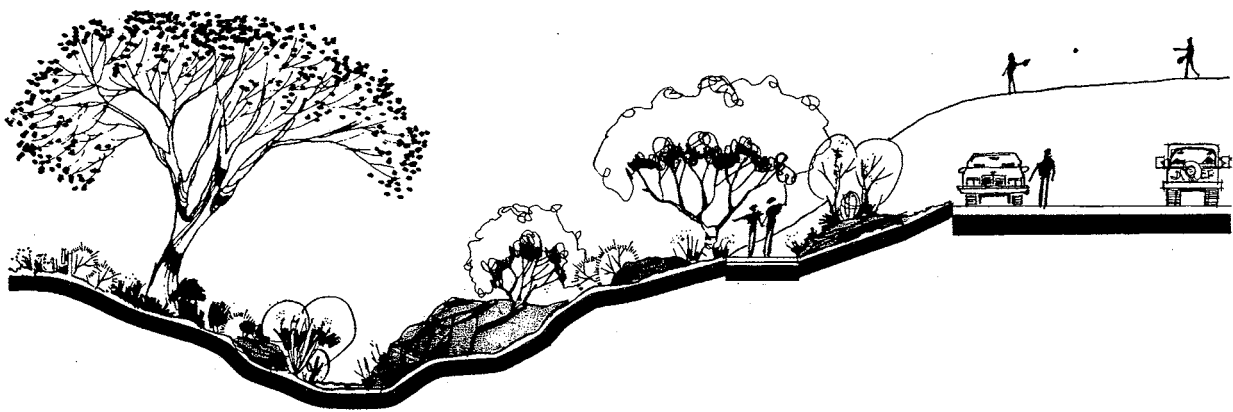




City of Red Deer



LANDFILL RECLAMATION CONCEPT PLAN N ½ Section 33-37-27-4

November 1999
Prepared by:
Parkland Community Planning Services

ACKNOWLEDGEMENTS

The preparation of this Land Use Concept Plan for the City of Red Deer's solid waste landfill site was co-ordinated through the Landfill Planning Ad-hoc Steering Committee. This committee comprised of staff from Parkland Community Planning Services, the City's Development and Community Services Divisions, and representatives of the Westerner Exposition Association. The County of Red Deer was also consulted regarding various components of the Plan. Thank you to all who contributed ideas and information for inclusion in this document.

Council Decision – November 8th, 1999 Meeting

Resolution:

Resolved that Council of the City of Red Deer, having considered report from Parkland Community Planning Services dated November 1, 1999 re: Landfill Reclamation Concept Plan, hereby approves the Landfill Reclamation Concept Plan as presented to Council November 8, 1999.

LANDFILL RECLAMATION CONCEPT PLAN

Table of Contents

	page
1.0 INTRODUCTION.....	1
2.0 EXISTING FEATURES, DEVELOPMENT & CONSTRAINTS	2
2.1 Land Uses.....	2
2.2 Environmental Considerations.....	4
2.3 Transportation	4
2.4 Utilities and Servicing	5
3.0 LAND USE CONCEPT PLAN	6
3.1 Westerner Exposition Association Site.....	7
3.2 Landfill Site.....	9
3.3 Piper Creek Natural Area.....	11
3.4 Sequence of Development	12
3.5 Plan Implementation Costs	13
4.0 LANDFILL CLOSURE	13
APPENDIX 'A'	15

List of Maps

Map 1 -	Plan Area	(following Page 1)
Map 2 -	Existing Features	(following Page 15)
Map 3 -	Land Use Concept Plan	(following Page 15)

1.0 INTRODUCTION

This Landfill Reclamation Concept Plan provides for an end use development strategy for the City's current solid waste landfill site located south of 19th Street (Delburne Road) and west of 40th Avenue. The need for this Land Use Concept Plan was identified several years' ago by the City's Administration and its planners. The Solid Waste Utility (Public Works Department) who operate and manage the current landfill operation, predict that this sanitary waste disposal site will be filled to capacity by the year 2002. Full site capacity is based on the entire site being filled to an approximately flat top elevation about $\pm 10\text{m}$ (30 feet) above the surrounding ground with applicable contoured side sloping. If any areas within the designated landfill area are not to be filled to its design capacity, the projected life span of the landfill operation would be shortened due to decreased fill capacity. This potentially affects the scheduling of the closure of the current landfill site and the opening of the new landfill site to the east. Furthermore, any lost landfill capacity translates into a financial impact and/or liability for the Solid Waste Utility. It is imperative and timely that the Solid Waste Utility be provided with sufficient lead-time to prepare the current landfill site for closure. It is therefore essential that the City has an adopted end use plan in place so that plan implementation may be undertaken in a timely manner.

As illustrated on Map 1, the area contained within the Concept Plan includes more than just the actual landfill site. Due to the landfill's proximity to the Westerner Exposition Association (Westerner) facilities and the interest shown by them in expanding portions of their operation onto the landfill site, the entire Westerner site has been included within the Concept Plan. Also, the extensive natural area located between the Westerner and landfill sites has been included within the Plan area. The total Plan area therefore encompasses all those lands located between 40th and 49th Avenues, and 17th and 19th Streets; all being contained within the corporate boundaries of the City of Red Deer.

Early planning objectives for determining a final end use for the landfill site identified possible private recreational preferences and the desire to accommodate possible interests of the Westerner. The need for an end use strategy that would be revenue generating for the Solid Waste Utility was an important consideration. Also important was the need to protect and manage the existing environment and that any future development of the site be of low cost to the City thereby minimizing public capital expenditures in preference to potential private sector and non-profit group investment. This Concept Plan has been prepared in the context of a long-range development strategy whereby for the most part, it will be left to the market place to determine the time frame for actual development.

The Concept Plan deals with such issues as the existing and ultimate road network, access to the completed landfill area, environmental considerations, servicing, staging of future development options, and other matters that the City has deemed necessary. The Concept Plan will encourage and promote orderly development in the context of a City that strives to maintain and improve its living and working environments, promoting a healthy and balanced community.

