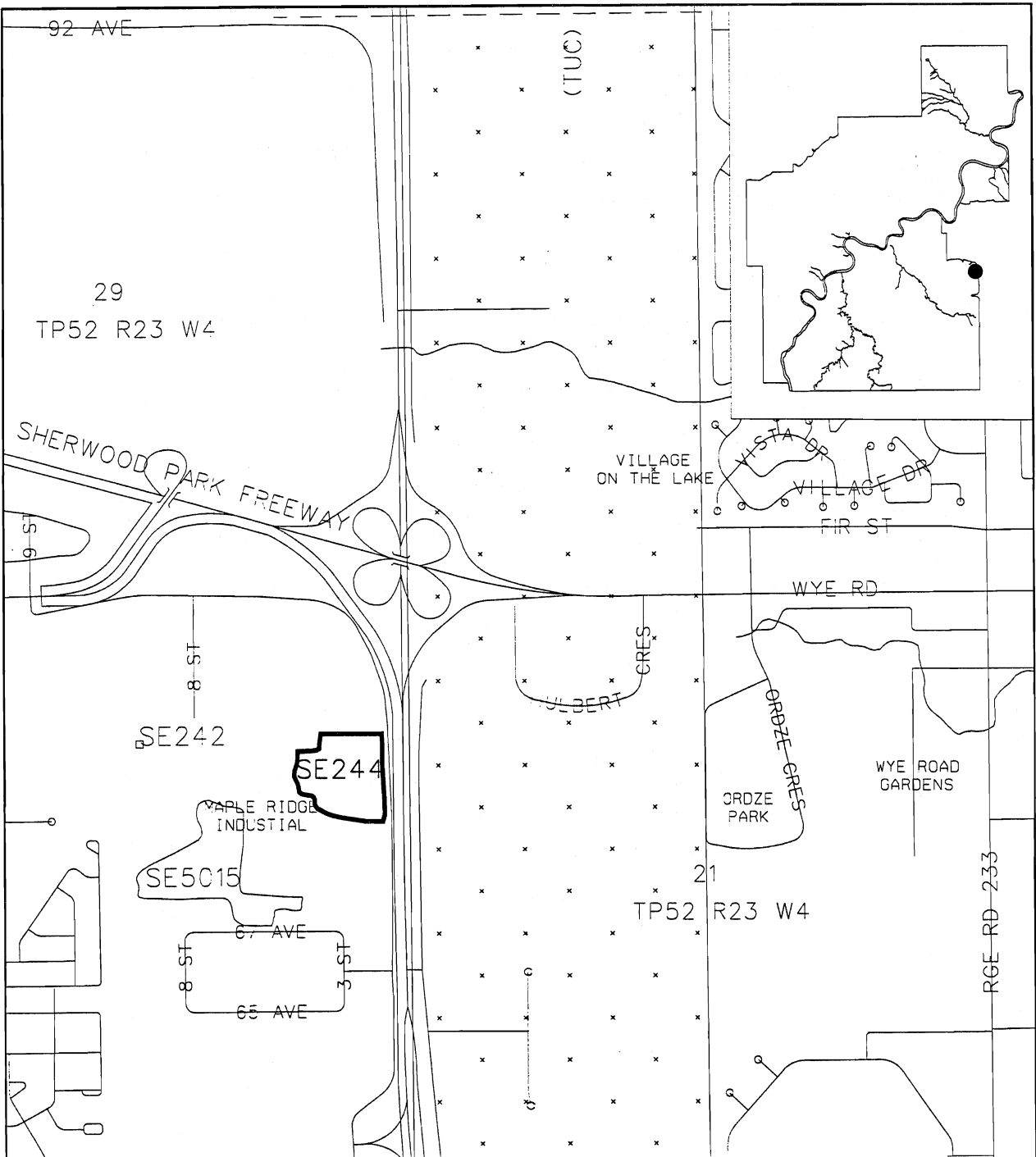
- good example of mature mixedwood vegetation
- high plant species diversity
- high habitat diversity
- diverse wildlife habitat

Existing Land Use / Management:

- Surrounding land uses include an abandoned school yard, country residential development, major highway and roads, and cultivated fields;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	82.3	Conservation Value	139.3
Ecological Integrity	37	Conservation Rank (out of 62)	18
Geographical Location	8	Risk Factor	1.00
Ecological Uniqueness	12	Overall Score	139.3
		Overall Rank (out of 62)	31

Site Map - SE 244



SOUTHWEST MIXEDWOOD NATURAL AREA (SW 6001)

Size: 24.53 ha

Site Location:

South of Ellerslie Road, between 111 Street and 127 Street SW;
[NW 19 TP51 R 24 W4M]

Site Description:

- Largest woodlot in southwest Edmonton;
- Healthy appearance;
- Mixedwood community composed of white spruce and balsam poplar and to a lesser extent, paper birch and aspen;
- Stand characterized by rich and diverse understorey vegetation composed of mountain ash, low-bush cranberry, cherry, red-osier dogwood, saskatoon, rose, snowberry, hazelnut and gooseberry;
- Numerous fern species observed including oak fern;
- Richness of site indicated by 10 m mountain ash and 25 m white spruce (latter approximately 90 years old);
- Well drained Orthic Black Chernozems have developed on nearly level glaciolacustrine materials;
- Textures vary from loams and silt loams on the surface to silty clays and silty clay loams in the unaltered parent materials;
- High clay content of parent materials results in availability of nutrients for growth;
- Size of the stand combined with the diversity of vegetation provides excellent wildlife habitat on a year-round basis;
- Local residents report between 35 and 40 white-tailed deer and the occasional moose using this stand (some view deer as a problem during the winter months considering its closeness to Ellerslie Road);
- Numerous well- established game trails exist within the stand;
- 17 bird species recorded during site visit in 1993 Inventory, including western wood-pewee, least flycatcher, red-eyed vireo, warblers, red-breasted nuthatch and golden-crowned kinglet;
- Golden-crowned kinglet, a confirmed breeder on this site, has never previously been reported breeding in Edmonton (its breeding habitat occurs primarily in the mountains, foothills and boreal forests);
- Richness of the site indicated by the presence of ferns, especially oak fern, and the diversity of both tall tree and shrub species.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

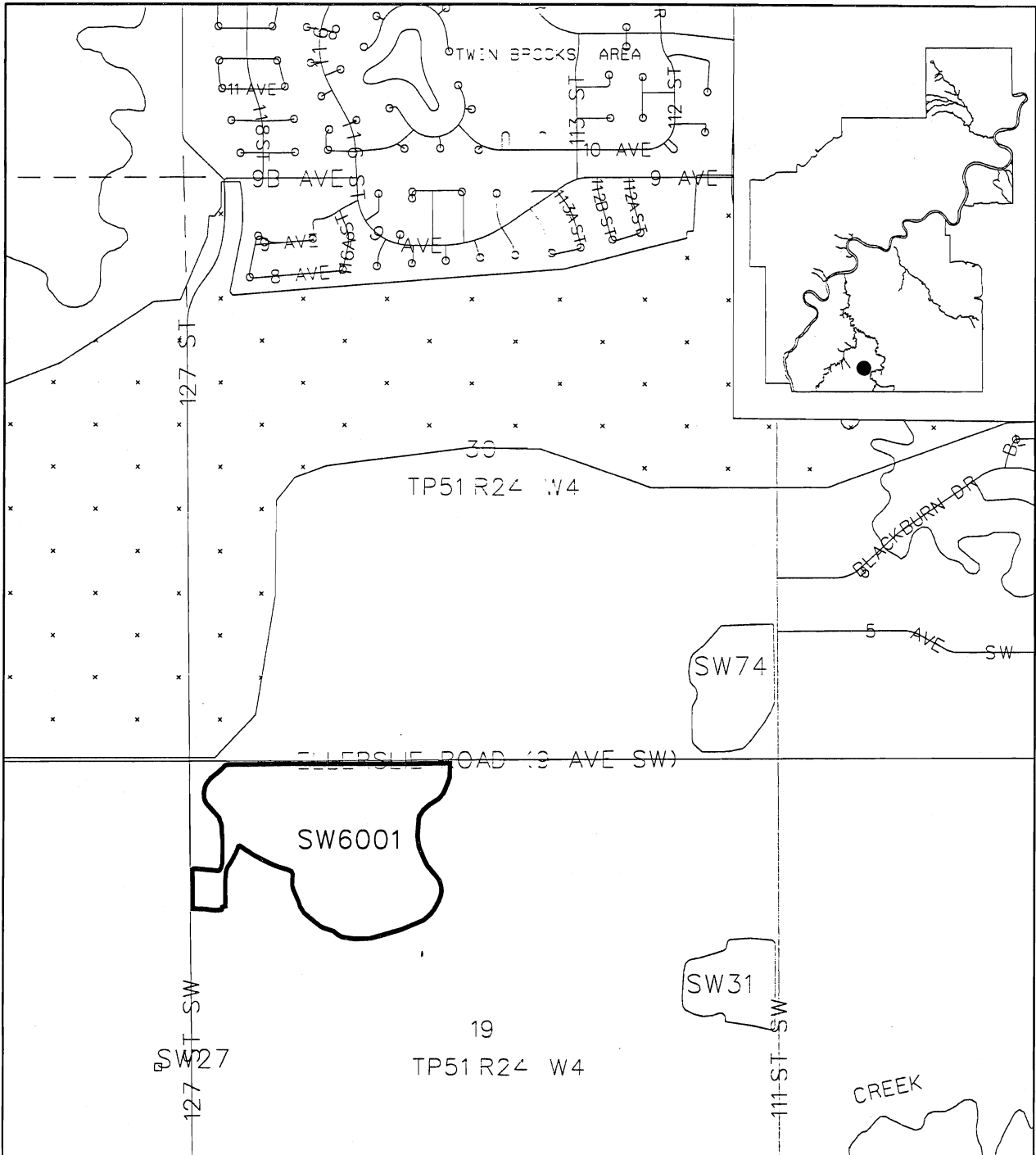
- best example within the Edmonton table lands of a mature mixedwood forest that is of sufficient size to maintain ecological integrity;
- provides year-round habitat for a variety of wildlife species
- significant plant species
- high wildlife species diversity
- "old growth" mixedwood stand

Existing Land Use / Management:

- Site is surrounded by cultivated fields to the south and east, Ellerslie Road to the north and country residential and 127 Street SW to the west;
- Popular bird-watching site (Edmonton Bird Club), known locally as "Woodpecker Woods";
- Owned by Miller Properties, who plan on developing a residential sub-division, but still in the early planning stages (i.e., no approved plan in place);
- Two other sites (SW 31 and SW 74) with similar vegetation occur to the east of this site. While the vegetation appears to be similar, the diversity of wildlife species present within these stands is considerably less due to their smaller size (less than 4.5 ha).
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	63.7	Conservation Value	133.7
Ecological Integrity	44	Conservation Rank (out of 62)	25
Geographical Location	10	Risk Factor	0.66
Ecological Uniqueness	16	Overall Score	133.7
		Overall Rank (out of 62)	36

Site Map - SW 6001



SOUTHWEST HIGHLAND (SW 86)

Size: 6.65 ha

Site Location:

0.4 km southwest of 23 Avenue and 142 Street;
[NW 36 TP51 R 25 W4M]

Site Description:

- Highest point in the City of Edmonton;
- Vegetation consists of a unique combination of young seral and pioneer shrubland communities;
- West-facing slope consists of pioneer shrubland community of beaked hazelnut and snowberry (result of clearing of native vegetation over 15 years ago and letting land revert to natural conditions);
- Young seral aspen communities with dense understories of saskatoon occur on east- and north-facing slopes;
- grassland (pastureland) is present;
- Well drained Dark Gray Luvisols have developed on moderately to strongly rolling (9-30% slope) glaciofluvial materials (deltaic deposits);
- Loam overlying sandy loams, stone content increases with depth;
- Feature is quite prominent in southwest Edmonton and can be easily distinguished from afar;
- Due to its proximity to other ESA/SNAs on the tablelands and to the North Saskatchewan River Valley and Ravine System (Whitemud Creek), and its unique combination of young seral and pioneer communities, the site is extensively used by white-tailed deer (many shrubs are heavily browsed);
- High vantage point for raptors.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

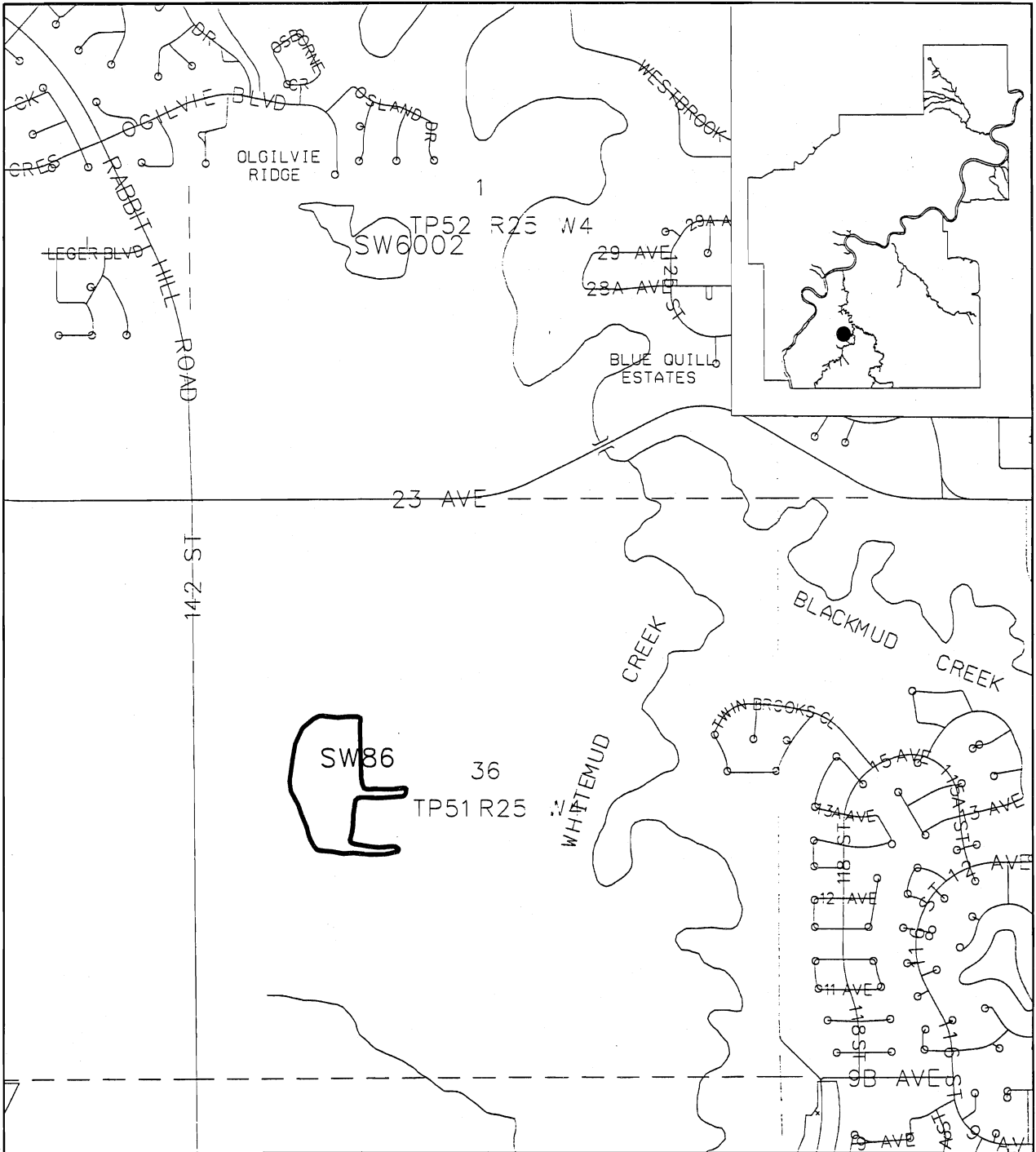
- significant landform feature
- visual and physical link with other ESA/SNAs identified within tablelands and with the North Saskatchewan River Valley
- good example of young seral and pioneer vegetation communities

Existing Land Use / Management:

- Farmyard, cultivated fields, gardens and gravel pits surround site;
- The Grange Area Structure Plan and the Terwillegar Heights Servicing Design Brief in place.

SITE RATING AND RANK			
Biophysical Features	64.4	Conservation Value	127.4
Ecological Integrity	39	Conservation Rank (out of 62)	33
Geographical Location	12	Risk Factor	1.39
Ecological Uniqueness	12	Overall Score	177.0
		Overall Rank (out of 62)	12

Site Map - SW 86



SOUTHWEST WETLAND (SW 2)

Size: 3.25 ha

Site Location:

1.6 km south of Ellerslie Road, on the east side of 184 Street SW
[NW 16 TP51 R25 W4M]

Site Description:

- Healthy ephemeral wetland complex approximately 0.4 km east of the North Saskatchewan River Valley;
- Vegetation consists mainly of willow/sedge with occasional balsam poplar and cattails (3 species of willow recorded including *Salix discolor*, *S. bebbiana* and *S. interior*);
- Poorly drained Orthic Gleysols developed on gently undulating glaciolacustrine materials;
- Textures range from silty clays to clay;
- High clay content of soils and subsequent topographic position responsible for high water-holding capacity and subsequent wetland vegetation;
- Close proximity (less than 0.5 km) to the North Saskatchewan River, and is used extensively by white-tailed deer and moose for cover and food when travelling between adjacent upland sites and the river valley;
- Both *Salix bebbiana* and *S. discolor* are "hedged", indicating heavy browsing by ungulates (browsing at 2.5 m height common on willows and indicative of moose);
- Extensive deer tracks observed at site.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance:

Local

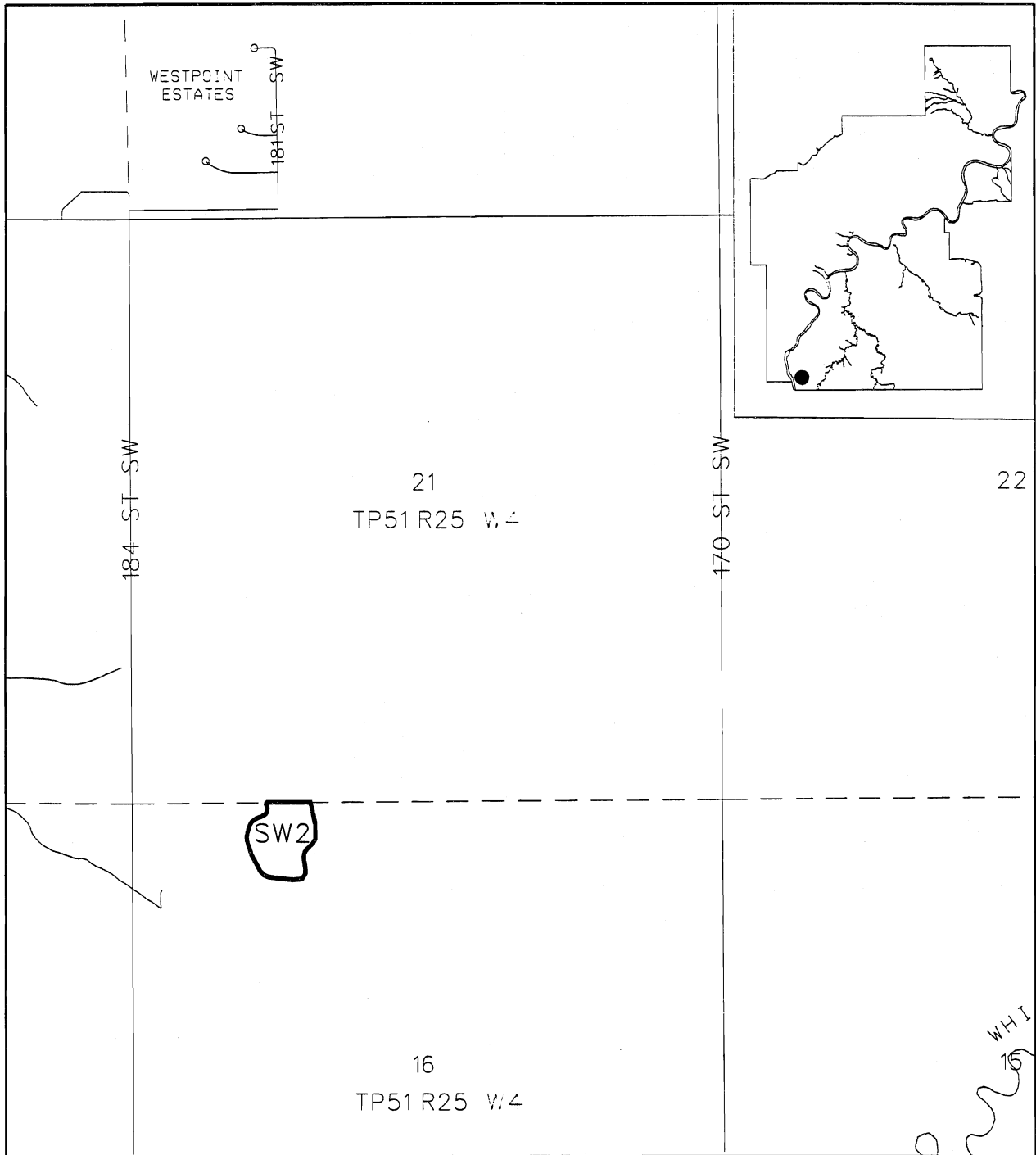
- good example of a willow/sedge ephemeral wetland
- provides habitat for local ungulates, including white-tailed deer and moose
- provides critical function in maintaining or balancing local hydrology
- provides linking function to the North Saskatchewan River Valley

Existing Land Use / Management:

- Site surrounded by cultivated alfalfa fields (to edge);
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	57.9	Conservation Value	114.9
Ecological Integrity	33	Conservation Rank (out of 62)	48
Geographical Location	12	Risk Factor	0.51
Ecological Uniqueness	12	Overall Score	114.9
		Overall Rank (out of 62)	52

Site Map - SW 2



VIRGINIA PARK WOODLAND (SW 31)

Size: 5.37 ha

Site Location:

0.5 km south of Ellerslie Road, on 111 Street SW
[NE 19 TP51 R 24 W4M]

Site Description:

- Healthy, relatively undisturbed mixedwood stand of balsam poplar - white spruce;
- Understorey characterized by extensive white spruce regeneration and a good diversity of shrub species including red-osier dogwood, low-bush cranberry, wild raspberry, saskatoon, bracted honeysuckle, choke cherry, elderberry and gooseberry;
- Spruce approximately 80 years old and between 20 -24 m in height;
- Balsam poplar approximately 90 - 100 years old and has a more decadent appearance than spruce;
- Significant amounts of deadfall and snag habitat;
- Moderately well to imperfectly drained Orthic Black Chernozems and Gleyed Black Chernozems developed on level to very gently undulating glaciolacustrine material;
- Silt loams overlying silty clays;
- Perched water table at 45 - 50 cm depth.
- Site was formerly part of a larger woodlot that included sites SW 6001 and SW 74;
- Considerably smaller than SW 6001 to the west, so does not provide the critical habitat required to support year-round populations of white-tailed deer as does SW 6001;
- May provide temporary cover for deer when moving between SW 6001 and Blackmud Creek.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

- good example of mature mixedwood community
- provides habitat for local wildlife

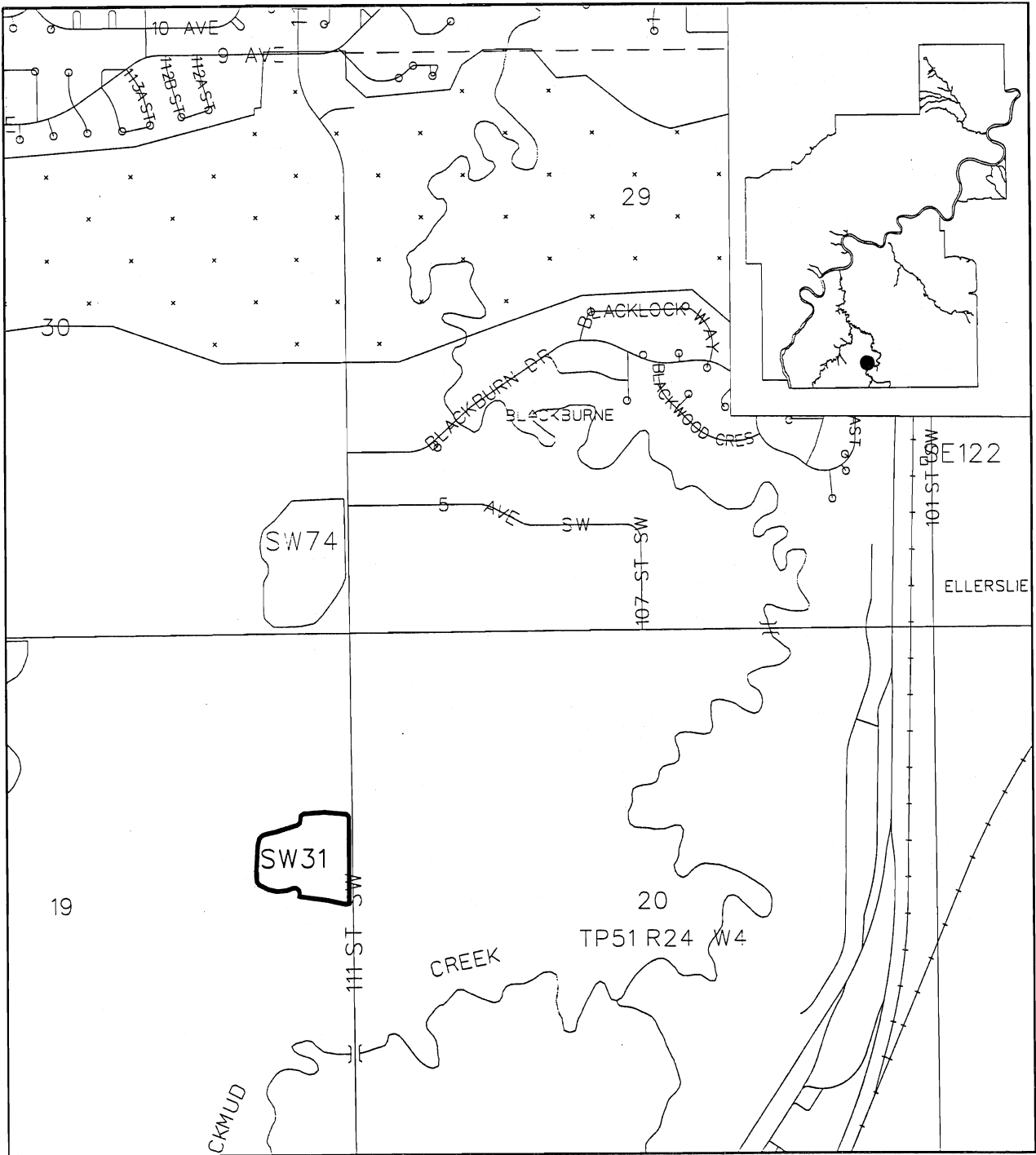
Existing Land Use / Management:

