KaylaVista Estates

AREA STRUCTURE PLAN

Prepared by:
D.A. Badke Enterprises Ltd

On behalf of:
Steve Brown and Shelly Nielsen

Presented to:
The Municipal District of Foothills No. 31

October 2004

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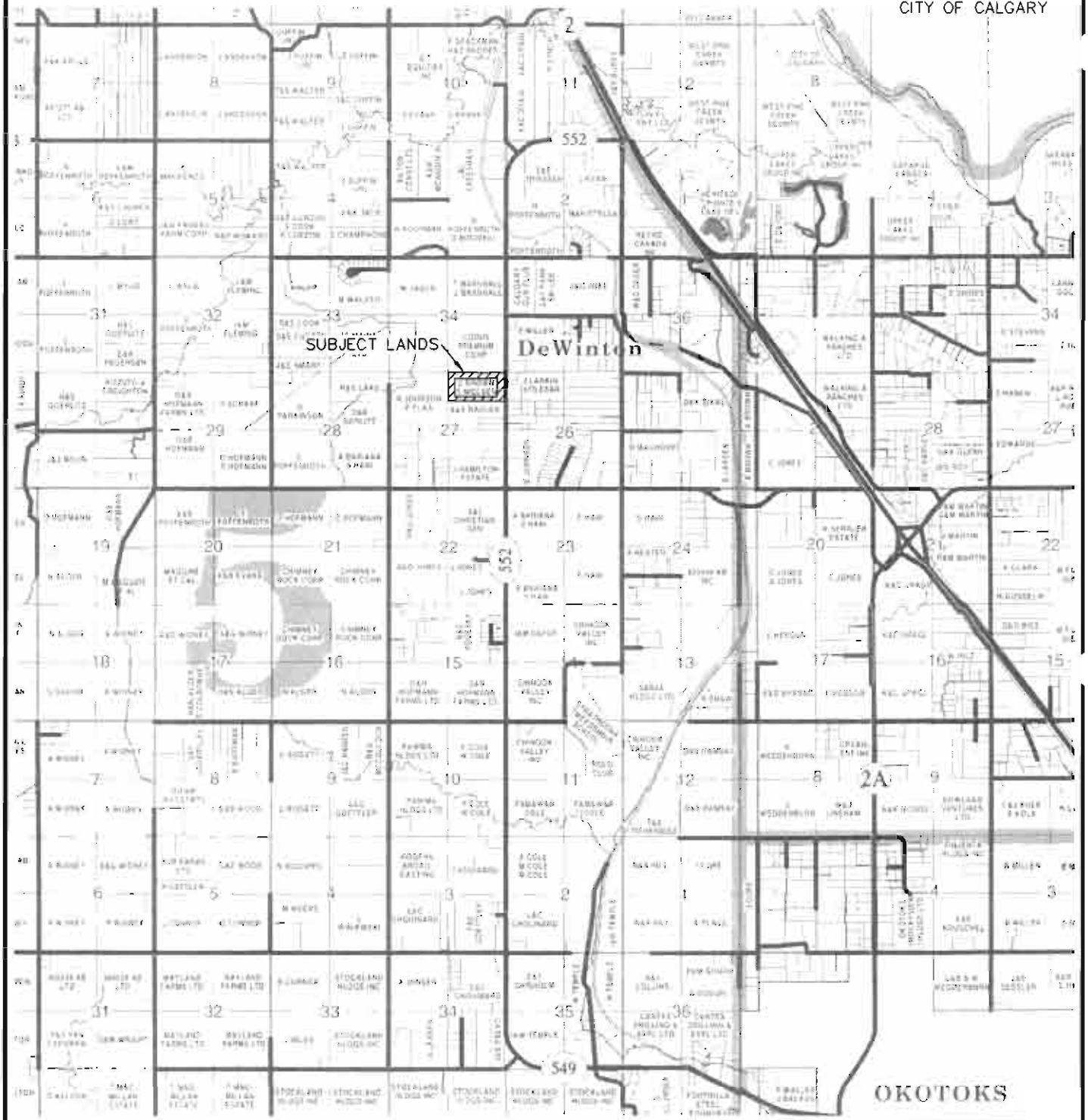


KaylaVista Estates

PTN N.E. 1/4 SEC 27, TWP 21, RGE 1, W5M

AREA STRUCTURE PLAN
Municipal District of Foothills No. 31

SCALE 1:75,000	LOCATION MAP	
D.A.BADKE ENTERPRISES LTD. (403)271-8708	AUG. 2004	FIGURE 1

1.0 INTRODUCTION

1.1 CONTEXT

The "Plan Area" referred to in this document, the KalaVista Estates Area Structure Plan, is defined as Lot 1 on Plan 961 1911 which lies within the north half of the Northeast Quarter of Section 27, Township 21, Range 1, West of the 5th Meridian (the "Subject Quarter").

The Subject Quarter was split into north and south halves in 1996, creating the Plan Area. The south half of the Subject Quarter was further subdivided in 2000 and 2001, creating two additional parcels. The Plan Area is located in an area of the Municipality that has already experienced significant fragmentation of the agricultural lands. The Location Map and Zoning Map, included as Figures 1 and 2, show the existing subdivision patterns in the general area and show the Plan Area shown as crosshatched. As shown in these figures, the lands within one half mile of the Subject Quarter contain some 60 parcels; 47 of which are Country Residential parcels. With the creation of these country residential parcels, this general area appears well on its way in transition from purely agricultural uses, to a mixture of country residential uses with some agricultural pursuits. This transition is fuelled by the increasing land values in the general area and the close proximity of the Subject Quarter to a prosperous major urban center.

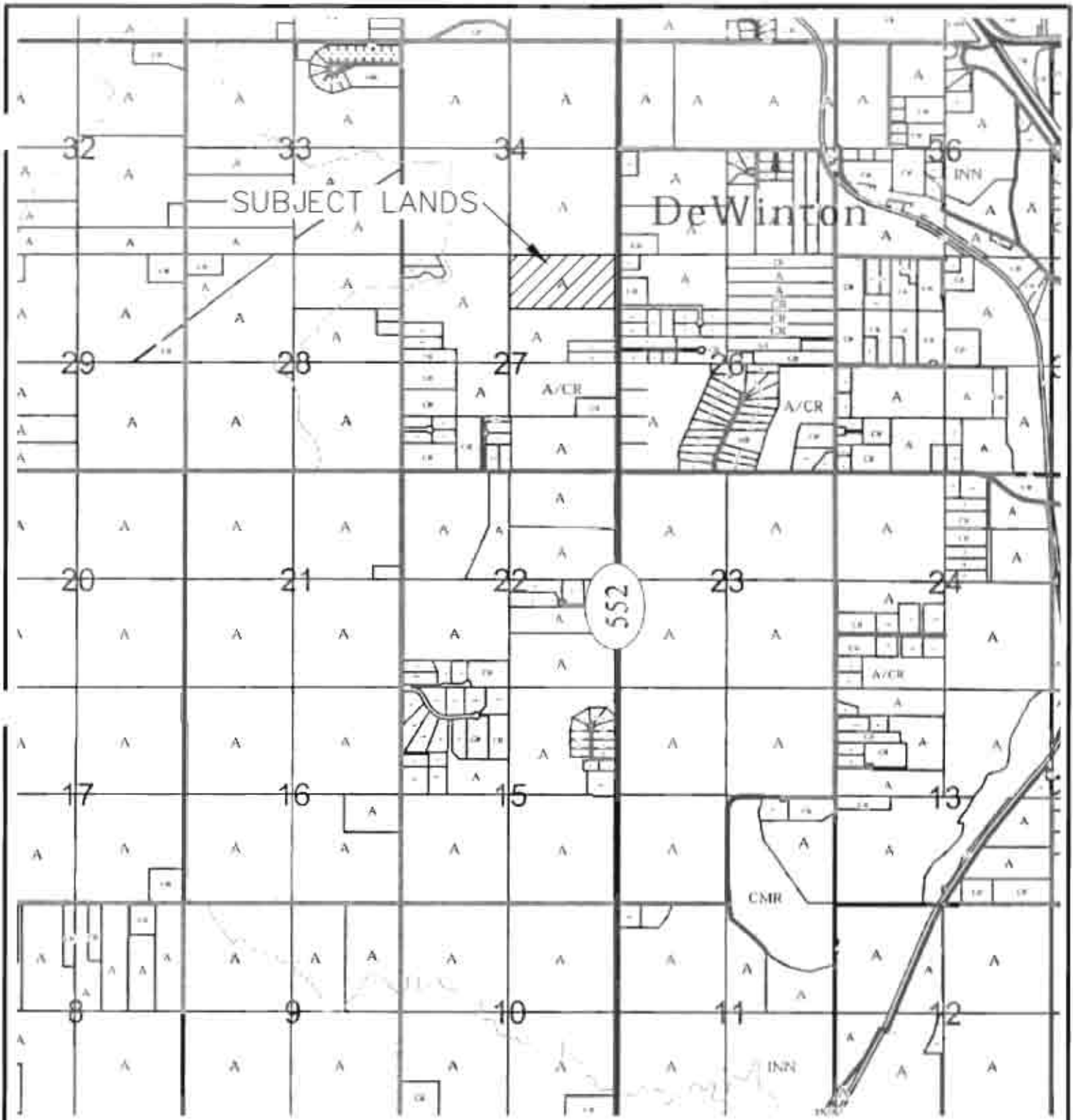
1.2 PURPOSE OF PLAN

The KaylaVista Estates Area Structure Plan was prepared at the request of the Municipal District of Foothills Council. The purpose of this Area Structure Plan is to act as a planning guide and to set parameters for future developments by establishing a range of compatible and appropriate land uses for the Plan Area. The KaylaVista Estates Area Structure Plan is necessary to establish an orderly approach with respect to subdivision and development within the Plan Area, addressing land use, servicing, access and density.

1.3 LEGISLATIVE FRAMEWORK

The KaylaVista Estates Area Structure Plan has been prepared in accordance with the provisions of the Municipal Government Act (Statutes of Alberta, 1994, Chapter M-26.1), which reads:

> *633(1) For the purpose of providing a framework for subsequent subdivision and development of an area of land, a council may, by bylaw, adopt an area structure plan.*



KaylaVista Estates

PTN N.E. 1/4 SEC 27, TWP 21, RGE 1, W5M

AREA STRUCTURE PLAN
Municipal District of Foothills No. 31

SCALE 1:40,000	ZONING MAP	
D.A.BADKE ENTERPRISES LTD. (403)271-8708	AUG. 2004	FIGURE 2

(2) An area structure plan

(a) must describe

(i) the sequence of development proposed for the area,

(ii) the land uses proposed for the area, either generally or with respect to specific parts of the area,

(iii) the density of population proposed for the area either generally or with respect to specific parts of the area, and

(iv) the general location of major transportation routes and public utilities

and

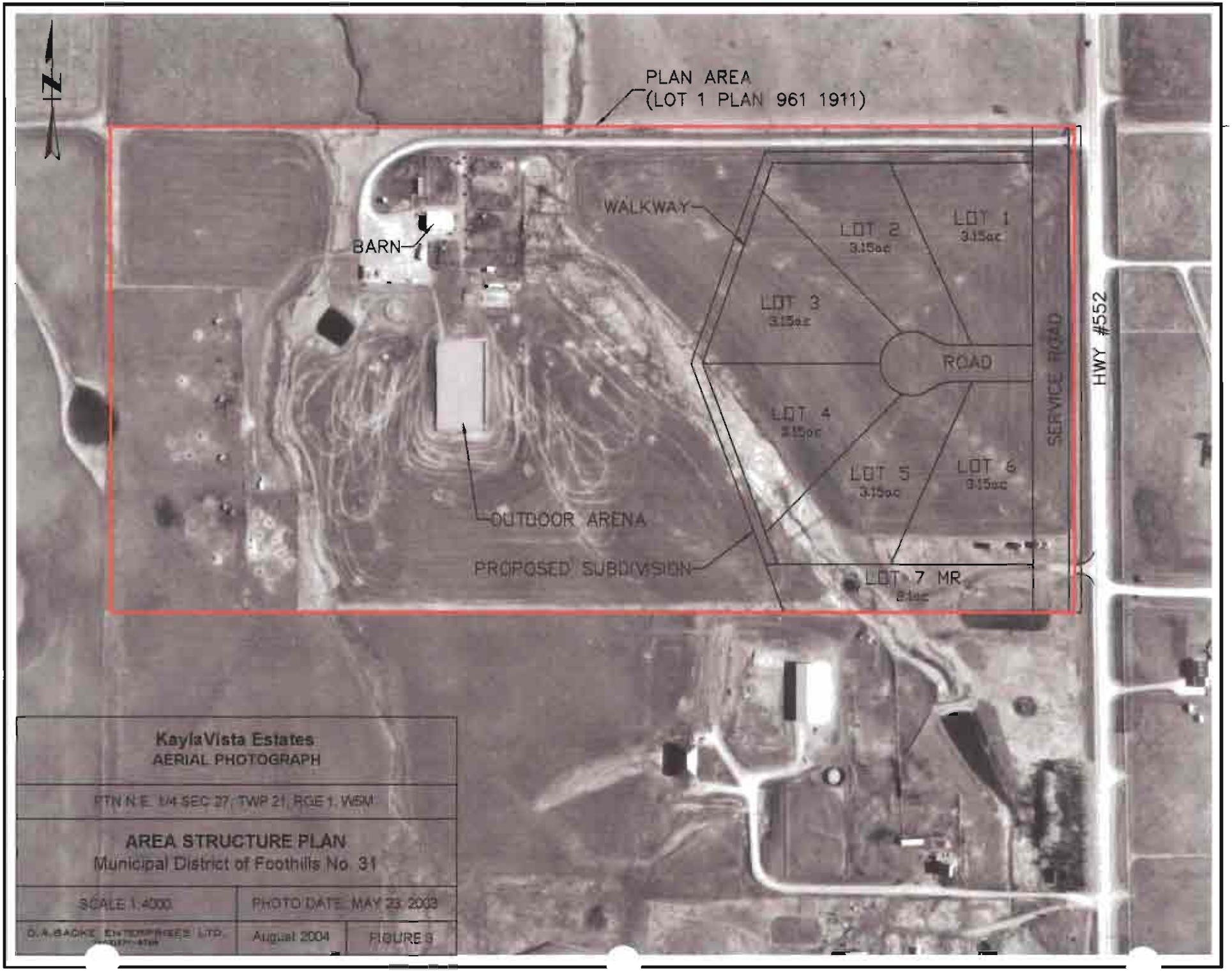
(b) may contain any other matters the council considers necessary

As well, this Area Structure Plan complies with the Municipality's Municipal Guidelines for preparation of Area Structure Plans.

1.4 INTERPRETATION

Within this document, the KaylaVista Estates Area Structure Plan:

- ***ASP*** means Area Structure Plan;
- ***Plan Area*** means Lot 1 on Plan 961 1911 which lies within the north half of the Northeast Quarter of Section 27, Township 21, Range 1, West of the 5th Meridian, comprising 79.54 acres more or less, which lands are currently owned by James Stephen Brown and Shelly Lynne Nielsen;
- ***Developer*** means the owner of the Plan Area;
- ***Subject Quarter*** means the NE¼ Section 27, Twp 21, Rge 1, W5M;
- ***Municipality*** means the Municipal District of Foothills No. 31;
- ***Council*** means the Council of the Municipal District of Foothills No. 31;
- ***MDP*** means the Municipal Development Plan of the Municipal District of Foothills No. 31;
- ***CLI*** means the Canada Land Inventory soil classification for agriculture;
- ***Development*** means subdivision and installation of roads and services;


N
PLAN AREA
(LOT 1 PLAN 961 1911)
WALKWAY
BARN
LOT 1
3.15ac
LOT 2
3.15ac
LOT 3
3.15ac
ROAD
LOT 4
3.15ac
LOT 5
3.15ac
LOT 6
3.15ac
LOT 7 MR
2.1ac
SERVICE ROAD
HWY #552
OUTDOOR ARENA
PROPOSED SUBDIVISION
KaylaVista Estates
AERIAL PHOTOGRAPH
PTN N.E. 1/4 SEC 27, TWP 21, RGE 1, W5M
AREA STRUCTURE PLAN
Municipal District of Foothills No. 31
SCALE 1:4000
PHOTO DATE: MAY 23, 2003
D.A. BAGKE ENTERPRISES LTD.
August 2004
FIGURE 9

2.0 THE PLAN AREA

2.1 REGIONAL SETTING

The Plan Area is located in the northern portion of the Municipal District of Foothills. The Plan Area is located 4 miles (6.4 km) south of the City of Calgary's south limits and 1.5 miles (2 km) west of DeWinton. Figure 1 shows the municipal setting of the Plan Area.

2.2 PLAN AREA BOUNDARIES

The Plan Area for The KaylaVista Estates Area Structure Plan is defined as Lot 1 on Plan 961 1911 which lies within the north half of the Northeast Quarter of Section 27, Township 21, Range 1, West of the 5th Meridian. The Plan Area contains 79.54 acres (32.19 hectares) more or less and currently stands in the names of James Stephen Brown and Shelly Lynne Nielsen as shown on the Certificate of Title contained in Appendix 1.

2.3 DESCRIPTION OF PLAN AREA

The Plan Area is located in the Foothills region of the Rocky Mountains. The topography of the Plan Area is undulating with shallow draws passing through the Plan Area, draining in a northerly direction. These draws are dry for most of the year, except when carrying seasonal melt water or storm runoff water. Vegetation within the Plan Area is mostly grass with minor willow growth in the draws. Figure 3 is an enlarged aerial photograph of the Plan Area on which the proposed subdivision has been superimposed. The Canada Land Inventory (CLI) rating for agriculture, of a 65 acre portion of the soils within the Plan Area, is CLI Class 4 with limitations due to adverse topography and erosion damage. A 5 acre portion of the soils within the Plan Area, is rated as CLI Class 6 with limitations due to excessive wetness. An agrologist has determined these CLI ratings of the soils within the Plan Area and the supporting report is enclosed in Appendix 2.

3.0 PLAN GOALS AND OBJECTIVES

3.1 GOALS AND OBJECTIVES

The KaylaVista Estates Area Structure Plan attempts to achieve the orderly, economical and beneficial development and use of the lands within the Plan Area. It is intended to be a flexible, long-term framework for the development and patterns of human settlement within the Plan Area. The goals and objectives of this Area Structure Plan are as follows:

3.1.1 To conform to the provisions of the Municipal Government Act (MGA) Statutes of Alberta, 1994, Chapter M-26.1, as amended and the Subdivision and Development Regulation, Alberta Regulation43/2002.

3.1.2 To define a land use strategy that conforms to the general principles contained in the MD of Foothills No. 31 Municipal Development Plan.

3.1.3 To provide guidance for subdivision and development of lands within the Plan Area which will result in an orderly and sequential development pattern.

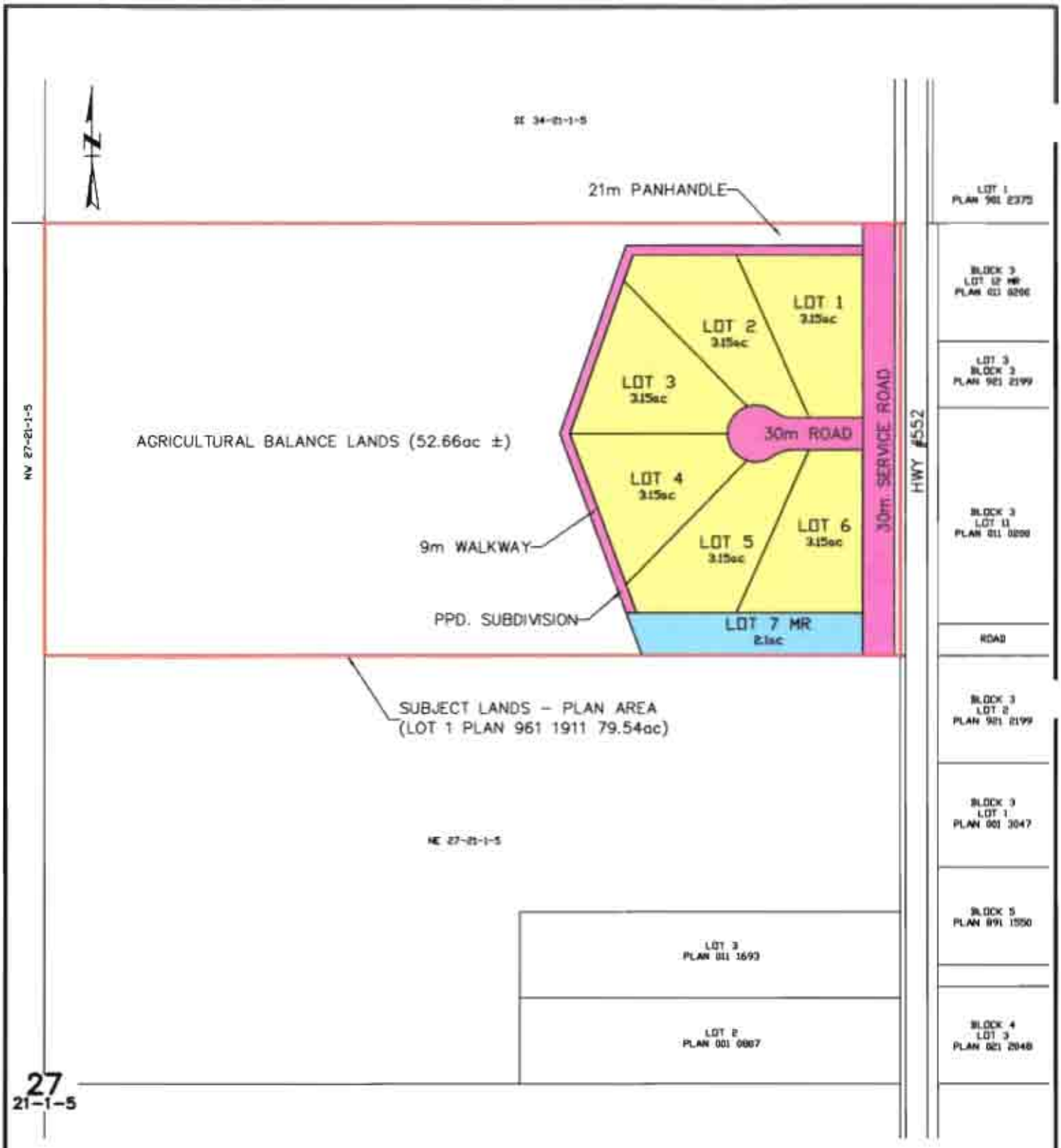
3.1.4 To ensure that all future development of lands within the Plan Area will conform to the Policies contained in this Area Structure Plan.

3.1.5 To establish high quality developments that are compatible with and which will harmonize with existing developments and natural features in the Plan Area and the immediately surrounding areas.

3.1.6 To preserve and protect existing natural features.

3.1.7 To provide an efficient and safe internal road network that yields a minimum of future road maintenance for the Municipality.

3.1.8 To establish policies that will direct proposed land uses, open spaces, transportation patterns, servicing, development phasing, population densities, and wildlife impact, as well as any other matters that the Municipality deems necessary.



LEGEND

- PROPOSED COUNTRY RESIDENTIAL LOTS
- MUNICIPAL RESERVE
- ROADS AND WALKWAYS

KaylaVista Estates
PROPOSED SUBDIVISION PATTERNS

IN N 1/2 NE 1/4 27–21–1–5

AREA STRUCTURE PLAN

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DRAWN: JDB	SCALE: 1:5000
DESIGN: DAB	DATE: AUG. 2004
D030602	FIGURE 4

4.0 PLAN POLICIES

4.1 THE PLAN CONCEPT

KaylaVista Estates is a planned country residential development that is proposed to be developed in one phase which is described as follows.