In order to avoid uncoordinated and uneconomical development in this area, it is essential

Highway 11A

Highway 2

Taylor Dr

77 St

Graetz (60) Ave

Riverside Dr

67 St



The City of RED DEER



Hwy 11

67 St

55 St

Ross (60) St

49 St

54 Ave

40 Ave

Ross (60) St

H

Spring Dr

32 St

32 St

Taylor Dr

Graetz (60) Ave

40 Ave

30 Ave

Highway 2

19 St

LANDFILL RECLAMATION
CONCEPT PLAN AREA

19 St (Deburne Rd)

Highway 24

MAP 1

that any future development be related to an overall plan that has been presented for public input and endorsed by City Council. This way, both private and public interests will be more certain of future expectations and plans for the development of this area, particularly the end use of the current solid waste landfill site. This Landfill Reclamation Concept Plan therefore, can subsequently be used as a sound basis for making decisions related to future improvements and development applications.

2.0 EXISTING FEATURES, DEVELOPMENT and CONSTRAINTS

As illustrated on Map 2, the existing site containing both natural and man made elements significantly impacts potential future development and/or redevelopment of the area. The following factors need to be considered:

2.1 Land Uses

The Concept Plan area is comprised of three distinct land use areas; the Westerner site, the Piper Creek Natural Area and the City's current sanitary landfill site. While each of these areas contain varying degrees of development potential, each also impacts and/or constrains development of the other.

2.1.1. Westerner Exposition Association (Westerner)

The Westerner site is located on 120 acres of land leased from the City of Red Deer. This multi purpose facility, capable of hosting major convention, sporting and agricultural events, includes the 6,000 seat Centrium, the Stockman's Pavilion, the North Pavilion, and the Parkland Pavilion. The Westerner has identified area traffic congestion, shortage of parking and limited potential for on site expansion as the three major constraints regarding the future operation of their facility.

Considerable area traffic congestion and delays are being experienced during major events held at the Westerner grounds, particularly with events held at the Centrium. The Westerner site has two major entrance/exit gates commonly referred to as the north and west gates. Past studies have indicated that up to 80% of the Westerner's traffic accesses these two gates via the Delburne Road. The remaining 20% of the traffic is estimated to originate from south of the City, accessing the Westerner's west gate from the south on 49th Avenue via the Highway 2 service roads.

The north gate which has direct access onto the Delburne Road is the scene of considerable traffic flow difficulty often resulting in backed up traffic and traffic delays on either the Delburne Road or within the Westerner site itself. The majority of this traffic comes from within the City of Red Deer that lies to the north of the Delburne Road. A recent change respecting an additional internal access point to the Westerner's north parking lot, while alleviating some of the on site traffic circulation problems, does little to change the actual traffic volumes from Delburne Road.

The Westerner also has a third entrance gate along its south boundary at the east end of 17th

(Spruce) Street, which dead-ends at this location. This entrance is designated primarily for exhibitor access to the barn and show ring areas. Access via this gate is not intended for the general public attending events on the Westerner grounds. Due to the location of this gate at a dead-end roadway (17th Street) and due to its location relative to the rest of the Westerner facilities, this entrance gate is too inconvenient to serve the general public. Under its present configuration, this entrance has very low potential to alleviate any of the existing traffic problems and pressures associated with the north and west gates.

The Westerner site presently contains 3,000 parking stalls. While present parking areas for the most part can accommodate existing Westerner functions including simultaneous events, the Westerner has identified the need for an additional 5,000 parking stalls over the next 5-10 years. Long range plans call for the expansion of the AgriCentre and expansion of the current 6,000 seat Centrum to 10,000 seats. Future major events are anticipated to simultaneously attract 15,000 to 20,000 persons at one time. Using an average of 2.5 persons per vehicle, this represents the need for a total of $\pm 8,000$ parking stalls. Present events such as the summer Westerner Days, during which time the midway is located on prime portions of parking, strain the availability and ease of parking.

While the existing Westerner site is essentially fully developed, two areas possibly offer potential for limited new development or expansion of current facilities. The one area, located east of the race track, is presently used for open storage while the second area, located in the north east corner of the Westerner site, is currently being leased to the City of Red Deer Recreation Department for a baseball playing field. This lease agreement with the City is re-negotiated on a year to year basis. Potentially, these two sites offer the Westerner some plausible options regarding limited future expansion of their current facilities.

2.1.2. Piper Creek Natural Area

The Piper Creek natural area effectively divides the Concept Plan area into two large parts, the landfill area to the east and the developed Westerner facilities to the west. This natural area is a north-south running corridor that contains Piper Creek, wetlands, grasslands, significant treed areas, wildlife and wildlife habitat areas. Preservation of this natural area is identified in the City's Community Services Master Plan, Environmental Action Plan, the 17th (Spruce) Street area Ecological Profile and the Waskasoo Park Master Plan.

2.1.3 Landfill Site

This area is currently being used as the City of Red Deer's sanitary (solid waste) landfill site. When full, the finished landfill site is proposed to have a raised flat top elevation of about ± 10 m (30 feet) above surrounding ground levels with uniform side sloping. By its very nature, a landfill site creates its own problems. The geotechnical properties of completed landfill areas containing landfill waste material restricts any subsequent re-contouring of the site and the location of structures and utilities for reasons of stability, settlement and drainage. The rate and magnitude of refuse settlement varies primarily with refuse consolidation related to type of waste, waste density, overburden weight, and biological decomposition related to temperature and water content. Landfill settlements generally occur in the order of 15 to 20%

of the finished height of the landfill areas with up to 90% of this settlement occurring within five years of completion. The generation of methane gas from the decay of buried waste material becomes a limiting factor regarding any future use of, or development on this site.

A 2.09 ha (± 5.16 acre) parcel owned by the County of Red Deer is located adjacent to the northeast corner of the landfill site. This site, used by the County for their Field Services Division (maintenance yard), contains outdoor vehicle and equipment storage areas and a metal quonset storage building. Due to the presence of the landfill site, adjoining public roadways and access and development setbacks, significant limitations exist on any upgrading and/or redevelopment of this site.