- A small trail has been pushed through the stand and is currently used for dumping garbage;
- Surrounding land uses include cultivated fields, the Virginia Park Greenhouse to the north and 111 Street SW to the east;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK

Biophysical Features	53.7	Conservation Value	98.7
Ecological Integrity	29	Conservation Rank (out of 62)	56
Geographical Location	10	Risk Factor	0.64
Ecological Uniqueness	6	Overall Score	98.7
		Overall Rank (out of 62)	58

Site Map - SW 31



NORTH VIRGINIA PARK WOODLAND (SW 74)

Size: 7.24 ha

Site Location:

Northwest corner of 111 St. and Ellerslie Road
[SE 30 TP51 R24 W4M]

Site Description:

- Relatively healthy, mature mixedwood stand composed mainly of white spruce and to a lesser extent, balsam poplar and white birch;
- Well-developed shrub understory of wild raspberry, red-osier dogwood, mountain ash, snowberry, bracted honeysuckle, elderberry, tall- and low-bush cranberry, beaked hazelnut, Manitoba maple, choke cherry and gooseberry;
- White spruce 85 - 100 years old and 20 - 24 m in height;
- Imperfectly to moderately well drained Gleyed Black and Orthic Black Chernozems have developed on nearly level glaciolacustrine parent materials;
- Clay loams over silty clay;
- Perched water tables within 50 cm of the surface for a portion of the year;
- Although the site is not as large as the adjacent SW 6001, it does provide habitat for white-tailed deer, red squirrel, great horned owl and a number of songbirds;
- 12 songbird species observed during 1993 Inventory, including American robin, pileated woodpecker, least flycatcher, black-capped chickadee, house wren, red-eyed vireo, yellow warbler, dark-eyed junco, red-winged blackbird, northern oriole, white-breasted nuthatch and clay-colored sparrow;
- Bracted honeysuckle, mountain ash and red-osier dogwood browsed by deer.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

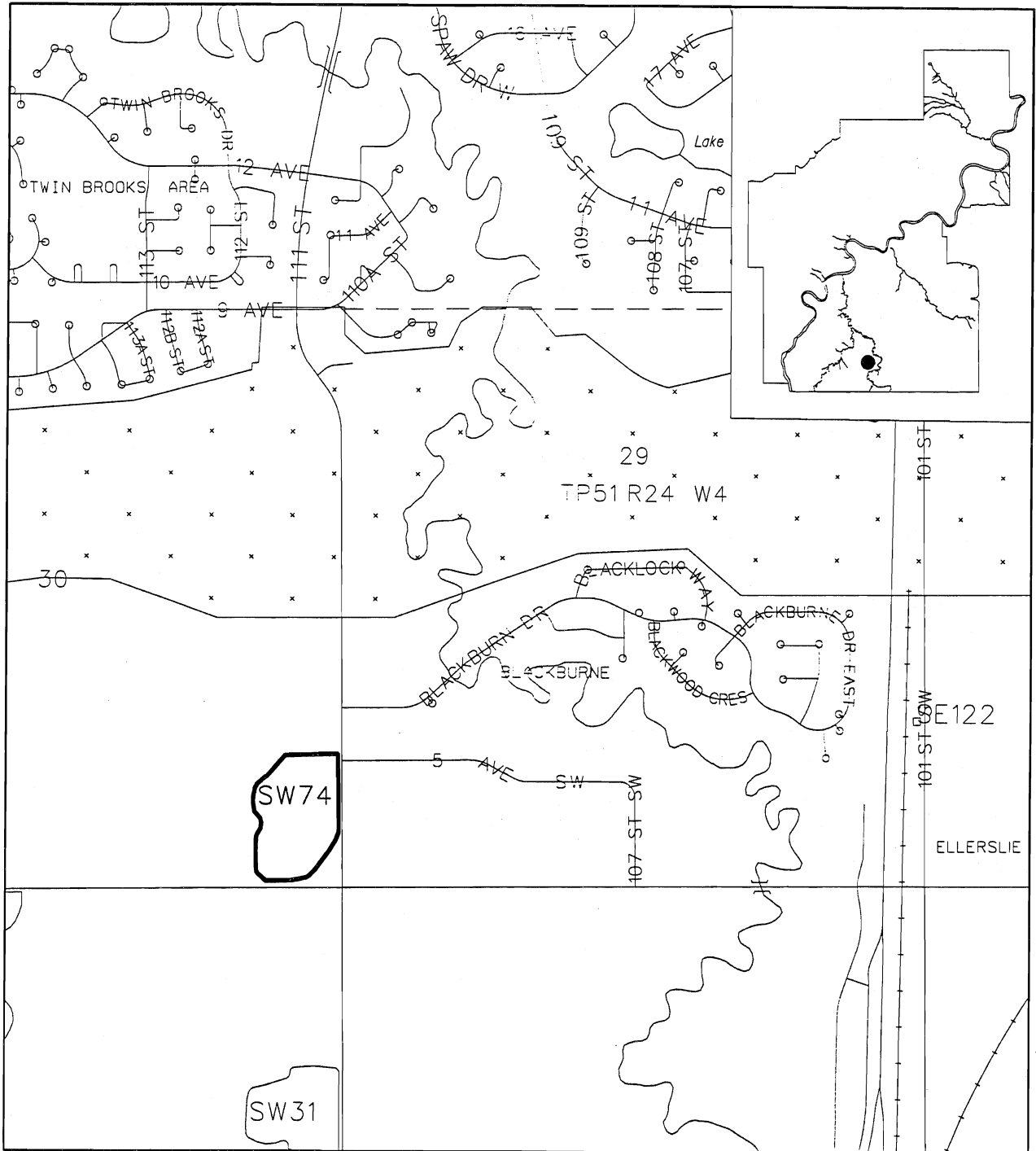
- good example of mature white spruce - balsam poplar community
- provides habitat for local wildlife

Existing Land Use / Management:

- Surrounding land uses include roads (Ellerslie Road) and high use areas such as the Virginia Park Greenhouse facility.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	68.4	Conservation Value	110.4
Ecological Integrity	26	Conservation Rank (out of 62)	50
Geographical Location	10	Risk Factor	0.61
Ecological Uniqueness	6	Overall Score	110.4
		Overall Rank (out of 62)	54

Site Map - SW 74



41 AVENUE SW - 184 STREET SW WOODLAND (SW 1)

Size: 2.14 ha

Site Location:

Extreme southwest corner of city;
Northwest corner of 41 Avenue SW and 184 Street SW
[SW 16 TP 51 R 25 W4M]

Site Description:

- Healthy, mature balsam poplar stand with a significant component of white birch immediately adjacent the North Saskatchewan River Valley;
- Minor component of aspen and white spruce;
- Well- developed shrubby understorey of red-osier dogwood, beaked hazelnut, rose, saskatoon and honeysuckle;
- 18-22 m tree heights, approximately 100 years old;
- Diverse shrub understorey is used extensively by white-tailed deer for food and cover (numerous bedding sites observed at site, perhaps for fawning purposes);
- 13 different bird species observed during 1993 Inventory, including downy woodpecker, least flycatcher, black-billed magpie, black-capped chickadee, house wren, American robin, cedar waxwing, warbling and red-eyed vireo, yellow warbler, song sparrow, brown-headed cowbird, and northern oriole;
- Good snag habitat provided by mature to over-mature balsam poplar and white birch;
- Well drained Orthic Black Chernozems have developed on nearly level glaciolacustrine materials;
- Silty clay loams overlying sandy loams.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

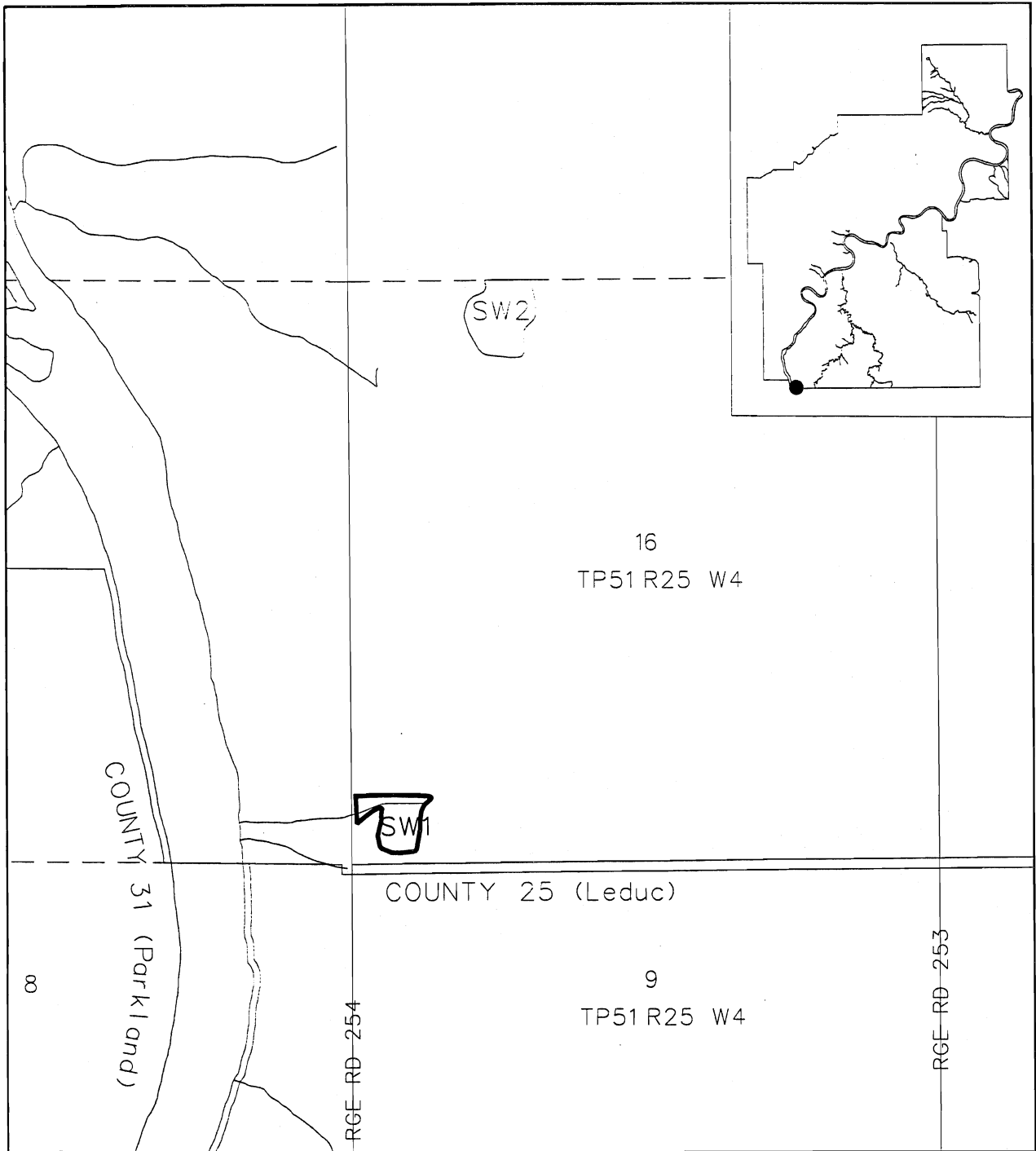
- good example of mature balsam poplar community
- possible "old growth" stand
- provides habitat for local wildlife species
- provides link to North Saskatchewan River Valley

Existing Land Use / Management:

- Surrounding land uses include cultivated fields, roads, the North Saskatchewan River Valley and Ravine System and country residential development;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	53.1	Conservation Value	123.1
Ecological Integrity	46	Conservation Rank (out of 62)	37
Geographical Location	12	Risk Factor	0.56
Ecological Uniqueness	12	Overall Score	123.1
		Overall Rank (out of 62)	44

Site Map - SW 1



SOUTHWEST DECIDUOUS WOODLAND (SW 8)

Size: 5.60 ha

Site Location:

Between Blackmud Creek and 127 St. SW along 30 Avenue SW
[NW 18 TP51 R 24 W4M]

Site Description:

- Healthy, mature, deciduous, two-aged stand comprised of balsam poplar and younger aspen;
- Variable canopy closure gives rise to well-developed vertical structure of shrubs, including raspberry, rose, cherry, Manitoba maple, snowberry, red-osier dogwood and saskatoon;
- Moderately well to imperfectly drained Orthic Black Chernozems and Gleyed Black Chernozems have developed on level glaciolacustrine materials;
- Loamy textures overlay silty clay loams;
- Perched water table at 50 - 60 cm depth;
- Mature seral community that is relatively undisturbed and is sufficiently large to be of value for white-tailed deer, small mammals and songbirds;
- 7 bird species observed during 1993 Inventory, including song sparrow, brown-headed cowbird, northern oriole, western wood-pewee, least flycatcher, house wren, American robin, warbling vireo and yellow warbler;
- Wild raspberry and red-osier dogwood browsed quite heavily by deer and rabbits;p
- Site is rather isolated and is approximately 1.0 km from Blackmud Creek, but may provide some linking function for ungulates and songbirds when moving between tableland sites to the west and Blackmud Creek.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: **Local**

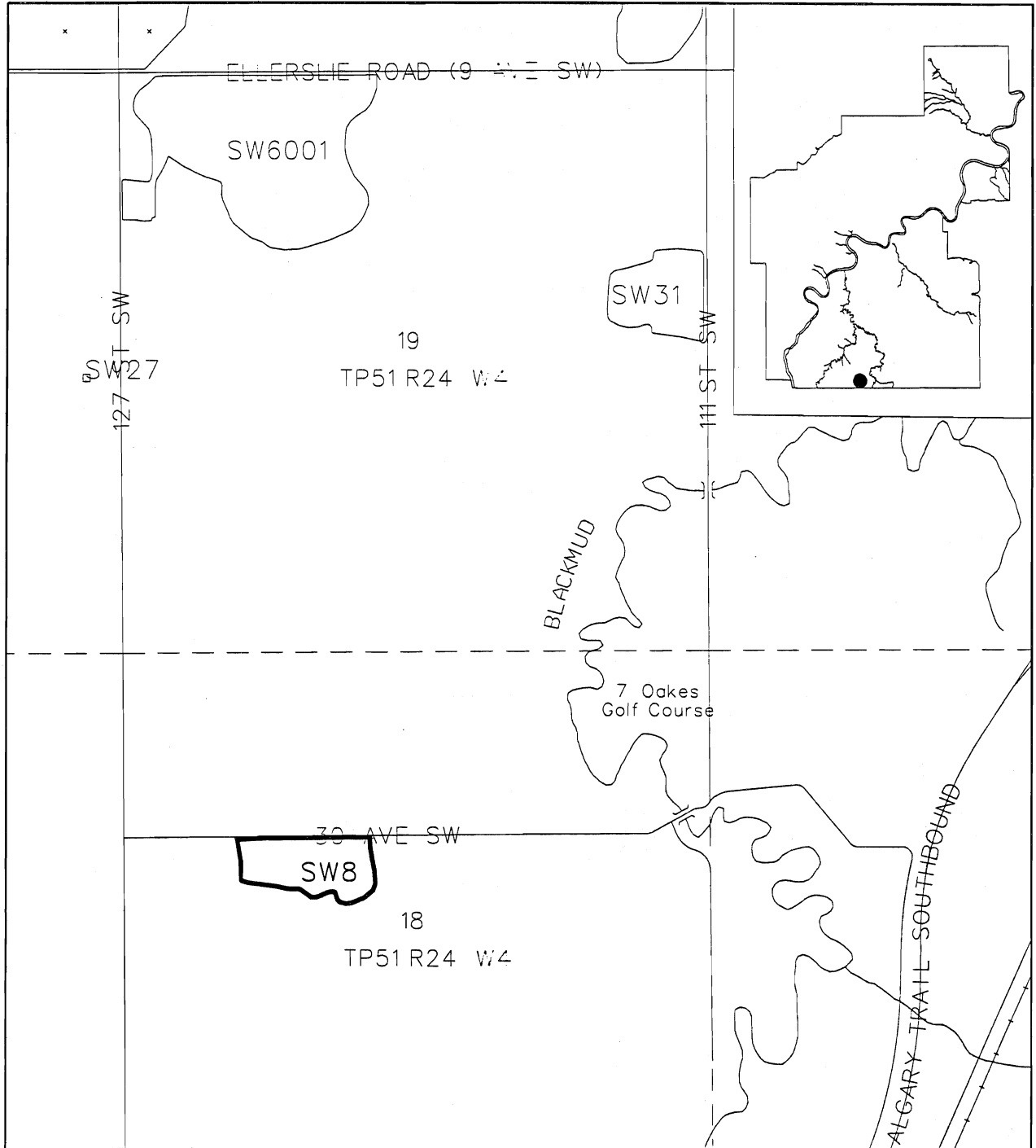
- good example of mature balsam poplar stand with young understorey of aspen
- provides habitat for local wildlife

Existing Land Use / Management:

- Surrounding land uses include cultivated fields and country residential developments;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	42.8	Conservation Value	97.8
Ecological Integrity	39	Conservation Rank (out of 62)	57
Geographical Location	12	Risk Factor	0.46
Ecological Uniqueness	4	Overall Score	97.8
		Overall Rank (out of 62)	59

Site Map - SW 8



UNIVERSITY OF ALBERTA FARM WOODLAND (SW 26)

Size: 5.36 ha

Site Location:

South of Ellerslie Road, between 127 Street SW and 141 Street SW
[NE 24 TP51 R 25 W4M]

Site Description:

- Healthy, but narrow, remnant balsam poplar-aspen stand with dense understorey thickets of red-osier dogwood, rose, honeysuckle, gooseberry, snowberry, wild raspberry, saskatoon and cherry;
- Good vertical structure within stand;
- 18 - 22 m canopy height, approximately 100 m wide by 0.6 km long;
- Moderately well drained Orthic Black Chernozems developed on level glaciolacustrine materials;
- Loams and silt loams overlying clay loams and clay, no evidence of perched water tables;
- Hedging of young aspen saplings and red-osier dogwood suggests that this site is a critical travel corridor for white-tailed deer between other tableland sites (especially SW6001, Southwest Mixedwood Woodlot) and Whitemud Creek;
- Extensive evidence of deer (tracks) observed along edges of stand.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

- provides habitat for local wildlife, especially white-tailed deer
- provides linkages between ESA/SNAs within the tablelands and to the North Saskatchewan River Valley and Ravine System

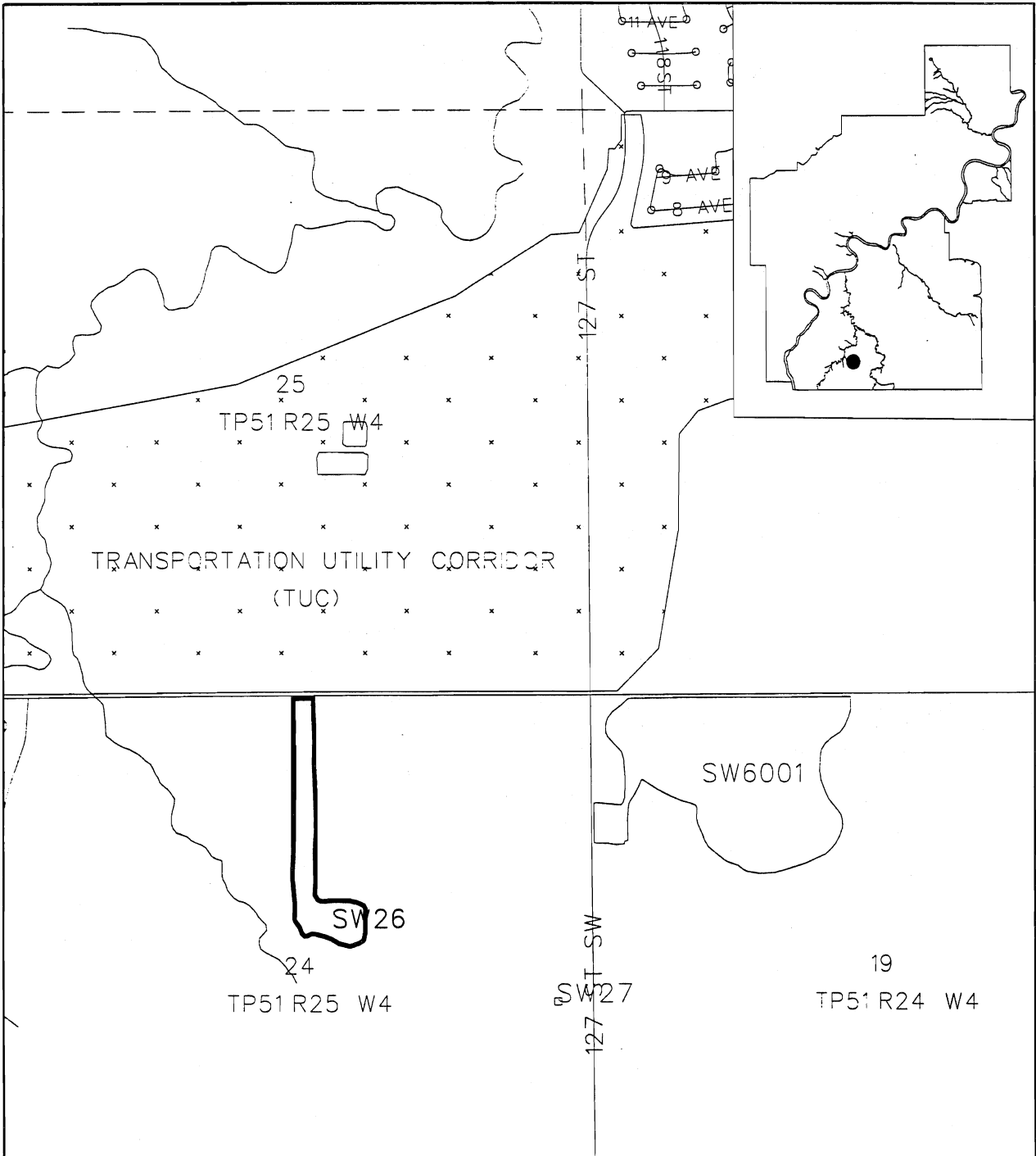
Existing Land Use / Management:

- Surrounding land uses include the University of Alberta Research Farm, Ellerslie Road, and MacTaggart Sanctuary;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK

Biophysical Features	42.8	Conservation Value	87.8
Ecological Integrity	31	Conservation Rank (out of 62)	61
Geographical Location	10	Risk Factor	0.51
Ecological Uniqueness	4	Overall Score	87.8
		Overall Rank (out of 62)	62

Site Map - SW 26



NW 7035 (formerly NW 110 and NW 7035)

Size: 41.35 ha

Site Location:

Approximately 2.0 km north of Yellowhead Trail and immediately south of 137 Avenue, on west side of 170 Street;

Site located south of CNR tracks between Grocery People property and the IXL Brickyard to north. [NE 21 TP53 R25 W4M]

Site Description:

- In 1993 Inventory, NW 110 and NW 7035 were considered as separate sites, now they are considered together as a significant mature mixedwood and wetland complex;
- Large, aspen-dominated woodlot with minor amounts of balsam poplar immediately adjacent to well-developed wetland with willow margins and balsam poplar pockets;
- Wetland component is between the Grocery People warehouse to the south and a brickyard to the north, adjacent to a large stand that has been partially removed and is now regenerating to shrubs;
- Wetland component composed of open water with dense willow margins, and a small aspen-balsam poplar stand in the northwest corner;
- Water body permanent with excellent development of cattails and rushes;
- Water depths appear to be in excess of 3 m and water has a quite clear appearance;
- Willow species quite diverse and consists of *Salix bebbiana*, *S. interior*, *S. discolor* and other species;
- Shrub species found within both upland and wetland communities include willow, rose, saskatoon, cherry, raspberry, mountain ash, beaked hazelnut, snowberry, and buffaloberry;
- Poorly drained Orthic Gleysols in wetland components, moderately well to imperfectly drained Orthic and Gleyed Gray Luvisols in upland components, both developed on gently undulating glaciolacustrine materials;
- Organic veneers overly glaciolacustrine materials adjacent open water;
- Perched water tables common within upland soils.
- Diversity of vegetation that occurs within this site, combined with the permanent water body, provides some of the best wildlife habitat in Edmonton and area;
- One of only four sites within the tablelands where black-crowned night herons were observed (8 individuals recorded at site and nests were found along the northern side of site in dense willow thickets during 1993 Inventory, 2 individuals recorded again at site during 1999 field visit);
- Heavily used by white-tailed deer (numerous game trails observed), coyote and numerous waterfowl species including green-winged and blue-winged teal, northern shoveler, American wigeon, lesser scaup;
- Other bird species recorded during 1993 Inventory include American cout, spotted sandpiper, alder flycatcher, tree swallow, magpies, American crow, black-capped chickadee, house wren, common yellowthroat, cliff swallow, clay-colored sparrow, song sparrow, Lincoln's sparrow, red-winged and yellow-headed blackbirds, and American goldfinch.