The development will consist of 6 country residential lots located in the eastern portion of the Plan Area. Each lot is planned to be slightly larger than 3 acres in size and all lots are clustered around an internal road as shown in Figure 4. This development also includes an MR lot sized at 10% of the net developed area. A 9 metre wide public walkway is planned around the periphery of the lots proposed for development. It is proposed that this walkway will be fenced on either side with a page wire fence to contain dogs and other animals within the walkway and lots. The remainder of the Plan Area (52.76 acres +/-) is proposed to remain unsubdivided. This Area Structure Plan does not support further subdivision of the balance lands.

POLICIES:

4.1.1 All developments within the Plan Area shall conform to all provincial and municipal requirements, specifically, the Municipal Government Act, the Subdivision and Development Regulation, the MD of Foothills Municipal Development Plan, the Foothills Land Use Bylaws, as well as any other relevant statutory provisions adopted by the Province and the Municipality.

4.1.2 All subdivision and development within the Plan Area shall be in conformity with the guidelines of Alberta Environment.

4.1.3 Uses on each new lot developed shall comply with the Restrictive Covenants attached in Appendix 6 and these Restrictive Covenants shall be registered as encumbrances on the titles of each new lot.

4.2 LAND USE COMPONENT

All developments within the Plan Area will be for country residential uses, except for the use of the balance lands which will be for agricultural uses, more specifically, for an equestrian training facility, pastureland and crop production. It is anticipated that this equestrian facility will be expanded in the future to include an indoor riding arena, approximately 40 by 80 metres in size. It is planned to locate this arena west of the existing outdoor riding arena. It is proposed that this equestrian facility will be a private facility.

Once the Plan Area is fully developed to its planned potential, the population within the 6 lot country residential development is estimated at 16 people. This estimate assumes an average household size of 2.6 persons per household.

POLICIES:

4.2.1 Development of the country residential lots shall be in one phase.

4.2.2 Following development of the 6 country residential lots within the Plan Area, the continued use of the balance lands for agricultural pursuits such as for an equestrian training facility, pastureland or hay and crop production, shall be allowed.

4.2.3 Each of the country residential lots shall contain a minimum 3.0 acres (1.21 hectares).

4.2.4 All future developments on the balance lands will require Council approval prior to implementation.

4.3 ENVIRONMENTAL CONSIDERATIONS and RESERVE LANDS

The topography of the Plan Area is undulating with shallow draws passing through the Plan Area, all draining in a northerly direction. These draws are dry for most of the year, except when carrying seasonal melt water or storm runoff water.

At the time of registration of Plan 961 1911, the Municipal Reserve requirements within the Plan Area were deferred until further subdivision.

POLICIES:

4.3.1 The existing drainage patterns within the Plan Area shall be protected by way of a Restrictive Covenant to be registered on each of the proposed lots and the balance lands. Appendix 6 contains a copy of the proposed Restrictive Covenant.

4.3.2 All Municipal Reserve land dedication shall be located immediately adjacent to the service road and along the south boundary of the Plan Area, generally as shown on Figure 4.

4.3.3 All Municipal Reserve lands shall be dedicated in accordance with the provisions of the Municipal Government Act.

4.4 DEVELOPMENT CONSTRAINTS

Municipal policies require that all building sites be a minimum of one contiguous acre in size. These building sites must not contain a high water table or ground slopes of more than 15%. Figure 5 shows the layout of the proposed lots and roadways within the Plan Area. This plan shows half metre interval contours and delineates the areas which have ground slopes greater than 15%, areas that are wetlands and areas along the natural draws that are unsuitable for building sites. Figure 5 also shows the allowable building envelope on each lot as prescribed by the MD of Foothill's Land Use Bylaw. The proposed lots within the Plan Area have all been designed such that each lot has an acceptable building site as defined by the Municipality.

POLICIES:

4.4.1 If deemed necessary by Council, a geotechnical report shall be prepared by a qualified professional, in areas where adverse topography or steep slopes are a factor in development on any lot within the Plan Area.

4.4.2 If deemed necessary by Council, a storm water management report shall be prepared by a qualified professional, in areas where overland drainage is a factor in development on any lot or roadway within the Plan Area. This is to be done in conjunction with the road engineering.

4.4.3 Each lot within the Plan Area shall contain a minimum one-acre building site within which the ground slopes are less than 15% and a high groundwater table is not present.

4.4.4 A Restrictive Covenant shall be registered on the titles of each lot and the balance lands within the Plan Area indicating that the lot owners shall not interfere with any natural or manmade drainage courses approved by the Municipality, which cross their respective lots.

4.5 TRANSPORTATION

The Plan Area is bounded on the east by paved Highway #552. Access to Highway #552 is planned via the existing approach in the northeast corner of the Plan Area. Access to the lots is proposed by way of a service road along Highway #552 and an internal public roadway. The approach to Highway #552 near the southeast corner of the subject lands is planned to be removed. All internal roads must provide for safe and efficient movement of traffic as well as reliable access for emergency vehicles.

Traffic surveys conducted by Alberta Transportation in 2002, indicated 1,660 vehicles per day on Highway #552, at a point immediately south of the Subject Quarter. A copy of Alberta Transportation's most recent traffic survey is included in Appendix 3. Assuming an average 10 trips per household per day, it is

SE 34-21-1-5

DRAWS

EX. DRIVEWAY IN 21m PANHANDLE

EX. APPROACH (TO REMAIN)

TRAILER

BUIDLING ENVELOPE

EX. BARN

PARKING

POND

NW 27-21-1-5

EX. OUTDOOR RIDING ARENA

LOT 2 3.15ac

LOT 1 3.15ac

LOT 3 3.15ac

ROAD 30

SERVICE ROAD

LOT 4 3.15ac

HWY #552

9m WALKWAY

LOT 5 3.15ac

LOT 6 3.15ac

PROPOSED SUBDIVISION

LOT 7 MR 2.1ac

30

NE 27-21-1-5

PLAN AREA (LOT 1 PLAN 961 1911 79.54ac)

PPD. ROAD WIDENING

LOT 1
PLAN 901 2375

BLOCK 3
LOT 12 MR
PLAN 011 0200

LOT 3
BLOCK 3
PLAN 921 2199

BLOCK 3
LOT 11
PLAN 011 0200

EX. APPROACH (TO BE REMOVED)

ROAD

BLOCK 3
LOT 2
PLAN 921 2199

LEGEND

ROAD (GRAVEL)

FENCE

POWER POLE

STREAM (INDEFINITE)

INDEX CONTOUR 150

AREAS IN EXCESS OF 15%

LOW LYING AREAS

BUILDING ENVELOPE

PLAN AREA

SCALE: 1:2500

H 0 10 20 40 80 120 160 200 metres

0.5m CONTOUR INTERVAL

AREA STRUCTURE PLAN
Municipal District of Foothills No. 31

KaylaVista Estates
CONTOUR MAP AND DEVELOPMENT CONSTRAINTS

PTN N.E. 1/4 SEC 27, TWP 21, RGE 1, W5M

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AUG. 2004

FIGURE 5

projected that the traffic on Highway #552 will increase by 60 vehicles per day (3.6%) once the proposed lots within the Plan Area have been developed. It is anticipated that most of the traffic generated by the proposed subdivision will travel northwards on Highway #552.

Walkways have been proposed around the periphery of the proposed development. These walkways are proposed to be 9 metres wide with a grassed surface. The Developer will construct a page wire and rail fence on either side of the walkway to prevent animals from straying beyond the walkway or onto the walkway. It is proposed that a Homeowner's Association will be formed and registered on title to maintain the walkways and adjacent fencing on both sides of the walkway. All walkways will be dedicated to the Municipality by plan of survey, as public walkways.

POLICIES:

4.5.1 All internal roads within the Plan Area shall be designed and constructed at the sole cost of the Developer in accordance with MD of Foothills Municipal Standards for paved roads.

4.5.2 All internal roads within the Plan Area shall be maintained throughout the maintenance period prescribed by the Municipality, at the sole cost of the Developer. Following issuance of the Final Acceptance Certificate by the Municipality for the internal roads, maintenance of all internal roadways shall be conducted at the sole cost and responsibility of the Municipality.

4.5.3 The service road shall gain access to Highway #552 at the northeast corner of the Plan Area as shown on the attached plans.

4.5.4 All lots shall have direct access to the internal roadway via approaches built to the Municipalities standards.

4.5.5 The approach onto Highway #552, located near the southeast corner of the Plan Area, shall be removed at the cost of the Developer at the time of constructing the internal roads.

4.5.6 In this development, that portion of the service road, south of the internal road, need not be constructed for the proposed development, however, the entire service road right of way shall be dedicated by plan of survey at the time of plan registration of the proposed lots in the Plan Area.

4.5.7 All walkways shall be grassed and fenced on both sides by the Developer using page wire in the fence construction. The walkway plus the fencing on both sides of the walkway shall be maintained by a Homeowner's Association. This responsibility shall be registered by way of a Restrictive Covenant on the title of each lot within the Plan Area.

4.5.8 If deemed necessary by Council, the Developer shall enter into a Development Agreement with the Municipality with respect to a contribution for upgrading and maintenance of external roadways.

4.5.9 If required by Alberta Transportation or the Municipality, the Developer shall conduct traffic studies with respect to access onto Highway #552. Any upgrading identified by such studies shall be implemented by the Developer at its sole cost and to the satisfaction of the Municipality and Alberta Transportation.

4.6 SERVICING

The Developer proposes to service the country residential developments within the Plan Area by way of conventional servicing techniques.

Water Service:

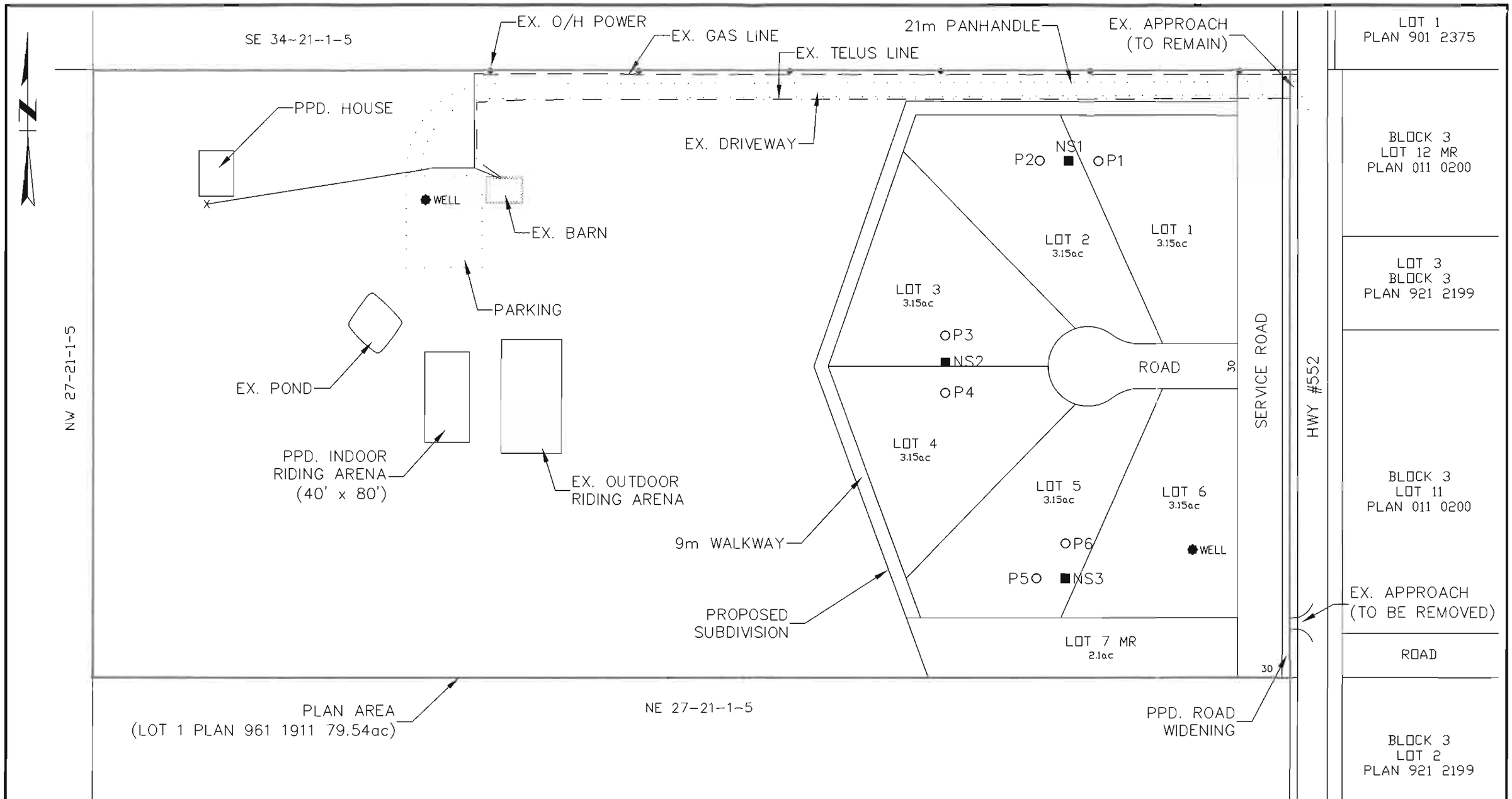
The Developer will supply water to each lot by way of an individual well drilled on each lot. The water well drilled to service the existing developments within the Plan Area generally has water yields that are far in excess of normal country residential needs. A new water well has been drilled as a test well at the location shown on Figure 6. This well was pump tested and proved a yield that was far in excess of the requirements for a residential lot. The hydrologist's report summarizing this testing and a review of water wells in the area, is included in Appendix 4.

Sewage Disposal:

Sewage disposal on the proposed lots is planned by way of conventional septic fields or treatment mounds, all in accordance with the provisions as set out in Alberta Environment's guidelines and the publication entitled "*Alberta Private Sewage Systems Standard of Practice 1999 Handbook*". Field percolation testing was conducted on 3 typical sewage disposal sites, at the locations shown on Figure 6. The results of this testing indicated that the soils at all sites were suitable for the use of either conventional septic fields or treatment mounds for sewage disposal. Standpipes were also installed to a depth of 10 feet at each percolation test site to detect the presence of a high water table. All of the standpipes were dry. An engineered report summarizing this testing is included in Appendix 5.

Storm Water Management:

Storm water drainage is currently handled by way of naturally occurring surface drainage courses passing through the Plan Area, generally draining from south to north. These drainage courses are dry for most of the year, except when carrying seasonal melt water or in extreme cases, storm runoff water. These drainage



LEGEND

ROAD (GRAVEL)	FIELD PERCOLATION TEST SITE ○ P1
FENCE ——x——	NEAR SURFACE WATER TEST SITE ■ NS1
POLE (UTILITY) •	EXISTING WATER WELL ● WELL

AREA STRUCTURE PLAN
Municipal District of Foothills No. 31

SCALE: 1:2500

H 0 10 20 40 80 120 160 200 metres

KaylaVista Estates
EXISTING SERVICES AND TEST LOCATIONS

PTN N.E. 1/4 SEC 27, TWP 21, RGE 1, W5M

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FIGURE 6

courses will generally be left intact. Storm water from each of the lots will either be channelled to the road ditches or will continue to flow towards these existing drainage courses. Where the roads cross these drainage courses, appropriate sized culverts will be utilized to pass the storm water beneath the roads. All storm water drainage after development of the Plan Area will continue to be handled by way of surface drainage. All stormwater originating on the Plan Area shall be controlled in such a manner that it will not be directed to the ditches along Highway#552.

Solid Waste:

Solid waste from the KaylaVista Estates development will be hauled by the individual landowners or a waste disposal contractor, and disposed at the nearest approved waste transfer site.

POLICIES:

4.6.1 Proof of an adequate water supply shall be provided to the Municipality for each country residential lot within the Plan Area, at the sole cost of the Developer. This shall include a water well on each lot. Pump testing of each well, plus well interference and yield calculations, shall all be done by the Developer in accordance with the Water Act, as amended. A qualified professional shall prepare a report at the cost of the Developer, to confirm that an adequate water supply is available on each lot.

4.6.2 If required by the Municipality, the Developer shall conduct field percolation testing and near surface water table testing, all in accordance with Alberta Environment's guidelines and the guidelines contained in the publication entitled "Alberta Private Sewage Systems Standard of Practice 1999 Handbook", in order to properly design the sewage disposal system for each lot. A qualified professional shall prepare a report at the cost of the Developer, to confirm that the soils on each lot are acceptable for installation of a sewage disposal system in accordance with Alberta Environment's guidelines and the guidelines contained in the publication entitled "Alberta Private Sewage Systems Standard of Practice 1999 Handbook".

4.6.3 Septic pump-out tanks will not be permitted within the Plan Area due to the road damage caused by tank trucks. Lagoons and open discharge from septic tanks shall not be permitted in the Plan Area.

4.6.4 All stormwater originating on the Plan Area shall be controlled in such a manner that it will not be directed to the ditches along Highway#552. The plans for the internal road and service road shall provide details of as to the stormwater drainage patterns and these plans shall be submitted to Alberta Transportation and the Municipality for approval.

4.7 UTILITIES

FortisAlberta Ltd. currently supplies power throughout the Municipality by way of an overhead power line grid. The Developer proposes to obtain power from these existing facilities and distribute underground power to the property line of each new country residential lot developed within the Plan Area.

ATCO Gas and Pipelines Ltd. currently supplies natural gas throughout that portion of the Municipality surrounding the Subject Quarter, by way of a network of underground service pipelines. The Developer proposes to obtain natural gas from these existing lines and distribute underground gas service to the property line of each new country residential lot developed within the Plan Area.

Telus Communications Inc. currently supplies telephone service throughout the Municipality by way of an underground phone line grid. The Developer proposes to distribute an adequate number of phone lines to the property line of each new country residential lot developed within the Plan Area.

The Developer reserves the right to select other service providers.

Figure 6 shows the location of the existing services within the Plan Area.

POLICIES:

4.7.1 The Developer shall at his sole expense, design, construct and install underground power, natural gas and phone service lines to the property line of each new country residential lot developed in the Plan Area.

4.8 PROTECTIVE SERVICES

Police service to the Plan Area is provided by the Royal Canadian Mounted Police and is available through the RCMP's Okotoks detachment. The MD of Foothills Special Constables provide additional protective services.

Fire fighting service is available from the City of Calgary fire department under contract to the MD of Foothills. This provides 24-hour service to the subject area.

Ambulance service is available from the Foothills Emergency Medical Services in Okotoks with backup service from the Okotoks FREMS station and Calgary.

POLICIES:

4.8.1 The design of the subdivision shall ensure that emergency vehicles have all weather developed public access to each lot created in the Plan Area.

5.0 PUBLIC CONSULTATION

A program of public consultation was undertaken to inform the neighbours surrounding the Plan Area, of the proposed land use changes and subdivision patterns contemplated within the Plan Area. This public consultation program consisted of the following:

- Submit subdivision proposal by way of mail-outs to all neighbours within one half mile of the Subject Quarter Section;
- Review of comments and concerns from neighbours to the Plan Area;
- Personal contact with some of the immediate neighbours to the Plan Area;
- Submit draft copy of ASP to the MD of Foothills Planning Staff, review comments from the Planning Staff.
- Incorporate changes to the ASP as suggested by Planning Staff and neighbours.

The comments received from neighbours (4 of 47 replied) were generally positive.

6.0 PLAN IMPLEMENTATION

6.1 PLAN IMPLEMENTATION

The KaylaVista Estates ASP is an intermediate step between the Municipal Development Plan and the Land Use Bylaws as illustrated on the attached Figure 7. The MD of Foothills Municipal Development Plan (MDP) establishes general planning policies which provide guidance for the subdivision and development of lands within the Municipality as a whole. The KaylaVista Estates ASP supports the MDP by adding another layer of detail to the guidelines for subdivision and development, specifically within the Plan Area. The KaylaVista Estates ASP does not supersede, repeal, replace or otherwise diminish any other statutory plan in effect in the Plan Area.

POLICIES:

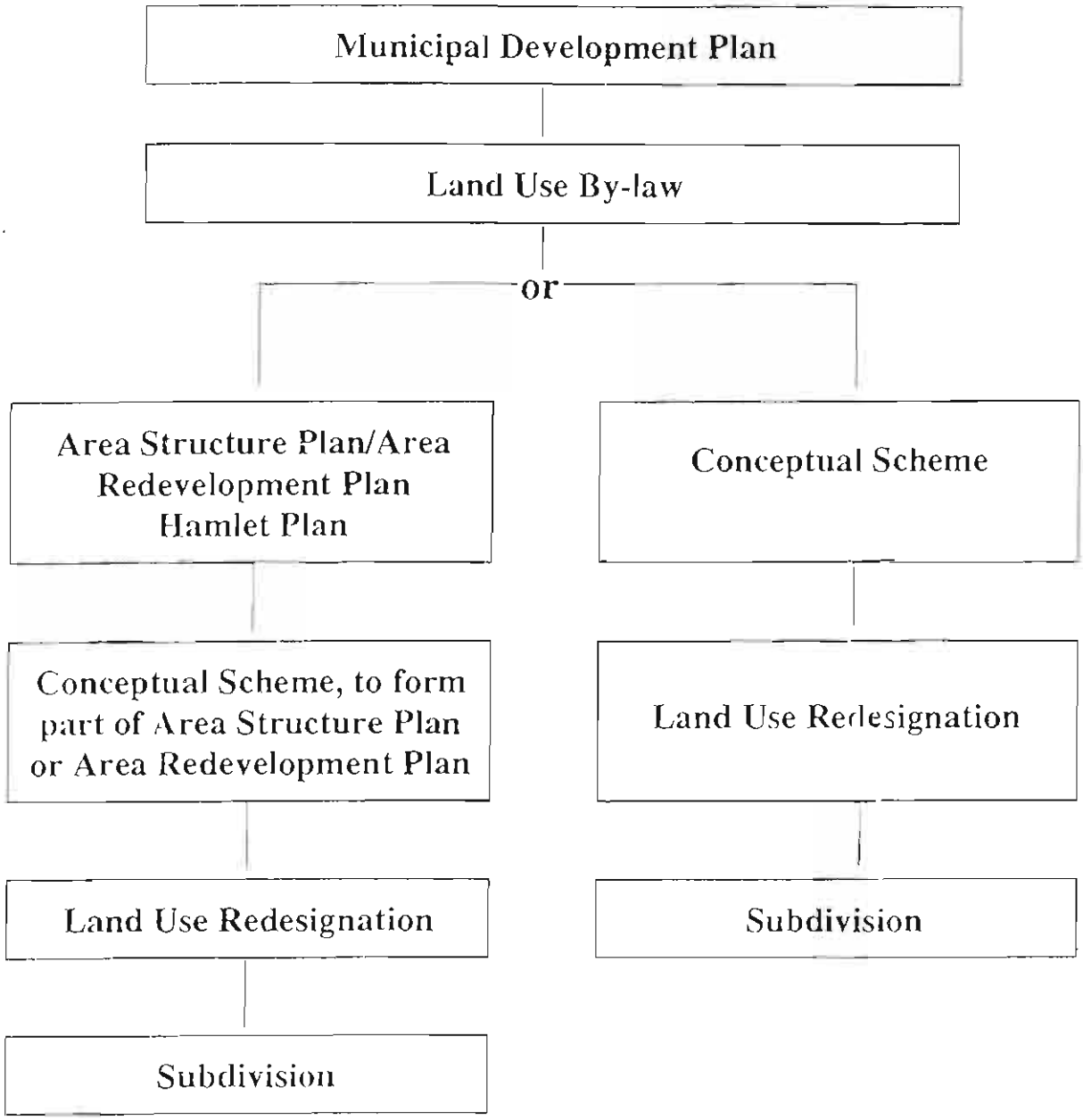
6.1.1 The policies contained in The KaylaVista Estates Area Structure Plan shall be reviewed and implemented by the Municipal District of Foothills Council at their discretion.