2.2 Environmental Considerations

Many unique and biologically diverse features are contained within the Piper Creek natural area. Throughout this largely untouched natural area the land is relatively flat, thereby reducing the creek flow which results in a meandering creek. Numerous oxbows have formed over the years creating considerable shallow water table areas. These conditions have brought about abundant levels of biological diversity and unique areas of ecological interest. This area also serves as a travel corridor for many wildlife species and contains sensitive habitat for beaver, deer and many bird species. Any disturbance of the creek and its surrounding environs including interference with the undulations of its seasonal flow patterns could substantially impact the biodiversity and ecological integrity of this natural area. Any type of future development in the vicinity of the creek, its embankment or escarpment areas should be adequately setback to prevent potential erosion and damage to this environmentally sensitive area. Development setbacks should be determined through a geotechnical evaluation study.

Site drainage and the potential for leachate (water contaminated by waste material) must be taken into account and fully considered within the overall planning process and any redevelopment and/or end use development envisioned on or near any completed landfill areas.

2.3 Transportation

The demands being placed on the existing road system within the area has become one of the major constraints regarding the potential for any additional development and/or redevelopment of those lands contained within the plan area. In particular, considerable area traffic congestion and delays are experienced at major events held at the Westerner grounds. As previously mentioned in Section 2.1.1, the majority of traffic entering and exiting the Westerner grounds through both its north and west gates are using the Delburne Road. During these events, traffic on the Delburne Road often comes to a complete standstill due to the Westerner's north and west gates not being able to accommodate patron traffic. At times traffic backs up to both the Delburne Road & 40th Avenue and Delburne Road & Gaetz Avenue intersections. This not only creates an inconvenience for those patrons accessing the Westerner grounds but also the general travelling public who face delays on vicinity area roads and on the Delburne Road which is designated as a regional Secondary Highway.

Disruption of normal traffic flows and blockage of traffic lanes also becomes a potential public safety issue.

The Westerner has long recognised the need for a third major access to their facilities. Funded by the Westerner, a 1996 road feasibility study by Infrastructure Systems Ltd. (ISL), examined the possible eastward extension of 17th Street to 40th Avenue as an alternative means of access to the Westerner's south boundary and in particular, the existing south entrance gate. An analysis of the projected Westerner pre-event and post-event traffic volumes as the City and area population increases, indicates benefits to the construction of an extended 17th Street. Although being a more circuitous route to the Westerner site for some patrons, 17th Street would provide immediate relief to the Delburne Road traffic flows both before and after Westerner events. The traffic analysis indicated that if a 2-lane 17th Street were in place today, it would normally carry approximately 1,300 vehicles per day. During major Westerner events, the traffic volume on this road would double to about 2,600 vehicles per day representing about 15% of total Westerner event traffic. The projected construction costs of the 17th Street extension is \$ 792,500 (in 1996 dollars) based on using a culvert type structure for the actual Piper Creek crossing. Other types of creek crossing structures would substantially increase costs.

In the final analysis, the ISL road study concluded that not enough Westerner traffic would use this route to warrant its construction at this time. However, the Westerner still strongly supports the future construction of the extension of 17th Street as they feel this overall enhanced traffic circulation for the area would definitely benefit the Westerner and improve the efficiency of their south entrance gate. The timing of its construction should be reconsidered in the future concurrent with any future development proposals for south of the existing landfill site based on an approved area structure plan for this area. It was further concluded that until Delburne Road is upgraded, traffic delays would still be experienced on Delburne Road between 40th and 49th Avenues.

2.4 Utilities and Servicing

The Westerner site is currently serviced with power, gas, telecommunications and City water and sanitary sewer services. Storm water drainage is accommodated through two separate systems. One system, draining the northerly one-quarter of the Westerner site feeds north into the Bower Place storm sewer system, which eventually discharges into Waskasoo Creek. The remainder of the Westerner site drains into a dry detention pond located east of the baseball diamond near the north entrance gate. Accumulated storm water then slowly discharges into Piper Creek. The extension of utility infrastructure within the present Westerner site to facilitate any future on site expansion plans can logically be accommodated. To extend any of these services beyond the present Westerner boundaries, especially east across the Piper Creek natural area, would be prohibitively expensive.

The landfill site is currently serviced with only power and telephone connections at the weigh scale building located near the main landfill entrance. The weigh scale facility uses propane for heat, sewage is accommodated by way of a pump out tank, and water is delivered to a holding tank. This level of service infrastructure would likely be of limited use to any future

development that may be envisioned for the area. Due to long-term earth settlement and gas generation on landfill sites from the decomposition of waste material located beneath the surface, the development of any permanent buildings and installation of underground utility infrastructure on any landfill areas would not be possible. Should any form of limited development occur on undisturbed ground at either the weigh scale or County maintenance yard sites, possible full municipal and other utility services could be extended to these areas from developed City areas to the north. Alternatively, for very limited development, sewage collection by way of a sewage-holding tank and pump out option could be explored. This level of independent servicing would be subject to meeting all health, environmental and safety requirements.

3.0 LAND USE CONCEPT PLAN

Historically it has been assumed that the completed landfill site would likely be used for agricultural purposes in the form of agricultural leases that would generate a small revenue stream for the Solid Waste Utility. Other early planning objectives identified possible use of the site for private recreational uses such as mini golf, ball diamonds or soccer fields. Simultaneously, the Westerner began to show interest in the landfill site with the intention that some of their expansion plans could be accommodated at this location including expanded parking areas, and possible outdoor amphitheatre and RV/camping areas.

Much of the initial discussion by the Planning Committee centred on the need to determine the basic philosophy upon which an ultimate end land use plan could be developed for the landfill area following its closure and reclamation. Preparation of this Plan was based on the following three major thrusts that emerged in the early stages of the planning process:

- the need by the Solid Waste Utility to maximize the full fill potential of the landfill site and to generate a revenue stream from the site following its closure,
- the desire by the Westerner Exposition Association to expand their operation onto the landfill site (see Appendix "A" regarding City Council's conditional approval for the future leasing of the completed landfill site to the Westerner), and
- that any future development on the landfill site other than agricultural uses and possibly parking would face significant development restrictions due to problems associated with completed landfill sites.