Current Condition: Some additional clearing and disturbance has occurred since 1993 Inventory, however site remains relatively pristine.

Level of Significance: Local

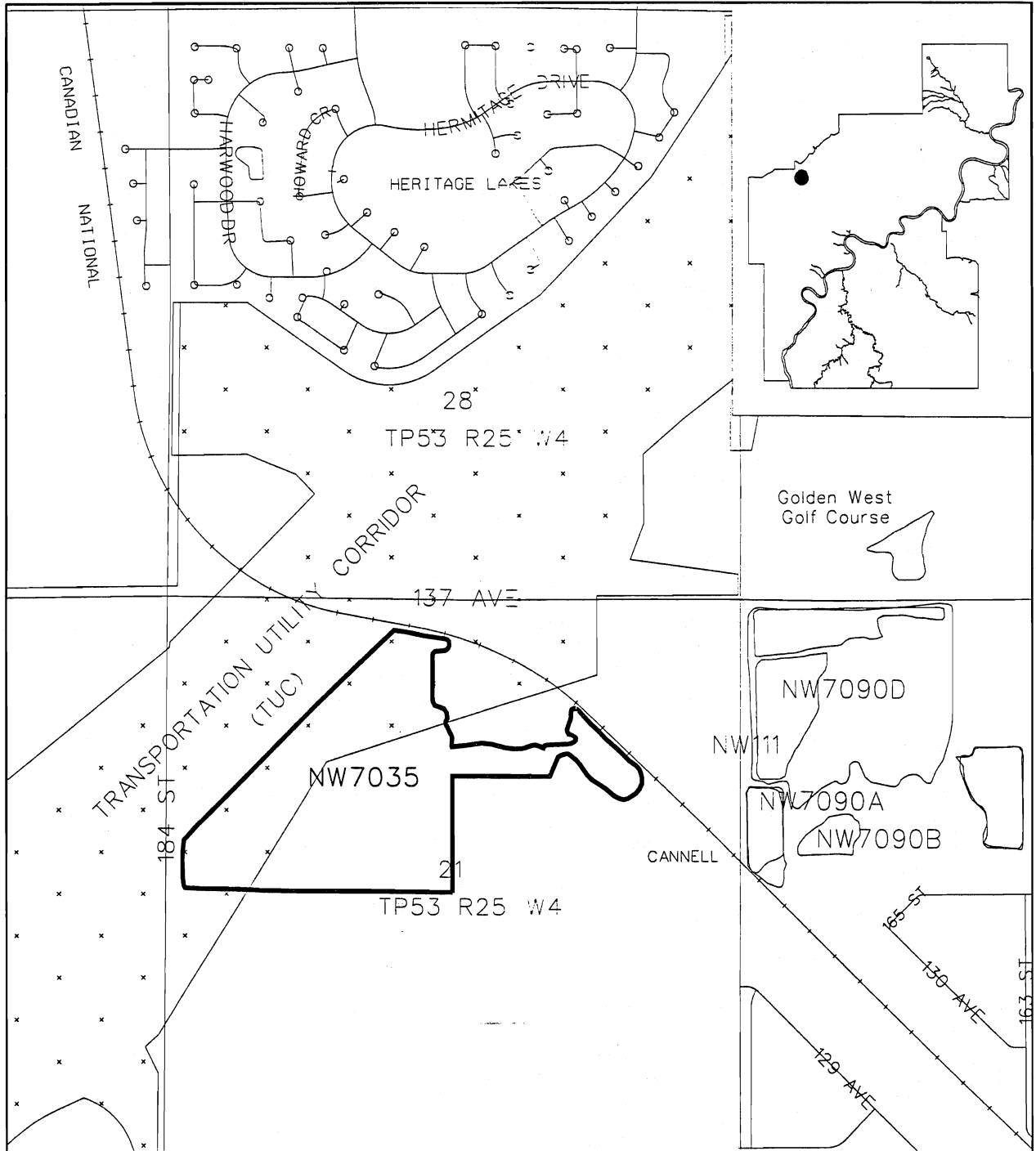
- good example of a permanent wetland and forest complex
- high plant species diversity
- permanent water body
- high habitat diversity
- high wildlife species diversity
- significant black-crowned night heron rookery (northwest edge of species' range)
- critical waterfowl and terrestrial bird habitat

Existing Land Use / Management:

- Surrounding land uses include light industrial, railway right-of-way, 170 Street and the Restricted Development Area (RDA);
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	100.5	Conservation Value	173.5
Ecological Integrity	51	Conservation Rank (out of 62)	3
Geographical Location	6	Risk Factor	0.86
Ecological Uniqueness	16	Overall Score	173.5
		Overall Rank (out of 62)	13

Site Map - NW 7035



NW 132

Size: 2.37 ha

Site Location:

Southeast of Horsehill Lake and immediately east of the Glendale Golf and Country Club, approximately 1.5 km north of Yellowhead Trail on 198 Street.
[NW 17 TP53 R25 W4M]

Site Description:

- A series of three beaver ponds in remnant meltwater channel surrounded by well-developed ring of aspen-balsam poplar;
- Well-developed shrub layer of willow, Manitoba maple, red-osier dogwood, rose, raspberry, snowberry, saskatoon and white birch;
- Poorly developed herb layer;
- Water levels considerably low;
- Beaver dams appear to have been "blown" in an attempt to remove beaver from site;
- Considerable deadfall as a result of beaver activity, especially aspen and, to a much lesser extent, white birch;
- Gently to moderately undulating and hummocky morainal materials;
- Loams and silty clay loams;
- Moderately well to imperfectly drained Dark Gray Luvisols on side slopes, poorly drained Orthic Gleysols adjacent open water;
- The only active beaver ponds within the city of Edmonton's tablelands;
- 2 black-crowned night herons observed at site during 1993 Inventory.

Current Condition: Site has considerably deteriorated since 1993 Inventory. Dumping of both organic (sod and fill material) and non-organic material (e.g., asphalt shingles, steel pipes) have severely impacted site. Much of wetland margin has been filled in to provide dumping grounds - not clear if dumping is solely the responsibility of the golf course. **SITE IS SO NEGATIVELY IMPACTED THAT IT SHOULD NOW BE CONSIDERED "LOST".**

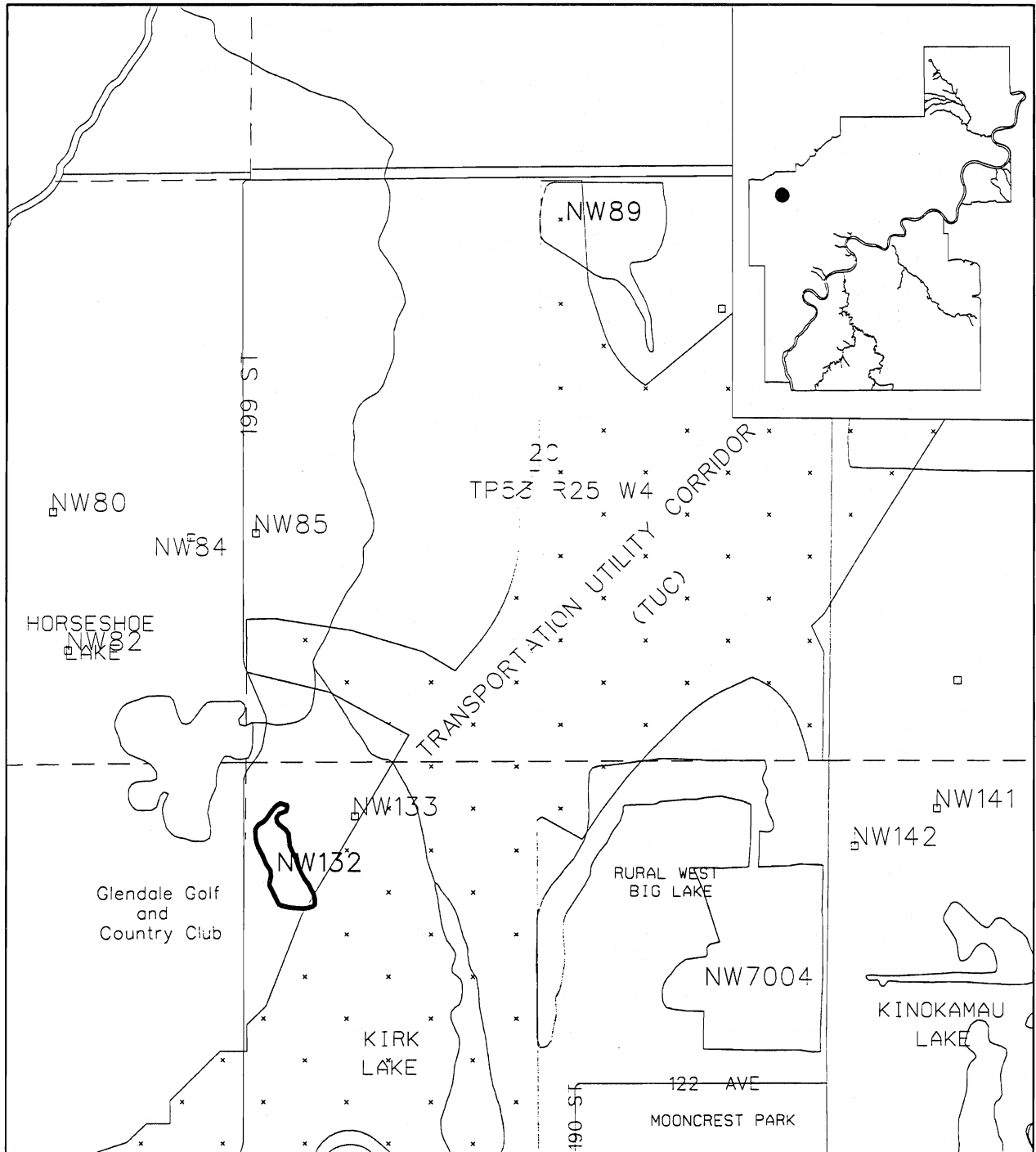
- Level of Significance:** n/a
- formerly one of the few active beaver ponds within City of Edmonton's tablelands
 - formerly important waterfowl habitat
 - permanent open water
 - formerly good furbearer (beaver) habitat
 - formerly critical function in maintaining or balancing local hydrology

Existing Land Use / Management:

- Surrounding land uses include the Glendale Golf and Country Club and parking lot, 198th Street and cultivated fields;
- Dumping activities have caused considerable disturbance along the western edge of the wetland;
- Considerable "garbage" has collected between the parking lot and the wetland;
- Big Lake Area Structure Plan in plan.

SITE RATING AND RANK			
Biophysical Features	78.3	Conservation Value	106.3
Ecological Integrity	16	Conservation Rank (out of 62)	53
Geographical Location	6	Risk Factor	1.36
Ecological Uniqueness	6	Overall Score	144.6
		Overall Rank (out of 62)	26

Site Map - NW 132



NORTHWEST BOUNDARY COMPLEX (NW 89)

Size: 8.09 ha

Site Location:

137 Avenue, 0.5 km West of 184 Street
[NE 20 TP53 R25 W4M]

Site Description:

- Open deciduous stand with small ephemeral wetland; upland stand comprised mainly of aspen with lesser amounts of balsam poplar; well-developed shrub understorey resulting from the open canopy; beaked hazelnut is dominant shrub with lesser amounts of saskatoon, cherry, rose, gooseberry, snowberry, and Canada buffaloberry; dense shrub layer limits productivity of herb layer,
- The wetland consists of two components, one being a relatively dry mud-flat with mineral soils exposed, the other portion consisting of dense willow thickets;
- Water may occur within the wetland during early to late spring;
- The forest stand is relatively healthy; some cutting with chain saws of aspen and balsam poplar along wetland fringe;
- Moderately well-drained Dark Luvisols occur on upland sites while poorly drained Orthic Gleysols have developed in wetland areas;
- Very gently to gently undulating and hummocky morainal deposits; silty clays over clay and clay loams;
- Water table at or near the surface in wetlands for most of the year;
- The site is large enough to be of significance for white-tailed deer who move between adjacent tableland sites near Kinokamau and "provincially significant" Big Lake to the north. It appears that the young aspen regeneration and saskatoon have been browsed extensively by white-tailed deer; extensive deer tracks throughout and around the wetlands; deer bedding sites occur on lower slopes within upland aspen forests.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance:

Local

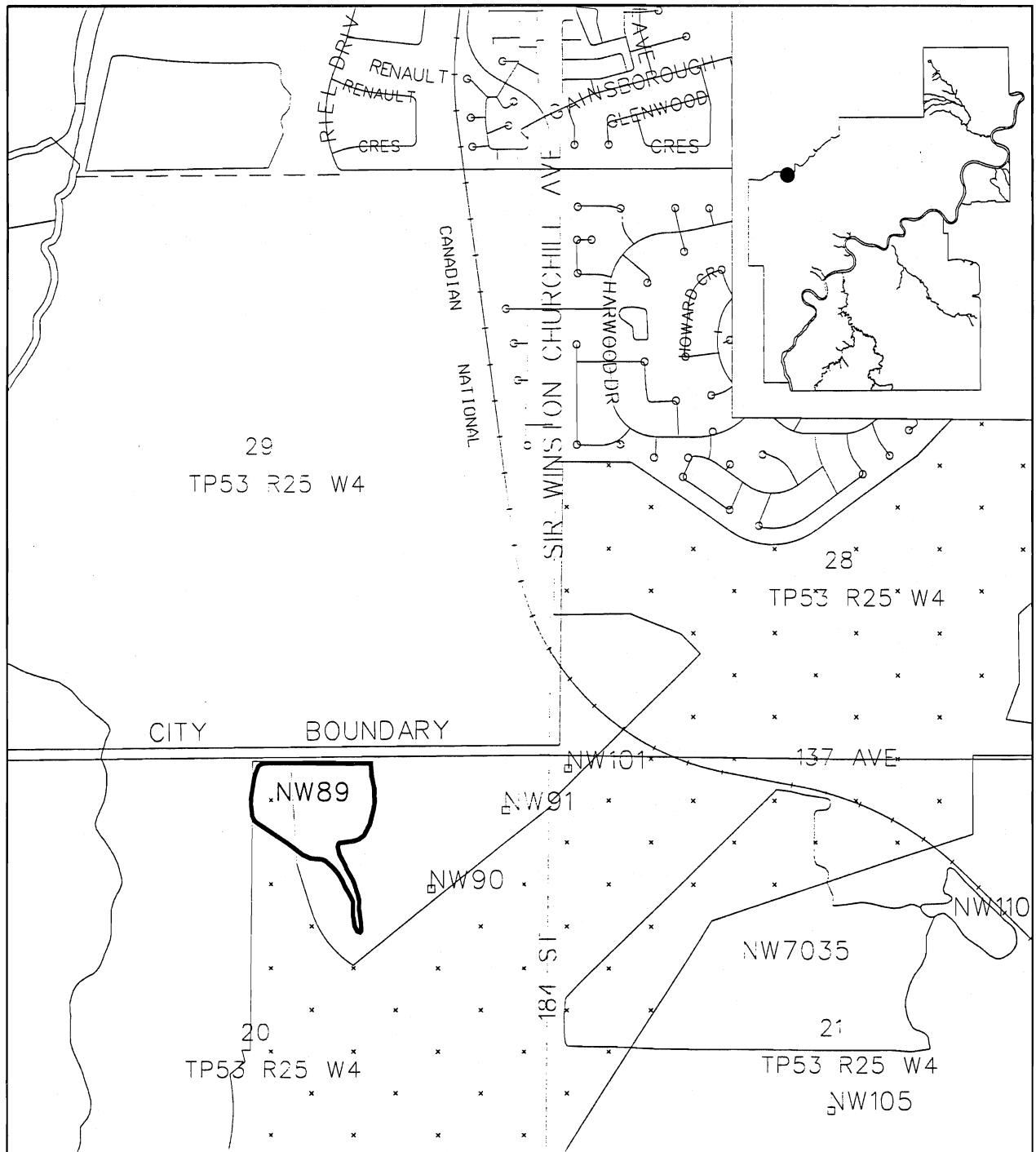
- good example of upland deciduous vegetation
- habitat for local wildlife
- temporary wetlands
- provides critical linking function to the Big Lake area

Existing Land Use / Management:

- Surrounding land uses include the Municipal District of Sturgeon and cultivated fields. The Restricted Development Area (RDA) occurs immediately to the west.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	90.1	Conservation Value	141.1
Ecological Integrity	35	Conservation Rank (out of 62)	16
Geographical Location	6	Risk Factor	0.71
Ecological Uniqueness	10	Overall Score	141.7
		Overall Rank (out of 62)	29

Site Map - NW 89



NORTHWEST WETLAND (NW 7018)

Size: 25.18 ha

Site Location:

1.7 km north of 167 Avenue on East Side of 127 Street
[SW 7 TP54 R24 W4M]

Site Description:

- Large wetland complex that has been significantly disturbed by recent cultivation, grazing, and reduced precipitation levels;
- Water levels very low, probably less than 50 cm in depth in middle;
- Significant exposed mineral materials;
- Numerous sedge species, few willows; well-developed balsam poplar fringe along portion of eastern side;
- Poorly drained Orthic Gleysols and Orthic Humic Gleysols have developed on recently exposed lacustrine materials; silty clay loams;
- Water table at or near the surface for a significant portion of the year;
- The low water levels and the amount of disturbance along the fringe has reduced the value of this particular wetland for waterfowl; it is perhaps of limited value during the spring migration and early nesting periods; bird species observed during the 1993 survey include: mallards, shovellers, and blue-winged teal; extensive mudflats of value for common snipe, killdeer, and spotted sandpiper;
- Decadent balsam poplar along eastern fringe for raptors, such as red-tailed hawk and yellow-headed blackbirds have been observed along with boreal chorus frogs; extensive coyote tracks throughout the wetland areas; dead cattle remains scattered around the site.

Current Condition: Portions of the Northwest corner has been drained / cleared for an agricultural field.

Level of Significance: **Local**

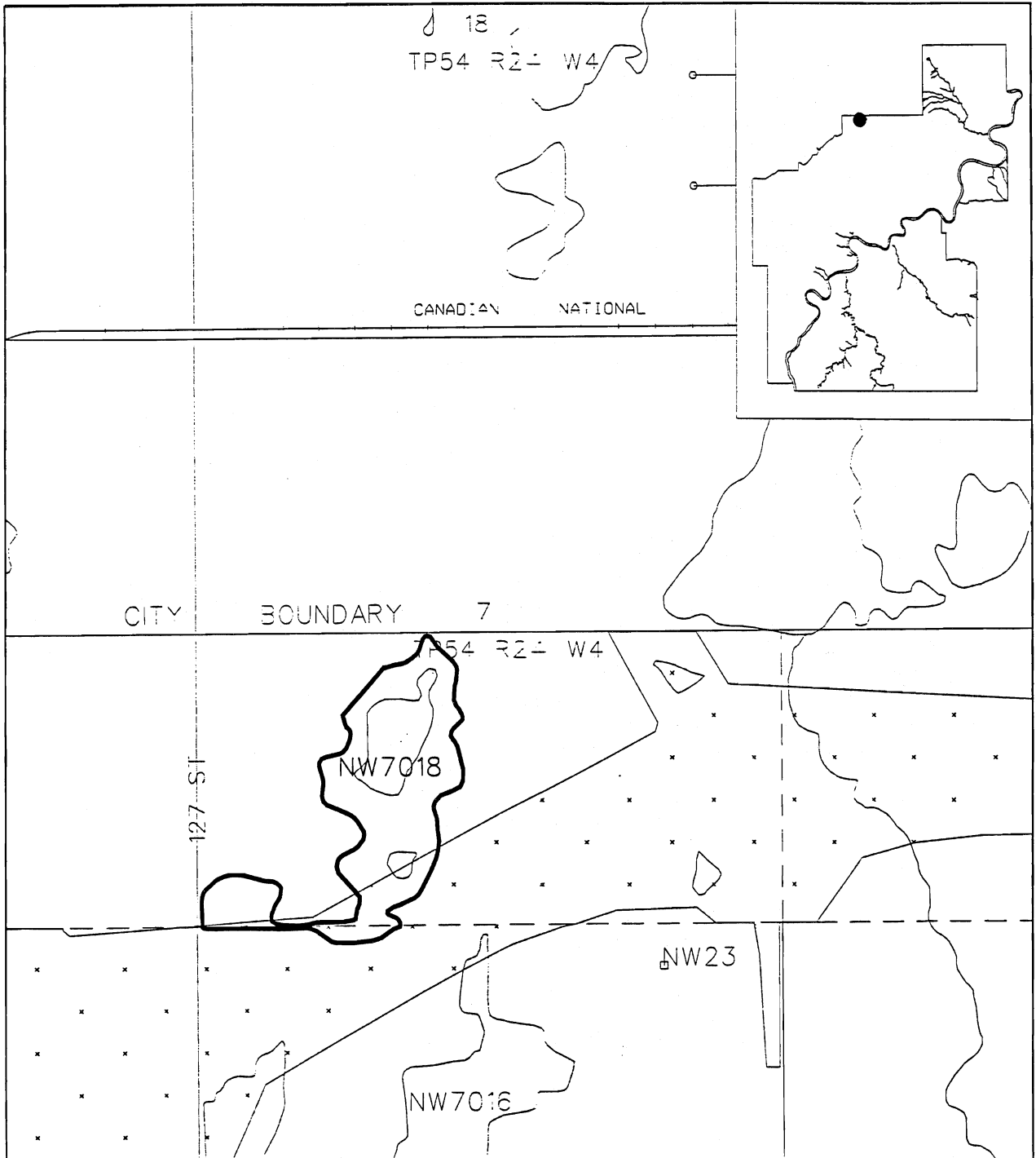
- Provides critical function in maintaining or balancing local hydrological regime
- Permanent wetland

Existing Land Use / Management:

- Access to this site is through the "Alberta Young Offender's Center";
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	95.7	Conservation Value	145.7
Ecological Integrity	34	Conservation Rank (out of 62)	14
Geographical Location	10	Risk Factor	0.46
Ecological Uniqueness	6	Overall Score	145.7
		Overall Rank (out of 62)	24

Site Map - NW 7018



STONEY INDUSTRIAL COMPLEX (NW 7012)

Size: 4.95 ha

Site Location:

Between 107 Ave and 110 Avenue, on the west side of 199 Street
[NE 6 TP53 R25 W4M]

Site Description:

- Relatively healthy and undisturbed portion of Winterburn Bog that does not fall within the Restricted Development Area (RDA);
- Site consists of three distinct community types, including balsam poplar-aspen, black spruce-larch and willow/sedge, with the balsam poplar-aspen type accounting for approximately 75% of the vegetation;
- Some white birch clumps throughout stand;
- Good diversity of shrub species including low-bush cranberry, rose, saskatoon, beaked hazelnut, red-osier dogwood, gooseberry, river alder and raspberry;
- Lady fern occurs in southern portion of stand, where moisture regime is subhydric;
- The black spruce-larch type occurs in the extreme southeast corner of the site and is composed of many significant plant species including lady fern;
- Very closed canopy with well-developed moss layer, particularly around small marl pools;
- Willow/sedge community occurs adjacent 199th St., along open water bodies;
- Soils within this site reflect the high water table and the high moisture holding capacity of the glaciolacustrine parent materials;
- Consist mainly of poorly drained Orthic Gleysols within upland deciduous stands and to a lesser extent, very poorly drained Typic Mesisols under the black spruce-larch type;
- High water tables combined with the clay-rich glaciolacustrine materials result in poorly drained conditions throughout the site;
- Diverse vegetation communities within this site are not found elsewhere within the City's tablelands;
- Similar vegetation communities, particularly the black spruce-larch type, occur mainly within the adjacent RDA lands to the east (however, with the recent expansion of Anthony Henday Drive, this portion of the RDA is extremely fragmented);
- The occurrence of lady fern also makes this site unique, as it was only encountered in two other sites within the city's tablelands (NW 302 and NW 7011);
- 23 species of bird observed at site during surveys in 1993, including red-tailed hawk, common snipe, alder and least flycatcher, black-billed magpie, American crow, black-capped chickadee, house wren, American robin, cedar waxwing, yellow warbler, chipping sparrow, savannah sparrow, song sparrow, Lincoln's sparrow, white-throated sparrow, red-winged blackbird, brown-headed cowbird, American goldfinch, and clay-colored sparrow; blue-winged and green-winged teal and mallard are likely nesting in the wetland component;
- A number of small marl pools are found within the black spruce-larch component, giving rise to unique and often quite rare plant species such as lady fern.

Current Condition: Essentially unchanged since 1993 Inventory, however adjacent RDA has been fragmented and threatens the site somewhat.