6.2 PLAN REVIEW AND AMENDMENT

Following approval by Council, the KaylaVista Estates ASP will become a Bylaw of the Municipal District of Foothills. This ASP is prepared to address long-term future land use and development within the Plan Area. A formal process as outlined in the Municipal Government Act, is required to amend this ASP.

POLICIES:

6.2.1 Any application for subdivision and development within the Plan Area that is contrary to the land use strategy and policies contained in this ASP, will require a formal application to the Municipality for an amendment of the KaylaVista Estates Area Structure Plan.



HIERARCHY OF PLANNING PROCESS

Figure 7

APPENDIX

APPENDIX

1

CERTIFICATE OF TITLE

ALBERTA REGISTRIES

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0026 820 514	9611911;;1	981 339 391

LEGAL DESCRIPTION
PLAN 9611911
LOT 1
EXCEPTING THEREOUT ALL MINES AND MINERALS
AREA: 32.19 HECTARES (79.54 ACRES) MORE OR LESS

ESTATE: FEE SIMPLE
ATS REFERENCE: 5;1;21;27;NE

MUNICIPALITY: MUNICIPAL DISTRICT OF FOOTHILLS NO. 31

REFERENCE NUMBER: 961 214 220

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
981 339 391	30/10/1998	TRANSFER OF LAND	$345,000	$345,000

OWNERS

JAMES STEPHEN BROWN

AND
SHELLY LYNNE NIELSEN
BOTH OF:
BOX 147
DEWINTON
ALBERTA T0L 0X0
AS JOINT TENANTS

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
981 339 392	30/10/1998	MORTGAGE MORTGAGEE - ALBERTA TREASURY BRANCHES. BOX 1020, OKOTOKS ALBERTA T0L1T0 ORIGINAL PRINCIPAL AMOUNT: $255,000
991 171 039	18/06/1999	UTILITY RIGHT OF WAY GRANTEE - CANADIAN WESTERN NATURAL GAS COMPANY LIMITED. PORTION AS DESCRIBED
991 327 754	08/11/1999	MORTGAGE MORTGAGEE - ALBERTA TREASURY BRANCHES. BOX 1020, OKOTOKS ALBERTA T0L1T0 ORIGINAL PRINCIPAL AMOUNT: $130,000
011 058 661	05/03/2001	MORTGAGE MORTGAGEE - ROMEO FAUCHON MORTGAGEE - INVESCO MORTGAGE INC.. BOTH OF: 400, 7015 MALCEOD TRAIL SOUTH CALGARY ALBERTA T2H2K6 ORIGINAL PRINCIPAL AMOUNT: $240,000
011 352 978	27/11/2001	ORDER IN FAVOUR OF - JOANNE MAY BROWN AGAINST - JAMES STEPHEN BROWN "MAINTENANCE ENFORCEMENT ACT"
021 052 100	12/02/2002	AMENDING AGREEMENT AMOUNT: $330,000 AFFECTS INSTRUMENT: 011058661
021 052 101	12/02/2002	POSTPONEMENT OF ORDE 011352978 TO AMEA 021052100

(CONTINUED)

TOTAL INSTRUMENTS: 007

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 18 DAY OF NOVEMBER, 2003 AT 04:53 P.M.

ORDER NUMBER:91172

CUSTOMER FILE NUMBER: 769

END OF CERTIFICATE

APPENDIX 2

AGROLOGIST'S REPORT

Matrix Solutions Inc.

ASSESSMENT OF ARABILITY
FOR A PORTION OF
NE1/4 27-21-1W5

Prepared for

SHELLY NIELSEN AND STEVE BROWN

Prepared by

MATRIX SOLUTIONS INC.

December, 1998

Blair Nicholson, P.Ag.
Project Agrologist

220, 319 - 2 Avenue S.W.

Telephone: (403) 237-0606

A. INTRODUCTION

In response to a request from Shelly Nielsen and Steve Brown, an 80 acre portion of the NE1/4 27-21-1W5 was inspected on November 21, 1998, by Blair Nicholson, an agrologist with Matrix Solutions Inc. The purpose of the inspection was to assess the property's potential for arable agriculture; specifically, the production of cereal crops. This report summarizes the findings of the data collected during the site evaluation.

The subject property is located west of DeWinton in the Municipal District of Foothills No. 31 (Figure 1). It is accessed from 32 Street W, a paved road, which borders the east side of the subject property (Photo 1). The 80 acres assessed comprises the north half of the quarter section. The perimeter of the subject property is fenced (Photos 2 and 3). At the time of inspection, the subject lands were in stubble (Photo 4). During the 1998 crop year the property was used for the production of green feed.

A number of site features are located on the subject property. A fenced storage area, for forage and grain, is located in the southeast corner (Photo 5). Two dugouts used to collect surface runoff have been constructed on the subject lands (Photos 6 and 7). A road has recently been constructed along the north fenceline (Photo 8). The road is used to access the west side of the parcel where a barn and associated holding pens are presently been constructed (Photo 9).

The Canada Land Inventory (CLI) Soil Capability for Agriculture in Alberta[1] system of rating was used to classify the subject property. The primary objective of this rating system is to provide the facts on which to base decisions concerning the utilization of land resources. In this system, mineral soils are grouped into seven classes according to their potential and limitations for agricultural use. The first three classes are capable of sustained production of common cultivated crops, the fourth class is considered marginal, the fifth is capable of use for only permanent pasture and hay, the sixth is capable of use for native grazing, and the seventh class has no capability or potential for agricultural use.

1 Brocke, L.K. 1977. The Canada Land Inventory Soil Capability for Agriculture in Alberta. Alberta Environment, Edmonton, Alberta.

For this assessment, the field inspection consisted of walking and driving over the subject property, describing soil profiles according to the Canadian System of Soil Classification[1], noting landforms, taking slope readings, measuring slope lengths, taking photos and, in general, looking for any of the fourteen limitations recognized in the CLI rating system. Soil samples were not collected during the inspection as soil chemistry was not deemed to be an issue with regard to this property. An airphoto at a scale of 1:5,000 was used for mapping.

B. GENERAL DESCRIPTION OF THE SUBJECT PROPERTY

1. Soil Survey of the Calgary Urban Perimeter

The soils of the subject property are described in the Soil Survey of the Calgary Urban Perimeter[2]. One soil series is identified for the subject lands, namely Lloyd Lake (LLK). One Lloyd Lake unit is recognized for the subject lands. The unit is symbolized as LLK 1/c. The number one reflects the relative purity of this unit, that is, it is almost exclusively made up of the named soil with little or no inclusion of other soil types. The letters to the right of the slash mark in the map unit symbol represent slope class limits. The letter "c" represents slopes in the 2-5% range.

Lloyd Lake is a deep, well drained black grassland soil formed on glaciolacustrine sediments. The sediments are distinguished by their high content of silt sized malerial. They are strongly calcareous and rarely contain any coarse fragments

Most areas of Lloyd Lake soil are presently cultivated. The native vegetation is characteristic of the forest-grassland transition zone. The short frost free period imposes a limitation on the choice of crops that can be grown in this unit and especially so in the valley bottoms west of Calgary subject to cold air drainage.

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1 Agriculture Canada Expert Committee on Soil Survey. 1987. The Canadian System of Soil Classification. 2nd Ed. Agric. Can. Publ. 1646. 164 pp.

2 Macmillan, R.A. 1987. Soil Survey of the Calgary Urban Perimeter; Alberta Soil Survey Report No. 45. Terrain Sciences Department, Alberta Research Council. Edmonton, Alberta. Pages 79 - 80.

A representative profile of Lloyd Lake has a black, friable surface horizon that is seldom less than 15 cm thick. This is underlain by a weak structured dark yellowish brown oxidized horizon (B). A zone of lime accumulation occurs between 30 cm and 50 cm and grades into unaltered parent material at about 60 cm to 90 cm. Lloyd Lake is classified as an Orthic Black Chernozemic soil.

The Lloyd Lake unit (LLK 1/c) identified on the subject lands is mapped on smooth undulating to gently sloping glaciolacustrine landscapes. The short frost free period associated with this unit precludes growing late maturing crops. Climate is the rating component that imposes the greatest limitation to active cultivation of this unit. The soil itself presents no serious limitations to agricultural use.

2. Site Specific Evaluation

A description of the 80 acres of the NE1/4 27-21-1W5 evaluated based on the November 21, 1998, site inspection follows.

A recurring ridge and swale landscape pattern on an inclined plane blankets the subject property. The ridges and swales reflect a southeast to northwest alignment. The ridges are both continuous and discontinuous. They tend to be relatively low and rounded. The width varies from ridge to ridge. The steepest slopes on the parcel are restricted to the sides of the ridges. These slopes range up to 6% on the subject lands. Photos 3 and 10 reflect the wave-like undulations produced by this ridge and swale pattern. The slopes on the ridges are in the 2-5% range.

The term swale refers to the low area between the ridges. On sloping land, such as found on this parcel, they serve to carry water directly downslope. On the subject property these waterways are both cultivated and grassed (Photo 11). In both cases they serve as a conduit to move runoff water from upslope positions directly downslope to lower elevations. These particular waterways move runoff into an undrained basin located northwest of the subject lands. These swales are frequently too wet for cultivation. Two dugouts on the property rely on this surface runoff for their water supply (Photos 6 and 7).

Poorly drained soil profiles supporting moisture loving grasses occur in these swales. Thus, the agricultural use of the land is restricted. As well, the cost for tillage and harvesting operations on the land between the swales goes up as efficient field operations are impeded. In addition to the poorly drained swales, which create a channeled landscape, there are a number of poorly drained depressions that dot the landscape. Some of these low areas are farmed (Photo 12) and some are grassed (Photo 13). These depressional areas are subject to flooding. Photo 12 depicts a farmed depression in which this year's crop was drowned out.

As well as the major erosional channels, dissecting the subject property, erosion of the ridge side slopes is also taking place (Photo 14). Here runoff is concentrated into small, narrow channels called rills. Cultivation can eliminate this rill erosion but it does nothing to rectify the damage caused by the downslope movement of soil, nor does it prevent future rill erosion. Once protective cover is removed from these sensitive side slopes and swales, the surface soil becomes less resistant to water erosion. Severe rainstorms and rapid spring snowmelt are the two major weather events that will trigger erosion in these areas if the land surface is exposed.

The subject property also features coarse fragments of all sizes (gravel <8 cm in diameter, cobbles 8-25 cm in diameter, stones >25 cm in diameter) both on the surface and at depth. Photos 15 and 16 depict all three sizes on the surface of the cultivated land. Photos 6 and 17 represent coarse fragments that have been uncovered from the shallow subsurface. Photo 18 represents coarse fragments that have been picked from the surface of the subject lands and deposited in one of the erosional channels on the subject property.

C. CLI SITE SPECIFIC EVALUATION

Two previous CLI ratings have been published for this area. However, the information they contain does not constitute a site specific evaluation as ratings are averaged over large areas and were made using airphotos and soil survey information without extensive ground truthing. The published CLI classifications are provided here for background information purposes only. Field inspections are necessary to confirm these classifications for local or site specific developments.

Figure 2 presents the published CLI classifications, at a scale of 1:250,000, for the subject property. Figure 3 presents the published CLI classifications, at a scale of 1:50,000, for the subject property. The 1:250,000 study delineates one complex unit for the NE1/4 27-21-1W5. The subject property is classed as 70% Class 3T, 20% Class 2C and 10% Class 5T. The notation recognizes a complex area rated Class 3 due to adverse topography (T) and Class 2 due to climatic limitations (C) and Class 5 due to adverse topography (T). The dominant class appears first in a complex symbol. Of the three components rated, climate is the dryland agriculture factor least easily changed by management.

The most recent published data for the CLI, the 1:50,000 study, also identified one area for the subject property. This study delineated a simple unit for the NE1/427-21-1W5. The LLK 1/c soil-landscape delineation has been given a CLI classification of Class 2C. This classification denotes an area rated Class 2 due to moisture deficiency and/or heat deficiency (C).

Using the CLI manual, a site specific CLI classification was done for the subject property and is presented in Figure 4. This site specific evaluation presents more closely defined boundaries than the two previous studies mentioned and allows for improved characterization of the property's soil and landscape qualities.

Of the three major arability components (soils, climate and landscape) under the CLI rating system, only the landscape component was found to be limiting on the subject property. Three landscape limitations were identified. The subclass limitations due to unfavourable landscape characteristics recognized on the subject property were adverse topography (T), erosion damage (E) and excessive wetness (W).

The adverse topography subclass applies to areas where topography is considered a limitation to agricultural use. Assessment of this limitation includes evaluation of the hazards imparted to cultivation by the degree of slope as well as those due to irregularity of field patterns and lack of soil uniformity as a result of complex landform patterns. The degree or intensity of limitation increases with the complexity of the landscape pattern. For the subject property the cultivation of the higher landscape positions is hindered by the drainage ways and the depressions which remain wet. These landscape constraints not only impede timely tillage and harvest operations but also add to the cost because of the overlap of field operations and increased input per unit area required.

The erosion damage subclass is applied in evaluating soils where actual damage by erosion has resulted in a limitation to agricultural use. Damage is assessed on both the restriction to the range of crops that can be grown, and the mechanical difficulties presented to farming. Both gully erosion and rill erosion damage has taken place on the subject property. Continuous vegetative cover is required to resist further erosional damage. Cultivation will eliminate the rills but it will not rectify the damage, that is, gradual thinning of the soil profile over an entire slope. Further erosion of the subject property also needs to be resisted to prevent further concentration of the surface stoniness observed and documented.

The excessive wetness subclass limitation applies to soils where excess moisture is a limitation. This excessive moisture may be the result of poor soil drainage, a high water table, seepage or the collection of runoff from surrounding areas. The degree of limitation is dependent on the duration that these soils remain wet, as it affects the timing of cultivation, seeding and harvest. Many of the waterways on the subject property remain wet throughout the year.

For this assessment only the largest of the grassed waterways was mapped separately and assigned an excessive wetness limitation. The remainder of the drainage channels are included as part of the larger unit mapped. The major drainage channels on the subject property are presented on Figure 4. All of the grassed waterways need to be maintained to reduce the speed of water flow over the land surface. Only grasses can provide the strong vegetative cover needed to anchor this soil. Grass cover is also needed to distance the surface from the large coarse fragments that are present in the upper subsoil.

In summary, the CLI classification for the 80 acres of the NE1/4 27-21-1W5 investigated is as follows, with the boundaries as shown on Figure 4. The rating symbol shows class placement and limitation.

10 acres – Site features (storage area, dugouts, road and barn)
5 acres – 6W
65 acres – 4TE

D. CONCLUSION

The soil capability classification system used in this report is built on several assumptions. Three of these assumptions are: that shrubs, trees or stumps are not considered a limitation unless it is not feasible to remove them; that good soil management practices that are feasible and practical under a largely mechanized system of agriculture are used; and, that this system is based on limitations for agriculture and general productive capacity for common field crops.

In conclusion, the November 21, 1998, site specific evaluation using the Canada Land Inventory Soil Capability for Agriculture in Alberta (1977) system of rating places 5 acres of the NE1/4 27-21-1W5 investigated into Class 6W and 65 acres into Class 4TE. The remaining 10 acres (storage area, dugouts, road and barn) were rated non-agricultural for the purposes of this assessment.

Class 6 lands have such severe limitations for arable agriculture that cropping is not feasible, even on an occasional basis. These soils are capable only of producing perennial forage crops and improvement practices are not feasible. Class 4 lands are considered marginal for arable agriculture. They have such severe limitations that they are suited only for a very narrow range of crops and the risk of crop failure is high.

E. CERTIFICATION

I certify that I inspected that portion of NE1/4 27-21-1W5 identified in this report on November 21, 1998. The classification of arability of the subject property was done using the guidelines for one system of classification: The Canada Land Inventory (CLI) Soil Classification for Agriculture, using information from the field inspection and information from the Canadian System of Soil Classification and the Soil Survey of the Calgary Urban Perimeter, as well as the Canada Land Inventory Kananaskis Lakes Map Sheet 82J[1].

The classification of the NE1/4 27-21-1W5 resulting from this inspection is as follows:

10 acres – Site features (storage area, dugouts, road and barn)
5 acres – 6W
65 acres – 4TE

I certify that I have no undisclosed interest, either actual or contemplated, in the property being inspected, nor is the fee contingent on the conclusions reached.

No legal survey was done during the inspection and area estimates in this report are the result of field observation. Information provided by others and used in this report is believed to be accurate, but that cannot be guaranteed.

This report has been prepared under the Code of Ethics of the Alberta Institute of Agrologists.

MATRIX SOLUTIONS INC.

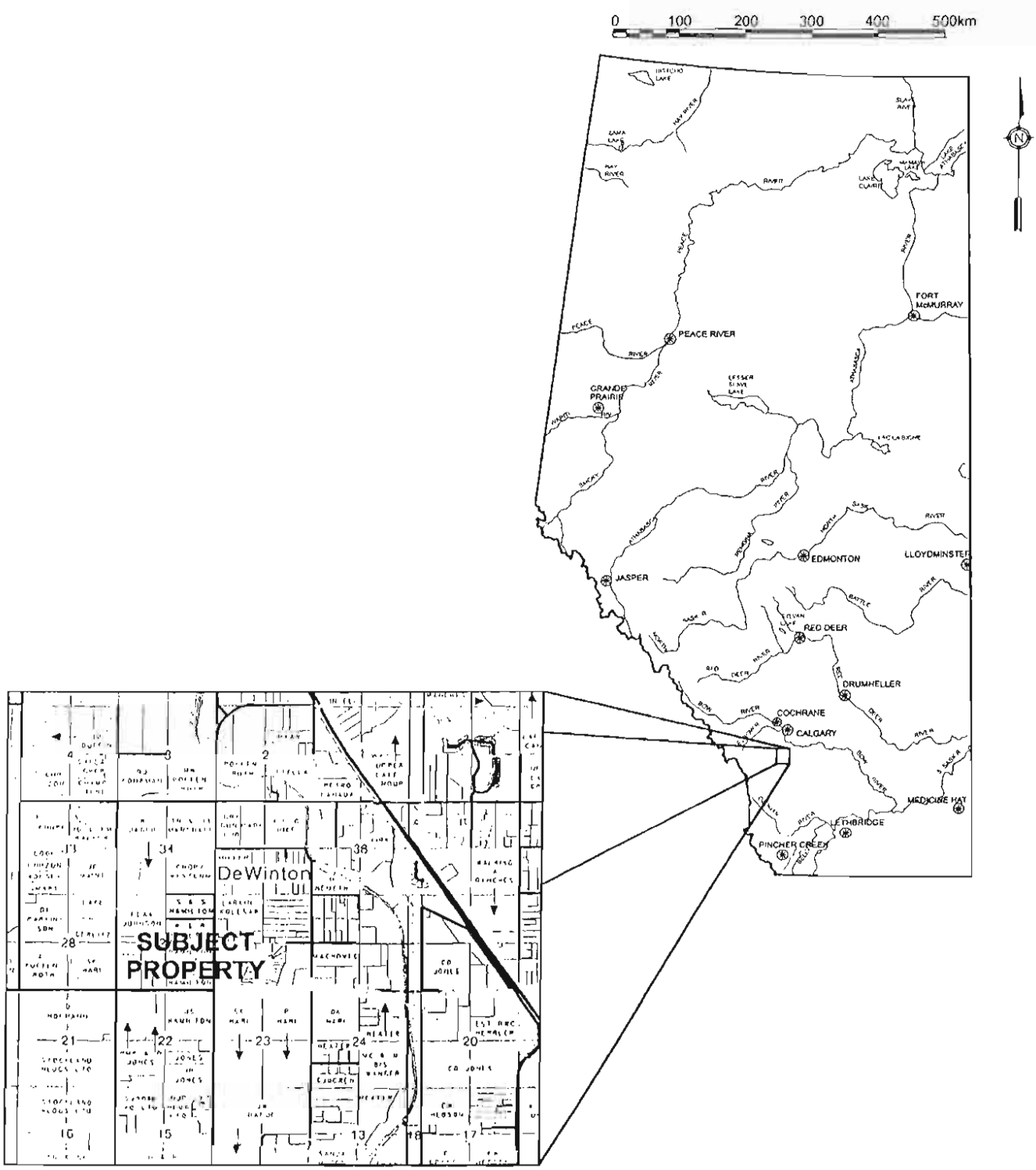
ALBERTA INSTITUTE OF AGROLOGISTS
BLAIR NICHOLSON, P.Ag.
1914
MEMBER

Blair Nicholson

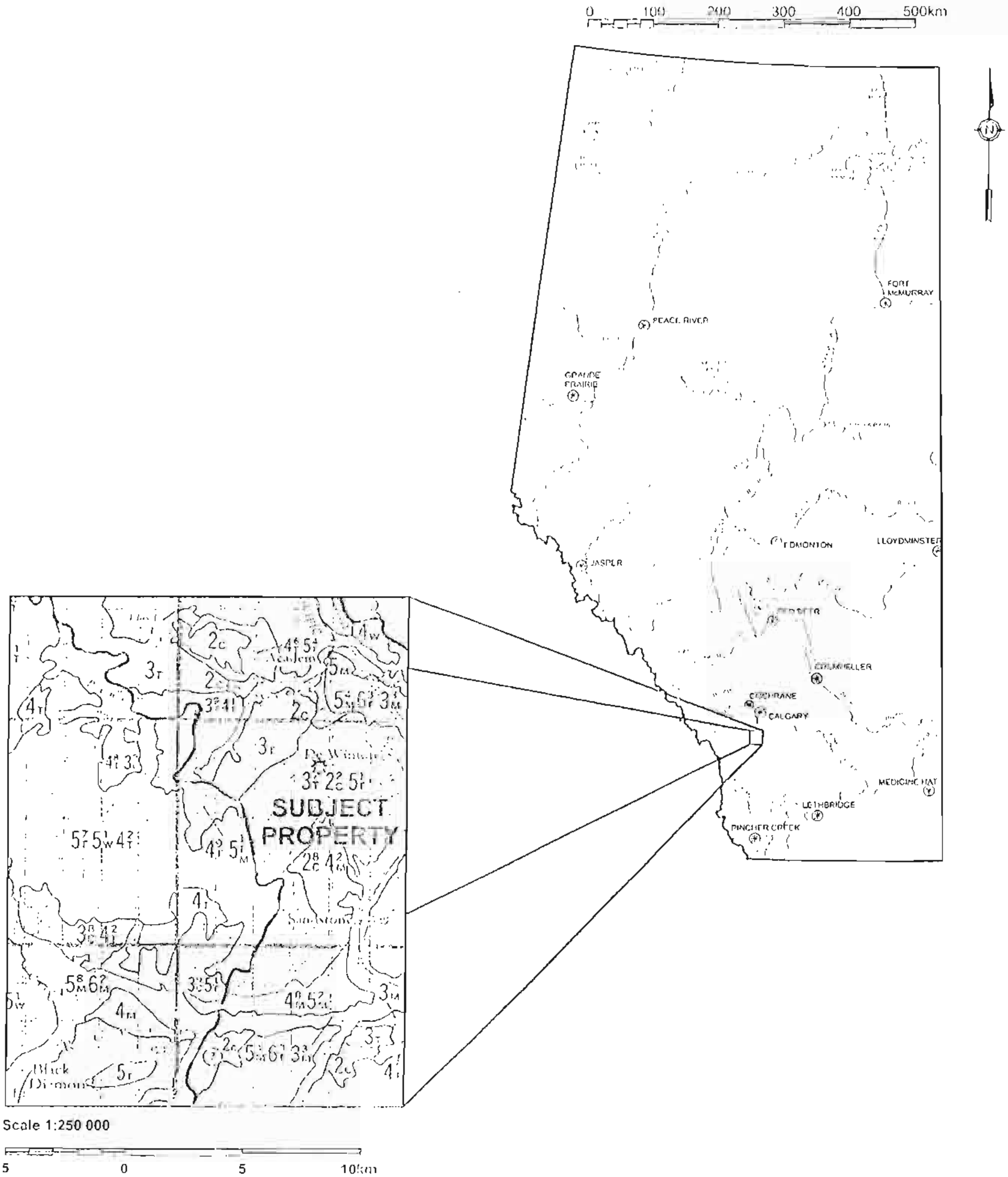
December, 1998

Blair Nicholson, P.Ag.