Preparation of this Landfill Reclamation Concept Plan involved significant research and consultation with the two major landowners within the plan area, the City of Red Deer and the Westerner Exposition Association. The consultation process yielded much in the way of input from various stakeholders who have an interest in this area. The Parks, Recreation & Culture Department have an interest in how the natural area between the Westerner and landfill sites would be developed. The Solid Waste Utility would accept the guidance of an end land use concept plan so long as potential fill capacities of their landfill operation would not be compromised. The Westerner continued to express interest in the landfill site area by narrowing their potential use of the site to only future parking. The Engineering Department provided input regarding area servicing and transportation requirements. Other stakeholders, including the County of Red Deer who own a small portion of land within the Plan area, and

more importantly who are the municipal jurisdiction governing adjoining lands to the south, were also consulted during the planning process. Public input and consultation were obtained through a plan referral process to applicable utility companies and provincial government agencies, special media coverage, mall display and a public open house.

The proposed land use development concepts envisioned for the Plan area are illustrated on Map 3. This Plan is based on the following principles:

- Protection and management of the natural environment.
- Maximum utilization of the fill capacity of the present landfill site and future revenue generation from the site for the Solid Waste Utility.
- Severe development restrictions on the landfill site and limited availability of municipal services and infrastructure to landfill site area.
- Desire by the Westerner to use the landfill site for only future expanded parking.
- Limited demand for private sector recreational opportunities on the site although opportunity will exist for these types of facilities including those by “non-profit organizations and sport groups”.
- Minimal public capital expenditures in deference to potential private sector investment.
- Orderly development in the context of a City that strives to maintain and improve its living and working environments, promoting a healthy and balanced community.
- A public consultation process prior to Plan adoption.

3.1 Westerner Exposition Association Site

3.1.1 Land Use

Most of the Westerner’s known future expansion and upgrading plans can be accommodated within the physical boundaries of their present site. One exception however, is with regard to their anticipated future parking requirements and the massive amounts of land required to provide adequate parking. With anticipated future Westerner expansion of their Centrium and AgriCentre facilities, additional future parking requirements are essential.

While the Concept Plan proposes that most of the Westerner’s future parking needs could be accommodated at the landfill site, the southeast and northeast corners of the present Westerner site each contains land that potentially could also be used for expanded parking. The relatively under utilized ±2.5 acre site east of the race track near the Westerner’s south gate has potential for future development of a ± 300 vehicle parking lot. The northeast corner site, ±3.7 acres presently occupied by the baseball diamond, could be redeveloped for additional parking if this facility were to be relocated to another location in the City. This area could accommodate approximately 450 vehicles and has the advantage of being close to the Westerner’s main north entrance gate.

Alternatively, the baseball diamond site could also be developed as a partially or fully serviced recreation vehicle (RV) campground to meet a growing need by the Westerner to provide a suitable location for limited overnight accommodation for exhibitors. For certain major events

(trade shows, rodeo, animal shows, etc.) some exhibitors come with their recreation vehicles in tow. These units are currently being accommodated in a random fashion in an open area in the southeast corner of the Westerner site that provides only limited utility hook-ups and basic washroom facilities. Also, limited camping (tenting) has been permitted on the grass areas adjacent to the west side of the northwest parking lot. Overnight site amenities normally associated with a more formalised campground environment are currently not available on the Westerner site. Consideration should be given to the development of an extensive campground facility at this northeast corner location that would include both serviced and unserviced sites. Campground areas containing utility hook-ups would need to be located above the escarpment while tenting areas, and other campground facilities having less impact on the environment, could possibly be located below the escarpment. This type of full service campground could be a supplementary facility for Westerner patrons to augment the services already contained on the Westerner site.

3.1.2 Servicing

The current Westerner site offers a full range of utility infrastructure to accommodate any of their future on-site expansion plans. Full municipal services (water, sanitary and storm sewer, etc.) and telecommunication services are readily extendable to any of the areas lying west of the Piper Creek natural area.

3.1.3 Transportation

As already mentioned in Section 2.5 of this report, the Westerner has long recognized the need for improved vehicular access to their facilities. Map 3, the End Use Concept Plan illustrates 2 major thrusts in which improved Westerner access is envisioned to be achieved.

First, completion of the upgrading of Delburne Road between 40th and 49th Avenues to a divided and lighted four lane arterial roadway with full intersectional treatments (turn bays) at the 40th Avenue and Westerner north gate intersections. This significant road improvement project is scheduled for completion by the end of 1999. Signalized traffic lights will be added at the appropriate intersections as warranted, based on traffic volumes.

Second, the construction of the eastward extension of 17th (Spruce) Street to 40th Avenue will allow the Westerner to better utilize their existing south gate. By improving vehicle accessibility to the Westerner's south entrance gate, a portion of the traffic currently using the north and west entrance gates would have a viable third access alternative. The traffic analysis undertaken by Infrastructure Systems Ltd. in their 1996 17th (Spruce) Street Feasibility Study concluded that between 10 – 15% of Westerner traffic would use 17th Street if it were available. Possible expanded parking in the southeast corner of the Westerner site would create logical parking areas tied directly to an improved south gate access entrance.

As part of the Delburne Road upgrading project, consideration was given to determining the safest and best location for the extension of the pedestrian/bike path across Delburne Road. Due to flat site topography, proximity to Piper Creek, and uneconomical construction costs, neither an above or below grade pedestrian/bike path structure is possible at this location.

Rather, the existing pedestrian/bike path on the north side of Delburne Road will be shifted westward to facilitate a pathway crossing of Delburne Road directly across from the Westerner's north entrance gate. It is possible that at some time in the future, this Delburne Road/Westerners gate intersection will be signalized.

3.2 Landfill Site

3.2.1 Land Use

The Land Use Concept Plan (Map 3) indicates that, other than the area required for the access roadway, the existing landfill site will be filled to its original design capacity based on the entire site being filled to an approximately flat top elevation of $\pm 10\text{m}$ (30 feet) above surrounding ground. The top of the completed fill area will have a finished grade containing a slope of between 1-5% to maintain adequate surface drainage. If any portions of the site are to be used for the development of a sports field(s), finished grades need to be $\pm 1.5\%$. Appropriate contoured side slopes will be provided around the perimeter of the landfill area. The proposed access roadway to the completed landfill site will be from 40th Avenue near where the present weigh scale is located thereby giving central physical access to the top of the filled area. The Solid Waste Utility had originally planned to fill the landfill site to the maximum level possible but agreed to accommodate the proposed access roadway even though the provision of this roadway meant that some fill capacity would be lost. The access roadway would be constructed to a gravel standard with a grade of 6-10%. A second access roadway to the top of the north edge of the landfill area may be possible from the Delburne Road. This potential second access would be subject to a feasibility study confirming the merits and suitability of a future road at this location relative to any specific development concept(s) under consideration at that time.