Level of Significance: Local

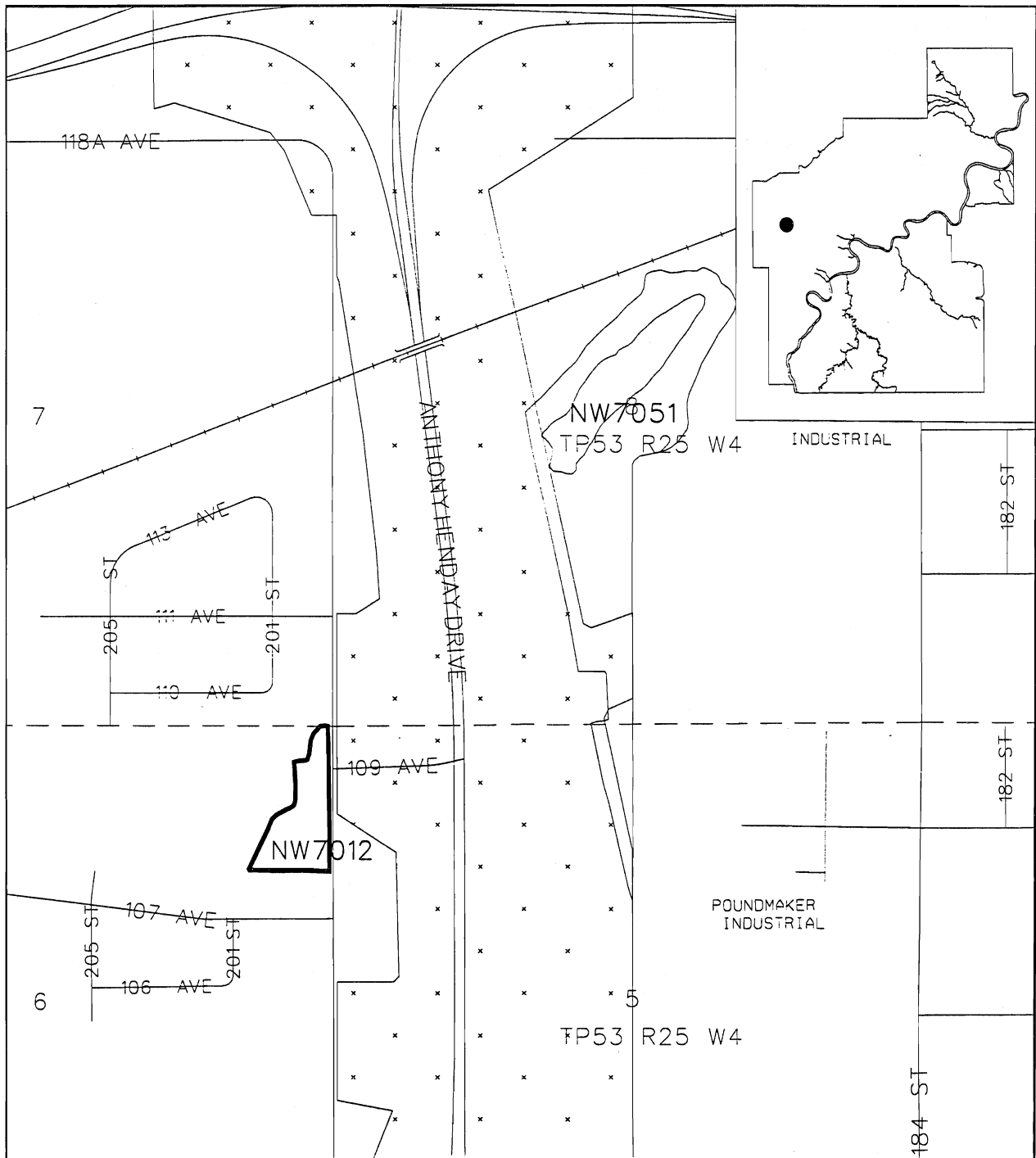
- high plant species diversity
- significant plant species (Lady ferns)
- high habitat diversity
- critical wildlife habitat
- significant landform features including marl pools
- provides critical function in maintaining or balancing local hydrology

Existing Land Use / Management:

- Surrounding land uses include RDA and 199th Street to the east, industrial land uses to the south and hayland to the north and west;
- Much larger black spruce-larch stand to the east is within RDA lands and has recently been severely impacted by clearing and filling;
- Winterburn Industrial Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	101.2	Conservation Value	166.2
Ecological Integrity	31	Conservation Rank (out of 62)	6
Geographical Location	10	Risk Factor	1.17
Ecological Uniqueness	24	Overall Score	194.4
		Overall Rank (out of 62)	7

Site Map - NW 7012



NORMANDEAU GARDENS NATURAL AREA (NW 254)

Size: 7.60 ha

Site Location:

Immediately east of 209 Street, south of Stony Plain Road
[NE 31 TP52 R25 W4M]

Site Description:

- Mature, relatively healthy, mixedwood stand dominated by balsam poplar-white spruce cover with significant portions of white birch, black spruce and aspen;
- Extremely diverse shrub and herb layer results from variable canopy densities;
- Shrub species include Manitoba maple, rose, willow, red-osier dogwood, mountain ash, saskatoon, snowberry, gooseberry, raspberry, honeysuckle, and river alder;
- Richness of site indicated by abundance of oak fern in several places;
- White spruce to 22 m in height and aspen and balsam poplar to 18 m;
- Decadent balsam poplar provides excellent snag habitat;
- Poorly drained Orthic Gleysols occur throughout the area and have developed on glaciolacustrine materials in response to high water tables and the high water holding capacity of the clay-rich materials;
- Silty clays over clays;
- Water table within 1 m of surface for most of year;
- Diversity of vegetation within this relatively small stand is almost unparalleled within the City's tableland area (a function of the variable overstorey canopy combined with nutrient-rich parent materials);
- Mature white spruce provides an excellent seed source for white spruce regeneration;
- 20 different bird species were noted during surveys in 1993, including great-horned owl, mallard, western wood-pewee, least flycatcher, eastern phoebe, black-billed magpie, black-capped chickadee, house wren, American robin, warbling vireo, red-eyed vireo, yellow warbler, chirping, song, Lincoln's, clay-colored and white-throated sparrows, red-winged blackbird, brown-headed cowbird, northern oriole, and pine siskin (pine siskin was only observed at one other site within the tablelands - NW 7010).

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

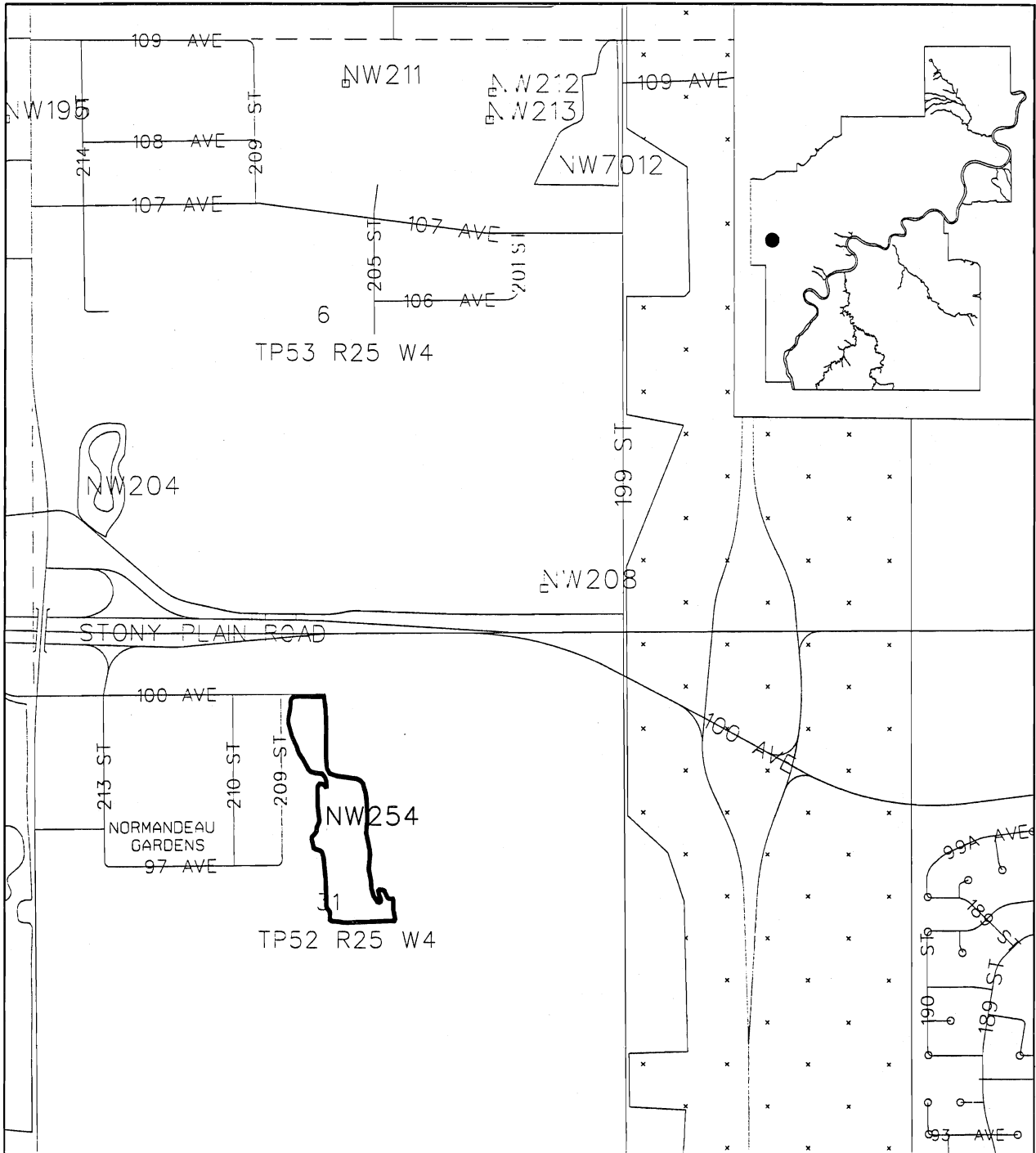
- presence of significant plant species
- high habitat diversity
- high plant species diversity
- terrestrial bird habitat
- provides critical function in maintaining or balancing local hydrology

Existing Land Use / Management Considerations

- Surrounding land uses include country residential and the Restricted Development Area (RDA) to the east;
- Lewis Farms Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	61.1	Conservation Value	116.1
Ecological Integrity	37	Conservation Rank (out of 62)	46
Geographical Location	6	Risk Factor	1.42
Ecological Uniqueness	12	Overall Score	164.9
		Overall Rank (out of 62)	15

Site Map - NW 254



23 AVENUE WETLAND (NW 355)

Size: 12.37 ha

Site Location:

Southeast corner of Winterburn Road and 23 Avenue
[NE 31 T 51 R 25 W4M]

Site Description:

- Major wetland complex consisting of open water with a well-developed cattail fringe, willow/sedge and a small island of balsam poplar-aspen;
- Water levels very low during 1993 inventory and appeared to be the same during field visit in 1999;
- Core wetland area consists of cattails, marsh ragwort, yellow water crowfoot, yellow cress and various sedge species;
- Willow fringe consists of various willow species including *Salix discolor* and *S. exigua*, balsam poplar and a number of sedge species;
- Small balsam poplar-aspen stand is quite young and has a well-developed understorey of red-osier dogwood, saskatoon, rose, gooseberry, snowberry, bracted honeysuckle and buffalo-berry;
- Weedy species such as dandelion are common throughout the site;
- Poorly drained Orthic Gleysols have developed on level to very gently undulating lacustrine materials;
- Loamy sands over sandy loams;
- Habitat is highly dependent upon water levels - the greater the water level, the higher the value of the habitat for waterfowl production;
- Site is likely used during spring migration, however if water levels are low or non-existent, then the site would be abandoned;
- Temporary cover and food for white-tailed deer travelling between the North Saskatchewan River Valley and the adjacent forested Stony Plain Indian Reserve.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

- permanent open water
- high diversity of wildlife habitat
- important waterfowl habitat
- high plant species diversity

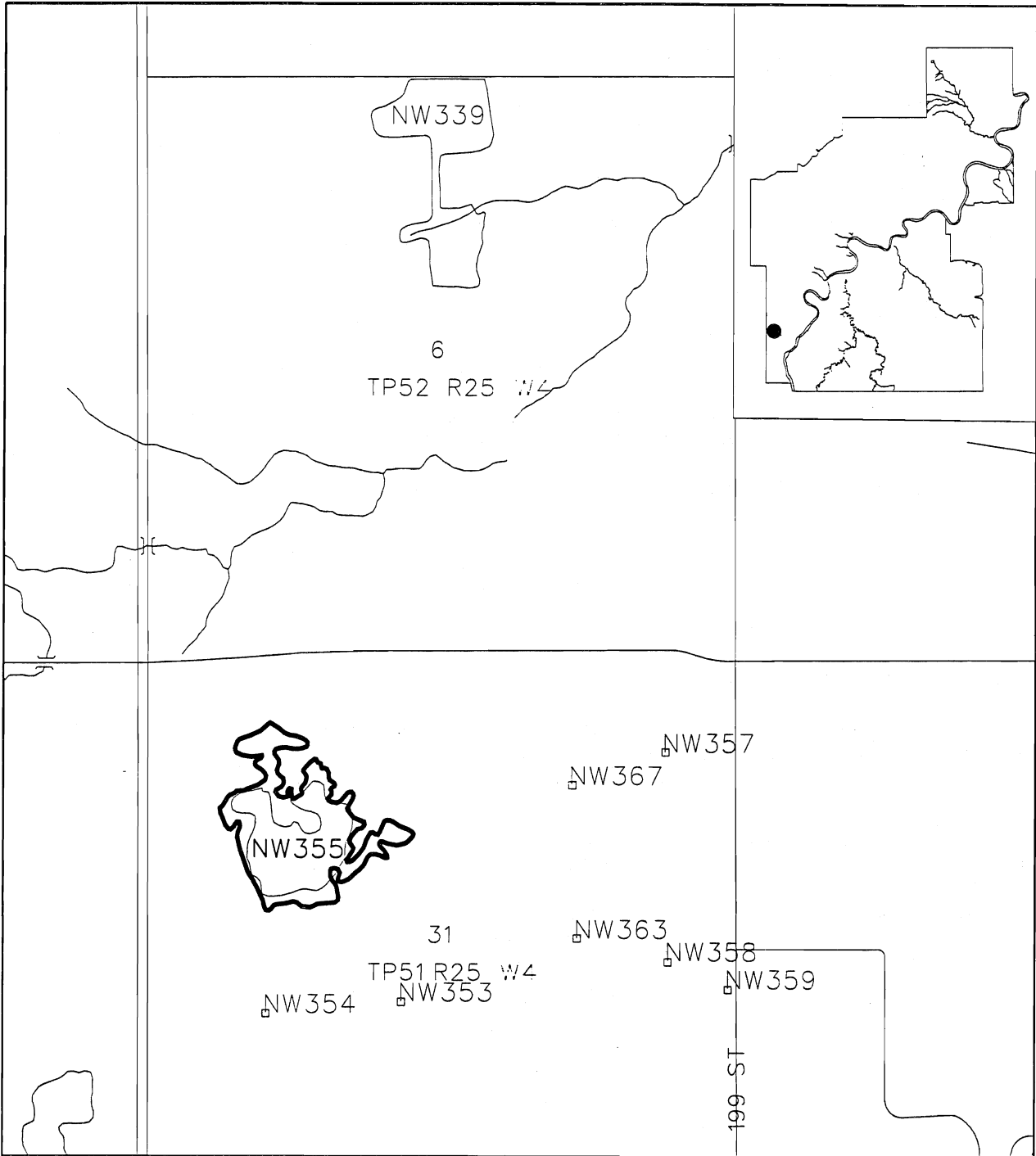
Existing Land Use / Management:

- Surrounding land uses include mainly pastureland and an Edmonton Power microwave tower;
- There is some evidence of cattle grazing within wetland.;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK

Biophysical Features	85.9	Conservation Value	128.9
Ecological Integrity	29	Conservation Rank (out of 62)	28
Geographical Location	8	Risk Factor	0.56
Ecological Uniqueness	6	Overall Score	128.9
		Overall Rank (out of 62)	40

Site Map - NW 355



EAST WINTERBURN NATURAL AREA (NW 204)

Size: 3.33 ha

Site Location:

103 Avenue and Winterburn Road
[SW 6 T P3 R25 W4M]

Site Description:

- Permanent water body with well developed fringe of willow/sedge and an upland balsam poplar component with a dense understorey of red-osier dogwood, mountain ash and raspberry;
- Water levels quite low in 1993 and again in 1999;
- Good development of cattails along fringe of open water;
- Poplar stand rather open with some snags and a significant amount of deadfall on the forest floor;
- Some white birch is also found within the stand;
- Site is small and completely isolated by highway and driving range;
- Poorly to very poorly drained Orthic Gleysols and Typic Mesisols occur adjacent the open water, while moderately well drained Dark Gray Luvisols have developed in upland areas within gently undulating glaciolacustrine materials;
- Sandy loams over sandy clay loams;
- Despite its small and isolated nature, this site is significant from a local perspective because it provides a diversity of wildlife habitats;
- Open water/cattails, willow/sedge and balsam poplar communities provide habitat for waterfowl, small mammals and birds (waterfowl species using the site for nesting, breeding and feeding habitat include northern shoveler, blue-winged teal and American wigeon)
- Red-winged blackbird, spotted sandpiper and common snipe occur around the wetland and a coyote den was found within the upland forest during 1993 surveys (a coyote was also observed to be hunting within the cattail fringe).

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

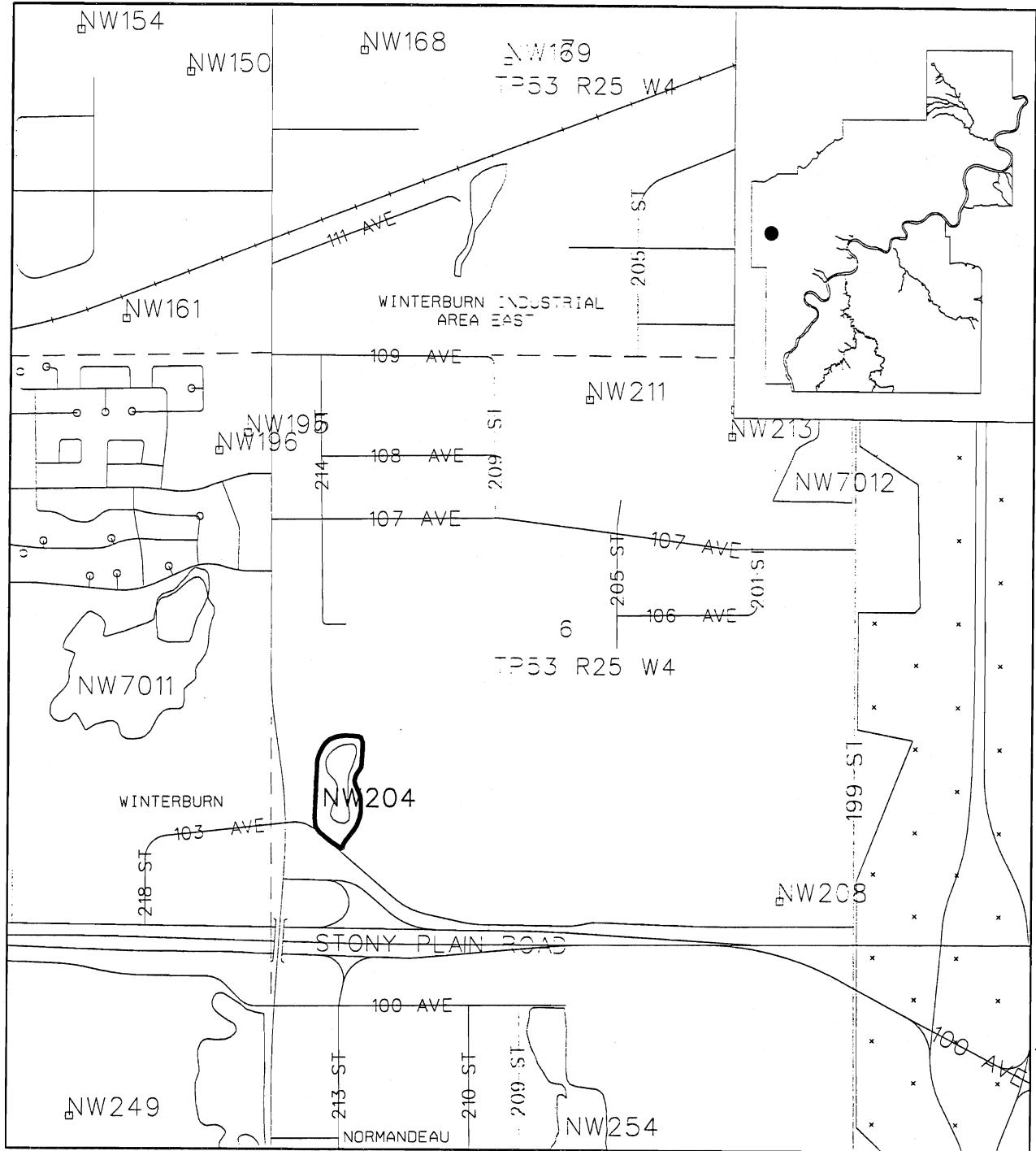
- good example of wetland vegetation
- high plant species diversity
- high habitat diversity
- permanent open water
- provides critical habitat for maintenance of all or significant components of life cycle stages
- permanent wetland

Existing Land Use / Management:

- Surrounding land uses include the Cypress Hills Driving Range to the east, and cultivated fields to the north and west;
- Winterburn Industrial Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	78.8	Conservation Value	119.8
Ecological Integrity	23	Conservation Rank (out of 62)	41
Geographical Location	8	Risk Factor	1.22
Ecological Uniqueness	10	Overall Score	146.1
		Overall Rank (out of 62)	23

Site Map - NW 204



TRIPLE 5 FARM WETLAND (NW 288)

Size: 8.90 ha (formerly)

Site Location:

1.5 km south of Whitemud Drive on west side of 199th Street
[SE 19 TP52 R25 W4M]

Site Description:

- Wetland located within undulating landscape, and cannot be seen from either 199th or 215th Streets;
- Extensively developed areas of emergent aquatic vegetation with open water areas;
- Emergent vegetation consists primarily of cattails and to a lesser extent rushes;
- Willow/sedge communities occur around the fringe with some balsam poplar/willow along the western edge;
- Large balsam poplar provide excellent snag habitat for raptors;
- Imperfectly to poorly drained soils predominate around the edges of the wetland;
- Soils include Orthic Gleysols and gleyed phases of Dark Gray Luvisols.

Current Condition: **SITE HAS BEEN ESSENTIALLY "LOST"**. One-third of wetland has already been filled and excavated for residential pond development, with intention of retaining the remainder in a 'natural' state but develop boardwalks and footpaths within and around it.

Level of Significance: n/a

- formerly permanent wetland
- formerly critical waterfowl habitat

Existing Land Use / Management:

- Carma Developers have developed the site;
- Glastonbury Neighborhood Structure Plan, Bylaw #11750 and Grange Area Structure Plan in place;
- Other surrounding land uses appear to be mainly hayland and several farm structures.