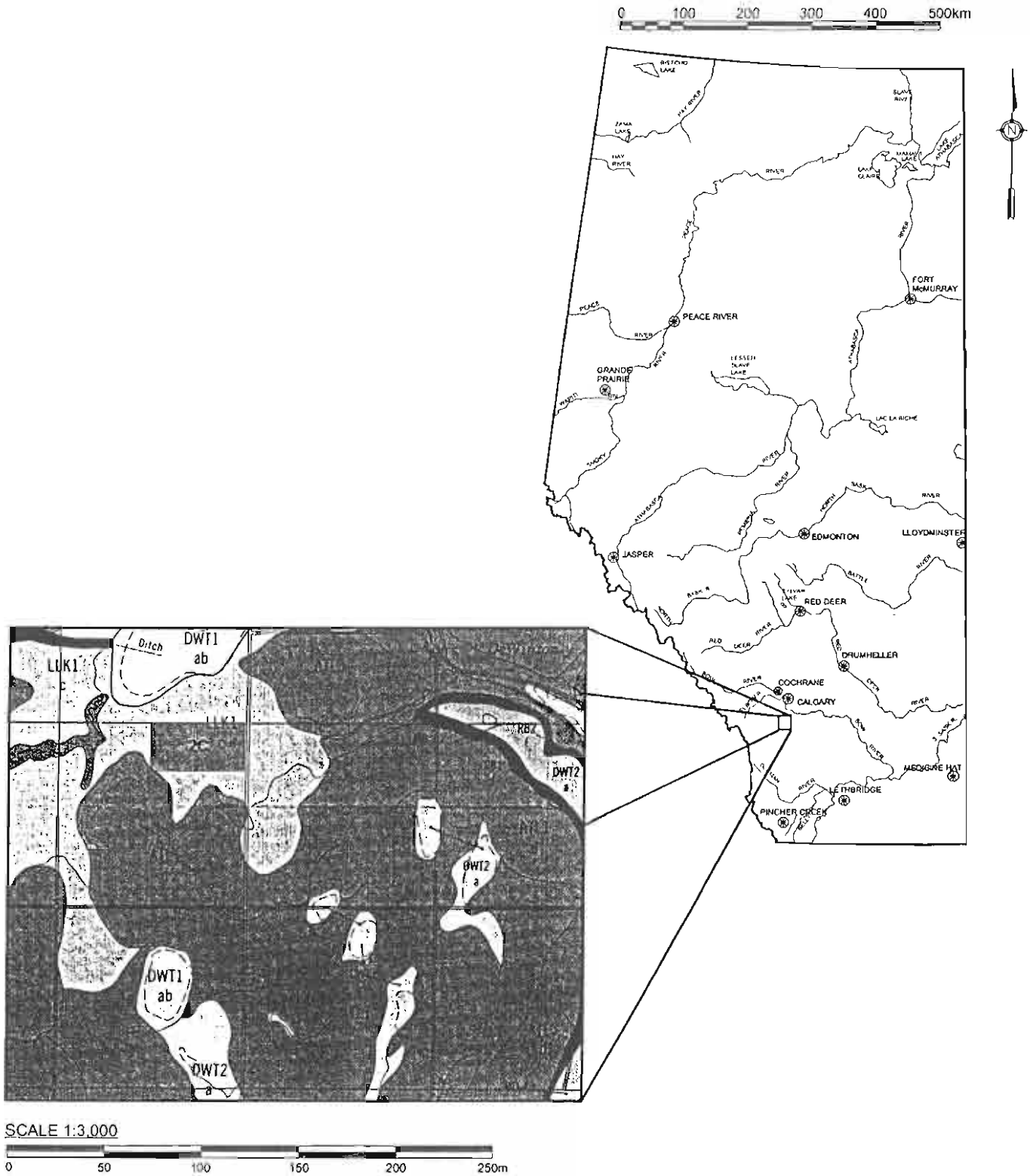
[1] Agriculture Canada Soil Research Institute. 1971. Canada Land Inventory Soil Capability for Agriculture, Kananaskis Lakes Map Sheet Area, 82J. Ottawa, Ontario.



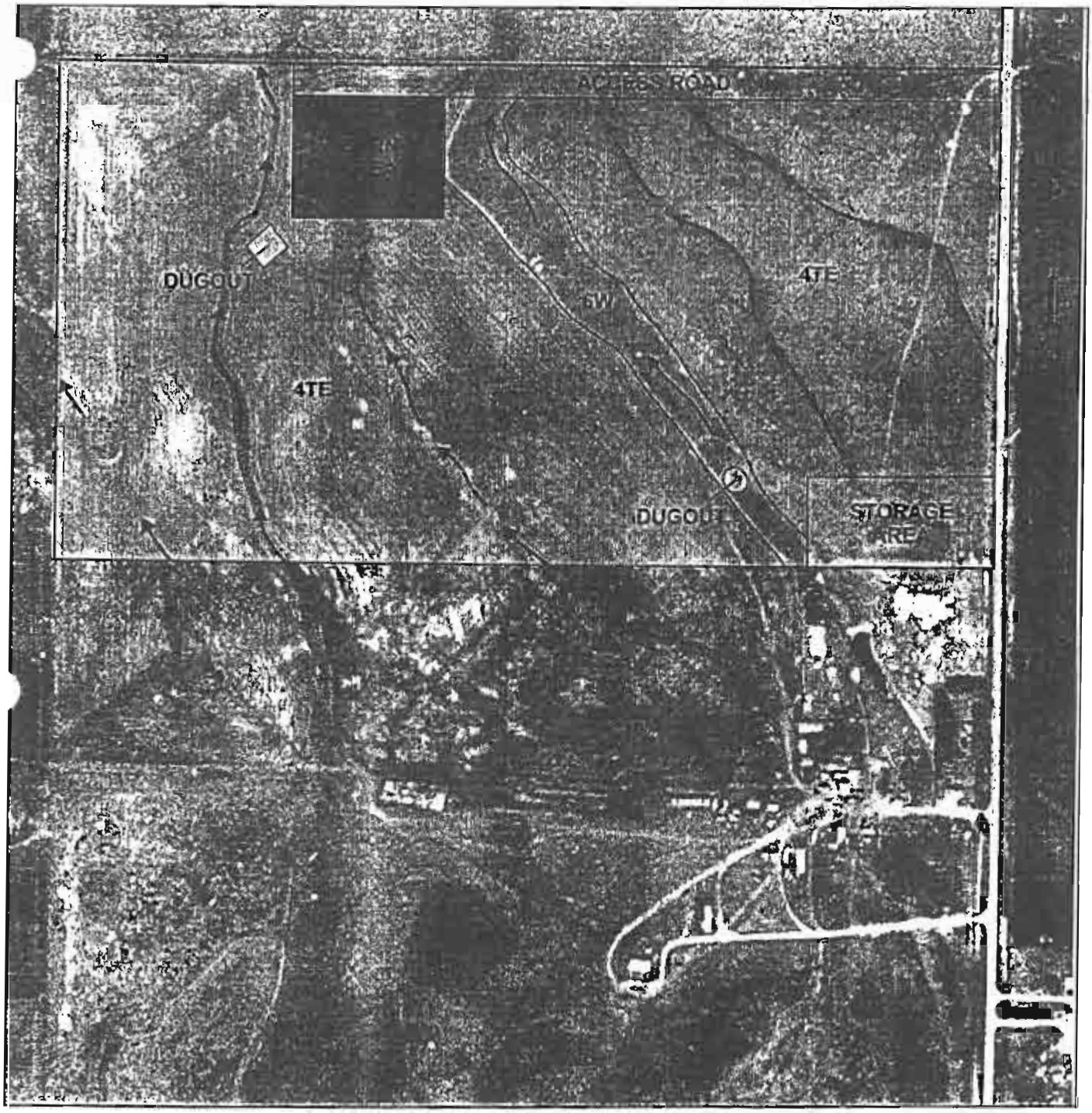
Matrix Solutions Inc.	JOB 1642-402	BY BN	LOCATION OF THE SUBJECT PROPERTY (NE¼ 27-21-1W5)	FIGURE 1
	DATE 12/04/98	DRWN LMA		
	FILE 1642Loc.cdr	CHKD		



JOB	1642-402	BY	BN	MAP SHOWING THE PUBLISHED CLI CLASSIFICATION FOR THE SUBJECT PROPERTY (NE¼ 27-21-1W5)	FIGURE 2
DATE	12/04/98	DRWN	LMA		
FILE	1642-2.cdr	CHKD			



Matrix Solutions Inc.	JOB 1642-402	BY BN	EXCERPT FROM THE CALGARY URBAN PERIMETER SOIL SURVEY SHOWING THE SOIL CLASSIFICATIONS AND CLI INTERPRETATIONS FOR THE SUBJECT PROPERTY (NE¼ 27-21-1W5)	FIGURE 3
	DATE 12/04/98	DRWN LMA		
	FILE 1642-3.cdr	CHKD		



SCALE 1:5,000

0 100 200m

MAJOR DRAINAGE CHANNELS

FACILITY TITLE
00-00-00 W0M

Matrix Solutions Inc.	JOB	1642-508	BY	BN	SITE SPECIFIC CLI RATING OF THE SUBJECT PROPERTY NORTH HALF OF THE (NE¼ 27-21-1W5) AS OF NOVEMBER 21, 1998
	DATE	11/25/98	DRWN	LMA	
	FILE	1642Aerial.cdr	CHKD		

FIGURE 4

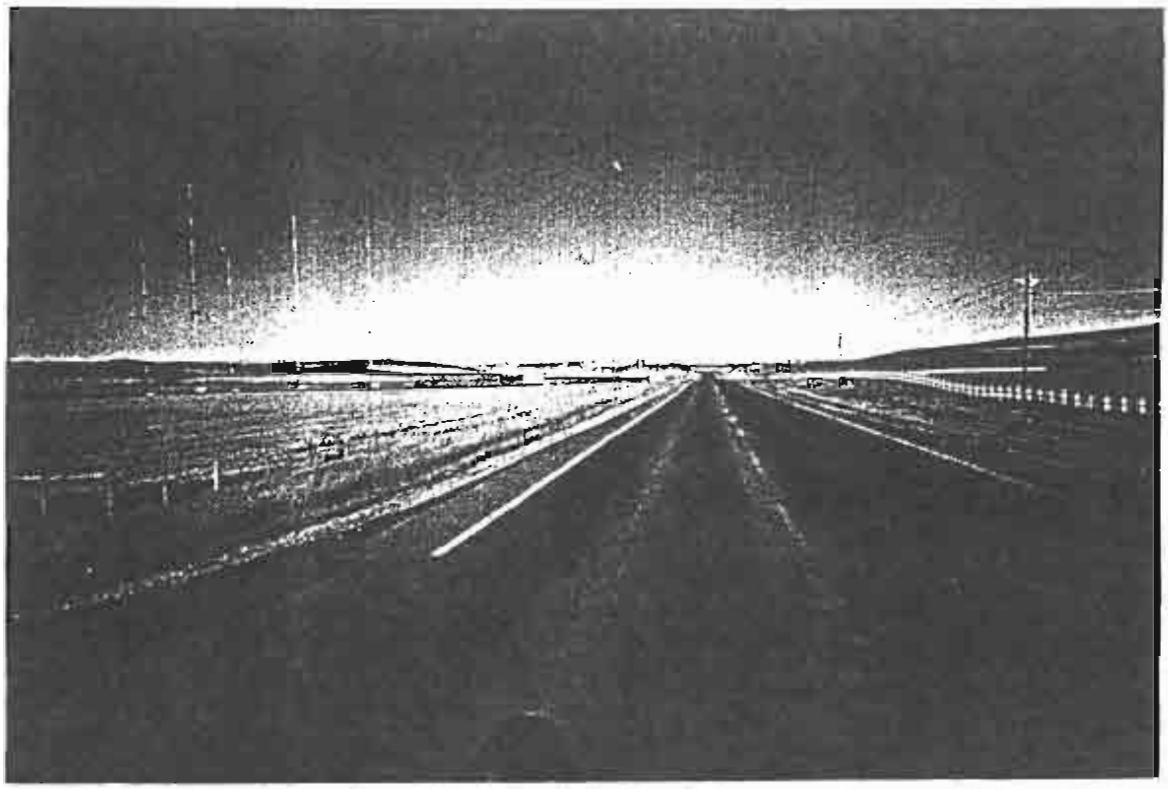


Photo 1. Photo taken on November 21, 1998, of 32 Street W, a paved road, which borders the east side of the subject property (NE1/4 27-21-1W5).

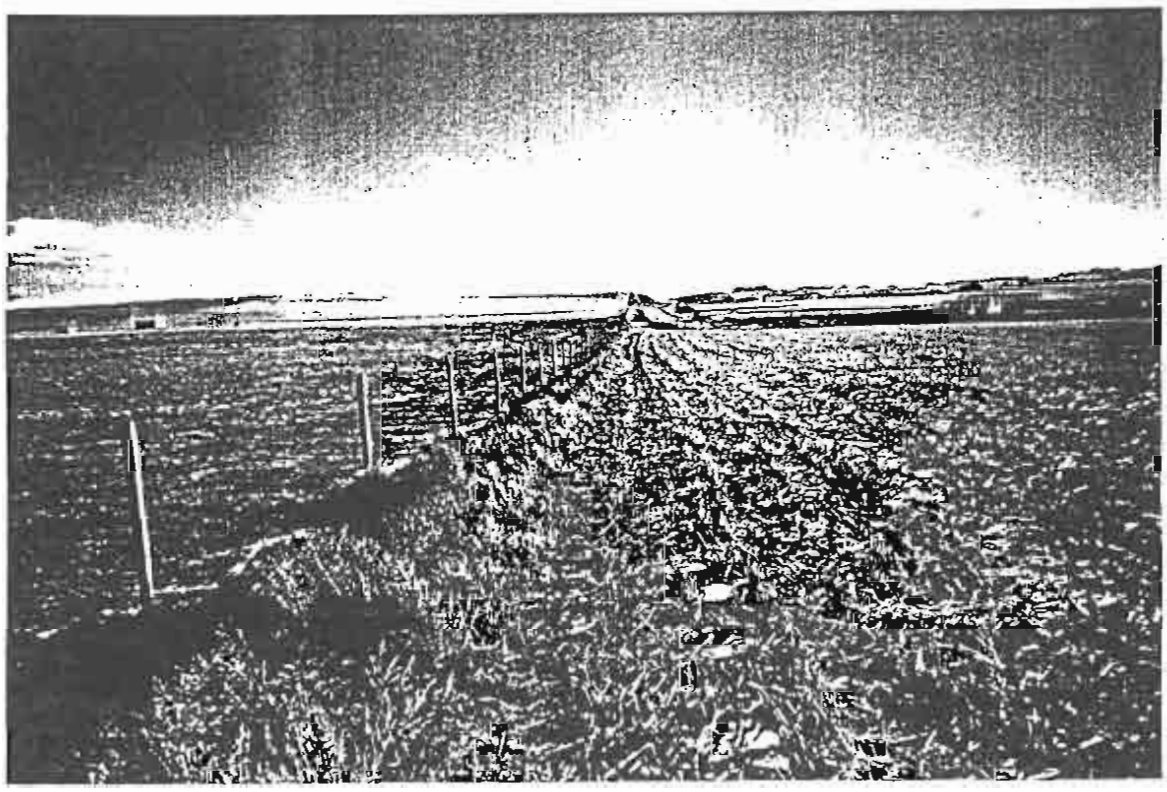


Photo 2. Photo taken on November 21, 1998, of the fenceline which marks the north boundary on the subject property (NE1/4 27-21-1W5).

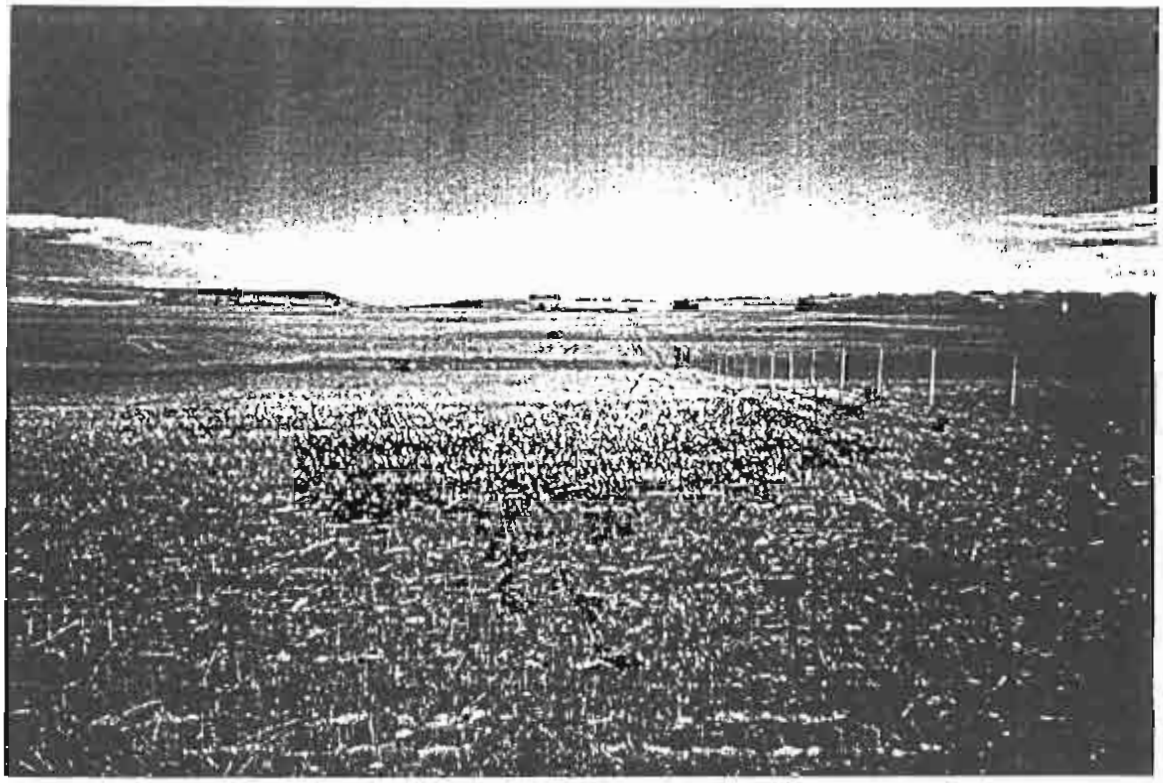


Photo 3. Photo taken on November 21, 1998, of the fenceline which marks the south boundary on the subject property (NE1/4 27-21-1W5).

Photo 4. Photo taken on November 21, 1998, depicting the stubble cover on the subject property (NE1/4 27-21-1W5).

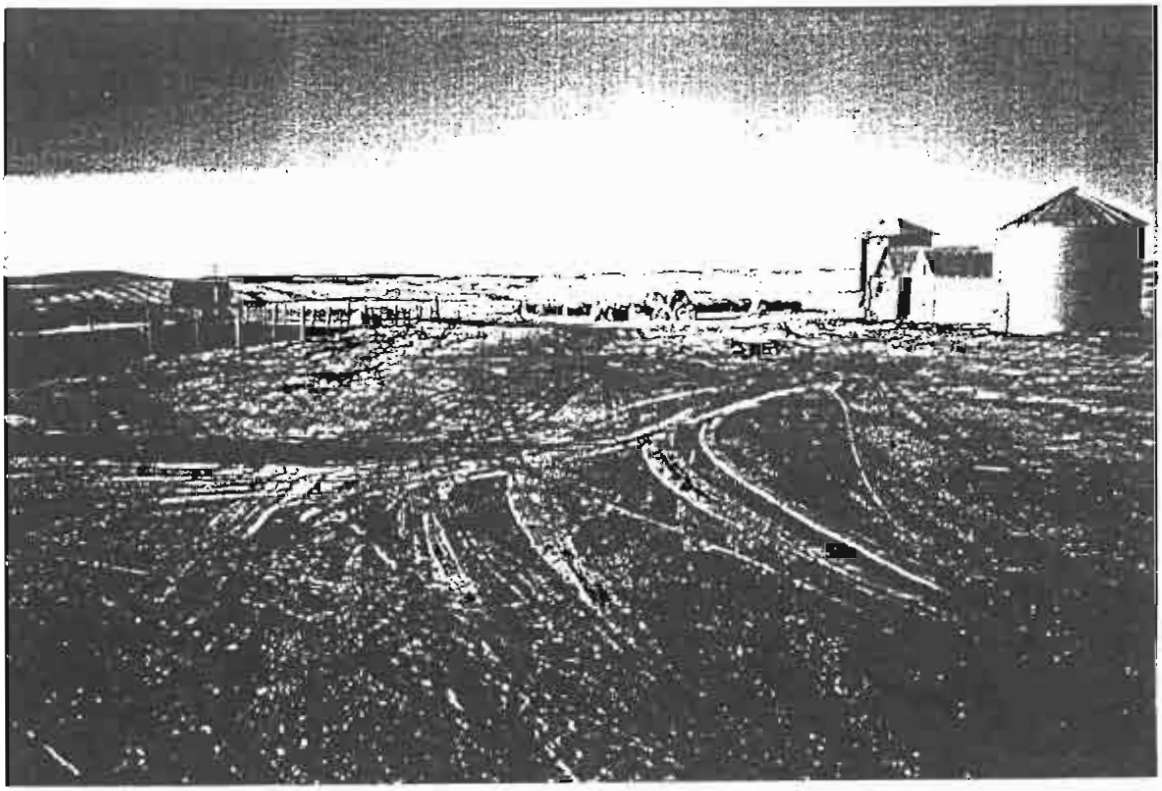


Photo 5. Photo taken on November 21, 1998, depicting the storage area on the subject property (NE1/4 27-21-1W5).