Due to geotechnical properties associated with a completed landfill site, future land use options for this site are severely limited. In order to allow for viable land uses which would be suitable for a site that potentially needs to accommodate surface settlement, drainage problems and gas generation, three different land use category options have been developed. Proposed future land uses for the two distinctive large development nodes identified as areas A & B on Map 3 are any one, or a combination of the following three interchangeable options:

- expanded parking areas for the Westerner Exposition Association,
- private sector and/or non-profit group recreational opportunities related to such activities as soccer, golf, sports fields, etc., and
- agricultural production.

Due to this site being a former landfill, subdivision of the site into individual titles is not likely to occur. Therefore, any development proposal would be subject to the negotiation of a suitable lease agreement with the City of Red Deer who will retain ownership to the entire site including the Piper Creek natural area. As indicated in the attached Appendix "A", City Council has conditionally agreed that all or a portion of the current landfill site be turned over to the Westerner Exposition Association under the terms of the current lease agreement with the City regarding their present site. In this regard, the Recreation, Parks & Culture

Department has indicated that the lease agreement contain provisions whereby the Westerner must consider subleases on a portion of the landfill site (±15 acres) to private sector and/or non-profit sport groups for possible recreational and sports field developments. This requirement has been included in the above noted land use options.

In the event that the County of Red Deer maintenance yard in the southwest corner of the Delburne Road & 40th Avenue intersection becomes surplus to their needs, the City of Red Deer should give consideration to the acquisition of this parcel. There are provisions in an agreement between the County and the City for the eventual transfer of ownership of this site back to the City. Should the City acquire this site, it would be considered as a possible location for a future City of Red Deer Public Works, Recreation, Parks & Culture, and/or E.L. & P. satellite maintenance yard to service the southeast area of the City.

3.2.2 Westerner Exposition Association “People Mover” Connection

Due to the physical separation distance between the current Westerner facilities and the landfill site that potentially could be the location of considerable future Westerner parking, a suitable means of conveying Westerner patrons between the two sites is required. In order for this concept to be realistically feasible, the Westerner recognizes their need to provide some type of motorized shuttle service between the two sites. This mini transportation system, accommodated on a narrow roadway linking the two sites, is referred to as the “people mover”. A footpath and/or sidewalk would also be incorporated into this linkage concept in order to accommodate pedestrian foot traffic between the two sites.

Map 3, the End Use Concept Plan illustrates two “people mover” alignment alternatives that would accommodate both motorized and pedestrian foot traffic associated with any Westerner parking that may be located on the landfill site. A potential third alignment alternative was initially considered as part of the 17th (Spruce) Street Feasibility Study that indicated additional 17th Street road right-of-way could be taken to accommodate the “people mover”. However, due to construction costs and uncertainty of the timing of any 17th Street extension, and the likely need by the Westerner to require the “people mover” connection prior to 17th Street being extended, a separate “people mover” alignment was favoured. By designating separate alternative “people mover” alignments, the Westerner will have more flexibility regarding their desire to eventually obtain a link to the landfill site that could proceed on its own merit.

Construction of the “people mover” at the ‘Alignment #1’ location will impact the Piper Creek natural area by the need to cut and fill portions of the escarpment area, and the likely need for a significant bridge structure to cross the creek. The ‘Alignment #2’ alternative would be located adjacent to the south side of the Delburne Road right-of-way and would require only a culvert crossing across Piper Creek. However, the merits of the ‘Alignment #2’ routing would need to be confirmed through a feasibility study indicating this is a viable alignment and that a proper and safe access to the top of the landfill area could be obtained.

3.2.3 Servicing

As previously mentioned in this report, geotechnical properties associated with a completed

landfill site severely limit its future development options including provision of municipal services and other utility infrastructure. The completed landfill site could never contain normal underground utilities due to the shallow depth of buried refuse material and severe settlement anticipated with the site. Any site services required at the top of the completed landfill area would in all likelihood, be limited to only overhead power and/or telecommunications lines. In conjunction with the proposed main entrance roadway to the top of the landfill site, a small area of land in the vicinity of the present weigh scale facility could remain as undisturbed ground. Although expensive, this small area has the potential to be fully serviced as previously outlined in Section 2.4 should this higher level of servicing be required relative to any future development on the completed landfill site.

3.3 Piper Creek Natural Area

3.3.1 Land Use

It is proposed that the Piper Creek Natural Area be retained in its natural state and protected under the Environmental Preservation (A2) District of the City's Land Use Bylaw. This area is contained within the boundaries of Waskasoo Park and as such, this area can be used for recreational purposes consistent with the mandate of Waskasoo Park Master Plan. It is proposed that this area be governed by the Westerner (under a lease agreement with the City) in much the same way as the River Bend Society and Normandeau Society manages escarpment lands within their respective lease areas.

No disturbance will be permitted in this environmentally sensitive area except those areas affected by the extension of 17th Street, the provision of the bike/pedestrian trail system along Piper Creek, provision for the Westerner's "people mover" link to the landfill site and the possible camping/RV area proposed near the Westerner's north gate. It is suggested that consideration also be given to enhancing Piper Creek as a "constructed wetland" to assist in the processing of leachate coming from the landfill area into the creek system. Detailed monitoring of the leachate is recommended to determine the required methods of treatment and to determine if other kinds of devices are required to achieve environmental standards of the creek water quality.

3.3.2 Creek Crossings

The proposed alignment of the 17th Street extension and the proposed Alignment #1 "people mover" link, both of which cross Piper Creek, take into account their environmental impact on the creek valley. These alignments were recommended in feasibility studies undertaken for these crossings. The proposed Alignment #2 link for the "people mover" is likely to have little effect on the creek. Regarding the actual design of creek crossing structures, the use of culverts is the most economical type of structure. The construction of bridges and/or arch type structures across the creek while not essential from a traffic or creek hydrology viewpoint, may be required to accommodate certain environmental criteria including the north/south movement of wildlife along the creek and its escarpment. This level of construction detail will be undertaken at the time of the detailed design phase of any creek crossing.