SITE RATING AND RANK			
Biophysical Features	n/a	Conservation Value	n/a
Ecological Integrity	n/a	Conservation Rank (out of 62)	n/a
Geographical Location	n/a	Risk Factor	n/a
Ecological Uniqueness	n/a	Overall Score	n/a
		Overall Rank (out of 62)	n/a

HILLVIEW NATURAL AREA (NW 275)

Size: 4.68 ha

Site Location:

1.7km south of Stony Plain Road on east side of 231 Street (Hillview Road)
[NW 25 TP52 R26 W4M]

Site Description:

- Permanent water body surrounded by well-developed and extensive margins of sedge, and balsam poplar with lesser amounts of aspen and white birch;
- Well-developed shrub understorey with upland deciduous stand composed of Manitoba maple, river alder, beaked hazel, gooseberry, rose, willow, mountain ash, cherry, honeysuckle, raspberry, and paper birch;
- Mature balsam poplar provide excellent snag habitat;
- Poorly drained Orthic Gleysols have developed within sedge fringe area, while moderately well drained Dark Gray Luvisols have developed on upland areas;
- Topography varies from nearly level around the wetland areas to moderately and strongly sloping along wetland fringe (15-30% slopes);
- Loams over clay loams;
- Water levels have lowered resulting in exposed lacustrine mineral soils;
- Landform appears to be a "kettle";
- Open water body combined with diverse vegetation species both along the shoreline and upland forest provide wildlife habitat for waterfowl, avian, small mammal, and ungulate species;
- Open water plus good shoreland habitat provides excellent nesting, breeding and feeding habitat for ducks, including mallard and blue-winged and green-winged teal;
- Small mammals such as muskrat are common along the shoreline;
- Red-tailed hawks use the balsam poplar snag habitat for nesting and perch sites;
- Some browsing has occurred within the upland stands by white-tailed deer.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

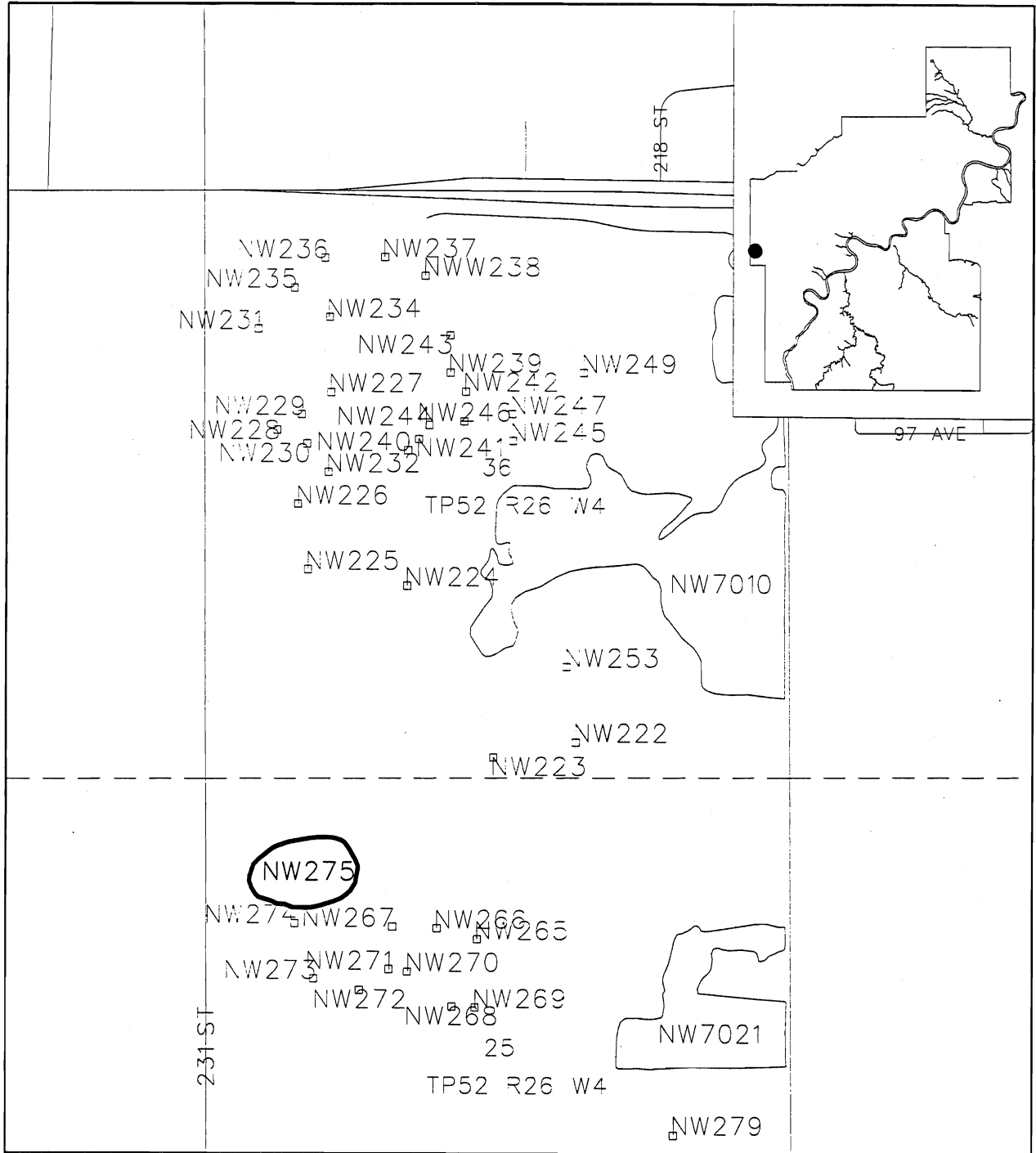
- high plant species diversity
- provides habitat for local wildlife species
- high habitat diversity
- permanent water body
- good example of a "kettle" landform
- provides critical function in maintaining or balancing local hydrology

Existing Land Use / Management:

- Surrounding land uses include country residential, a horse stable and boarding facility, and cultivated fields;
- Lewis Farms Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	86.8	Conservation Value	124.8
Ecological Integrity	24	Conservation Rank (out of 62)	34
Geographical Location	8	Risk Factor	1.25
Ecological Uniqueness	6	Overall Score	156.0
		Overall Rank (out of 62)	19

Site Map - NW 275



TRIPLE ACRES NATURAL AREA (NW 318)

Size: 25.64 ha

Site Location:

Southeast corner of Winterburn Road (215 Street) and 45th Avenue
[W 7 TP52 R25 W4M]

Site Description:

- Mixedwood forest area with a mixture of conifers and deciduous trees growing on perhaps the best-developed sand dune complex within the City of Edmonton;
- Relatively open tree canopy results in diverse shrub species, including rose, choke cherry, mountain ash, twining honeysuckle, saskatoon, snowberry and blueberry;
- Well drained Orthic Eutric Brunisols have developed on very gently undulating to moderately ridged eolian landforms;
- Loamy sands over sand;
- Stabilized sand dune complex;
- A number of smaller, less-developed sand dunes occur in the vicinity, but none are characterized by the size and diversity of this particular complex;
- Critical link between ESA/SNAs both within and outside the City limits for wildlife, particularly white-tailed deer;
- Site occurs immediately adjacent the Stony Plain Indian Reserve and provides an excellent corridor for deer movement to and from the North Saskatchewan River Valley;
- Site likely does not provide suitable year-round wildlife habitat, owing to the degree of country residential development within and adjacent to the site, however it likely provides good winter shelter for bird species that make extensive use of the numerous local bird feeders.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

- significant landform feature
- critical linking function to ESA/SNAs within and outside city boundary

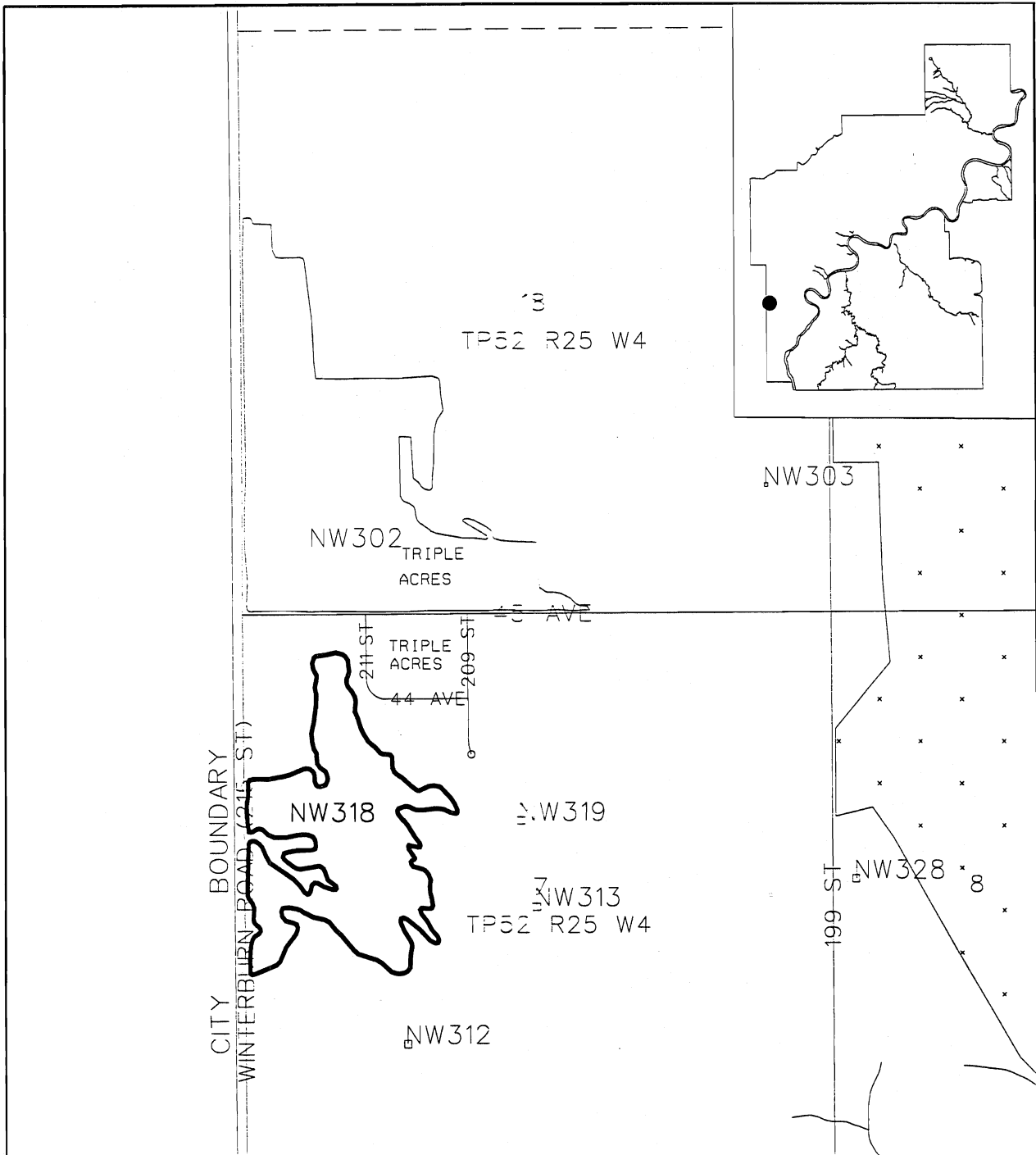
Existing Land Use / Management:

- Surrounding land uses include country residential (Triple Acres), the Stony Plain Indian Reserve No. 135 and rough pasture;
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK

Biophysical Features	71.7	Conservation Value	147.7
Ecological Integrity	46	Conservation Rank (out of 62)	13
Geographical Location	6	Risk Factor	1.09
Ecological Uniqueness	24	Overall Score	161.0
		Overall Rank (out of 62)	17

Site Map - NW 318



WINTERBURN SCHOOL NATURAL AREA (NW 7010)

Size: 38.04 ha

Site Location:

0.6 km south of Stony Plain Road, on west side of Winterburn Road
[NE 36 TP52 R26 W4M]

Site Description:

- Healthy, mature balsam poplar-aspen woodlot with one significant water body and a smaller, ephemeral wetland;
- Diverse shrub layer includes tall-bush cranberry, red-osier dogwood, gooseberry, raspberry, rose, choke cherry, Manitoba maple, and bracted honeysuckle;
- Open water area surrounded by willow and balsam poplar;
- Balsam poplar provides excellent snag habitat with extensive woody debris within forested area;
- Large pond is likely spring fed;
- Moderately well to imperfectly drained Dark Gray Luvisols have developed on very gently undulating glaciolacustrine materials;
- Loams over silty clay loams with a thin band of fine sandy loam materials at 23 cm depth and faint mottling at 40 cm;
- Diversity of vegetation communities, combined with permanent water and a very well-developed shrub understorey, produce habitat for white-tailed deer, small mammals, waterfowl and terrestrial songbirds;
- 30 bird species observed during 1993 Inventory, including seven black-crowned night herons; Other species include red-tailed hawk, yellow-bellied sapsucker, northern flicker, western wood-pewee, eastern phoebe, eastern kingbird, tree and barn swallows, black-billed magpie, black-capped chickadee, house wren, American robin, cedar waxwing, warbling and red-eyed vireo, vesper and song sparrow, white-throated sparrow, red-winged blackbird, brown-headed cowbird, northern oriole, pine siskin, and American goldfinch;
- A porcupine also observed at the site during 1993 surveys.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

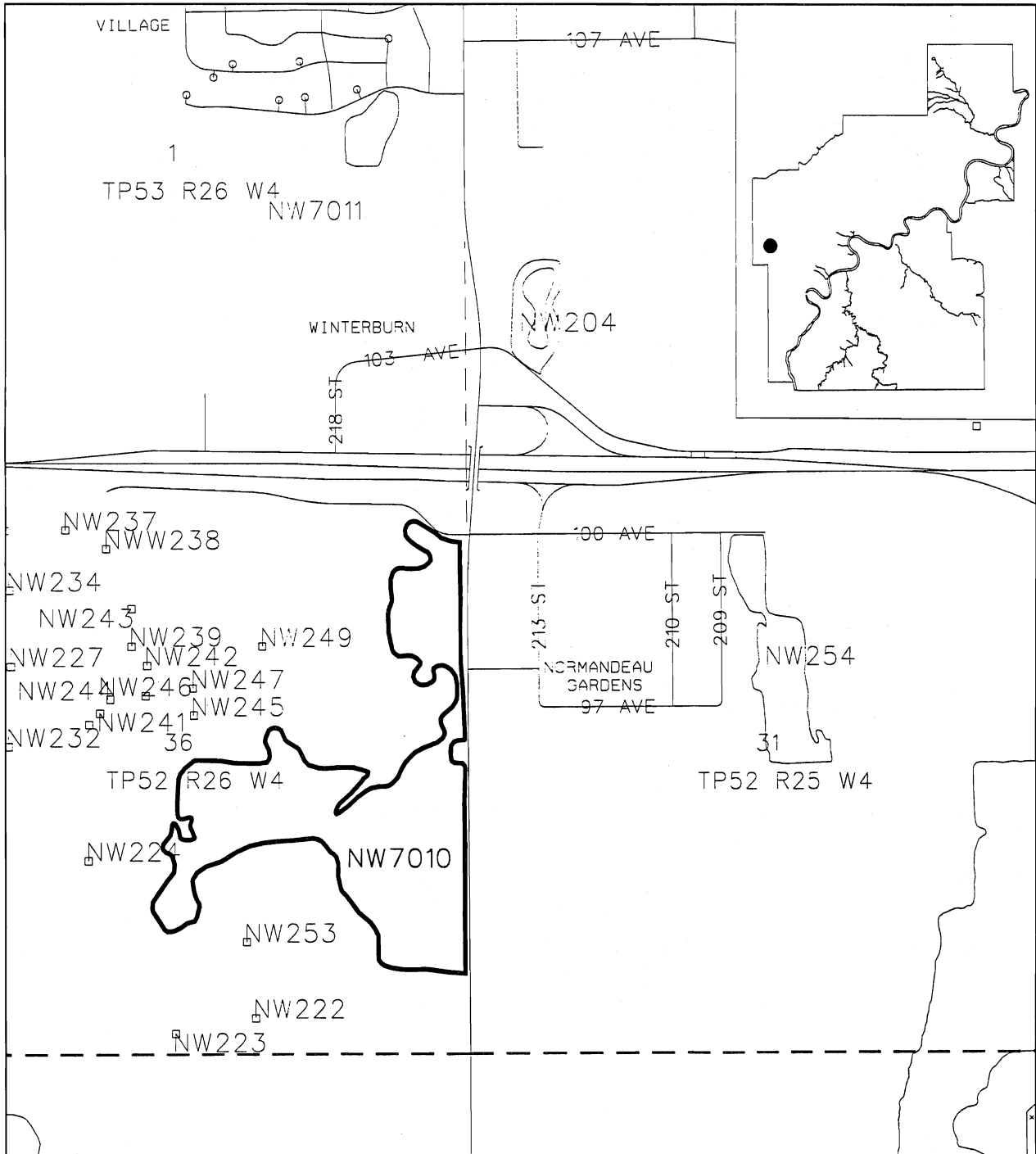
- high plant species diversity
- high habitat diversity
- permanent water body
- critical wildlife habitat, especially for terrestrial songbirds
- natural springs

Existing Land Use / Management:

- Surrounding land uses include country residential, cultivated fields, rough pasture and well sites (Suprex Energy and Marnell Resources);
- Proposed "Discovery Village", with residential development and health and wellness center (Stage One Natural Site Assessment completed);
- Lewis Farms Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	89.7	Conservation Value	153.7
Ecological Integrity	46	Conservation Rank (out of 62)	12
Geographical Location	8	Risk Factor	1.72
Ecological Uniqueness	10	Overall Score	264.3
		Overall Rank (out of 62)	2

Site Map - NW 7010



167 AVENUE WETLANDS (NW 7024)

Size: 13.53 ha

North of 167 Avenue between 127th and 142nd Streets
[SE 1 TP54 R25 W4M]

Site Description:

- Large wetland complex with open water; excellent perimeter of cattails and marsh ragwort; poorly defined willow/sedge community occurs within wet meadow component of site; site consists mainly of sedges and grasses with very little willow;
- Water levels quite low during June 1993;
- Adjacent upland deciduous stands of balsam poplar-aspen quite disturbed by cattle grazing;
- Poorly drained Orthic Gleysols, and, to a lesser extent, very poorly drained Mesisols have developed in wetland areas adjacent to the open water; thin organic veneers have accumulated where water levels have lowered in recent years; silt loams and silty clay loams over clays and heavy clays; very fine textured nature of lacustrine and glaciolacustrine parent materials results in seasonally high water tables;
- Excellent nesting and rearing habitat for waterfowl; however, with the low water levels experienced in recent years, the attractiveness of this site has been reduced considerably; with the current water levels, the site appears to be of value mainly for spring migration and possibly only breeding and rearing habitat for a few ducks; mallard, redhead and blue-winged teal observed at site; bird species noted included killdeer, common yellow-throat, sora, red-winged blackbird, and European starling; boreal chorus frog habitat.

Current Condition:

- The northern portion of the site has been reduced since 1993 and is now part of an agricultural field,
- Water levels are also considerably reduced since the earlier Inventory.

Level of Significance:

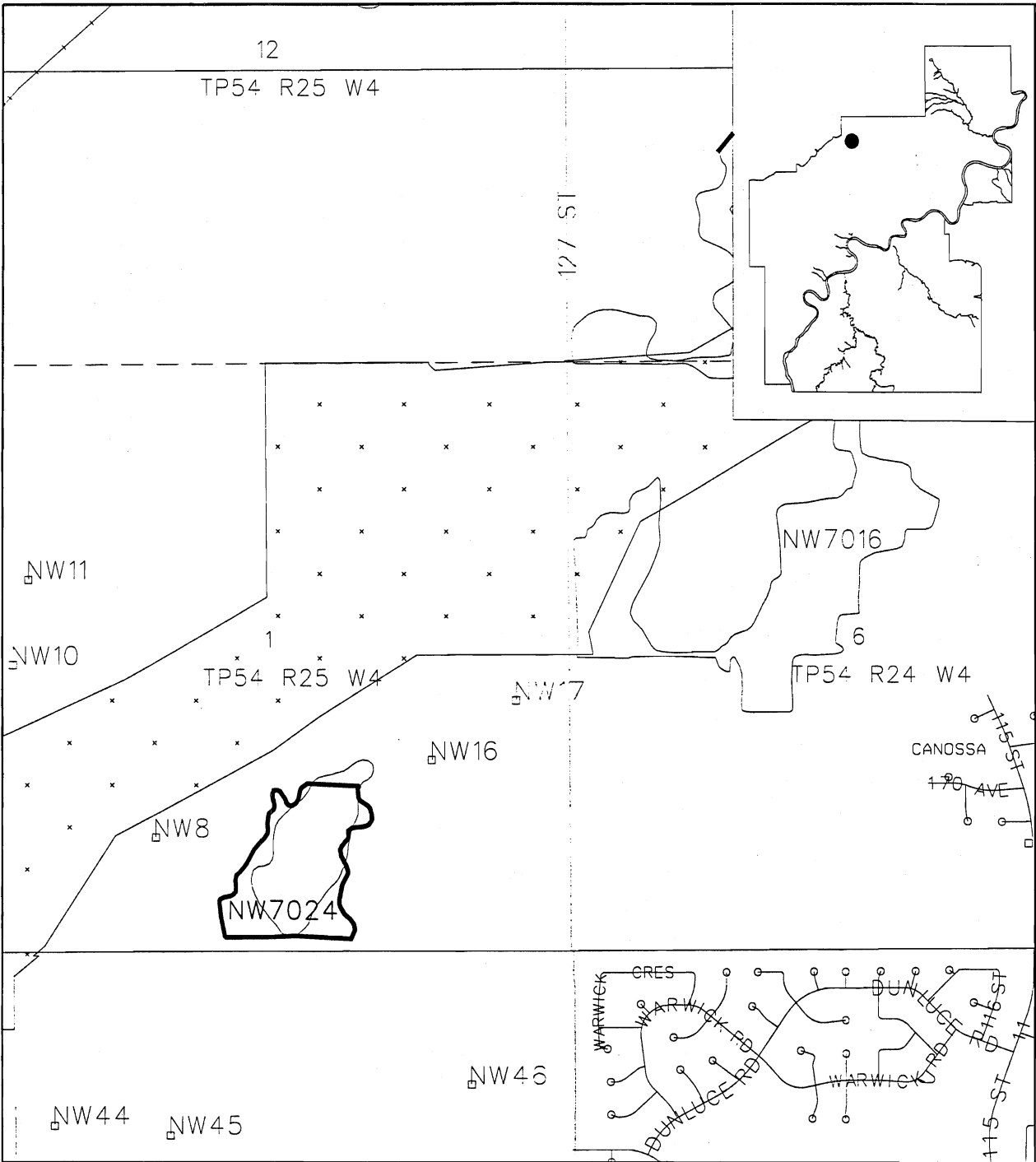
- Local**
- good example of a permanent wetland in transition
 - provides important waterfowl habitat, including spring staging, nesting and possibly rearing
 - provides critical function in maintaining or balancing area hydrology
 - provides linkages to adjacent ESA/SNAs

Existing Land Use / Management:

- Surrounding land uses include an adjacent field operated by the "Radio Control Association".
- Palisades Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	84.4	Conservation Value	130.4
Ecological Integrity	28	Conservation Rank (out of 62)	26
Geographical Location	12	Risk Factor	1.41
Ecological Uniqueness	6	Overall Score	183.8
		Overall Rank (out of 62)	9

Site Map - NW 7024



NORTHWEST WETLAND**(NW 7018)****Size:** 25.18 ha1.7 km north of 167 Avenue on east side of 127 Street
[SW 7 TP54 R24 W4M]**Site Description:**

- Large wetland complex that has been significantly disturbed by recent cultivation, grazing and reduced precipitation levels;
- Water levels very low, probably less than 50 cm in depth in middle; significant exposed mineral materials;
- Numerous sedge species, few willows; well-developed balsam poplar fringe along portion of eastern side;
- Poorly drained Orthic Gleysols and Orthic Humic Gleysols have developed on recently exposed lacustrine materials; silty clay loams; water table at or near the surface for a significant portion of the year.
- The low water levels and the amount of disturbance along the fringe has reduced the value of this particular wetland for waterfowl; it is perhaps of limited value during the spring migration and early nesting periods;
- Bird species observed during the 1993 survey include: mallards, shovelers and blue-winged teal observed on the water in mid June; extensive mudflats of value for common snipe, killdeer and spotted sandpiper; decadent balsam poplar along eastern fringe provides excellent perch and nesting sites for raptors such as red-tailed hawk; red-winged and yellow-headed blackbirds observed along with boreal chorus frogs; extensive coyote tracks throughout wetland; dead cattle remains scattered around site.