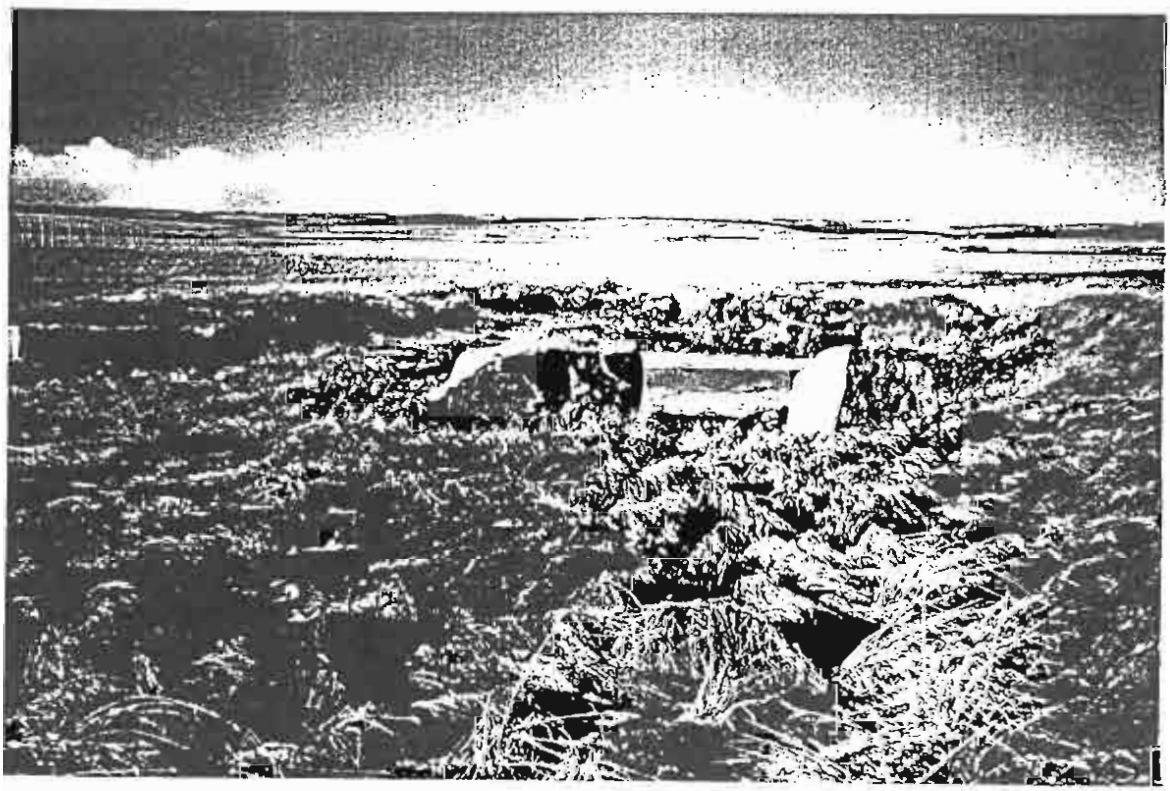


Photo 6. Photo taken on November 21, 1998, of one of the dugouts located on the subject property (NE1/4 27-21-1W5).

Photo 7. Photo taken on November 21, 1998, of the dugout recently constructed on the subject property (NE1/4 27-21-1W5).

Photo 8. Photo taken on November 21, 1998, of the access road to the subject property (NE1/4 27-21-1W5).

Photo 9. Photo taken on November 21, 1998, of the barn being built on the subject property (NE1/4 27-21-1W5).

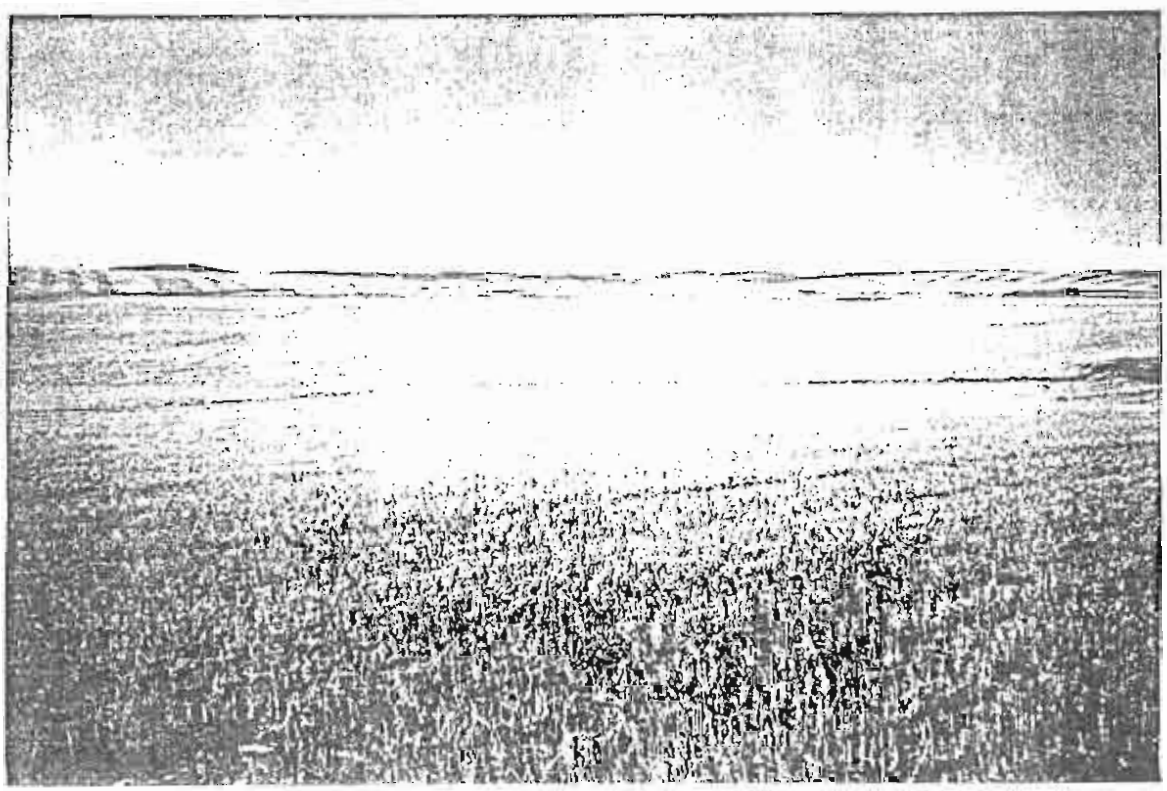


Photo 10. Photo taken on November 21, 1998, of the wave-like undulations produced by the ridge and swale topography across the subject property (NE1/4 27-21-1W5).

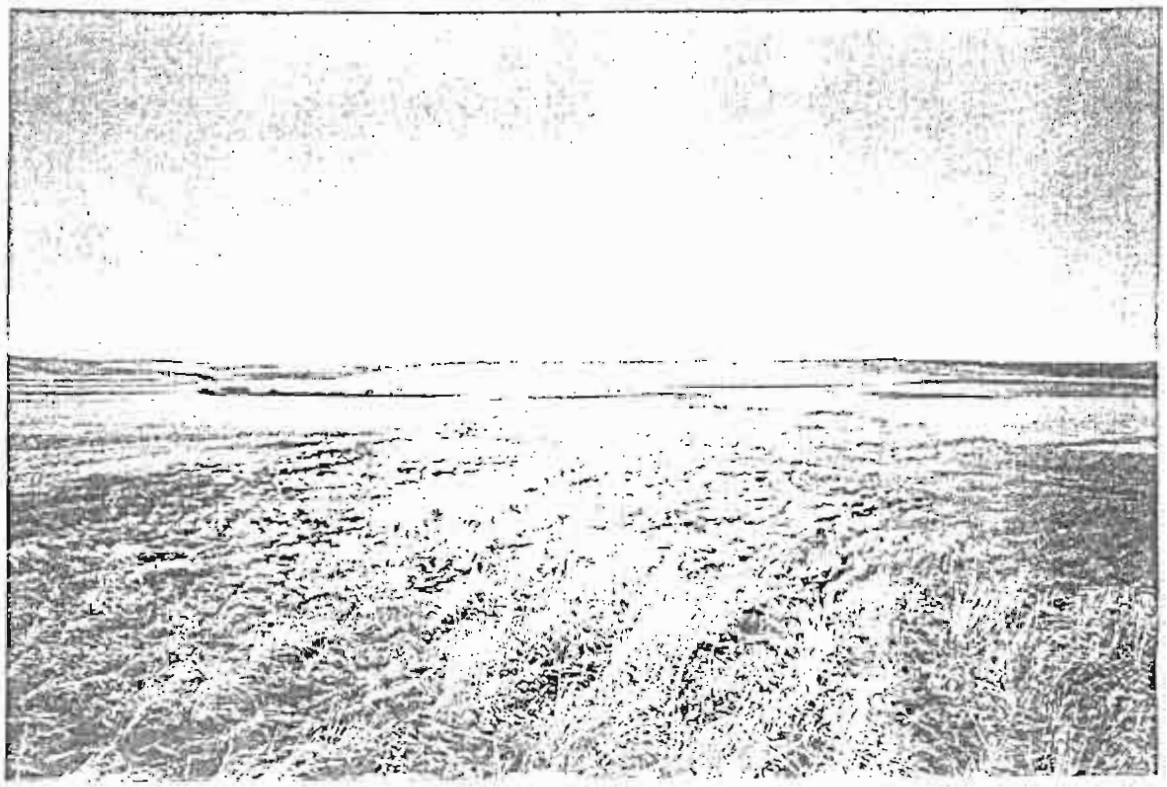


Photo 11. Photo taken on November 21, 1998, of one of the grassed waterways on the subject property (NE1/4 27-21-1W5).

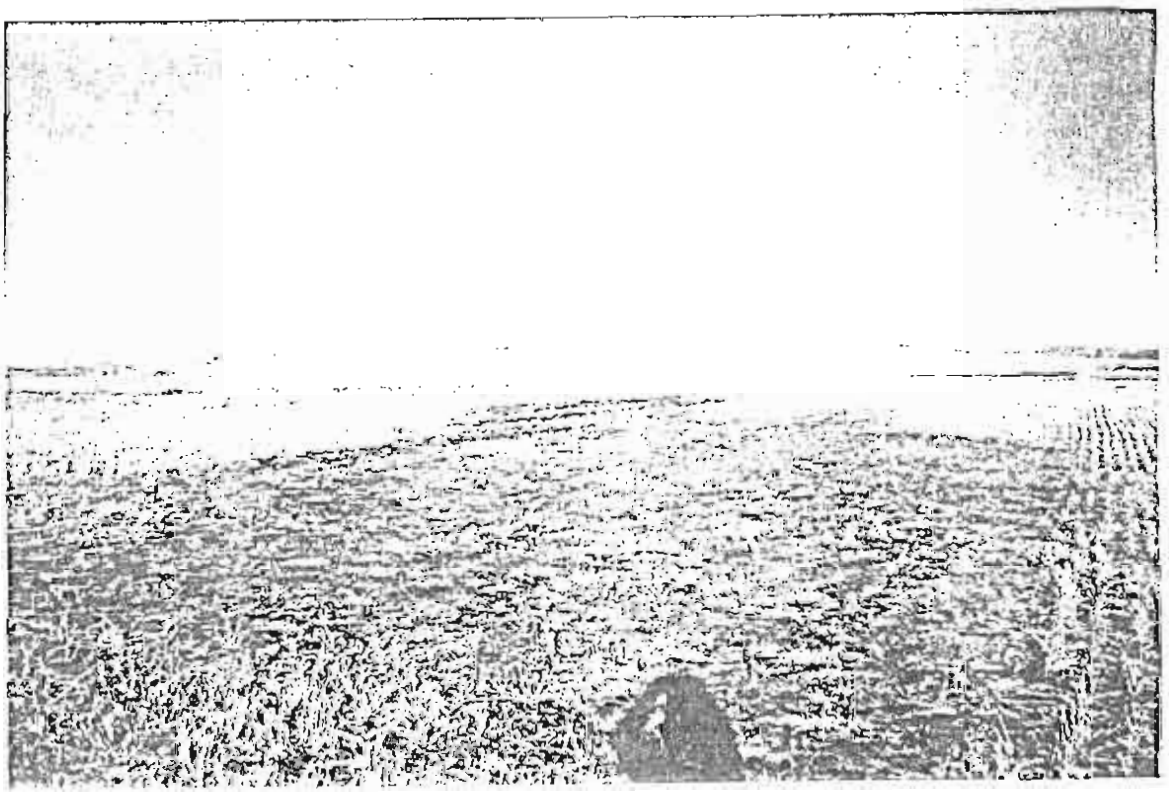


Photo 12. Photo taken on November 21, 1998, of one of the farmed low areas that was flooded out this past crop year on the subject property (NE1/4 27-21-1W5).

Photo 13. Photo taken on November 21, 1998, of one of the grassed depressions on the subject property (NE1/4 27-21-1W5).

Photo 14. Photo taken on November 21, 1998, of rill erosion on the subject property (NE1/4 27-21-1W5).

Photo 15. Photo taken on November 21, 1998, of coarse fragments on the surface of the subject property (NE1/4 27-21-1W5).

Photo 16. Photo taken on November 21, 1998, depicting a stone size coarse fragment on the surface of the subject property (NE1/4 27-21-1W5).

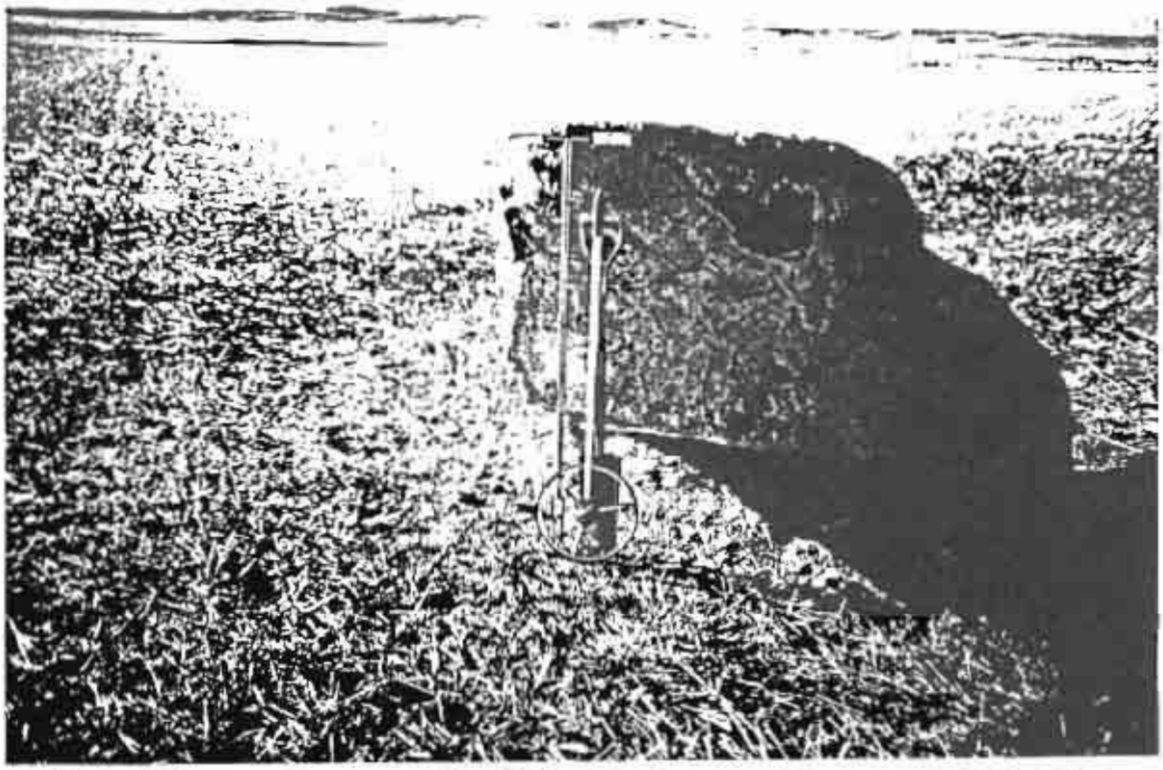


Photo 17. Photo taken on November 21, 1998, of a large boulder unearthed from the subsurface on the subject property (NE1/4 27-21-1W5).

Photo 18. Photo taken on November 21, 1998, of coarse fragments picked from the surface of the subject property (NE1/4 27-21-1W5).

APPENDIX

3

TRAFFIC SURVEY

ALBERTA HIGHWAYS 1 TO 986
TRAFFIC VOLUME HISTORY 1993 - 2002

Alberta Transportation
Program Management Branch
Highway Asset Management Section

Produced: 14-Feb-2003 By CornerStone Solutions Inc.

Hwy	CS	TCS	Muni	From	1993 AADT	1994 AADT	1995 AADT	1996 AADT	1997 AADT	1998 AADT	1999 AADT	2000 AADT	2001 AADT	2002 AADT	2002 ASDT
550	2	12	Newl	W OF 873 E OF DUCHESS					1920	1920	1980	2070	1890	1890	2140
552	1	4	Fthl	N OF 549 NW OF OKOTOKS	780				1060	1140	1080	1080	1160	1160	1300
552	1	4	Fthl	S OF 274 AVE W, FOOTHILLS 22-21-1-500000000	700				1100	1110	1690	1590	1650	1650	1850
552	1	4	Fthl	N OF 274 AVE W, FOOTHILLS 22-21-1-500000000					1280	1290	1730	1600	1660	1660	1860
552	1	4	Fthl	W OF 2 S OF CALGARY NJ						1670	1810	1540	1600	1640	1830
552	2	8	Fthl	E OF 2 N OF OKOTOKS	1180		1440	1470	1700	1980	2190	2160	2170	2220	2510
552	2	8	Fthl	W OF 128 ST E, FOOTHILLS 16-21-28-400001450						310	330	360	360	360	410
552	2	8	Fthl	E OF 128 ST E, FOOTHILLS 16-21-28-400001450						160	170	180	290	290	330
552	2	8	Fthl	W OF 797 NE OF GLADYS	110				150	150	140	140	240	240	270
552	2	12	Fthl	E OF 797 NE OF GLADYS	120				150	150	120	140	240	240	270
552	2	12	Fthl	W OF 799 NE OF GLADYS	110				150	150	120	140	220	220	250
555	2	4	SA#2	E OF 884 AT JENNER	320				330	290	510	560	560	560	640
555	2	4	SA#2	W OF 886 SW OF BUFFALO	170				180	160	280	180	180	180	210
555	4	4	SA#2	E OF 886 SW OF BUFFALO	170				180	160	280	170	170	170	190
555	4	4	SA#2	3.3 KM W 41 & 555 BINDLOSS	180				170	140	150	140	140	140	160
555	4	4	SA#2	W OF 41 SE OF BINDLOSS	170		170	150	160	170	170	160	140	140	160
556	2	4	Newl	E OF 862 SE OF GEM	180				190	110	120	140	150	150	170
556	2	4	Newl	W OF 36 SE OF GEM	180		160	170	190	190	200	290	310	290	330
560	2	4	Rkyv	W OF 791 E OF CALGARY	2930					4370	4750	4990	4460	4460	4950
560	2	8	Rkyv	E OF 791 E OF CALGARY	2110					3720	4040	4260	3620	3620	4020
560	2	8	Rkyv	W OF 797 N OF LANGDON	2100				2800	3030	3460	3640	3640	3640	4040
561	2	4	WhtL	N OF 1 E OF STRATHMORE	980		980	950	1000	1060	1340	1320	1110	1110	1260
561	2	4	WhtL	W OF 840 S OF STANDARD	830				850	1010	1060	1100	1030	1030	1170
561	2	8	WhtL	E OF 840 S OF STANDARD	520				530	660	690	710	720	720	850
561	2	8	WhtL	W OF 842 W OF HUSSAR	490				500	530	660	690	730	730	860
561	2	12	WhtL	E OF 842 W OF HUSSAR	490				560	590	630	650	690	690	810
561	2	12	WhtL	W OF 56 E OF HUSSAR NJ	570		630	580	600	580	580	640	680	720	850
561	4	4	WhtL	E OF 56 SE OF HUSSAR SJ	200		110	120	120	120	120	160	160	160	190
561	4	4	Newl	W OF 862 NE OF GEM	60				60	60	40	60	60	60	70
561	6	4	SA#2	E OF 36 W OF CESSFORD			190	200	240	240	240	200	200	200	230
561	6	4	SA#2	W OF 876 N OF CESSFORD					270	270	280	110	110	110	130
561	6	8	SA#2	E OF 876 N OF CESSFORD					160	160	160	70	70	70	80
561	6	8	SA#3	W OF 884 E OF CESSFORD					50	50	50	60	60	60	70
562	2	4	Acad	E OF 41 NW OF EMPRESS	60		80	100	100	100	100	80	80	80	90
582	2	4	Acad	W OF 899 S OF ARNESON	70				140	150	150	160	100	100	110
562	2	8	Acad	E OF 899 S OF ARNESON	50				120	120	120	130	110	110	130
563	2	4	Rkyv	S OF 1 W OF CALGARY	1320		1380	1340	1410	1710	2460	2420	2440	2540	3100
563	2	4	Rkyv	N OF LOCAL RD 35-24-3-500001200	1230				1310	1580	2250	1850	1870	1940	2370
563	2	4	Rkyv	E OF LOCAL RD 35-24-3-500001200	480				510	610	890	670	670	690	840
564	4	4	Rkyv	W OF 791 N OF DELACOUR	960				1430	1490	1550	1590	1590	1580	1810
564	4	8	Rkyv	E OF 791 N OF DELACOUR	880				1340	1410	1430	1480	1480	1470	1690

APPENDIX 4

HYDROLOGIST'S REPORT

#03-21

Groundwater Supply Evaluation
Brown/Nielsen Lot 6 well: NE-27-21-01-W5M

Submitted to:

D.A. Badke Enterprises Ltd. and
Steve Brown and Shelly Nielsen

Prepared by:

Groundwater Exploration & Research Ltd.
April 2003

Groundwater
Exploration & Research

Groundwater Exploration & Research LTD

Box 15
Balzac, AB. CANADA T0M 0E0
Phone (403) 226-0330: Fax (403) 226-6593: Email: nowakb@telus.net

April 11, 2003
File No: 03-21

D.A. Badke Enterprises Ltd.
160 Park Estates Place, SE
Calgary, AB
T2J 3W5

Attention: Mr. Doug Badke

RE: Proposed subdivision of the Brown/Nielsen property at NE-27-21-01-W5M: Municipal District of Foothills

Enclosed find our letter report which summarizes well completion details; includes a table of pump test data; a graph of the drawdown and recovery data from a field test conducted on the well; and makes a recommendation with respect to the calculated Q_{20} for a well at the above captioned location.

1.0 Background Information

The subject property is located west of the Hamlet of DeWinton and on the west side of Secondary Road SR552. The parent parcel is a +/-32.38 hectare [80 acre] parcel from which six +/-1.27 hectare [3.15 acre] parcels and a +/-0.85 hectare [2.1 acre] Municipal Reserve will be created leaving a residual +/-21.64 hectare [53.47 acre] parcel. A well test was conducted on a new well drilled on Lot 6, a +/-1.27 hectare [3.15 acre] parcel.

2.0 Well Completion Details

Total Depth:		33.54 meters
Non-Pumping Water Level:		19.82 meters below top of casing
Surface Casing:		168 mm set to 11.28 meters
Liner:		127 mm PVC set from 9.15 to 33.54 meters; perforated from 27.44 to 33.54 meters
Drilling Contractor:		Aaron Drilling Inc.
Pump Test Contractor:		D.A. Badke Enterprises Ltd.
Date Drilled:		March 4, 2003
Lithology:	0.00 - 0.30	topsoil
	0.30 - 7.01	till
	7.01 - 9.15	sandstone
	9.15 - 13.72	grey shale
	13.72 - 29.27	grey sandstone
	29.27 - 32.62	grey water bearing sandstone
	32.62 - 33.54	grey shale

3.0 Well Test Results

The new well was flow tested by D.A. Badke Enterprises Ltd. on March 18 - 19, 2003. The well was pumped at a rate of 60.22 m^3/day [9.2 Cgpm] for 720 minutes followed by 8 minutes of recovery. Water level measurements were recorded automatically using a pressure transducer supplied and installed by D.A. Badke Enterprises Ltd.

The maximum drawdown was observed to be 0.85 meters during the 720 minute test at a pumping rate of 60.22 m^3/day [9.2 Cgpm]. After 8 minutes of termination of pumping, the water level in the well had recovered 100 percent.

The maximum available drawdown, measured from the non-pumping water level of 19.82 meters, and the top of the water bearing sandstone at 29.27 meters is 9.45 meters.

Transmissive capacity has been determined graphically using the Cooper and Jacob semilog plot method, with transmissive capacity based usually on the final limb of the curve according to:

$$T = 2.3Q/4*pi*delta\ s$$

where: T = transmissive capacity, in m^2/day
Q = pump rate, in m^3/day
s = drawdown over one log cycle

and by the non-graphical Sheahan Z(u) and Sen SM methods.