An environmental impact assessment for the proposed 17th Street Piper Creek crossing was undertaken by Spencer Environmental Management Services Ltd. in 1996 with their report contained within the completed 17th (Spruce) Street Feasibility Study. No environmental impact assessment has been undertaken for either of the two "people mover" creek crossing options and therefore, will likely be required.

3.4 Sequence of Development

Little development can occur on the landfill site until the site has been filled, closed and fully reclaimed in accordance with the concepts illustrated on Map 3, the Land Use Concept Plan. As final portions of the site are filled, accommodation for the future main access road from 40th Avenue will be provided. Completion and final closure of the landfill site is scheduled to occur around the year 2002. In the interim, completed portions of the landfill will be reclaimed on an ongoing basis, with these areas being offered for only agricultural leases as has been the case in the past. Until such time as the entire landfill site has been fully reclaimed, no end use of the site other than for agricultural purposes will be permitted. All reclaimed areas not initially leased for agricultural purposes will be finished to a City Level 1 landscaping standard of topsoil and seeded grass. Costs related to all other end use developments are to be borne fully by the lessee and/or developer. Neither the City nor the Solid Waste Utility will be responsible for any costs associated with new development or improvements on the completed landfill site beyond the standard of an agricultural lease and/or Level 1 landscaping.

In accordance with this Concept Plan, and upon approval by the City of Red Deer regarding a suitable lease agreement for any development of the finished landfill area, the construction of the main access road to the top of the landfill area would be the responsibility of the lessee. Similarly, the construction of the second access to the Delburne Road, if approved by the City, would be the responsibility of the lessee. Any lease (or sub-lease) agreement and/or development agreement with any future user of this site would, among other items, address the specifics of the site design, any construction, site maintenance, level of landscaping, fencing and security/access issues, etc.

The construction of the bike/pedestrian path along Piper Creek, the possible Westerner "people mover" link and potential RV/campground, and the eastward extension of 17th Street, could all occur independently of each other based on their individual need, availability of funding and economic viability of their construction. An environmental impact assessment and/or a geotechnical report would be necessary to determine any applicable development setback limitations from the edge of escarpment areas. Conversion of the present ball diamond facility near the Westerner's north gate to either an expanded parking area or possible R.V. campground area could be undertaken at any time upon expiry of the current lease agreement affecting the site. However, consideration should be given to not terminating the lease on the baseball diamond site until an alternate diamond is developed elsewhere in the City. This type and size of diamond is critical to the program needs of the Red Deer Baseball Association.

Upgrading of the Delburne Road and Delburne Road and 40th Avenue intersection is

scheduled to be undertaken and completed during 1999. The proposed eastward extension of 17th Street through to 40th Avenue is very likely tied to the timing of future development of the lands located to the south of the existing landfill site.

3.5 Plan Implementation Costs

The following projected costs will give a cursory indication of both private and public sector investments required to implement major portions of this Landfill Reclamation Concept Plan. This is not an inclusive list of all capital costs associated with implementation of this Plan. These estimates are projected costs only and were extracted from various studies, City documents and/or from discussions with applicable resource personnel and where possible, are based on 1999 construction dollars. Further feasibility studies, detailed design stage analysis, timing, and economic factors all have potential to affect the actual final costs of the following plan components:

• Delburne Road upgrading and related improvements:	\$ 2,500,000
• 17 th Street extension with culvert creek crossing	800,000
• Paved 2.5 metre wide bike/pedestrian path along Piper Creek 1,000 metres @ \$ 80.00/metre	80,000
• Conversion of ball diamond facility into paved parking (450 stalls) 15,000 square meters (3.7 acres) @ \$ 15.00 m ²	225,000
• Conversion of ball diamond facility into R.V. site (cost is a guesstimate varying considerably with level of services)	500,000
• Main gravel access road to top of reclaimed landfill site ±400 metres long by 6 metres wide @ \$ 12.00 m ²	30,000
• Gravel parking on reclaimed landfill site 162,000 square metres (40.0 acres) @ \$ 12.00 m ²	1,945,000
• "People Mover" road connection to reclaimed landfill area	175,000
• Baseball diamond relocation (possibly on the landfill site)	60,000

The above cost estimates do not include such items as landscaping, fencing, access gates & security; lighting and "people mover" related equipment. Also, no costs estimates have been included regarding the extension of any City municipal sewer and/or water utilities to the present weigh scale location at the landfill site, as the need for such services at this location appears to be remote and prohibitively expensive.

No cost estimates have been provided regarding final landfill reclamation and closure costs by the City. The Public Works Department will undertake the preparation of a separate study detailing these closure costs in anticipation of the subsequent opening of the City's new solid waste landfill site located east of 40th Avenue and south of Delburne Road.

4.0 LANDFILL CLOSURE

Closure of the existing landfill is continually being undertaken on an ongoing basis as areas are filled to the final design elevation of about ±10m (30 feet) above original grade.

Approximately 85% of the existing landfill site has been filled to date and reclaimed in accordance with measures that include re-grading and a final cover over all waste material. The designed finish top cover cross section is 0.6m (24 inches) of compacted clay, 0.35m (14 inches) intermediate/subsoil, and 0.2m (8 inches) of topsoil. The topsoil depth may actually vary between 0.2 m (8 inches) and 1.0 m (39 inches) depending on location. The intermediate or subsoil layer consists of a lighter colour soil intended as the root zone beneath the topsoil layer. To date, all completed landfill areas that have been fully reclaimed have been leased for agricultural production (i.e. hay crop) purposes. Upon final closure and reclamation of all landfill areas, lands will continue to be leased for agricultural purposes until such time as the City, in accordance with this Landfill Reclamation Concept Plan, offers and completes a lease agreement with another party(s) for the development of this site or, portions thereof.

The present closure measures will be followed until a final closure and post closure plan has been prepared by the Public Works Department. These final closure plans need to be prepared at least 12 months prior to actual closure of the present landfill site and subsequent opening of the new landfill area. The key components of the post closure plan will include a monitoring program and contingency plans. Monitoring will involve:

- regular inspection of the landfill cover layer for signs of excessive erosion, rodent activity, visible cracks that may extend into the compacted low permeability layer and depressions that may encourage infiltration of rainwater,
- annual groundwater quality monitoring of the 13 existing test wells at the site, and
- semi-annual monitoring of the water quality in Piper Creek both upstream and downstream of the landfill site.