Current Condition: Essentially unchanged since 1993 Inventory.**Level of Significance:** Local

- provides critical function in maintaining or balancing local hydrological regime
- permanent wetland

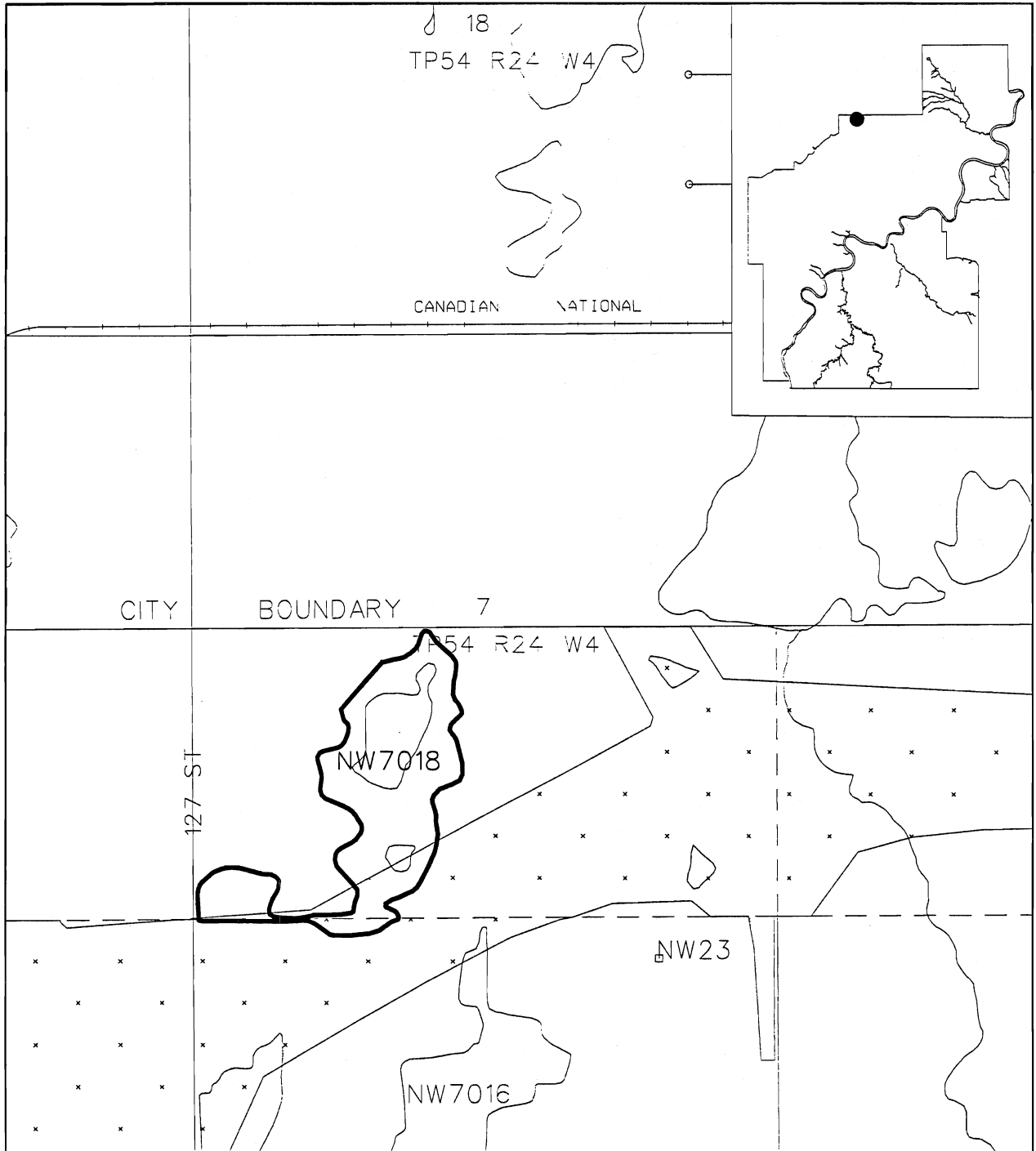
Existing Land Use / Management:

- Land immediately to the south is owned by the Petroleum Club and residential development is imminent.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK

Biophysical Features	95.7	Conservation Value	145.7
Ecological Integrity	34	Conservation Rank (out of 62)	14
Geographical Location	10	Risk Factor	0.46
Ecological Uniqueness	6	Overall Score	145.7
		Overall Rank (out of 62)	24

Site Map - NW 7018



WOODBEND RAVINE WOODLOT (NW 339)

Size: 8.93 ha

4.8 km south of Whitemud Drive on Winterburn Road and 0.8 km east on 35 Avenue
[NE 6 TP52 R25 W4M]

Site Description:

- Healthy aspen-balsam poplar-dominated woodlot with a minor component of white spruce; well-developed shrub understorey of low-bush cranberry, red-osier dogwood, saskatoon, rose, beaked willow, bracted honeysuckle and snowberry; good tree growth with 14 - 16 m canopy; few standing dead trees;
- Well drained Orthic Black Chernozems have developed on very gently undulating glaciolacustrine materials; loams over loamy sand and sand;
- Although there was no extensive evidence of wildlife usage (i.e., browsing on palatable browse species) in this stand, the site may act as a critical travel corridor for wildlife moving between Woodbend Ravine and the North Saskatchewan River Valley and the forested Stony Plain Indian Reserve to the west.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

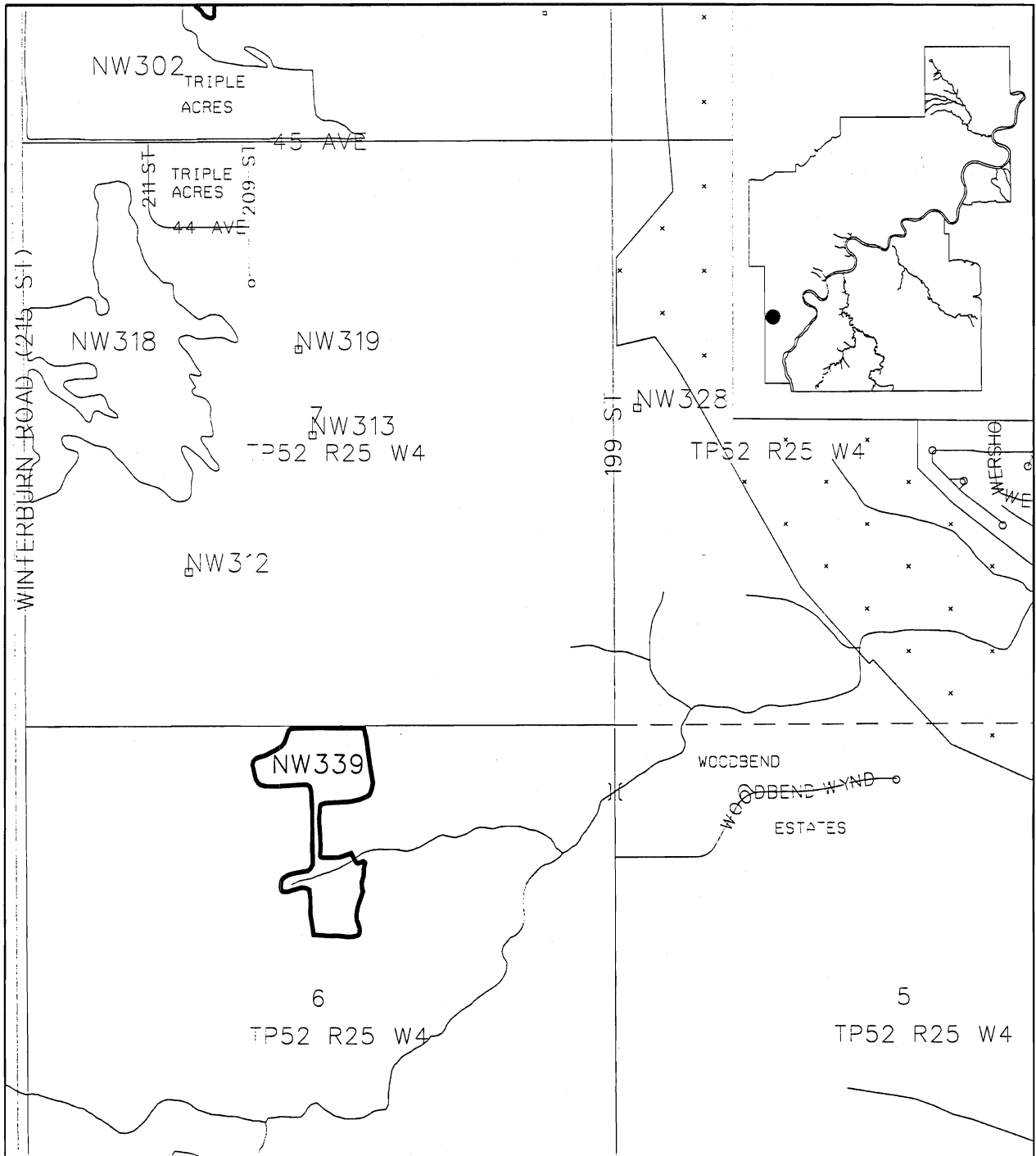
- provides critical linking function to North Saskatchewan River Valley

Existing Land Use / Management:

- Surrounding land uses are primarily cultivated fields.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	53.3	Conservation Value	117.3
Ecological Integrity	46	Conservation Rank (out of 62)	44
Geographical Location	6	Risk Factor	0.66
Ecological Uniqueness	12	Overall Score	117.3
		Overall Rank (out of 62)	50

Site Map - NW 339



KINOKAMAU LAKE WOODLAND NW 139

Size: 3.73 ha

0.8 km north of Yellowhead Trail between Kinokamau Lake and 184 Street
[NW 16 TP53 R25 W4M]

Site Description:

- This woodlot is situated immediately west of the northwest corner of Kinokamau Lake and consists predominately of aspen with lesser amounts of balsam poplar; small willow/sedge wetland located in northwest corner; well-developed understorey of saskatoon and beaked hazelnut, willow, rose, honeysuckle, gooseberry, snowberry and wild raspberry as a result of relatively open canopy; dense shrub layer results in poorly developed herb layer;
- Decadent balsam poplar providing good snag habitat; quite a bit of fallen timber;
- Imperfectly to poorly drained Gleyed Gray Luvisols and Orthic Gleysols have developed on level glaciolacustrine materials; clay loams over clay. ;
- High water table throughout the area promotes lush shrub understories;
- The heavy use of the area by white-tailed deer suggests that this stand is used as a corridor for movement between Kinokamau Lake and the Big Lake area to the northwest. Extensive deer tracks and "hedged" red-osier dogwood and lightly browsed willow all suggest that the area is used extensively by deer. Other species noted during the 1993 inventory at the site include red-tailed hawks and numerous songbirds.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: **Local**

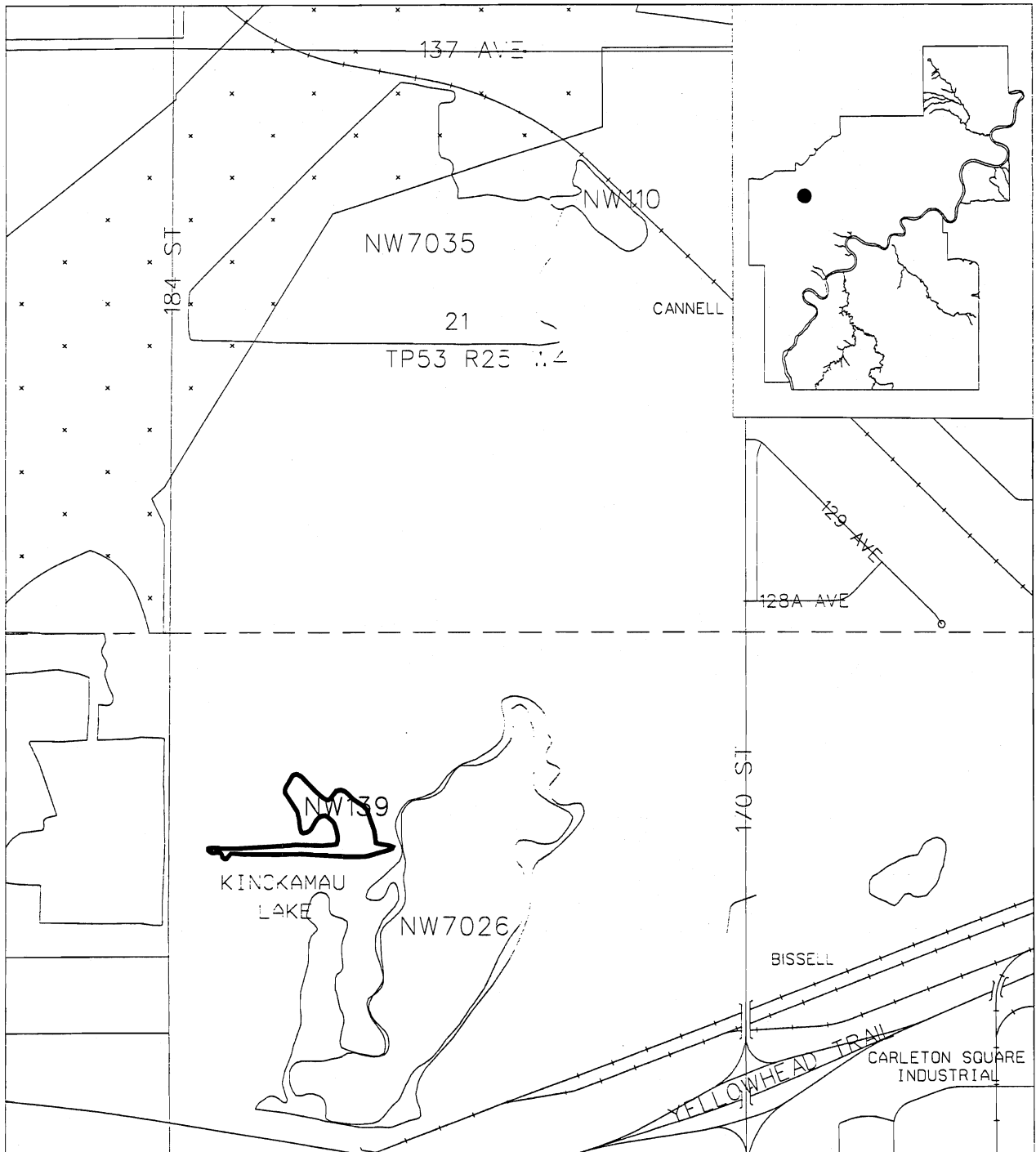
- good example of mature aspen-dominated stand
- provides habitat for local wildlife, especially white-tailed deer
- critical linking function to other ESA/SNAs within tablelands and the Big Lake area

Existing Land Use / Management:

- Surrounding land uses include country residential and cultivated fields.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	71.8	Conservation Value	120.8
Ecological Integrity	33	Conservation Rank (out of 62)	39
Geographical Location	6	Risk Factor	0.76
Ecological Uniqueness	10	Overall Score	120.8
		Overall Rank (out of 62)	46

Site Map - NW 139



SECTION 19 WOODLOT (NW 384)

Size: 17.56 ha

1.2 km south of Whitemud Drive on East Side of Winterburn Road
[SW 19 TP51 R25 W4M]

Site Description:

- Large remnant woodlot that is composed mainly of white birch and to a lesser extent, balsam poplar; some areas of pure white birch within stand; some balsam poplar to 24 m in height; few scattered large white spruce; understory characterized by high shrub cover and high shrub diversity; dominant shrub species include beaked hazelnut, raspberry, gooseberry, red-osier dogwood, high-bush cranberry, snowberry, bracted honeysuckle and wild red currant;
- Moderately well to well drained Orthic Black Chernozems have developed on very gently to gently undulating and hummocky eolian deposits; loams over sand and sandy loams;
- This stand is one of only a few white birch-dominated stands found within the tablelands of Edmonton; within the tablelands, white birch usually occurs as a subdominant species. It does, however, occur quite extensively in pure stands within the North Saskatchewan River Valley;
- Heavily browsed shrub species indicate the relative importance of this site for white-tailed deer. In addition, a number of well-developed game trails and tracks were also observed during the survey. An intermittent, unnamed stream forms the north boundary of this site and would be used by deer for movement between the North Saskatchewan River valley and the forested lands to the west.
- Considering the high level of disturbance that has occurred during 1992 and 1993 to construct the Edmonton Petroleum Golf and Country Club, this site has taken on additional importance for wildlife in the area.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: **Local**

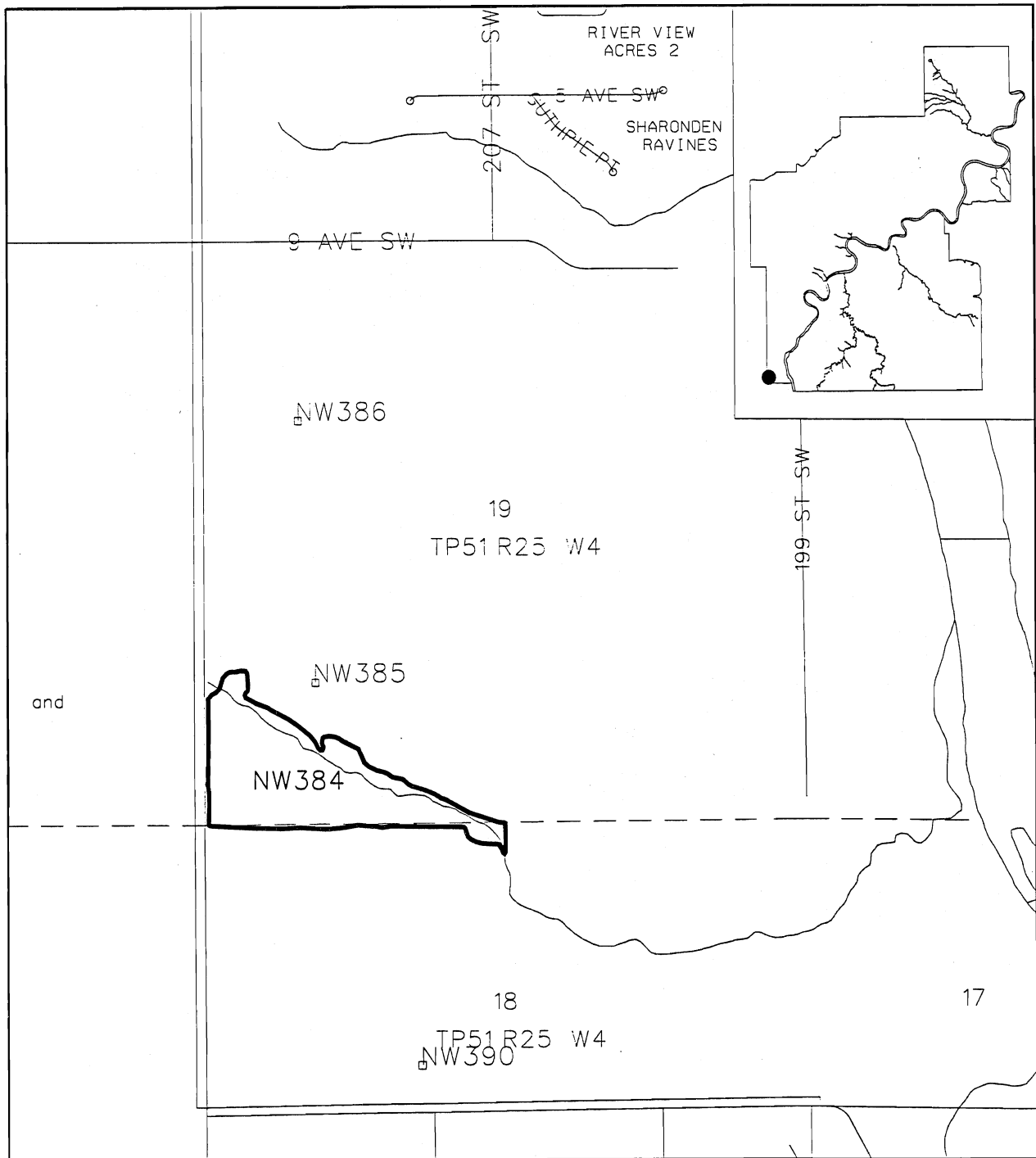
- one of the best examples of upland white birch within the tablelands
- provides habitat for white-tailed deer
- provides link to North Saskatchewan River Valley

Existing Land Use / Management:

- Surrounding land uses include the Edmonton Petroleum Golf and Country Club to the west, a tree farm to the north and cultivated fields to the east and south.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	71.5	Conservation Value	154.5
Ecological Integrity	55	Conservation Rank (out of 62)	11
Geographical Location	8	Risk Factor	0.90
Ecological Uniqueness	20	Overall Score	154.5
		Overall Rank (out of 62)	20

Site Map - NW 384



215 STREET NATURAL AREA (NW 7021)

Size: 12.08 ha

0.8 km north of Whitemud Drive on West Side of 215 Street (Winterburn Road)
[SE 25 TP52 R26 W4M]

Site Description:

- Healthy, undisturbed upland site with two small wetland complexes; upland area comprised of two-aged aspen stand with variable shrub densities; older open areas have considerable snags present with dense shrubby understories and poorly developed herb layers; areas with younger aspen are characterized by more closed canopies with poorer developed shrub layers and better developed herb layers; shrub species include beaked hazelnut, honeysuckle, rose, snowberry, red-osier dogwood, cherry, saskatoon, willow, and raspberry;
- Small wetland areas may have open water during the early to late spring period and are characterized by well-developed willow/sedge communities; some balsam poplar occurs around the perimeters of the wetland;
- Moderately well drained Dark Gray Luvisols and Dark Brown Chernozems have developed under upland forests; poorly drained Orthic Gleysols occur extensively within wetlands and along lower slopes; soils have developed within very gently undulating glaciolacustrine materials; loams over sandy clay loams;
- Water table at or near the surface for a significant portion of the year in wetland areas;
- The diversity of vegetation found within this site results in good wildlife habitat, unfortunately, the stand is not significant in size to provide year-round habitat for species like white-tailed deer; the site does provide essential cover and food for travel between other adjacent sites in the area; shrub species not overly browsed; the seasonal nature of the wetlands provides only temporary habitat for some waterfowl species.

Current Condition: Essentially unchanged since 1993 Inventory. Site is relatively undisturbed. It is connected to smaller habitat patches and to the larger Winterburn Natural Area (NW 7010).

Level of Significance: Local

- good example of two-aged aspen stand
- provides habitat for local wildlife
- provides linkages to other ESA/SNAs within the tablelands

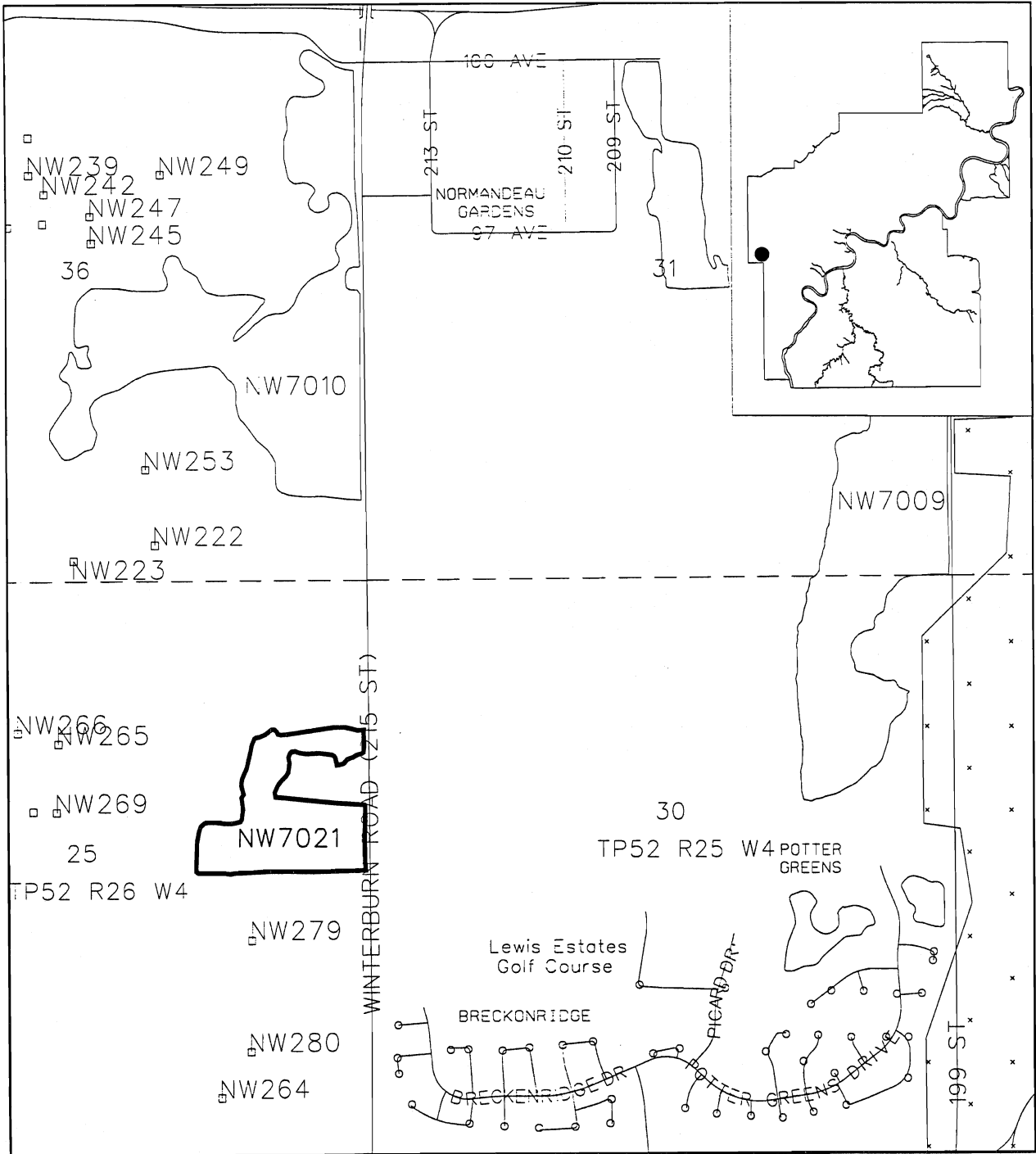
Existing Land Use / Management:

- Surrounding land uses include country residential, cultivated fields, a sour gas well and Lewis Farms golf course to the east.
- Contains a gas well owned by Leddy Exploration Limited.
- Lewis Farms Area Structure Plan in place.

SITE RATING AND RANK

Biophysical Features	89.5	Conservation Value	156.5
Ecological Integrity	49	Conservation Rank (out of 62)	10
Geographical Location	8	Risk Factor	1.26
Ecological Uniqueness	10	Overall Score	197.2
		Overall Rank (out of 62)	6

Site Map - NW 7021



156 STREET- ST ALBERT TRAIL NATURAL AREA (NW 65)

Size: 13.54 ha

Immediately Southwest of the intersection of St Albert Trail and 156 Street
[NE 27 TP53 R25 W4M]

Site Description:

- Mature balsam poplar-aspen forest; excellent shrub growth results from rather open canopy tree layer; shrub understorey comprised of red-osier dogwood, cherry, beaked-hazelnut, raspberry, honeysuckle, rose, snowberry and gooseberry; herb layer less well developed due to dense shrub layer;
- Two relatively small willow/sedge wetlands;
- Poorly drained Orthic Gleysols and Gleyed Black Chernozems are common throughout the area and reflect the generally high water tables;
- Water table generally within 200 cm of surface;
- Nearly level to very gently undulating glaciolacustrine materials; loams and clay loams over clays and heavy clay; prominent mottling at 20 cm;
- Possible "old growth" balsam poplar occurring at this site. The mature nature of this stand provides unique habitat for many bird species.

Current Condition: Essentially unchanged since 1993 inventory.