Transmissive capacity, determined from the above methods is summarized as follows:

Stage	Delta s	Transmissivity
drawdown	0.068	162.17
residual drawdown	0.068	162.17
Sheahan Z(u)		191.56
Sen SM	not usable	

Based on the above methods of analysis, the geometric mean transmissive capacity is 171.4 m^2/day. It should be noted that the calculated transmissive capacity value is time dependent, flow rate dependent [particularly for fractured or stratified heterogeneous media] and reflects the response of an aquifer for the particular time of the year during which the test was conducted. Transmissive capacity is not a constant everywhere in an aquifer and is generally characterized by a log-normal distribution.

The 20 year, long term safe yield index (Q_{20}), neglecting well loss, is determined from the equation:

$$\mathbf{Q_{20} = 0.683TH}$$

where: Q20 = 20 year, long term safe yield, in m^3/day

T = effective transmissive capacity, in m^2/day

H = available drawdown, in meters

The calculation of the 20 year safe yield index for an aquifer, assuming isotropic, homogeneous conditions is derived by extrapolating a downward trend so that the available drawdown lasts for 20 years. This approach neglects the effects of recharge, and is, therefore, a conservative approach.

It is common practice to adjust the Q_{20} by a safety factor to account for unknown boundary conditions due to test duration, well deterioration, well inefficiency, seasonal variability in non-pumping water level and errors associated with assuming isotropic, homogeneous aquifer conditions.

Based on a factor of safety of 1.5 the calculated Q_{20} is 737.52 m^3/day (112.7 Cgpm). When the calculated Q_{20} exceeds the pump test rate, it is common practice to consider the Q_{20} rate equal to the pump test rate, in this case 60.22 m^3/day [9.2 Cgpm].

In accordance with the Water Act, every household user is entitled to divert up to a maximum of 1250 cubic meters per year or 3.42 m^3/day. Based on well test data, the production well is capable of providing the allotted 1250 m^3/year.

The well test indicates an aquifer flow potential of at least 60.22 m^3/day which is capable of supporting up to 17 lots. The subdivision proposal is for 6 lots.

A review of water well data was also undertaken for the NE-27 quarter section and the surrounding 8 quarter sections. Based on 41 well records, there is a potential cumulative production of 236.3 m^3/day per quarter section. There are currently 4 existing parcels in the NE-27 quarter section with the intent to create 7 additional parcels including the Municipal Reserve parcel. The total water requirement for the 11 existing and proposed lots is 37.6 m^3/day [11 lots x 3.42 m^3/day per lot]. The cumulative groundwater potential exceeds the requirements to support the 11 lots in the quarter section.

4.0 Licenced Users

A review of existing Alberta Environmental Protection groundwater licences indicates no licenced users within an 800 meter radius of the new production well. Operation of the domestic well will not, therefore, interfere with any licenced user existing at the time of subdivision application.

5.0 Well Interference

Country residential subdivision is subject to the following sections of the Water Act and the Water Regulation:

Section 23(3) of the Water Act states:

If after this Act comes into force, a subdivision of land of a type or class of subdivision specified in the regulations is approved under the Municipal Government Act, a person residing within that subdivision on a parcel of land that adjoins or is above a source of water described in section 21 has the right to commence and continue the diversion of water under section 21 only if

(a) a report certified by a professional engineer, professional geologist, or professional geophysicist, as defined in the Engineering, Geological and Geophysical Professions Act, was submitted to the subdivision authority as part of the application for the subdivision under the Municipal Government Act, and the report states that the diversion of 1250 cubic meters of water per year for household purposes under section 21 for each of the households within the subdivision will not interfere with any household users, licensees, or traditional agriculture users who exist when subdivision is approved, and

(b) the diversion of water for each household within the subdivision under section 21 is not inconsistent with an applicable approved water management plan

Section 23(3) of the Water Act requires that an APEGGA member sign-off on whether or not a newly created subdivision lot well would interfere with any household users, licensees or traditional agricultural users existing at the time of subdivision application. Unfortunately, this section of 23(3) has an inherent weakness because well interference for domestic wells is not a relevant issue. In general, planners are more concerned with the cumulative effect of country residential subdivision on the availability of groundwater supplies.

Well interference calculations do not address this issue. While well interference is not a significant issue, long term aquifer depletion could be.

On a weighing of plausibility, well interference is not deemed to be a relevant issue for the following reasons:

[1] Well interference can be thought of as an artificial boundary condition resulting from the overlapping of cones of depression created by wells pumping on a continuous basis [Driscoll (1986) Groundwater And Wells, page 242-243].

[2] Household wells do not operate on a continuous basis, and as a result a cone of depression is not developed. Household wells operate on a cyclic basis, with very short periods of pumping followed by longer periods of recovery. In essence, only the water held in storage in the well is pumped to the pressure tank system and then the pump shuts down. A cone of depression is not generated under such a pumping condition.

[3] Transmissive capacity values are not constant within a given aquifer; and in fact are log-normally distributed. Well interference assumes a constant transmissive capacity between wells in order that the calculation have any realistic meaning. Bibby [1979: Estimating sustainable yield to a well in heterogeneous strata; Alberta Research Council, Bulletin 37] has indicated that in Alberta there exists no practical methods for determining the spatial variations of transmissivity of heterogeneous aquifers.

[4] The well interference concept assumes no recharge over a 20 year period and is, therefore, conservative.

[5] The actual water consumption for household purposes, based on historical use, is less than 50% of the volume of 1250 m^3/year allocated under the Water Act.

[6] Groundwater is a common reservoir on which anyone may draw. In accordance with Section 27 of the Water Act no one using groundwater under Section 21 has any priority over any other Section 21 user.

[7] Because of the complexity of natural heterogeneous groundwater flow systems, any cause and effect with regard to well interference, can not be brought together with any reasonable degree of certainty.

One approach to determining if increased country residential development has impacted the regional non-pumping water level is to review water well records on a decade basis. Historical, geometric mean, non-pumping water level [Npwl] data has been summarized for the NE-27 quarter section and the surrounding 8 quarter sections. The data are tabulated as follows:

Decade	No of Well Records	Npwl (m)	gm Well Depth (m)
1960s	5	11.1	25.2
1970s	9	22.5	51.5
1980s	8	28.5	65.5
1990s	16	21.9	47.6
2000s	1	19.8	33.5

There is no evidence for a substantive decline in regional water level based on existing water well information. The most recent production well has a regional non-pumping water level as high or higher than that observed in the past.

6.0 Groundwater Geochemistry

A groundwater sample was collected from the pump well just before conclusion of the well test and submitted to Midwest Laboratories of Calgary, AB for analysis. The groundwater geochemistry data are appended. The groundwater is very hard [406 mg/L] and of the calcium / sulfate chemical type. The total dissolved solids [531 mg/L] concentration, slightly exceeds Canadian Drinking Water Quality guidelines for aesthetic objectives (Sixth Ed. 1996; Health and Welfare Canada) for human consumption.

A sodium adsorption ratio [SAR] was also determined in that the source water has an effect on the water quality disposed of via septic fields. SAR is determined from the equation:

$$SAR = [Na/((Ca+Mg)/2)^{0.5}]$$

where: Na = sodium concentration in milliequivalents per L (meq/L)
Ca = calcium concentration in meq/L
Mg = magnesium concentration in meq/L

The calculated SAR is 0.63. SAR values greater than 8 are considered to have a potential for adverse impacts by reducing soil hydraulic conductivity. As indicated above, the SAR value is below 8. As a result, there is minimal risk that the operating lifespan of any septic field could be reduced as a result of the potential impact of high SAR on soil hydraulic conductivity.

7.0 Summary of Findings

Based on the results of the flow test and drill log, the following conclusions have been drawn:

[1] The groundwater production well is capable of providing a maximum of 1250 m^3/year in accordance with Section 23(3) of the Water Act for the proposed +/-1.27 hectare [3.15 acre] Lot 6 parcel.

[2] Pumping of the new well, for household purposes, will not interfere with any household users, licensees or traditional agricultural users who exist at the time of subdivision application.

[3] Historical non-pumping water levels do not yield a concern for any significant decline in regional water level.

8.0 Closure

If you have any questions or comments regarding the conclusions drawn in this groundwater supply evaluation, contact the undersigned at your convenience.

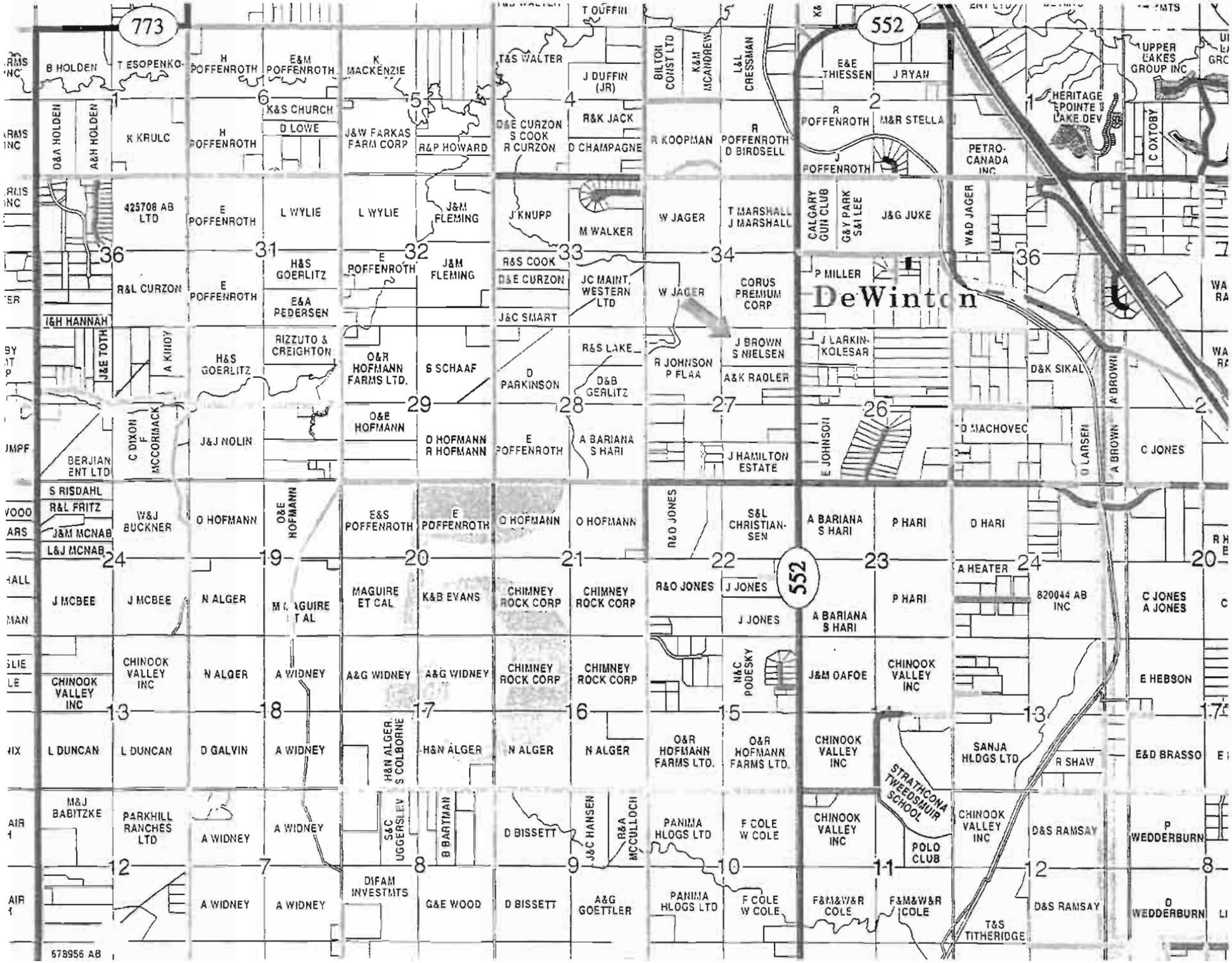
Respectfully yours,
Groundwater Exploration & Research Ltd.

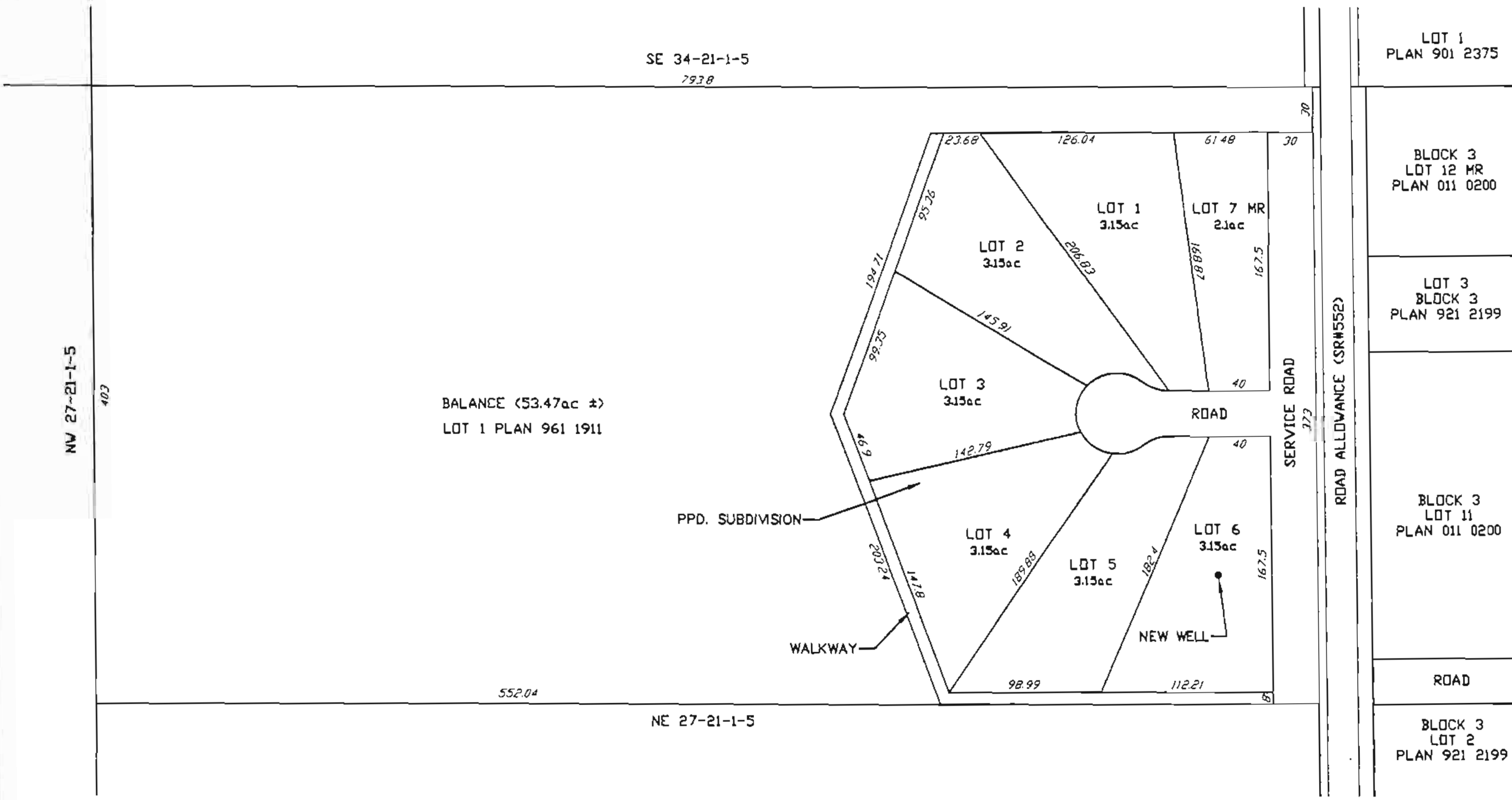
Bob Nowak

Bob Nowak: Ph.D., P.Geol.
Groundwater Geologist

PERMIT TO PRACTICE
Groundwater Exploration & Research Ltd.
Signature B. Nowak
Date Apr 11/03
PERMIT NUMBER: P 3471
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Appendix


773
552
DeWinton
B HOLDEN
T ESOPENKO
H POFFENROTH
E&M POFFENROTH
K MACKENZIE
T&S WALTER
T DUFFIN
J DUFFIN (JR)
BILTON CONST LTD
K&M MCANDREW
L&L CRESSMAN
E&E THIESSEN
J RYAN
UPPER LAKES GROUP INC
HERITAGE POINTE LAKE DEV
O&A HOLDEN
A&H HOLDEN
K KRULC
K&S CHURCH
D LOWE
J&W FARKAS FARM CORP
R&P HOWARD
D&E CURZON
S COOK
R CURZON
R&K JACK
D CHAMPAGNE
R KOOPMAN
R POFFENROTH
D BIRDSELL
R POFFENROTH
M&R STELLA
J POFFENROTH
PETRO-CANADA INC
C OXTOBY
425708 AB LTD
E POFFENROTH
L WYLIE
J&M FLEMING
J KNUPP
M WALKER
W JAGER
T MARSHALL
J MARSHALL
CALGARY GUN CLUB
G&Y PARK
S&I LEE
J&G JUKE
W&D JAGER
R&L CURZON
H&S GOERLITZ
E&A PEDERSEN
R&S COOK
D&E CURZON
J&C SMART
JC MAINT. WESTERN LTD
CORUS PREMIUM CORP
P MILLER
I&H HANNAH
J&E TOTH
A KIHOY
RIZZUTO & CREIGHTON
O&R HOFMANN FARMS LTD.
S SCHAAF
R&S LAKE
D PARKINSON
D&B GERLITZ
R JOHNSON
P FLAA
J BROWN
S NIELSEN
A&K RADLER
J LARKIN-KOLESAR
D&K SIKAL
C DIXON
F MCCORMACK
J&J NOLIN
O&E HOFMANN
D HOFMANN
R HOFMANN
E POFFENROTH
A BARIANA
S HARI
J HAMILTON ESTATE
E JOHNSON
D MACHOVEC
D LARSEN
A BROWN
C JONES
BERJIAN ENT LTD
S RISDAHL
R&L FRITZ
J&M MCNAB
L&J MCNAB
W&J BUCKNER
O HOFMANN
E&S POFFENROTH
R&O JONES
S&L CHRISTIAN-SEN
P HARI
D HARI
A HEATER
J MCBEE
N ALGER
MAGUIRE ET AL
K&B EVANS
CHIMNEY ROCK CORP
J JONES
820044 AB INC
C JONES
A JONES
CHINOOK VALLEY INC
A WIDNEY
A&G WIDNEY
N&C PODESKY
J&M OAFOE
E HEBSON
L DUNCAN
D GALVIN
H&N ALGER
S COLBORNE
O&R HOFMANN FARMS LTD.
SANJA HLDGS LTD
R SHAW
E&D BRASSO
M&J BABITZKE
PARKHILL RANCHES LTD
S&C UGGERSLEV
B BARTMAN
D BISSETT
J&C HANSEN
R&A MCCULLOCH
PANIMA HLDGS LTD
F COLE
W COLE
STRATHCONA TWEEDSMUIR SCHOOL
POLO CLUB
D&S RAMSAY
P WEDDERBURN
DIFAM INVESTMTS
G&E WOOD
A&G GOETTLER
F&M&W&R COLE
T&S TITHERIDGE
678956 AB



Municipal District of Foothills No. 31	BROWN / NIELSEN PROPOSED SUBDIVISION - PLAN 'B'	
	IN N 1/2 NE 1/4 27-21-1-5	SKETCH PLAN
	D.A.BADKE ENTERPRISES LTD.	

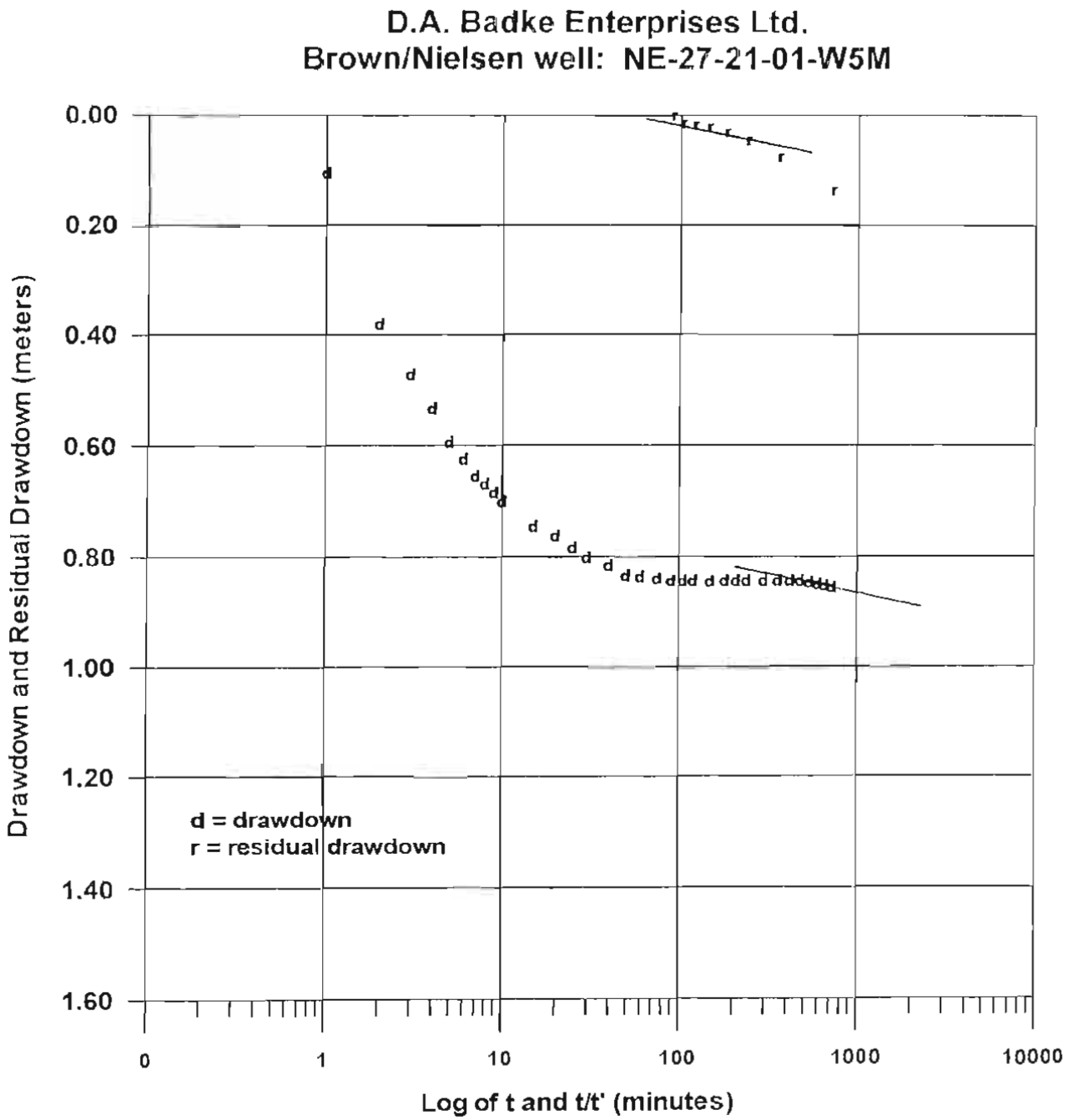
Pump Test Data
NE-27-21-01-W5M

Project: Brown/Nielsen Lot 6 well
Date: March 18 - 19, 2003
Non-Pumping Water Level: 19.82 meters, below top of casing
Pump Test Rate: 60.22 m^3/day (9.2 Cgpm)
Test Duration: 720 + 8 minutes