Monitoring will continue after closure until Alberta Environmental Protection advises that the monitoring may be discontinued.

Appendix 'A'

Council Decision - April 6, 1998 Meeting

DATE: April 7, 1998
TO: Director of Development Services
FROM: City Clerk
RE: Westerner Exposition Association - Use of Existing Landfill

Reference Report: Director of Development Services, dated March 31, 1998

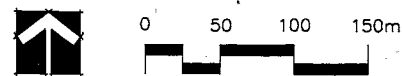
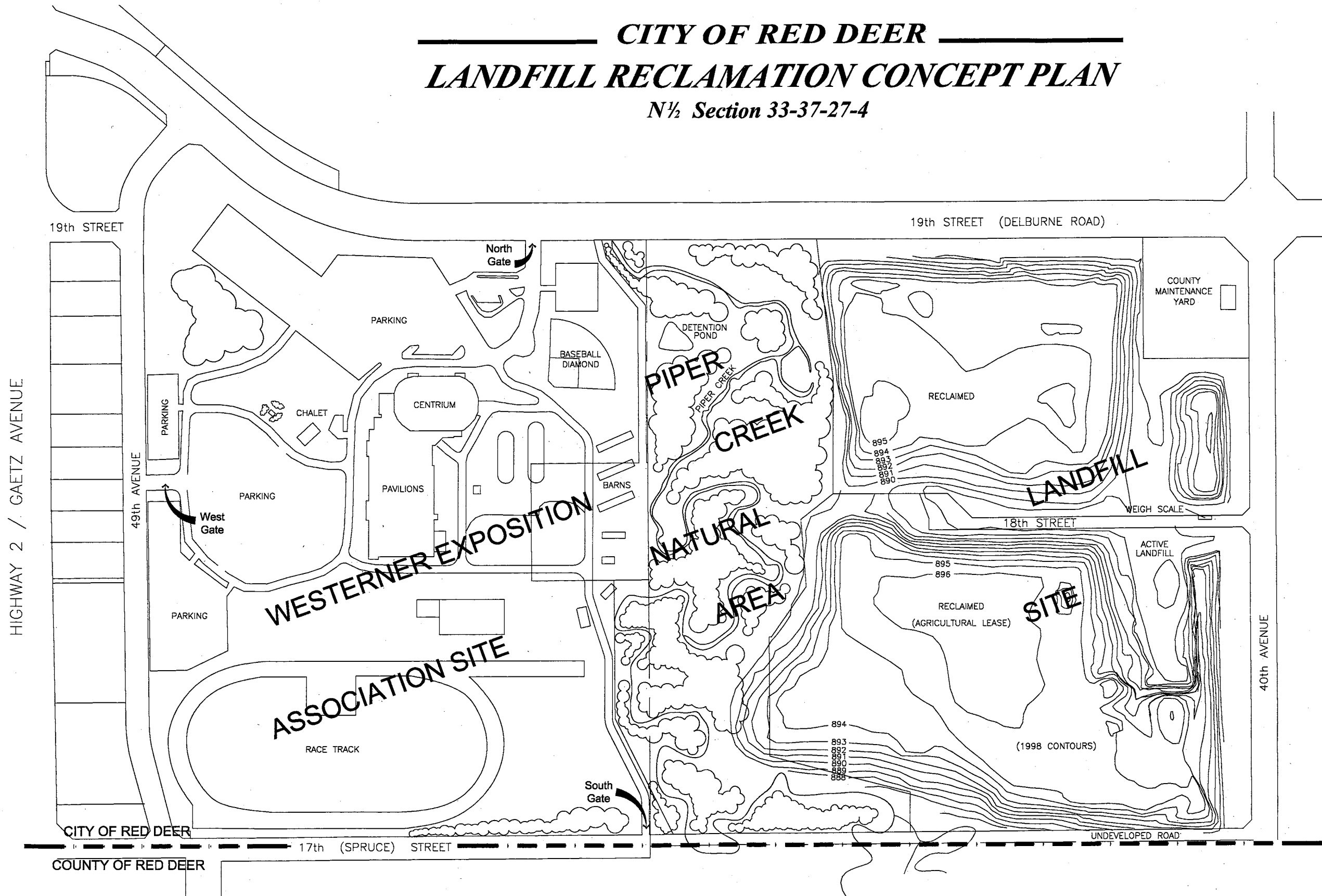
Resolution:

"RESOLVED that Council of The City of Red Deer, having considered report from the Director of Development Services dated March 31, 1998, re: Westerner Exposition Association Use of Existing Landfill, hereby agrees that all or a portion of the current landfill site be turned over to the Westerner Exposition Association under the terms of the current lease, subject to the following conditions:

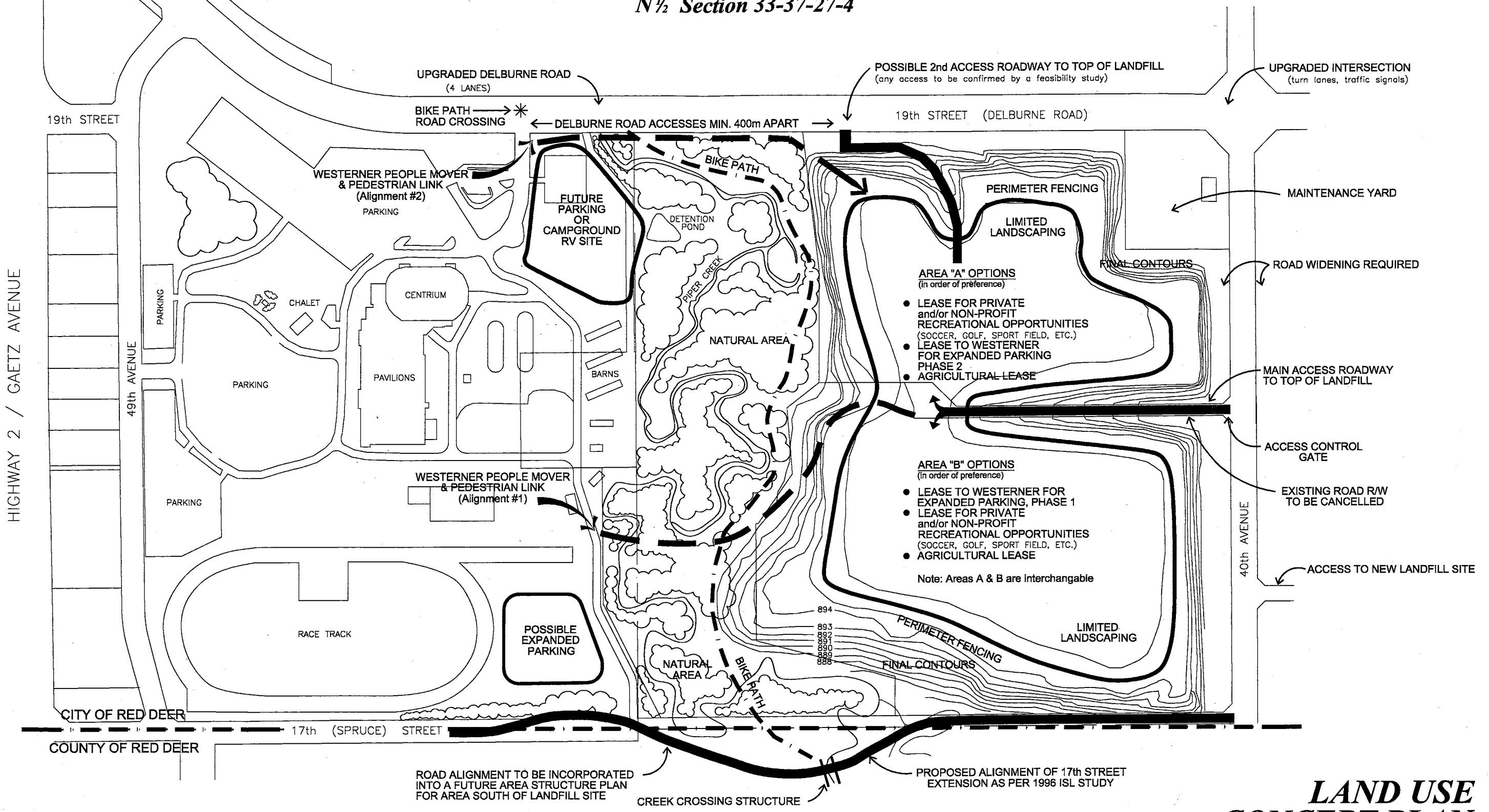
1. That said site not be available until the Public Works Department declares the site to be closed;
2. That the City will continue to have access to the site to carry out post closure monitoring activities;
3. That the addition of the site to the current lease would be subject to the Westerner and the Recreation, Parks and Culture Department concluding a mutually satisfactory agreement that accommodates the objectives of each group;
4. The present County of Red Deer site not be included in the areas added to the lease;
5. That the creek and natural area be protected to the satisfaction of the Recreation, Parks and Culture Department;
6. That the proposed plans and uses the Westerner intends to place on the site be presented to Council to afford them an opportunity to review and approve the proposed plans;
7. The City of Red Deer will assume no responsibility for the costs associated with the Westerner's planned development,

and as presented to Council April 6, 1998."

CITY OF RED DEER
LANDFILL RECLAMATION CONCEPT PLAN
N½ Section 33-37-27-4



CITY OF RED DEER
LANDFILL RECLAMATION CONCEPT PLAN
N½ Section 33-37-27-4



UPGRADED DELBURNE ROAD
(4 LANES)

POSSIBLE 2nd ACCESS ROADWAY TO TOP OF LANDFILL
(any access to be confirmed by a feasibility study)

UPGRADED INTERSECTION
(turn lanes, traffic signals)

19th STREET

BIKE PATH
ROAD CROSSING

← DELBURNE ROAD ACCESSES MIN. 400m APART →

19th STREET (DELBURNE ROAD)

WESTERNER PEOPLE MOVER
& PEDESTRIAN LINK
(Alignment #2)
PARKING

FUTURE
PARKING
OR
CAMPGROUND
RV SITE

DETONATION
POND

PIPER CREEK

NATURAL AREA

PERIMETER FENCING
LIMITED
LANDSCAPING

MAINTENANCE YARD

ROAD WIDENING REQUIRED

AREA "A" OPTIONS
(in order of preference)

- LEASE FOR PRIVATE and/or NON-PROFIT RECREATIONAL OPPORTUNITIES (SOCCER, GOLF, SPORT FIELD, ETC.)
- LEASE TO WESTERNER FOR EXPANDED PARKING PHASE 2
- AGRICULTURAL LEASE

FINAL CONTOURS

MAIN ACCESS ROADWAY TO TOP OF LANDFILL

ACCESS CONTROL GATE

EXISTING ROAD R/W TO BE CANCELLED

ACCESS TO NEW LANDFILL SITE

WESTERNER PEOPLE MOVER
& PEDESTRIAN LINK
(Alignment #1)

AREA "B" OPTIONS
(in order of preference)

- LEASE TO WESTERNER FOR EXPANDED PARKING, PHASE 1
- LEASE FOR PRIVATE and/or NON-PROFIT RECREATIONAL OPPORTUNITIES (SOCCER, GOLF, SPORT FIELD, ETC.)
- AGRICULTURAL LEASE

Note: Areas A & B are interchangeable

PARKING

PAVILIONS

BARNES

CHALET

CENTRIUM

49th AVENUE

40th AVENUE

RACE TRACK

POSSIBLE
EXPANDED
PARKING

NATURAL AREA

894
893
892
891
890
889
888

PERIMETER FENCING

LIMITED
LANDSCAPING

FINAL CONTOURS

CITY OF RED DEER

COUNTY OF RED DEER

17th (SPRUCE) STREET

ROAD ALIGNMENT TO BE INCORPORATED INTO A FUTURE AREA STRUCTURE PLAN FOR AREA SOUTH OF LANDFILL SITE

CREEK CROSSING STRUCTURE

PROPOSED ALIGNMENT OF 17th STREET EXTENSION AS PER 1996 ISL STUDY