Level of Significance: Local

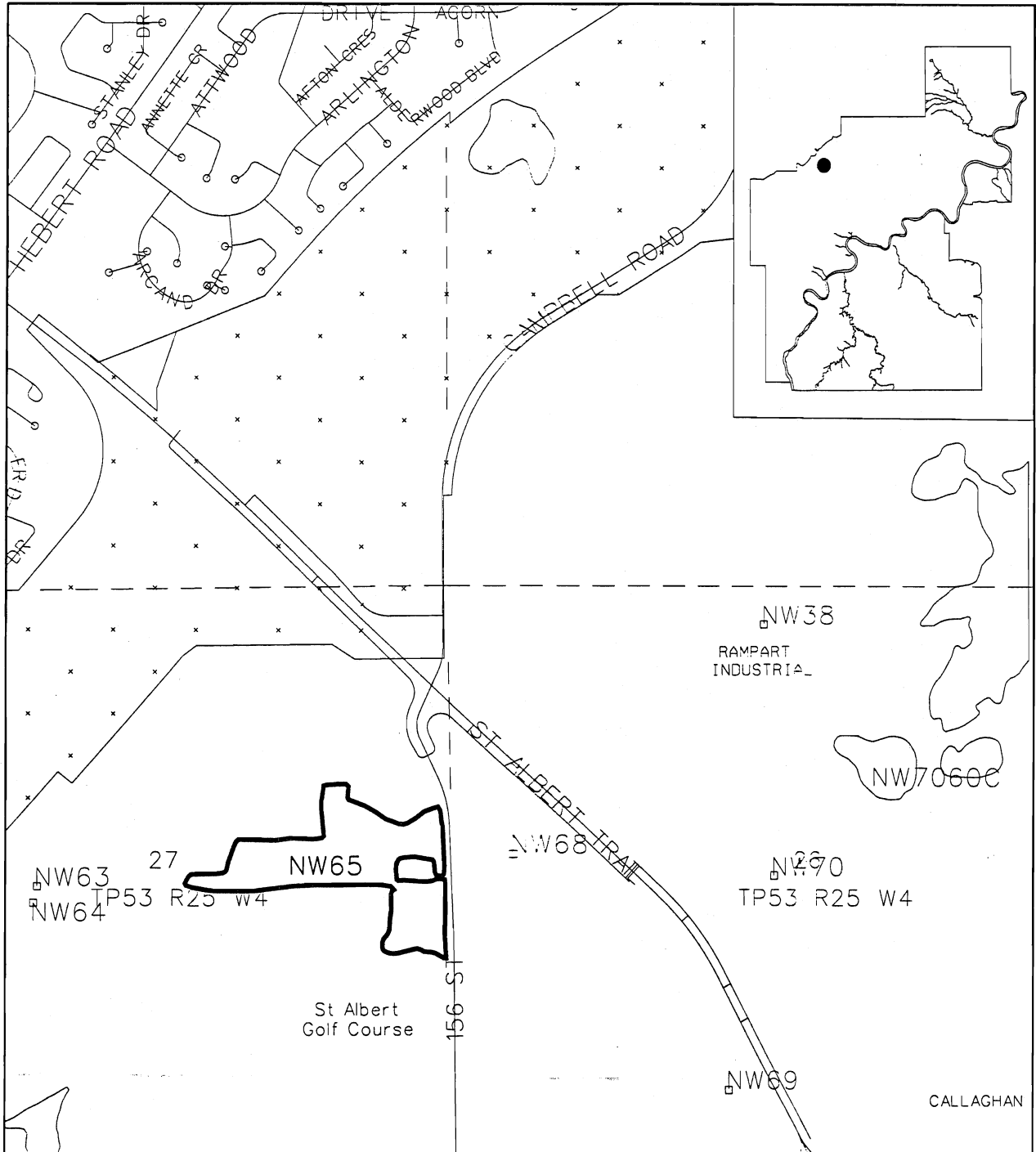
- good example of mature balsam poplar-aspen stand
- possible "old growth" balsam poplar
- terrestrial bird habitat

Existing Land Use / Management:

- Surrounding land uses include light industrial/commercial and agriculture.
- Mistamin Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	80.0	Conservation Value	137.0
Ecological Integrity	43	Conservation Rank (out of 62)	21
Geographical Location	10	Risk Factor	1.12
Ecological Uniqueness	4	Overall Score	153.5
		Overall Rank (out of 62)	21

Site Map - NW 65



NW 7004

Size: 22.93 ha

North of 122 Avenue and west of 184 Street
[NE 17 TP53 R25 W4M]

Site Description:

- Relatively large and healthy aspen-balsam poplar mixedwood stand situated between 184 Street and Kirk Lake; some white spruce in the overstorey; common shrub species include red-osier dogwood, snowberry, beaked willow, rose, saskatoon, choke cherry and gooseberry; overstorey vegetation between 15 and 20 m in height; mature white spruce providing good seed source for spruce regeneration;
- Small meltwater channel occur at northern end of unit and appears to be natural drainage channel towards Kirk Lake to the west; willow/sedge communities have developed within this area but appear to have been disturbed by dumping;
- Imperfectly to poorly drained Black Chernozems and Orthic Gleysols have developed on nearly level to very gently undulating glaciolacustrine materials; silt loams and silty clay loams;
- The unique diversity of vegetation that occurs within this stand provides significant habitat for white-tailed deer and a variety of songbirds; red-osier dogwood heavily browsed; ephemeral wetlands along northern fringe may provide temporary nesting habitat for waterfowl.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

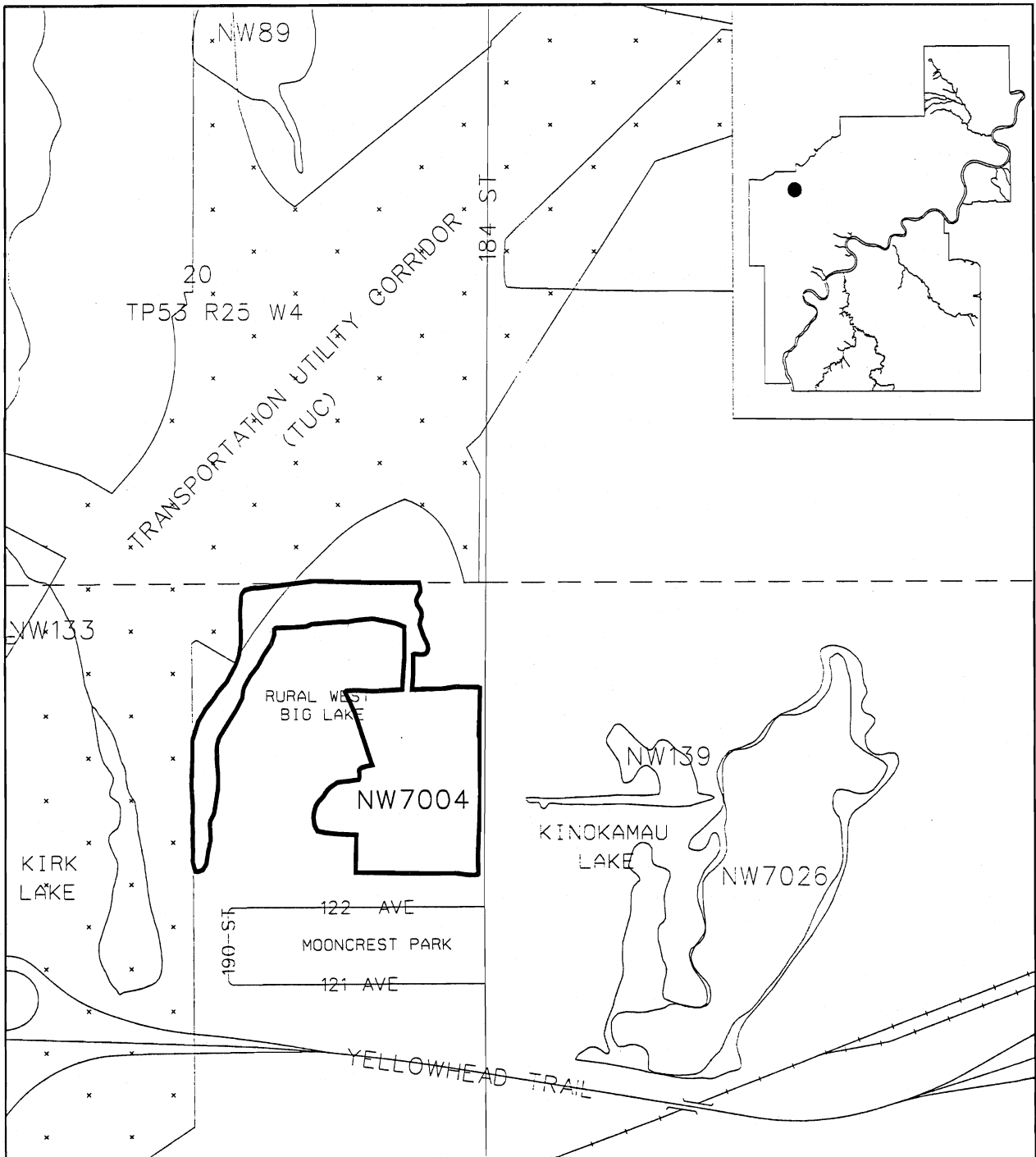
- good example of mature mixedwood stand
- provides habitat for local wildlife species
- provides linking function to Big Lake area

Existing Land Use / Management:

- Surrounding land uses include cultivated fields and pastureland.
- No structure plans / design briefs in place at this time.

SITE RATING AND RANK			
Biophysical Features	81.3	Conservation Value	162.3
Ecological Integrity	63	Conservation Rank (out of 62)	7
Geographical Location	6	Risk Factor	0.81
Ecological Uniqueness	12	Overall Score	162.3
		Overall Rank (out of 62)	16

Site Map - NW 7004



WINTERBURN CROSSING WETLANDS (NW 7011)

Size: 11.77 ha

West of Winterburn Rd between 103 Avenue and Westview Village
[SE 1 TP53 R26 W4M]

Site Description:

- A series of four permanent wetlands with open water with well-developed perimeters of sedge, rush, cattails and willows; some scrubby balsam poplar-aspen stands with significant amounts of introduced weedy species; water levels appear to be considerably lower than historical regimes (some small ponds appear to have been drained by man-made ditches);
- Because the landscape has been significantly altered over the past decade with topsoil being removed and fill being dumped, the site has been downgraded from an *environmentally sensitive area* to a significant natural area;
- Imperfectly drained Gleyed Gray Luvisols and poorly drained Orthic Gleysols have developed along the perimeters of the wetlands; moderately well drained Dark Gray Luvisols have developed under scrubby upland deciduous stands; loams and clay loams over silty clay loams; gently undulating and hummocky glaciolacustrine materials; perched water tables near wetlands;
- The four wetlands work together to provide important nesting, breeding and feeding habitat for waterfowl species. Bird species observed during the 1993 survey include the blue-winged and green-winged teal, black-crowned night heron, Canada goose, mallard, lesser scaup, killdeer, tree and barn swallows, black-billed magpie, American crow, black-capped chickadee, house wren, European starling, warbling vireo, yellow warbler, song, clay-colored, and savannah sparrows, red-winged blackbird, brown-headed cowbird, northern oriole, and American goldfinch; individually,
- None of these wetlands would be significant, however, when combined, they provide important waterfowl habitat;
- Shallow, but relatively stable nature of the water has provided critical muskrat habitat; numerous muskrat runs are found adjacent to these wetlands.

Current Condition: Site has been developed slightly since 1993 through agricultural planting of barley.

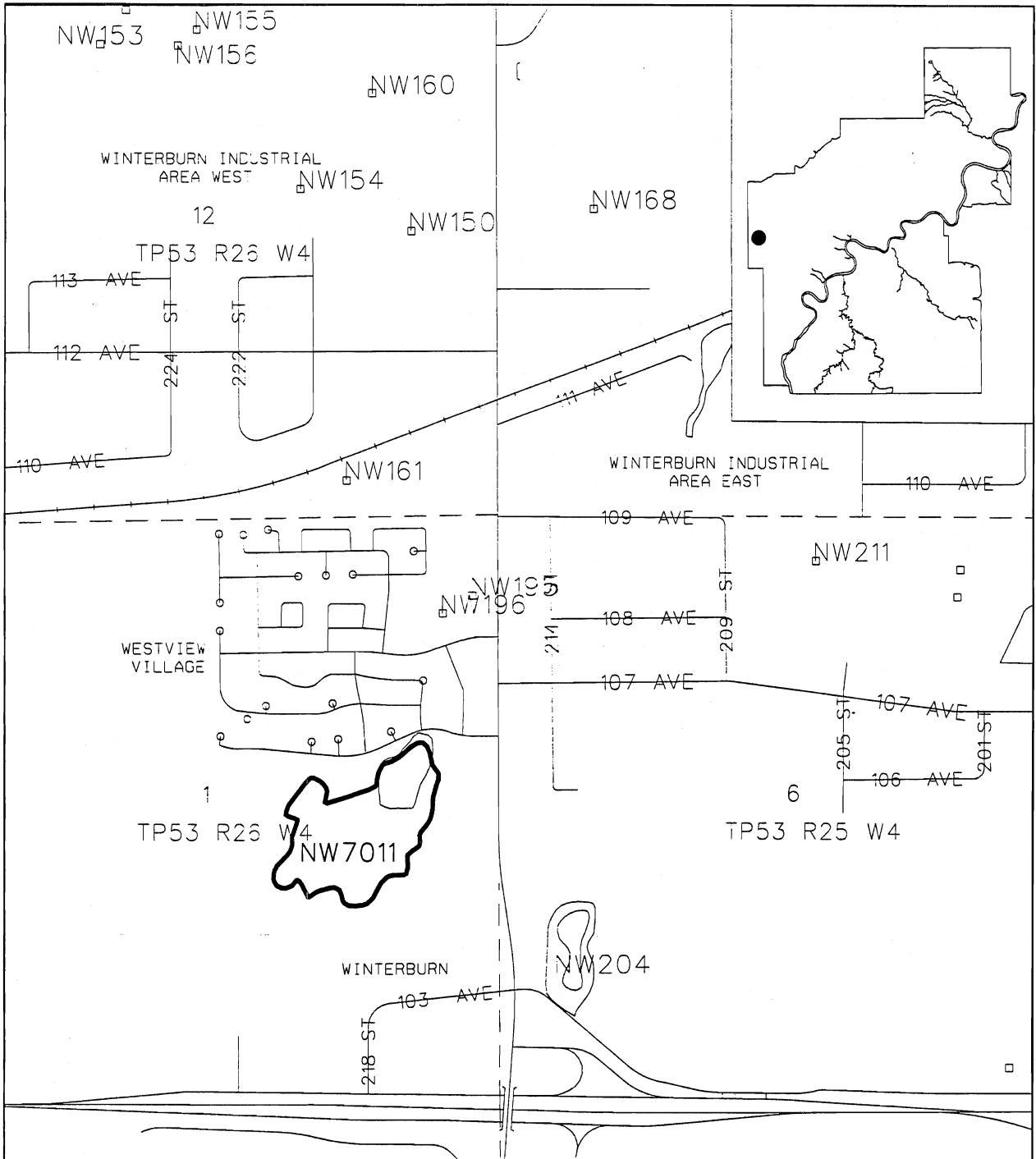
- Level of Significance:** Local
- high plant species diversity
 - high habitat diversity
 - critical waterfowl nesting, breeding and feeding habitat
 - aquatic furbearer habitat
 - permanent water bodies

Existing Land Use / Management:

- Surrounding land uses are mainly native pasture and the Westview Village Trailer Park to the north.
- Winterburn Industrial Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	84.9	Conservation Value	127.9
Ecological Integrity	29	Conservation Rank (out of 62)	30
Geographical Location	8	Risk Factor	1.62
Ecological Uniqueness	6	Overall Score	207.2
		Overall Rank (out of 62)	4

Site Map - NW 7011



MISTATIM LAGOONS (NW 7090)

Size: 21.61 ha

Location:

2 km north of Yellowhead Hwy (16X) on east side of 170 Street
[NW 22 TP53 R25 W4M]

Site Description:

- Cooperative venture between Consolidated and Ducks Unlimited;
- series of open-water ponds, some with emergent cattail fringe, others with steep mud banks;
- 5 ponds of considerable size and one smaller one;
- nesting boxes are present on largest pond, and numerous waterfowl noted during inventory in 1993;

Current Condition: Site has been severely impacted and drastically reduced in size since 1993 inventory (from 39.78 ha to current size of 21.61 ha).

Level of Significance: Local

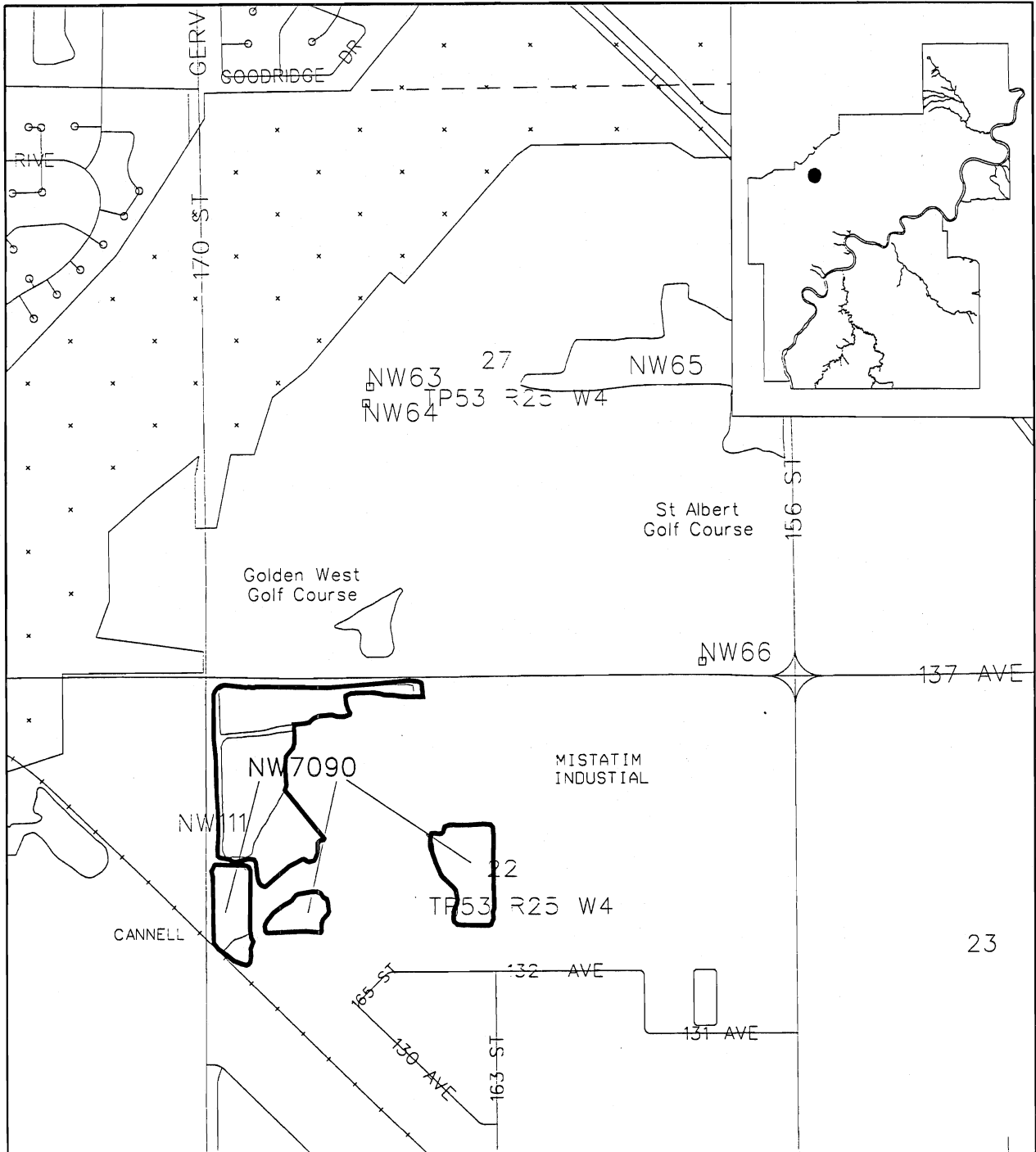
- permanent open water
- waterfowl nesting habitat

Existing Land Use / Management:

- Surrounding land uses are mainly industrial as site is located within the Consolidated Cement Plant;
- Immediately adjacent to two heavily travelled roads (170 Street and 137 Avenue);
- Mistatim Industrial Area Structure Plan (1982) in place.

SITE RATING AND RANK			
Biophysical Features	49.9	Conservation Value	76.9
Ecological Integrity	21	Conservation Rank (out of 62)	60
Geographical Location	12	Risk Factor	1.22
Ecological Uniqueness	6	Overall Score	93.8
		Overall Rank (out of 62)	60

Site Map - NW 7090



HENRY SINGER SPORTS FIELD (NW 7060)

Size: 18.5 ha

Location:

Approximately 1 km north of 137 Avenue on west side of 142 Street
[NE 26 TP53 R25 W4M]

Site Description:

- A series of five variable sized wetlands occurring primarily within the Henry Singer Sports Field complex;
- Wetlands consist primarily of open water with well-developed sedge meadows and emergent aquatic fringes comprised mainly of cattails;
- some willow clumps also found;
- water levels variable and wetlands are somewhat ephemeral in nature;
- Poorly drained Orthic Gleysols and very poorly drained Mesisols developed on glaciolacustrine materials;
- Local groundwater table at or very near the surface for a significant portion of the year;
- Open water / emergent fringe provide excellent nesting and foraging habitat for variety of waterfowl;
- Species noted during survey in 1993 included mallard, blue-winged teal, northern pintail, American wigeon, red-winged and yellow headed blackbirds, barn swallow, unident. sandpiper, Wilson's phalarope, red-tailed hawk, American robin, common crow, and black-billed magpie;
- evidence of boreal chorus frogs, white-tailed deer, and coyotes also noted at site.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

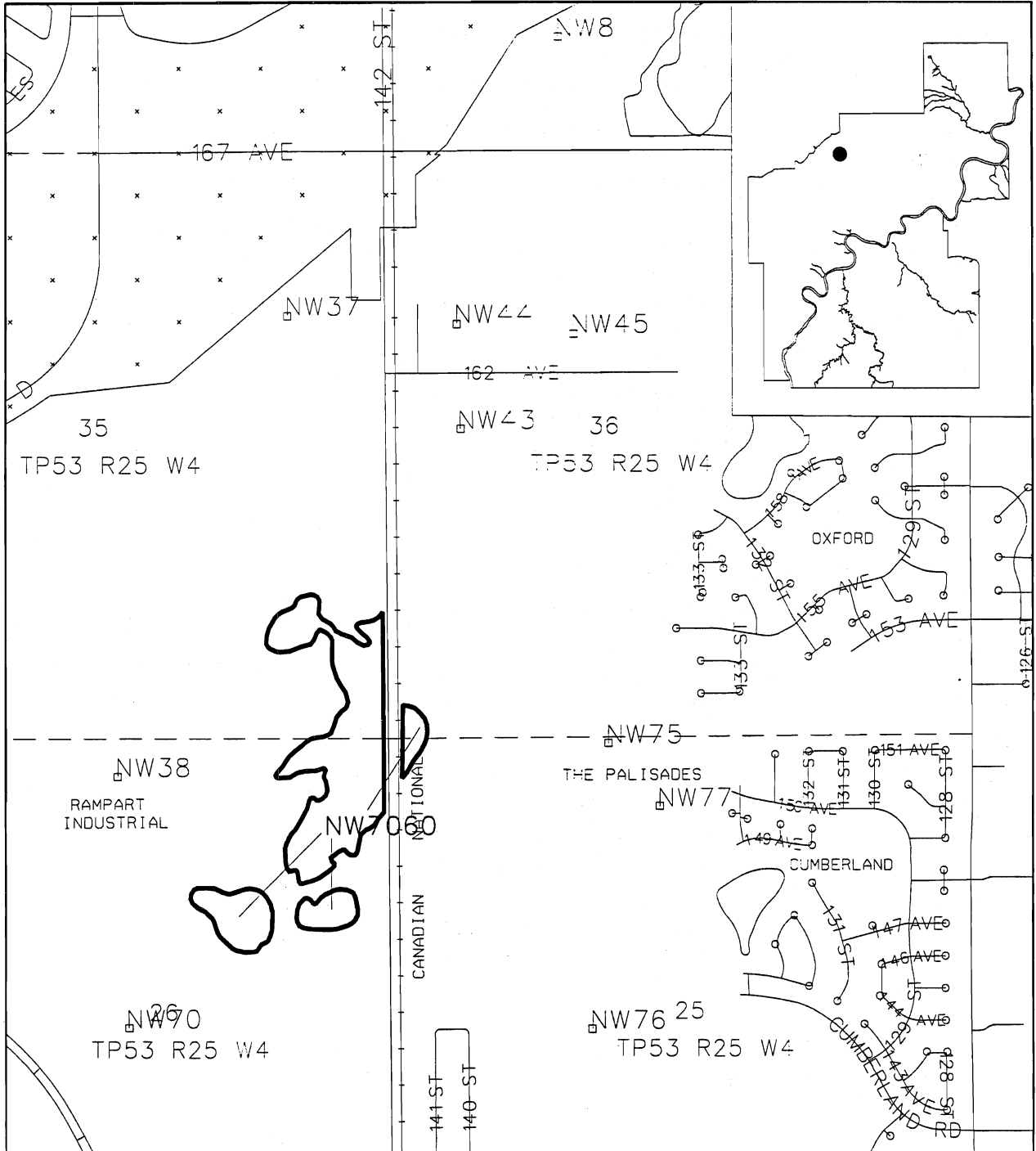
- good example of wetland communities
- habitat for waterfowl, terrestrial birds, and ungulates;
- good example of transitional wetlands (permanent to ephemeral);
- important for maintaining local hydrological conditions.

Existing Land Use / Management:

- Surrounding land uses include a number of sports fields and associated buildings, a major transmission right of way, 142 Street, and cultivated fields;
- major access road developed off 142 Street and through southern portion of site;
- Rampart Industrial Area Structure Plan and Palisades Industrial Area Structure Plan in place.

SITE RATING AND RANK			
Biophysical Features	63.9	Conservation Value	116.9
Ecological Integrity	31	Conservation Rank (out of 62)	45
Geographical Location	16	Risk Factor	1.17
Ecological Uniqueness	6	Overall Score	136.8
		Overall Rank (out of 62)	33

Site Map - NW 7060



NORTHWEST MATURE WOODLAND (NW 7016)

Size: 27.44 ha

Location:

0.8 km north of 167 Avenue between 112 and 127 Streets
[NW 6 TP54 R24 W4M]

Site Description:

- A relatively large, homogenous and healthy deciduous stand comprised mainly of aspen and, to a lesser extent, balsam poplar both up to 18 m in height;
- well-developed shrub understorey or red-osier dogwood and rich herbaceous layer comprised of wild sarsparilla, meadow rue, dewberry, northern bedstraw, bishop's cap, fireweed, cow parsnip, and a number of violet and geranium species;
- numerous palatable shrub species in dense understorey (including dogwood, beaked willow, saskatoon, and rose);
- numerous well-defined deer beds and trails throughout site;
- songbirds noted during survey included northern oriole, black-capped chickadee, yellow warbler, least flycatcher, common crow; also boreal chorus frogs recorded in small wet meadow;
- moderately well drained Dark Gray Luvisols and imperfectly drained Gleyed Dark Gray Luvisols have developed on nearly level to very gently undulating glaciolacustrine materials;
- heavy clay content of soils results in high availability of nutrients for plant growth.