Elapsed Time t (min)	Drawdown (m)	Elapsed Time t/t' (min)	Residual Drawdown (m)
1	0.10	721	0.13
2	0.38	361	0.07
3	0.47	241	0.04
4	0.53	181	0.02
5	0.59	145	0.02
6	0.62	121	0.01
7	0.65	103.86	0.01
8	0.66	91	+0.01
9	0.68		
10	0.70		
15	0.74		
20	0.76		
25	0.78		
30	0.80		
40	0.81		
50	0.83		
60	0.83		
75	0.84		
90	0.84		
105	0.84		
120	0.84		
150	0.84		
180	0.84		
210	0.84		
240	0.84		
300	0.84		
360	0.84		
420	0.84		

Pump Test Data (continued)
NE-27-21-01-W5M

Elapsed Time t (min)	Drawdown (m)	Elapsed Time t/t' (min)	Residual Drawdown (m)
480	0.84		
540	0.84		
600	0.84		
660	0.85		
720	0.85		


D.A. Badke Enterprises Ltd.
Brown/Nielsen well: NE-27-21-01-W5M
Drawdown and Residual Drawdown (meters)
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
d = drawdown
r = residual drawdown
0
1
10
100
1000
10000
Log of t and t/t' (minutes)

ALBERTA ENVIRONMENTAL PROTECTION

COMPUTER GENERATED WATER WELL DRILLER'S REPORT FORM

WELL I.D. 339176

Page 1 of 1

THIS DATA MAY NOT BE FULLY CHECKED; THE PROVINCE DISCLAIMS ALL RESPONSIBILITY FOR ITS ACCURACY:

CONTRACTOR:

NAME: AARON/INTERPROVINCIAL WATERWELL DRILLING

ADDRESS: Box 28, Site 9, R.R.1
DeWinton, Alberta T0L-0X0

LICENCE NO.: 0892 JOURNEYMAN NO.: VA4996

WELL OWNER:

NAME: BROWN,STEVE#4990

ADDRESS: 168 SUNDOWN WAY SE CALGARY

POSTAL CODE: T2X 2M2

WELL LOCATION: IC#:

¼ OR LSD	SEC	TWP	RGE	W. MER
NE	27	021	01	W5

LOCATION VERIFICATION METHOD: FIELD
LOCATION IN QUARTER:

LOT: BLOCK: PLAN:
WELL ELEV: Feet How obtain: SURVEY-AIR

FORMATION LOG DESCRIPTION:

Depth (Feet):	Lithology:
Ground to:	
1	Topsoil
23	Till
30	Sandstone
45	Gray Shale
96	Gray Sandstone
107	Gray Water Bearing Sandstone
110	Gray Shale

DRILLING METHOD: ROTARY

TYPE OF WORK: NEW WELL

FLOWING WELL: **RATE:**
GAS PRESENT: No OIL PRESENT: No
DATE OF ABANDONMENT:
MATERIAL USED:
PROPOSED USE: DOMESTIC

WELL COMPLETION DATA:

WELL FINISH: CASING/PERFORATED LINER
TOTAL HOLE DEPTH: 110 Feet

CASING TYPE: STEEL
SIZE OD: 6.62 Inch WALL THICKNESS: 0.188 Inch
BOTTOM AT: 37 Feet

PERFORATED CASING/LINER:
TYPE: PLASTIC
SIZE OD: 5.00 Inch ID: Inch
WALL THICKNESS: 0.219 Inch
TOP AT: 30 Feet BOTTOM AT: 110 Feet
PERFORATED FROM: 90 Feet TO: 110 Feet
Feet TO: Feet
Feet TO: Feet

SIZE OF PERFORATIONS: 0.188 Inch X 6.000 Inch
HOW PERFORATED: SAW
SEAL TYPE: DRIVEN
INTERVAL TOP: 35 Feet TO: 37 Feet
GEOPHYSICAL LOG TAKEN:
RETAINED ON FILE:

SCREEN:
MATERIAL:
SIZE ID (CLEAR): Inch SLOT SIZE: Inch
INTERVAL TOP: Feet TO: Feet
Feet TO: Feet

INSTALLATION METHOD:
TOP FITTINGS:
BOTTOM FITTINGS:
PACK TYPE:
GRAIN SIZE: AMOUNT:

PITLESS ADAPTER TYPE:
DROP PIPE TYPE: LENGTH: Feet
DIAMETER: Inch
ADDITIONAL PUMP INFORMATION:

PRODUCTION TEST:

TEST DATE: March 4, 1903 START TIME: 15:00

Elapsed Time in Min:Sec	Depth to Water Level During Pumping	Depth to Water Level During Recovery

WATER REMOVAL RATE DURING TEST: 9 Gal/Min
TEST DURATION: 12 Hours 0 Minutes
TESTING METHOD: PUMP
DEPTH OF PUMP/DRILL STEM: 100 Feet
WATER LEVEL AT END OF TEST: 67.7 Feet
NON-PUMPING(STATIC) WATER LEVEL: 65.0 FEET
TOTAL DRAWDOWN: 2 Feet

RECOMMENDED PUMPING RATE: 6 Gal/Min
RECOMMENDED PUMP INTAKE AT: 100 Feet
TYPE OF PUMP INSTALLED:
MODEL: H.P.:

DATE WORK STARTED: March 4, 1903

DATE WORK COMPLETED: March 4, 1903

COMMENTS: pump test performed by DA Badke.
(Maximum of 9 lines printed)

ADDITIONAL TEST AND/OR PUMP DATA:

CHEMISTRIES HELD: DOCUMENTS HELD: 1

WELL OWNER'S ANTICIPATED WATER REQUIREMENTS PER DAY: 500 Gallons

DATE FORM PRINTED: March 23, 2003 17:17:37 DATE DATA KEYED: March 23, 2003 GIC5 DC

D.A. Badke Enterprises Ltd.

WATER WELL PUMP TEST DATA - PPD LOT 6

Well Owner:	*Brown - Nielsen*	Pumping Rate:	*9.2 IGPM*
Well Location:	*N1/2 NE 1/4 27-21-1-5*	Depth of Well:	*111 feet*
Tested by:	*Doug /Jeff Badke*	Pump set at:	*108 feet*
Start Test Date:	*18 Mar 03 - 8:45 AM*	Casing Stick-up:	*1.0 feet*

Time Elapsed	Water Level (feet below ground)			
(minutes)	Production Well		Observation Well	
	Drawdown	Recovery	Drawdown	Recovery
0	64.97	67.76	n/a	n/a
1	65.30	65.40		
2	66.20	65.20		
3	66.50	65.10		
4	66.70	65.05		
5	66.90	65.02		
6	67.00	65.01		
7	67.10	65.00		
8	67.15	64.95		
9	67.20			
10	67.25			
15	67.40			
20	67.45			
25	67.52			
30	67.58			
40	67.63			
50	67.69			
60	67.70			
75	67.71			
90	67.72			
105	67.72			
120	67.72			
150	67.72			
180	67.72			
210	67.72			
240	67.72			
300	67.72			
360	67.72			
420	67.72			
480	67.72			
540	67.73			
600	67.74			
660	67.75			
720	67.76			

Midwest Laboratories®

Date Received: Mar 1 2003

Reported to: D A BADKE ENTERPRISES

Date Sampled:

160 PARK ESTATES PLACE SE
CALGARY
AB CANADA T2J-2W5

BROWN

DOMESTIC WATER ANALYSIS

Level Exceeds EPA Limits	Problems Likely	Potential Problems	No Apparent Problems	Non-Detect

Sample ID 1 NE 27-21-1-5

Lab Number 843115

Analyte	SODIUM Na ppm	CALCIUM Ca ppm	MAGNESIUM Mg ppm	pH	NITRATE NITROGEN NO_3-N	SULFATE SO_4	CONDUCTIVITY mmhos/cm	TOTAL DISSOLVED SOILDS (TDS) ppm	HARDNESS gr/gallon	TOTAL COLIFORM cfu/100 ml	IRON Fe ppm	MANGANESE Mn ppm	CHLORIDE Cl ppm	COPPER Cu ppm	FLUORIDE F ppm
Level Found	29.2	73.3	54.2	7.53	1.1	45	0.817 (817)	531	23.8 406.22 mg/L	n.d.	n.d.	n.d.	11		0.1
Level Found	29.2	73.3	54.2	7.53	1.1	45	0.817	531	23.8	n.d.	n.d.	n.d.	11		0.1
Caution Level	100	80	30	6.5/9.0	10	400	0.75	500	20	1	0.3	0.05	200		3

Notes:
n.d. - Not Detected.

Table 1
Summary of Groundwater Well Data

Location	Landowner	Date Drilled	Td/Npwl (ft)	Flow Estimate	Completion Interval (ft)
TP21, R01					
NE-27	Reid	Sep 92	200/66	10 Cgpm/2 hrs	65 - 100 & 120 - 140 & 160 - 185
NE-27	Hamilton	Nov 66	52/22	18 Cgpm/0.2 hrs	38 - 52
NE-27	Hamilton	Dec 77	160/60	15 Cgpm/1 hr	135 - 145
NE-27	Hamilton	Jan 17	na	na	30 - 50
NW-27	Heikkila	Dec 90	105/35	10 Cgpm/2 hrs	65 - 105
NW-27	Hamilton	Aug 88	180/27	8 Cgpm/2 hrs	140 - 180
SE-27	Steer	Apr 96	105/63.6	8 Cgpm/2 hrs	65 - 105
SE-27	Steer	Nov 97	60/35.8	6 Cgpm/2 hrs	40 - 60
SW-27	Cobb	Nov 90	146/67	10 Cgpm/2.15 hrs	85 - 135
SW-27	Agra Farms Ltd.	Jun 91	92/55	15 Cgpm/2 hrs	52 - 87
SW-27	Cobb	May 92	125/50.1	14 Cgpm/4 hrs	70 - 102
SW-27	Agra Farms Ltd.	Jul 76	160/45	50 Cgpm/1.3 hrs	130 - 150
SW-27	Fisher	Apr 68	96/38	28 Cgpm/1.3 hrs	88 - 93
SW-27	Blanes	Nov 77	200/98	12 Cgpm/2 hrs	115 - 130 & 170 - 200
SW-27	Bahrens	Jun 66	53/39	15 Cgpm/0.45 hrs	46 - 50
NW-26	Jade Farms	Jun 92	157/85	15 Cgpm/2 hrs	117 - 157
NW-26	Jade Farms	Jun 92	143/85	10 Cgpm/2 hrs	103 - 143
NW-26	Morningstar	Jun 87	140/75	20 Cgpm/4 hrs	80 - 140
NW-26	Fleming	Nov 77	10/45	7 Cgpm/1 hr	80 - 95
NW-26	Vick	Jun 80	270/220	7 Cgpm/2 hrs	250 - 268
NW-26	Morningstar	Jun 87	140/75	20 Cgpm/4 hrs	80 - 140
NW-26	Graf	Apr 94	216/93	13 Cgpm/4 hrs	125 - 205
SW-26	Johnson	Mar 90	132/64	30 Cgpm/2.3 hrs	30 - 120
SW-26	Johnson	May 90	325/171	5 Cgpm/4.3 hrs	50 - 70 & 150 - 170 & 230 - 310
SW-26	Jeb Holdings	Nov 90	310/191	8 Cgpm/3 hrs	24 - 300
SW-26	Johnson	Nov 90	300/188	20 Cgpm/3 hrs	180 - 295
SW-26	Poffenroth	Aug 62	67/33	12 Cgpm/2 hrs	na
SW-26	Jeb Holdings	Mar 77	360/196	4.5 Cgpm/3 hrs	260 - 290
SW-26	Jeb Holdings	Jun 76	270/185	8 Cgpm/2.3 hrs	220 - 260
SW-26	Jeb Holdings	Apr 78	132/55	6 Cgpm/3 hrs	50 - 60 & 88 - 125

Table 1 (continued)
Summary of Groundwater Well Data

Location	Landowner	Date Drilled	Td/Npwl (ft)	Flow Estimate	Completion Interval (ft)
SW-26	Johnson	Jul 85	240/130	4 Cgpm/2.3 hrs	70 - 110 & 150 - 230
SW-26	Johnson	May 89	324/196	3 Cgpm/12 hrs	20 - 35 & 125 - 165 & 225 - 265
SW-26	Johnson	Jun 89	340/213	4 Cgpm/2 hrs	45 - 63 & 225 - 320
SW-26	Jeb Holdings	Mar 77	310/197	7.5 Cgpm/3 hrs	235 - 250 & 280 - 305
SE-34	Drake	Nov 69	145/60	20 Cgpm/1 hr	open hole 79 - 145
SE-34	Custom Riggers	Jul 86	180/32	4 Cgpm/2 hrs	140 - 160
SW-35	Miller	Apr 90	80/23	7 Cgpm/2 hrs	58 - 70
SW-35	Miller	Nov 90	360/87	5 Cgpm/3.2 hrs	300 - 360
SW-35	Hamilton	May 75	55/14	10 Cgpm/2 hrs	45 - 55
SW-35	Miller	Oct 68	124/na	2.5 Cgpm/na	80 - 110
na = not available					

APPENDIX 5

PERCOLATION TEST REPORT

D.A. Badke Enterprises Ltd.
160 Park Estates Place SE, Calgary, Alberta T2J 3W5
Ph 403-271-8708 - Fax 403-278-3734 - email: dougbadke@nucleus.com

5 May 2003

Steve Brown and Shelly Nielsen
Box 177,
DeWinton, Alberta
T0L 0X0

Re: Percolation Tests
Ptn NE¼ 27-21-1 W5M (Lot 1 Plan 961-1911)

As requested earlier, we have conducted field percolation and near surface water table testing on the subject lands. This testing has been carried out at three locations that are typical of the septic field sites at the proposed 6 lot subdivision. The purpose of this testing is to determine whether the soils within the proposed subdivision, are suitable for sewage disposal by way of conventional septic fields or mounds. All testing was done in accordance with the provisions as set out in the publication entitled "*Alberta Private Sewage Systems Standard of Practice 1999 Handbook*". Descriptions of the test procedures along with the test results are shown below, while the test locations are shown on the attached plan.

Field Percolation Testing:

On April 18, 2003, two 8" (200mm) diameter holes were augered to a depth of 36" (900mm) at each of the three test locations on the subject lands. The walls of the holes were scratched to remove any glazing from the auger. The ground at these locations is level to gently sloping at about 2%.

The materials encountered at each test site are as follows.

Test Site Lot 1:	0.0' to 0.6'	Loam
	0.6' to 3.0'	Sandy silty clay, with some rocks
Test Site Lot 3:	0.0' to 0.8'	Loam
	0.8' to 3.0'	Sandy silty clay, with some rocks
Test Site Lot 5:	0.0' to 0.8'	Loam
	0.8' to 3.0'	Sandy silty clay, with some rocks

On April 18, 2003, the holes were filled with clean water to saturate the surrounding soils. On April 19, 2003, the holes were cleaned with a hand auger and the holes were again refilled with clean water for an additional 4 hour period of saturation. Immediately after the second saturation period, the holes were refilled to the 18" (450mm) mark with clean water. After an interval of approximately 30 minutes, the water level was recorded and the holes refilled to the 18" (450mm) mark. This process was repeated four times at

each site. These tests were conducted in non-frozen ground conditions.

The resulting water level declines for each test trial are shown in the table below. The field percolation rate was calculated using the last trial reading at each site:

P1 Trial	Time Elapsed (minutes)	Water Level Decline (inches)	Percolation Rate (minutes/inch)	(minutes/cm)
1	36	1.20	30.0	11.8
2	33	1.05	31.4	12.4
3	31	1.00	31.0	12.2
4	30	0.95	31.6	12.4
	Field Percolation Rate		**31.6**	**12.4**
SAR (Sodium Absorption Ratio)			**0.63**	

P2 Trial	Time Elapsed (minutes)	Water Level Decline (inches)	Percolation Rate (minutes/inch)	(minutes/cm)
1	38	1.90	20.0	7.9
2	34	1.60	21.3	8.4
3	32	1.50	21.3	8.4
4	30	1.40	21.4	8.4
	Field Percolation Rate		**21.4**	**8.4**
SAR (Sodium Absorption Ratio)			**0.63**	

P3 Trial	Time Elapsed (minutes)	Water Level Decline (inches)	Percolation Rate (minutes/inch)	(minutes/cm)
1	37	1.70	21.8	8.6
2	35	1.55	22.6	8.9
3	32	1.40	22.9	9.0
4	30	1.30	23.1	9.1
	Field Percolation Rate		**23.1**	**9.1**
SAR (Sodium Absorption Ratio)			**0.63**	

P4 Trial	Time Elapsed (minutes)	Water Level Decline (inches)	Percolation Rate (minutes/inch)	(minutes/cm)
1	37	2.50	14.8	5.8
2	35	2.25	15.6	6.1
3	32	2.05	15.6	6.1
4	30	1.90	15.8	6.2
	Field Percolation Rate		**15.8**	**6.2**
SAR (Sodium Absorption Ratio)			**0.63**	

P5 Trial	Time Elapsed (minutes)	Water Level Decline (inches)	Percolation Rate (minutes/inch)	(minutes/cm)
1	38	1.70	22.4	8.8
2	34	1.50	22.7	8.9
3	31	1.30	23.8	9.4
4	30	1.25	24.0	9.4
	Field Percolation Rate		**24.0**	**9.4**
SAR (Sodium Absorption Ratio)			**0.63**	

P6 Trial	Time Elapsed (minutes)	Water Level Decline (inches)	Percolation Rate (minutes/inch)	(minutes/cm)
1	37	1.15	32.2	12.7
2	35	1.05	33.3	13.1
3	30	0.85	35.3	13.9
4	30	0.85	35.3	13.9
	Field Percolation Rate		**35.3**	**13.9**
SAR (Sodium Absorption Ratio)			**0.63**	

With reference to the publication entitled "*Alberta Private Sewage Systems Standard of Practice 1999 Handbook*", the allowable range for the field percolation rates is:

- 5 to 60 minutes per inch for septic fields as outlined in Section 7.1.5, or;
- 5 to 120 minutes per inch for treatment mounds as outlined in Section 8.1.1.

The percolation rate at each test site is well within the allowable range for percolation rates for either septic fields or treatment mounds.

Near Surface Water Table Test:

On April 18, 2003, an 8 inch (200mm) hole was augered to a depth of 10 feet (3.0 metres) at each of the test locations as shown on the attached plan. The materials encountered were as follows:

NS1 (Lot 1)	0.0' to 0.6'	Loam
	0.6' to 6.0'	Sandy silty clay, with some rocks
	6.0' to 10.0'	Silty clay, with some rocks
NS2 (Lot 3)	0.0' to 0.8'	Loam
	0.8' to 5.0'	Sandy silty clay, with some rocks
	5.0' to 10.0'	Silty clay, with some rocks
NS3 (Lot 5)	0.0' to 0.8'	Loam
	0.8' to 5.0'	Sandy silty clay, with some rocks
	5.0' to 10.0'	Silty clay, with some rocks

A 3/4" inch (20 mm) perforated PE pipe was installed in each test hole and the holes backfilled with excavated materials. Each hole was dry at the time of installation. On April 19th and 30th, 2003, the standpipes were monitored using an electric tape. Each standpipe was found to be dry to the bottom of the standpipe on each of the dates. We therefore conclude that a near surface water table is not present at these locations.

Sodium Absorption Ratio:

Midwest Laboratories Ltd. has tested a sample of water obtained from the new well located on the proposed Lot 6. The chemical analysis of the water from this well is shown on the attached summary sheet from the laboratory. The Sodium Absorption Ratio (SAR) was calculated using the formula $(Na/23)/(((Ca/20) + (Mg/12))/2)^{0.5}$, were Na (sodium), Ca (calcium) and Mg (magnesium), are the ionic concentrations in mg/litre. The SAR from the new water wells was calculated at 0.63. It was assumed that the water from the well on the proposed Lot 6 well was representative of the water which will be used on all of the lots.

Alberta Environment's guidelines recommend that the SAR for a household water supply should not exceed a value of 8. The SAR value of 0.63 for the water supply on Lot 6 is quite low and is well within Alberta Environment's guidelines. Use of this water should not be problematic in the septic fields.

Using a water softener which utilizes sodium chloride (salt) as a regeneration agent may cause problems in the disposal fields in that it will increase the SAR of the waste water entering the field. If a sodium chloride water softener is used, and the resulting SAR is over 8, then the length of the septic field laterals should be increased by 20%. If a water softener must be used, a softener that uses potassium chloride should be considered.

We trust this is the information you require; please call if you have any questions.

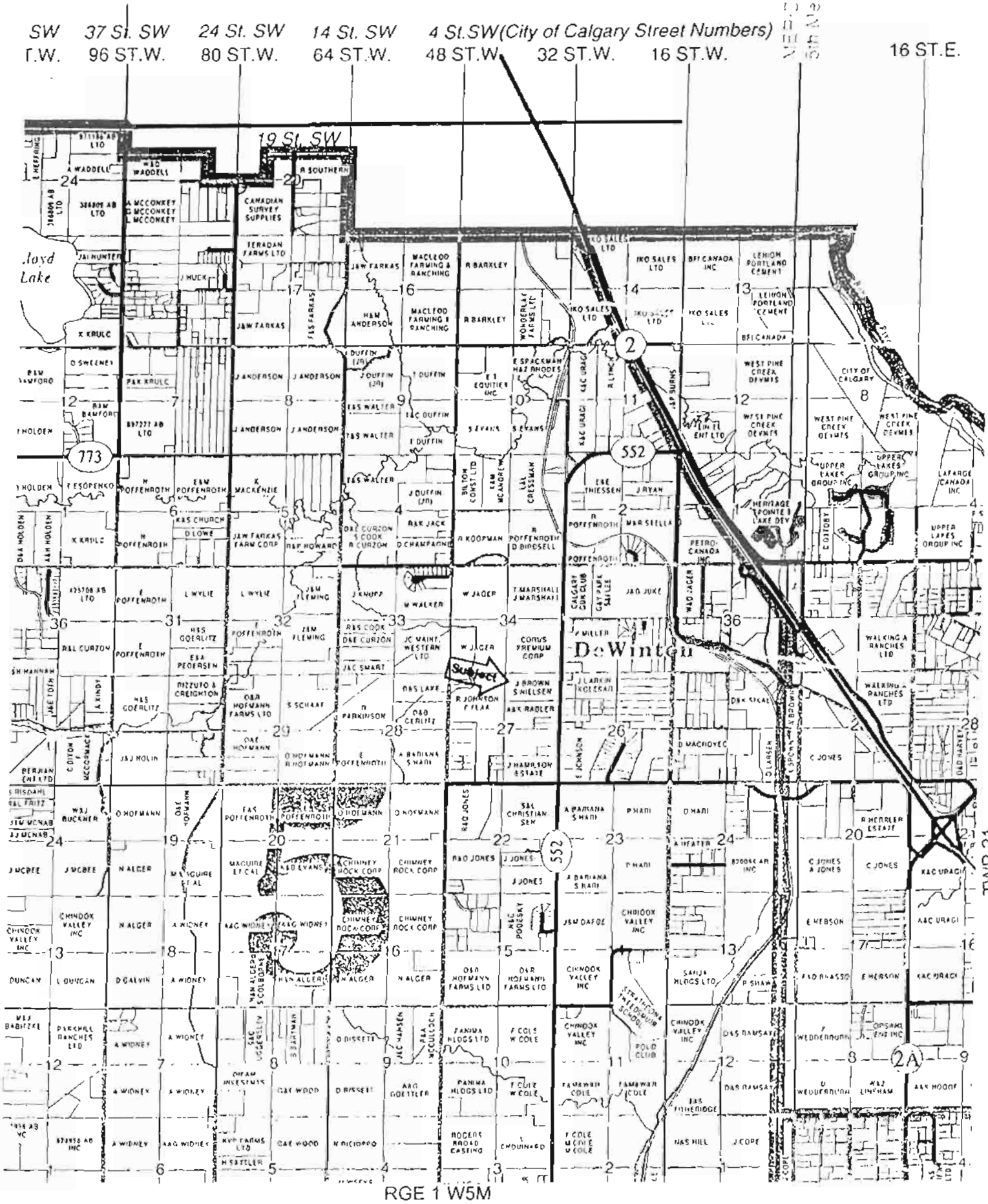
Yours truly,
D. A. Badke Enterprises Ltd.