Current Condition: Essentially unchanged since 1993 Inventory.

Level of Significance: Local

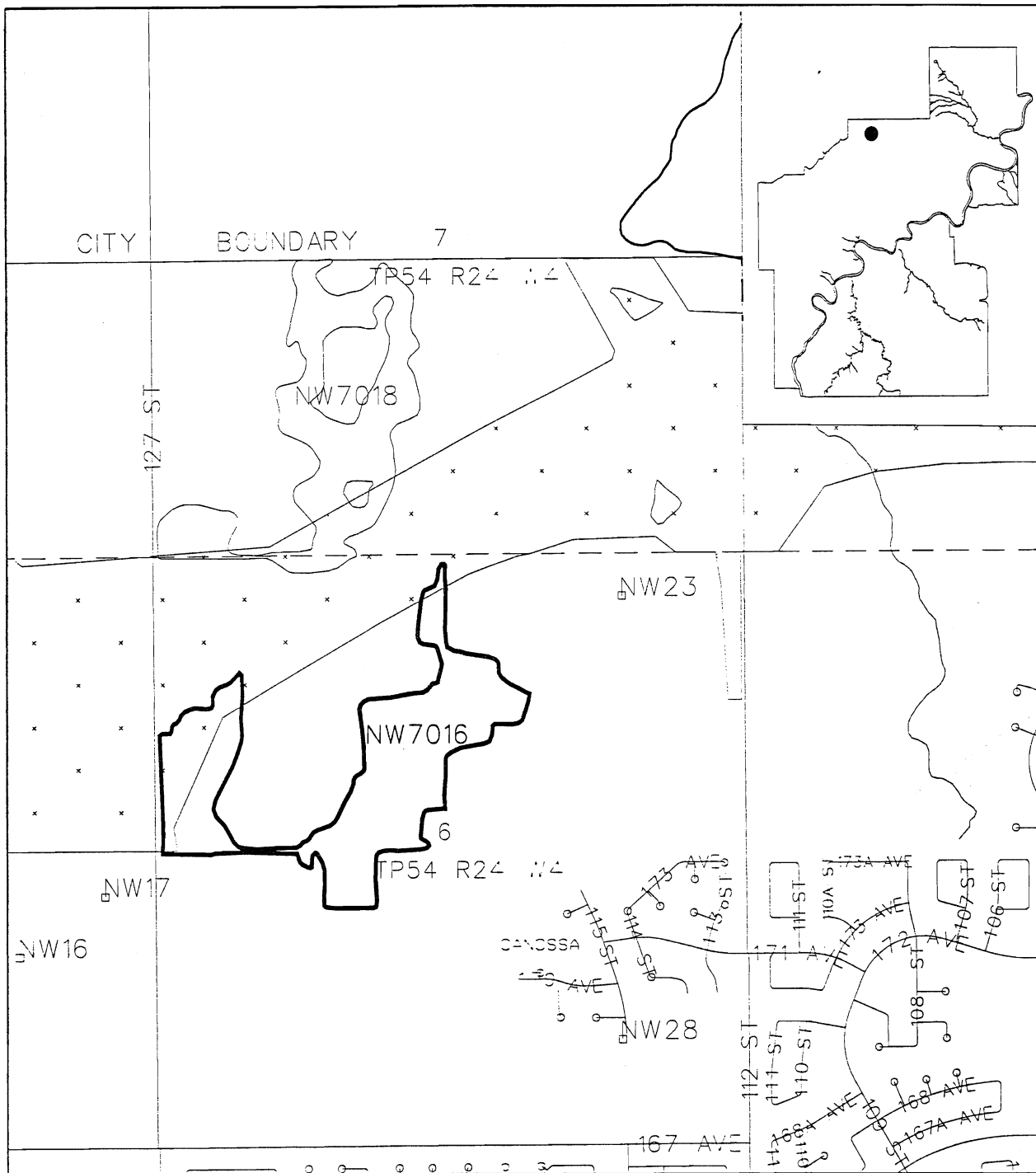
- good example of mature aspen stand
- links to other adjacent natural areas
- habitat for locally important wildlife species

Existing Land Use / Management:

- Surrounding land uses consist of cultivated fields;
- site has a number of well-defined trails that appear to be used by locals for recreational pursuits;
- Castle Downs Extension Area Structure Plan (1983) in place.

SITE RATING AND RANK			
Biophysical Features	51.5	Conservation Value	109.5
Ecological Integrity	38	Conservation Rank (out of 62)	52
Geographical Location	16	Risk Factor	1.31
Ecological Uniqueness	4	Overall Score	143.4
		Overall Rank (out of 62)	27

Site Map - NW 7016

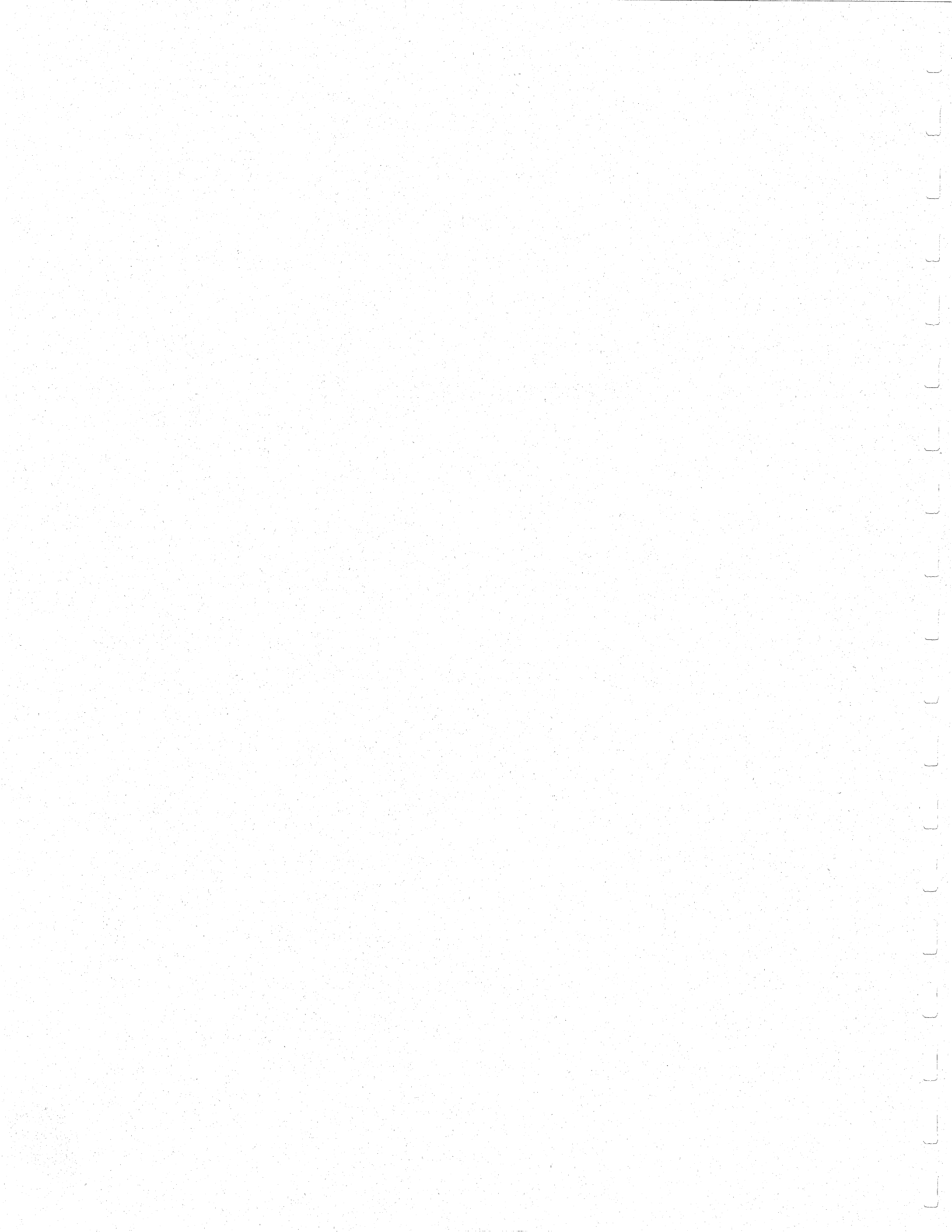


APPENDIX D

POTENTIAL OCCURRENCE &

HABITAT AFFINITIES

OF WILDLIFE SPECIES



MAMMALS

SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	LIMNETIC	LITTORAL	LENTIC EMERGENT	NON-VEG SHORELINE	LOTIC	LOTIC RIPERIAN	FEN	CLOSED DECIDUOUS	CLOSED MIXEDWOOD	CLOSED CONIFEROUS	TALL SHRUB	WET MEADOW	GRASSLAND
Masked Shrew	<i>Sorex cinereus</i>								P	P	P	P	P	
Dusky Shrew	<i>Sorex monticolus</i>						P	P	P	P	P	P	P	P
Water Shrew	<i>Sorex palustris</i>		P	P			P	P	S	S	S	S	P	
Arctic Shrew	<i>Sorex arcticus</i>							P	P	P	P	P	P	
Pygmy Shrew	<i>Sorex hoyi</i>								P	P	P	P		
Little Brown Bat	<i>Myotis lucifugus</i>								S	S	S			
Northern Long-eared Bat	<i>Myotis septentrionalis</i>								P	P	P			
Silver-haired Bat	<i>Lasionycteris noctivagans</i>								P	P	P			
Big Brown Bat	<i>Eptesicus fuscus</i>								S	S	S			
Hoary Bat	<i>Lasiurus cinereus</i>								P	P	P			
Snowshoe Hare	<i>Lepus americanus</i>								P	P	P	P		P
White-tailed Jack Rabbit	<i>Lepus townsendii</i>								P	P	P	P		
Least Chipmunk	<i>Tamias minimus</i>								P	P	P	P		
Woodchuck	<i>Marmota monax</i>						P							P
Richardson's Ground Squirrel	<i>Spermophilus richardsonii</i>													P
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>											P		S
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>								P			S		
Red Squirrel	<i>Tamiasciurus hudsonicus</i>									P	P			
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>									P	P			
Northern Pocket Gopher	<i>Thomomys talpoides</i>													P
Beaver	<i>Castor canadensis</i>	P	S	S		P	S							
Deer Mouse	<i>Peromyscus maniculatus</i>			P			P	P	P	P	P	P		P
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>							S	P	P	P	P		
Heather Vole	<i>Phenacomys intermedius</i>				S							P		
Meadow Vole	<i>Microtus pennsylvanicus</i>											P		P
Prairie Vole	<i>Microtus ochrogaster</i>								S					P
Muskrat	<i>Ondatra zibethicus</i>		P	P		P								
Northern Bog Lemming	<i>Synaptomys borealis</i>			P				P	S	S	S		P	
Meadow Jumping Mouse	<i>Zapus hudsonius</i>			S				S	P				P	
Western Jumping Mouse	<i>Zapus princeps</i>						S				S		P	
Porcupine	<i>Erethizon dorsatum</i>								P	P	P	P		P
Coyote	<i>Canis latrans</i>								P	P	P	P		P
Red Fox	<i>Vulpes vulpes</i>								P	P	P	P		P
Black Bear	<i>Ursus americanus</i>								P	P	P	P		
Raccoon	<i>Procyon lotor</i>								P	P	P			
Ermine	<i>Mustela erminea</i>						S		P	P	P			
Least Weasel	<i>Mustela nivalis</i>								P	P	P	P		P
Long-tailed Weasel	<i>Mustela frenata</i>								P	P	P	P		P
Mink	<i>Mustela vison</i>	P	P	S		P	S							
Badger	<i>Taxidea taxus</i>								P					P
Striped Skunk	<i>Mephitis mephitis</i>								P	P	P	P		P
Canada Lynx	<i>Lynx canadensis</i>									P	P			
Mule Deer	<i>Odocoileus hemionus</i>						S		P	P	P	P		
White-tailed Deer	<i>Odocoileus virginianus</i>						S		P	P	P	P		
Moose	<i>Alces alces</i>	S	S	S				S	P	P	P	P		
TOTAL PRIMARY		3	3	4	0	3	4	5	22	26	25	16	9	14
TOTAL SECONDARY		0	1	4	1	0	7	3	5	4	5	2	0	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

BIRDS

**SPECIES
COMMON NAME**

SCIENTIFIC NAME

SPECIES COMMON NAME	SCIENTIFIC NAME	LIMNETIC	LITTORAL	LENTIC EMERGET	NON-VEG SHORELINE	LOTIC	LOTIC RIPERIAN	FEN	CLOSED DECIDUOUS	CLOSED MIXEDWOOD	CLOSED CONIFEROUS	TALL SHRUB	WET MEADOW	GRASSLAND
Yellow Rail	<i>Coturnicops noveboracensis</i>			P									P	
Virginia Rail	<i>Rallus limicola</i>			P									P	
Sora	<i>Porzana carolina</i>			P										
American Coot	<i>Fulica americana</i>	P	P	P										
Sandhill Crane	<i>Grus canadensis</i>			P				P					P	S
Killdeer	<i>Charadrius vociferus</i>				P								P	S
American Avocet	<i>Recurvirostra americana</i>			P	P									S
Greater Yellowlegs	<i>Tringa melanoleuca</i>			P	P		P	P	S	S				
Lesser Yellowlegs	<i>Tringa flavipes</i>			P	P				S	S				
Solitary Sandpiper	<i>Tringa solitaria</i>			P	P				S	S				
Willet	<i>Catoptrophorus semipalmatus</i>			P	P								P	S
Spotted Sandpiper	<i>Actitis macularia</i>			P	P		P							
Upland Sandpiper	<i>Bartramia longicauda</i>												P	P
Marbled Godwit	<i>Limosa fedoa</i>				P									P
Short-billed Dowitcher	<i>Limnodramus griseus</i>			P	P				S	S			P	
Common Snipe	<i>Gallinago gallinago</i>			P	P		P	P					P	
Wilson's Phalarope	<i>Phalaropus tricolor</i>		P	P	P									
Franklin's Gull	<i>Larus pipixcan</i>	P	P	P		P	P							
Bonaparte's Gull	<i>Larus philadelphia</i>	P	P	P		P				S				
Ring-billed Gull	<i>Larus delawarensis</i>	P			P	P								
California Gull	<i>Larus californicus</i>	P			P	P								
Herring Gull	<i>Larus argentatus</i>	P	P	P	P	P								
Common Tern	<i>Sterna hirundo</i>	P	P	P	P	P								
Forster's Tern	<i>Sterna forsteri</i>	P	P	P	P									
Black Tern	<i>Chelidon niger</i>	P	P	P										
Mourning Dove	<i>Zenaidura macroura</i>						S					P		P
Great Horned Owl	<i>Bubo virginianus</i>								P	P	P	P		P
Northern Hawk Owl	<i>Surnia ulula</i>						S		P	P	P			
Barred Owl	<i>Strix varia</i>						S		P	P	P			
Long-eared Owl	<i>Asio otus</i>								P	P	P	P		S
Short-eared Owl	<i>Asio flammeus</i>								S	S	S			P
Northern Saw-whet Owl	<i>Aegolius acadicus</i>								P	P	P			
Snowy Owl	<i>Nyctea scandiaca</i>													S
Great-Gray Owl	<i>Strix nebulosa</i>								P	P	P			
Boreal Owl	<i>Aegolius funereus</i>								P	P	P			
Common Night-Hawk	<i>Chordeiles minor</i>								P	P	P	P		P
Ruby-throated Hummingbird	<i>Archilochus colubris</i>													
Belted Kingfisher	<i>Ceryle alcyon</i>	P				P	P							
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>								P	P				
Downy Woodpecker	<i>Picoides pubescens</i>								P	P	P	P		
Hairy Woodpecker	<i>Picoides villosus</i>								P	P	P			
Northern Flicker	<i>Colaptes auratus</i>								P	P	P	P		P
Pileated Woodpecker	<i>Dryocopus pileatus</i>									P	P			
Black-backed Woodpecker	<i>Picoides tridactylus</i>													
Northern Three-toed Woodpecker	<i>Picoides arcticus</i>													
Olive-sided Flycatcher	<i>Contopus borealis</i>						S							

BIRDS

SPECIES COMMON NAME

LATIN NAME

SPECIES COMMON NAME	LATIN NAME	LIMNETIC	LITTORAL	LENTIC EMERGENT	NON-VEG SHORELINE	LOTIC	LOTIC RIPERIAN	FEN	CLOSED DECIDUOUS	CLOSED MIXEDWOOD	CLOSED CONIFEROUS	TALL SHRUB	WET MEADOW	GRASSLAND
Western Wood-pewee	<i>Contopus sordidulus</i>						S		P	P	P			
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>							P		P	P			
Alder Flycatcher	<i>Empidonax alnorum</i>			S			S	S				P		
Least Flycatcher	<i>Empidonax minimus</i>								P			P		
Eastern Phoebe	<i>Sayornis phoebe</i>						S		P	P	P	P		
Say's Phoebe	<i>Sayornis sayap</i>									P		P		P
Great-Crested Flycatcher	<i>Myiarchus crinitus</i>								P	P				
Eastern Kingbird	<i>Tyrannus tyrannus</i>						S					P		P
Horned Lark	<i>Eremophila alpestris</i>													P
Purple Martin	<i>Progne subis</i>						S		P	P	P			
Tree Swallow	<i>Tachycineta bicolor</i>						S		P	P	P			
Bank Swallow	<i>Riparia riparia</i>	S	S			S	P							
Cliff Swallow	<i>Hirundo pyrrhonota</i>	S					P							
Barn Swallow	<i>Hirundo rustica</i>						P							
Gray Jay	<i>Perisoreus canadensis</i>								P	P	P			
Blue Jay	<i>Cyanocitta cristata</i>								P	P				
Black-billed Magpie	<i>Pica pica</i>								P	P	P	P		P
American Crow	<i>Corvus brachyrhynchos</i>								P	P	P	S		S
Common Raven	<i>Corvus corax</i>								P	P	P	S		S
Black-capped Chickadee	<i>Parus atricapillus</i>						S		P	P	P	P		
Boreal Chickadee	<i>Parus hudsonicus</i>													
Red-breasted Nuthatch	<i>Sitta canadensis</i>													
White-breasted Nuthatch	<i>Sitta carolinensis</i>								P	P				
Brown Creeper	<i>Certhia americana</i>									P				
House Wren	<i>Troglodytes aedon</i>								P			P		
Sedge Wren	<i>Gistothorus plantensis</i>			P									P	S
Marsh Wren	<i>Gistothorus palustris</i>	S	S	P										
Winter Wren	<i>Troglodytes troglodytes</i>	S	S	S			S							
Golden-crowned Kinglet	<i>Regulus satrapa</i>									P	P			
Ruby-crowned Kinglet	<i>Regulus calendula</i>										P			
Mountain Bluebird	<i>Sialia currucoides</i>								P	P	P	P		P
Veery	<i>Catharus fuscens</i>								P			S		
Swainson's Thrush	<i>Catharus ustulatus</i>						S			P	P			
Hermit Thrush	<i>Catharus guttatus</i>									P	P			
American Robin	<i>Turdus migratorius</i>								P	P	P	P		P
Gray Catbird	<i>Dumetella carolinensis</i>											P		
Brown Thrasher	<i>Toxostoma rufum</i>						S					P		S
Sprague's Pipit	<i>Anthus spraguei</i>													P
Bohemian Waxwing	<i>Bombycilla garrulus</i>											P		
Cedar Waxwing	<i>Bombycilla cedrorum</i>						S		P	P				
Northern Shrike	<i>Lanius excubitor</i>													P
Loggerhead Shrike **	<i>Lanius ludovicianus</i>													P
Blue-headed Vireo	<i>Vireo solitarius</i>									P	P	S		
Warbling Vireo	<i>Vireo gilvus</i>								P					
Philadelphia Vireo	<i>Vireo philadelphicus</i>								P			S		
Red-eyed Vireo	<i>Vireo olivaceus</i>								P			S		



BIRDS

SPECIES COMMON NAME	LATIN NAME	LIMNETIC	LITTORAL	LENTIC EMERGENT	NON-VEG SHORELINE	LOTIC	LOTIC RIPERIAN	FEN	CLOSED DECIDUOUS	CLOSED MIXEDWOOD	CLOSED CONIFEROUS	TALL SHRUB	WET MEADOW	GRASSLAND
Tennessee Warbler	<i>Vermivora peregrina</i>								S	P	P	S		
Orange-crowned Warbler	<i>Vermivora celesta</i>						S		P	P		S		
Yellow Warbler	<i>Dendroica petechia</i>								S			P		
Magnolia Warbler	<i>Dendroica magnolia</i>									P	P			
Yellow-rumped Warbler	<i>Dendroica coronata</i>								P	P	P			
Black-throated Green Warbler	<i>Dendroica vires</i>									P	P			
Palm Warbler	<i>Dendroica palmarum</i>		S	S				P			P			
Blackpoll Warbler	<i>Dendroica palmarum</i>										P			
Black-and-White Warbler	<i>Mniotilta varia</i>								P	P		S		
American Redstart	<i>Setophaga ruticilla</i>								P			P		
Ovenbird	<i>Seiurus aurocapillus</i>						S		P			P		
Northern Waterthrush	<i>Seiurus noveboracensis</i>								P			P		
Connecticut Warbler	<i>Oporornis agilis</i>						P		S			S		
Mourning Warbler	<i>Oporornis philadelphia</i>								S			P		
Common Yellowthroat	<i>Geothlypis trichas</i>			P										
Wilson's Warbler	<i>Wilsonia pusilla</i>											P		
Canada Warbler	<i>Wilsonia canadensis</i>						S					P		
Western Tanager	<i>Piranga ludoviciana</i>								P	P	P			
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>						S		P	P	P			
Chipping Sparrow	<i>Sipzella passerina</i>													
Clay-colored Sparrow	<i>Sipzella pallida</i>								P			P		
Vesper Sparrow	<i>Pooecetes gramineus</i>											S		P
Savannah Sparrow	<i>Passerculus sandwichensis</i>			S									P	P
Le Conte's Sparrow	<i>Ammodramus leconteii</i>											P		P
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>			P										
Fox Sparrow	<i>Passerella iliaca</i>								P	P	P	P		
Snow Bunting	<i>Plectrophenax nivalis</i>													P
Song Sparrow	<i>Melospiza melodia</i>						P					P		
Lincoln's Sparrow	<i>Melospiza lincolni</i>			P					S	S	S	P		P
Swamp Sparrow	<i>Melospiza georgiana</i>			S			S		P	P			P	
White-throated Sparrow	<i>Zonotrichia albicollis</i>						S		P	P	P	P		
Dark-eyed Junco	<i>Junco hyemalis</i>									P	P	P		
Bobolink	<i>Dolichonyx oryzivorus</i>													P
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			P								P		
Western Meadowlark	<i>Sturnella neglecta</i>													P
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>			P										
Rusty Blackbird	<i>Euphagus carolinus</i>			P								S		S
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>			P								S		S
Common Grackle	<i>Quiscalus quiscula</i>			S								P		P
Brown-headed Cowbird	<i>Molothrus ater</i>								P	P	P	P		P
Baltimore Oriole	<i>Icterus galbula</i>						S		P	P				
Pine Grosbeak	<i>Pinicola enucleator</i>									P	P			
Purple Finch	<i>Carpodacus purpureus</i>									P	P			
White-winged Crossbill	<i>Loxia leucoptera</i>										P			
Common Redpoll	<i>Carduelis flammea</i>											P		P



BIRDS

SPECIES COMMON NAME	LATIN NAME													
		LIMNETIC	LITTORAL	LENTIC EMERGET	NON-VEG SHORELINE	LOTIC	LOTIC RIPERIAN	FEN	CLOSED DECIDUOUS	CLOSED MIXEDWOOD	CLOSED CONIFEROUS	TALL SHRUB	WET MEADOW	GRASSLAND
Pine Siskin	<i>Carduelis pinus</i>								P	P	P			
American Goldfinch	<i>Carduelis tristis</i>										P			P
Evening Grosbeak	<i>Coccothraustes vespertinus</i>							S	S	P				
TOTAL PRIMARY		39	30	52	15	20	15	5	51	57	58	40	13	35
TOTAL SECONDARY		4	4	7		1	23	2	19	14	10	17		13



AMPHIBIANS/REPTILES

SPECIES COMMON NAME	LATIN NAME	LIMNETIC	LITTORAL	LENTIC EMERGET	NON-VEG SHORELINE	LOTIC	LOTIC RIPERIAN	FEN	CLOSED DECIDUOUS	CLOSED MIXEDWOOD	CLOSED CONIFEROUS	TALL SHRUB	WET MEADOW	GRASSLAND
Tiger Salamander	<i>Ambystoma tigrinum</i>		S	S					P	P			P	P
Western (Boreal) Toad	<i>Bufo boreas</i>	P		P		P	P			S	S			
Canadian Toad	<i>Bufo hemiophrys</i>		S	S					P	P	P			
Boreal Chorus Frog	<i>Pseudacris triseriata</i>		P	P										
Wood Frog	<i>Rana sylvatica</i>	S							P	P	P			
Red-sided Garter Snake	<i>Thamnophis sirtalis</i>		S				S		P	P	P			
TOTAL PRIMARY		2	2	2		1	1		4	4	3		1	2
TOTAL SECONDARY		1	3	2			1			1	1			