Doug Badke, C.E.T.

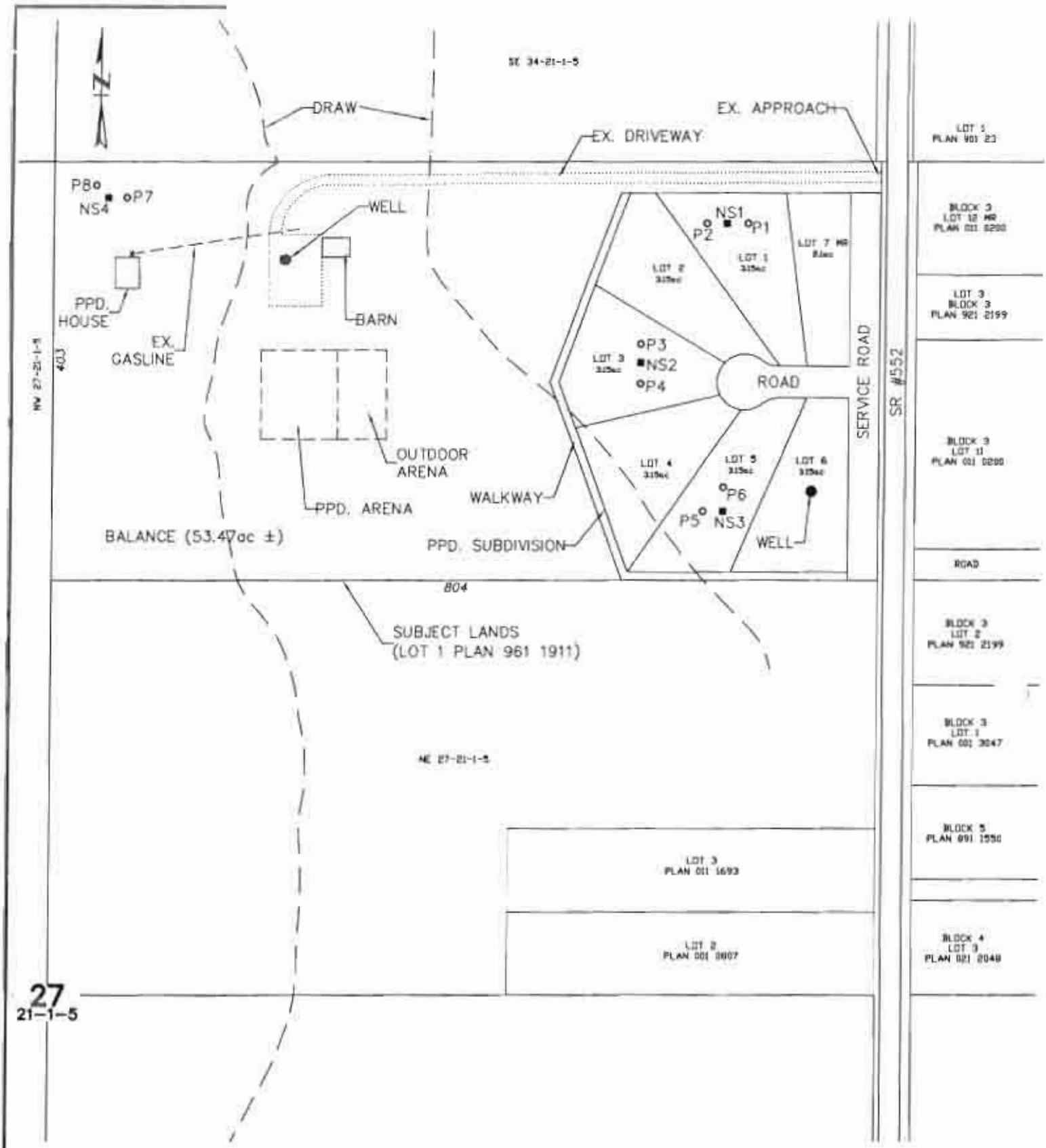
Yours truly,
[illegible] Surveys Ltd.

Thomas To, P.Eng.

PROFESSIONAL ENGINEERS ALBERTA



MUNICIPAL MAP



KaylaVista Estates
PERCOLATION TEST LOCATIONS

IN N 1/2 NE 1/4 27-21-1-5	PLAN
O.A.BADKE ENTERPRISES LTD.	DRAWN: JDB / SCALE: 1:5000 / DATE: APRIL 2003

REPORT NUMBER
03-086-211

REPORT DATE
03/28/03

Midwest Laboratories Canada (1993) Ltd.

#8, 4001B - 19th Street N.E. Calgary, AB T2E 6X8 Tel: (403) 250-3317 Fax: (403) 250-5249

REPORT TO:

D A BADKE ENTERPRISES
160 PARK ESTATES PLACE SE
CALGARY
AB CANADA T2J-2W5

IDENTIFICATION:

BROWN (20)

COPY TO:

DOMESTIC WATER ANALYSIS

SAMPLE IDENTIFICATION: 1 NE 27-21-1-5

LABORATORY NUMBER: 843115

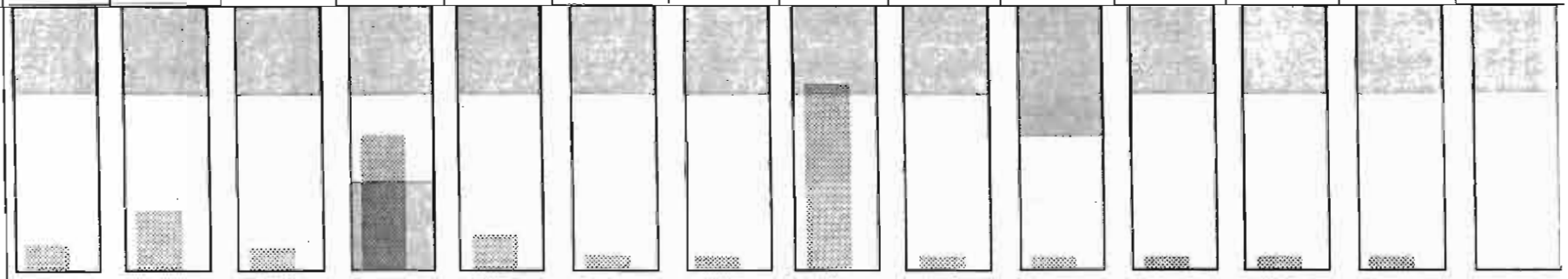
ELEMENT	SODIUM Na ppm	CALCIUM Ca ppm	MAGNESIUM Mg ppm	pH	NITRATE NITROGEN NO_3-N ppm	SULFATE SO_4 ppm	CONDUCTIVITY mmhos/cm	TOTAL DISSOLVED SOLIDS (TDS) ppm	HARDNESS gpr/gallon	PURITY Bacteria cfu/100 ml	IRON Fe ppm	MANGANESE Mn ppm	CHLORIDE Cl ppm	COPPER Cu ppm
LEVEL FOUND	29.2	73.3	54.2	7.53	1.1	45	0.817	531	23.8	N.D.	N.D.	N.D.	11	

GRAPHIC

PROBLEMS LIKELY

POTENTIAL PROBLEMS

NO APPARENT PROBLEMS



ELEMENT	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE-N	SULFATE	CONDUCTIVITY	TDS	HARDNESS	PURITY	IRON	MANGANESE	CHLORIDE	COPPER
LEVEL FOUND	29.2	73.3	54.2	7.53	1.1	45	0.817	531	23.8	N.D.	N.D.	N.D.	11	
GUIDELINE LEVEL	200	225	400	6.5/8.5	10	500	1.50	500	30	10	0.3	0.05	250	
ELEMENT	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE-N	SULFATE	CONDUCTIVITY	TDS	HARDNESS	PURITY	IRON	MANGANESE	CHLORIDE	COPPER
PROBLEM AREAS								****						

ADDITIONAL ELEMENTS

ELEMENT	Fluoride					
LEVEL FOUND	0.1					

COMMENTS:

Signed _____

Midwest Laboratories Canada, Ltd.

REV. 01/9

APPENDIX

6

RESTRICTIVE COVENANTS

RESTRICTIVE COVENANT

PURSUANT TO SECTION 52 AND 71(1) OF
THE LAND TITLES ACT ALBERTA

WHEREAS **James Stephen Brown and Shelly Lynne Nielsen**, (hereinafter referred to as the "Developer") are the registered owners of an estate in fee simple, subject however to such encumbrances, liens and interests as are notified by memorandum underwritten or endorsed on the existing certificate of title, of the following lands:

Dominant Tenement: **Lots 1, 2, 3, 4, 5 and 6 all in Block 1**
as shown on Plan _____,
excepting thereout all mines and minerals,
(hereinafter referred to as the "Lands");

Servient Tenement: **Lots 1, 2, 3, 4, 5 and 6 all in Block 1**
as shown on Plan _____,
excepting thereout all mines and minerals,
(hereinafter referred to as the "Lands");

(hereinafter individually referred to as the "Lot" and collectively referred to as the "Lots");

AND WHEREAS the Developer is developing a planned housing subdivision on the lots, (hereinafter referred to as the "Development") and the Developer desires the Development to be well planned and that a uniform high standard of appearance be achieved for all buildings, fences, driveways and landscaping (hereinafter referred to as the "Improvements") on the Lots;

AND WHEREAS to establish such high standards of development, the Developer considers it desirable for the greater enjoyment of the Lots and useful to maximize the value of the Lots, to impose a Restrictive Covenant (hereinafter referred to as the "Restrictive Covenant") against the Lots, such Restrictive Covenant containing certain restrictions, covenants and conditions in respect of the exterior design, use and development of the Lots and the buildings, structures, improvements and premises to be erected on the Lots, all as hereinafter set forth;

AND WHEREAS Section 71(1) of the Land Titles Act, Alberta, provides that an owner my grant to itself a Restrictive Covenant for the benefit of land which it owns and against land which it owns and the Restrictive Covenant may be registered under the Land Titles Act;

AND WHEREAS the restrictions and covenants to be imposed by way of this Restrictive Covenant, are for the benefit of all future owners of the individual Lots and are designed to protect the owners of such Lots against the improper development and use of such Lots and to prevent haphazard or inharmonious improvements and repairs or the use of improper designs or materials;

NOW THEREFORE the Developer as registered owner of the Lots, does for himself, his transferees, assigns and successors in title to the Lots, covenant and agree as follows:

1. The land use and building restrictions and conditions contained herein shall be deemed to be covenants running with and annexed to the Lots (as Servient Tenements) and shall be binding upon the respective owner or owners of all the Lots from time to time (hereinafter referred to individually as "Owner" and collectively as "Owners"), and enure to the benefit of each of the Lots (as Dominant Tenements) and the Owner or Owners thereof from time to time. Such restrictions and conditions, having been imposed as a building scheme with a view to maintaining the general character of all the Lots and to controlling the drainage thereof, may be enforced by the Developer of the Lots or by the Owner of any Lot from time to time. Any waiver by the Developer or any Owner of any of the Lots, of the strict performance of the covenants set out herein shall not of itself constitute a waiver of or abrogate any other covenants set out herein, nor a waiver of any subsequent breach of the same condition.

2. If any provision of this Restrictive Covenant is found to be void, invalid or unenforceable, the remainder of this Restrictive Covenant shall not be affected thereby and each remaining provision shall be valid and shall be enforceable to the extent permitted by law.

3. No action shall lie against the Developer for damages for breach of any one or more of the covenants contained in this Restrictive Covenant unless the Developer is registered as owner of the Lot alleged and proven by a court of competent jurisdiction to be in breach of this Restrictive Covenant. This covenant shall constitute an absolute defence to any such action and may be pleaded as such.

4. All Improvements on the Lots, and any alterations to such Improvements, shall be constructed in accordance with provisions contained in this Restrictive Covenant and the Architectural Guidelines attached as Schedule A.

5. No initial construction of any Improvements or subsequent alterations of Improvements, shall take place prior to the Owner making written application to the Developer for Development Approval from the Developer for all Improvements in accordance with the provisions contained in this Restrictive Covenant, the Architectural Guidelines contained in Schedule A attached to this agreement. Development Approval in writing from the Developer must be obtained prior to application to the municipality for a building permit.

6. The granting of Development Approval by the Developer does not release the Owner from the obligations to comply with all municipal bylaws, building codes, statutes and regulations that are applicable to construction of the Improvements on any Lot.

7. The Developer may retain an Architectural Consultant to assist in the administration of the Architectural Guidelines on its behalf. Prior to submission of plans to the Municipal authority for a Building Permit, the Owner shall first submit these plans to the Architectural Consultant.

8. No consent or approval given by the Developer or the Architectural Consultant under this Restrictive Covenant shall create any liability on the Developer or the Architectural Consultant or any other consultant and without limiting the generality of the foregoing, such consent or approval shall not constitute any representation of compliance with any laws or the adequacy for construction or other purpose of any plans.

9. The interpretation of the Architectural Guidelines shall be at the discretion of the Developer, acting reasonably, and the Developer shall not have any obligation to provide any consent applied for by the Owner.

10. In the event that the Developer and the Architectural Consultant are no longer in business at the time that the Owner is preparing plans for construction or alterations of the Improvements on any Lot, the Owner shall nevertheless be bound to construct all Improvements or alterations to such Improvements in complete compliance with this Restrictive Covenant and the Architectural Guidelines contained in Schedule A.

11. No more than one private single-family dwelling house with private garage attached or unattached, shall be erected at any time on any one Lot. This restriction shall not prohibit a single-family dwelling house being erected on any Lot resulting from a re-subdivision of any of the Lots.

12. There shall be no time limit on a building commitment, however, once building has been commenced, it must be completed to the extent that the exterior finish is completed, within one year of the commencement date that buildings construction.

13. No building shall be occupied until it has been completed in accordance with the plans and specifications up to the stage that the exterior of the building is completed.

14. No business or commercial use shall be made of any home or other building on any Lot unless permitted under the applicable municipal land use bylaw and then only if a permit has been obtained from the municipal authority having jurisdiction and provided that such use is wholly contained within the home or other building on any Lot and that such use does not attract the general public to the Lot.

15. No Lots shall be used for stockpiling of any materials, or the storage of supplies, stock-in-trade, machinery or equipment other than that as normally used in

conjunction with a single-family residence. The storage of recreational vehicles owned and used by the occupants for their personal use is permitted.

16. No buildings shall be erected, except on permanent foundations and all buildings shall be constructed of new and durable materials conforming in all respects with the relevant provisions of the current edition of the Alberta Building Code, as amended from time to time.

17. No signs or advertising manner of any kind, except the ordinary signs offering the Lots or buildings for sale, shall be placed on any of the Lots or on any buildings, fences or trees on the Lots or internal roadways.

18. All septic systems and sewage disposal fields or sewage treatment mounds shall be installed at the sole cost and expense of the Owner and shall be in compliance with the requirements of the public authorities exercising jurisdiction therein. Septic fields or treatment mounds shall not be installed within 40 metres of a water well on an adjacent Lot.

19. The Developer will install all underground shallow utilities (power, phone and gas) to the property line of each Lot and provide water wells on each Lot. It shall be the sole cost and expense of the Owner of each Lot to connect to these utilities or services and to extend these utilities to the point of service requirement. No utility or services shall be installed above ground.

20. No exterior lighting shall be installed on any of the Lots which would unreasonably illuminate any other Lot and all exterior lighting must be shaded or indirect.

21. Seasonal filling of pools on the Lots shall not be made using water obtained from wells on the Lots. Replenishment of water due to evaporation or spillage, may be made using water from a well on any of the Lots.

22. No noxious weeds, underbrush or unsightly growths shall be permitted to grow or remain on the Lots.

23. No garbage or refuse pile or unsightly objects shall be allowed to accumulate on, or allowed to remain on any of the Lots. Each Owner is responsible for the disposal of their garbage or refuse at an approved off-site disposal site.

24. No fuel, gasoline or chemicals of any nature shall be stored on any of the Lots in amounts exceeding 100 litres.

25. The use of firearms, hunting bows, crossbows or any other weapons is not permitted on any of the Lots.

26. Used car bodies or antiques shall not be stored on any of the Lots, except inside a building.

27. No heavy equipment shall be stored or operated on the Lots, other than for the construction of the Improvements on the Lots.

28. The excavation or removal of any loam, rock, gravel or clay from any of the Lots for commercial purposes, shall not be allowed.

29. Following completion of construction, the Owner of each Lot, shall ensure that all areas of the Lots are to be left in a natural state or if disturbed, that the disturbed areas are landscaped in a professional manner.

30. No mobile home, ready constructed home or used house shall be moved onto any lot as a temporary or permanent residence.

31. Satellite dishes larger than 24 inches in diameter or high antennas or aerials, shall not be located on any Lot.

32. No more than two (2) dogs and two (2) cats over six (6) months of age shall be allowed on any one Lot. Such dogs and cats shall not run free and must be confined to the Owners Lot by means of a kennel or underground electronic fencing. All dogs must be housed inside at night so that barking does not unreasonably interfere with any neighbours.

33. No livestock or animals shall be kept on any of the Lots for commercial purposes, with the exception of one horse per Lot.

34. No driveway shall be constructed on any lot, unless it is paved with asphalt, concrete or interlocking brick within one year of completing the house construction. Such pavement must extend from the existing paved approach at the internal road and extend to the face of the garage. Straight driveways should be avoided in favor of curved driveways.

35. The Owners of the Lots, shall not make any alterations to the Lots that will impede, impound or divert the natural drainage or storm water drainage across the Lots.

36. Any dispute arising from the interpretation of the restrictions, covenants and conditions contained herein, shall be referred to arbitration pursuant to the Arbitration Act of Alberta and the arbitrator's decision shall be final and binding.

37. In the event that legal proceedings or arbitration is commenced to interpret or enforce this Restrictive Covenant (hereinafter referred to as a "Proceeding"), all legal fees determined on a solicitor and his own client basis, plus disbursements and arbitration costs (hereinafter referred to as the "Costs") incurred by the successful party or parties, whether the Developer, Architectural Consultant, or owner of the Dominant or Servient Tenement, shall be born and paid by the unsuccessful party or parties. When none of the parties is wholly successful in any such Proceeding, the Costs shall be apportioned and shall be the responsibility of

the parties in proportion to their respective success, or as may be ordered by a Court of competent jurisdiction or an arbitrator.

38. This Restrictive Covenant may be enforced by the Developer, his successors and assigns, the Owner or Owners of the Dominant or Servient Tenements, or any of them, and the parties agree that any breach of this Restrictive Covenant constitutes irreparable harm to the Developer, his successors and assigns, the Owner or Owners from time to time; that damages are not a sufficient remedy; and that in addition to the Developer, his successors and assigns, the Owner or Owners from time to time of the Dominant or Servient Tenements, or any of them, shall be entitled to relief by way of injunction or an Order in the nature of an injunction against the offending party.

39. Words herein importing a number or gender shall be construed in grammatical conformance with the context of the party or parties affected by this Restrictive Covenant from time to time.

40. No covenants herein shall be deemed to restrict any provision of any laws, bylaws or regulations passed or imposed by any governmental authority, rather the restrictions and covenants contained herein shall be considered as additional restrictions and covenants.

IN WITNESS WHEREOF **James Stephen Brown and Shelly Lynne Nielsen** have hereto affixed their signatures this _____ day of _____ , 2003.

_____ _____

Witness **James Stephen Brown**

_____ _____

Witness **Shelly Lynne Nielsen**

AFFIDAVIT OF EXECUTION

CANADA	)	I, Doug Badke of the City of Calgary
	)	in the Province of Alberta,
PROVINCE OF ALBERTA	)	MAKE OATH AND SAY AS FOLLOWS:
	)	
TO WIT	)	

1. That I was personally present and did see **James Stephen Brown and Shelly Lynne Nielsen** named in the within or annexed instrument who are known to me to be the persons named therein, duly sign and execute the same for the purpose named therein.

~~Or~~

~~That I was personally present and did see **James Stephen Brown and Shelly Lynne Nielsen** named in the within or annexed instrument who, on the basis of identification provided to me, I believe to be the persons named in the within instrument, duly sign and execute the same for the purpose named therein.~~

2. That the same was executed at the City of Calgary, in the Province of Alberta, and that I am the subscribing witness thereto.

3. That I know the said **James Stephen Brown and Shelly Lynne Nielsen** and they are in my belief of the full age of eighteen years.

SWORN BEFORE ME at the City of Calgary, in the Province of Alberta, this day of 2003.	)
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_____	)
A Commissioner for oaths in and for the Province of Alberta	)
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Schedule A

ARCHITECTURAL GUIDELINES

1. **House Area**

Bungalow	1,600 sf
Two Storey	2,200 sf (Main floor to be a minimum of 1200 sf)
Split on two levels	1,800 sf (foot print as per bungalow)

The dimensions of any garage, porch, verandah, sun room or other appurtenant structure shall be excluded in computing the ground area except where the same is wholly within the foundations walls of the dwelling house on any of the Lots.

2. **Side yards, Setbacks, and Massing**

All setbacks are to be in accordance with the MD of Foothills Land Use Bylaw. The massing of the home is important.

3. **Exterior Detail and Design**

The design/style of the home is to be carried around the home with the detailing on all elevations. Detailing suggestions are as follows:

i) decorative trusses (gable trim)
ii) dentil trim
iii) muntin bars/ window grills
iv) front porches
v) shutters
vi) batten boards, shadow boards at the soffit line, trim boards, batten detailing at windows and joist levels
vii) columns
viii) decorative louvers
ix) dormers
x) brick or stone
xi) detailing in the form of a decorative column treatments, porch spindles and handrails etc.
xii) bay or box windows

4. **Roof Design, Material and Colors**

a) The preferred roof overhang is 600mm (24") on the main rooflines, and a preferred minimum of 150mm (6") on boxed out or bay windows.

b) Minimum roof slope 5:12

c) Tile, shakes or an architectural asphalt or fiberglass shingles with a 25-year warranty as a minimum. The colors should be equal to Renaissance Weathered Slate, Harvest Slate, Taupe Slate or Black Slate.

5. **Exterior Cladding Material and Colors**

a) Exterior cladding colors should be in the earth tone range; bright blues, pinks, yellows etc should be avoided.

b) Finishing Materials are to be the same for all elevations except for brick or stone. The following exterior materials will be permitted:
   i) Horizontal manufactured wood siding
   ii) Horizontal vinyl/aluminum siding to have a double 4 or triple 5 profile
   iii) Stucco
   iv) Brick or stone.

6. Soffit, Fascia, Gutters and Downspouts

Soffits and fascias should be prefinished aluminum or vinyl.

7. Garages and Overhead Garage Doors

a) A 24-foot wide double garage is a minimum requirement.

b) The maximum space between the overhead garage door and the soffit line is 16".

c) Raised panel garage doors are required as a minimum.

d) The garage shall not block the visibility of the front entry of the home.

e) Garage doors are to be painted to match the siding or stucco color.

8. Masonry

Brick or stone is to be returned a minimum of 2'0" on corners.

9. Chimneys, Flues and Roof Vents

a) All chimneys and flues that are visible on the front or side elevations are to be boxed in and at a minimum clad with the siding material. Capping detail required.

b) All roof stacks, vents and flashings should be painted to blend in with the roof color.

10. Fireplaces

Metal fireplaces flues must be enclosed and finished to the top complete with capping detail.

11. General Notes

a) Grade should always slope away from the house. Where the rear grade elevation is higher than the grade around the house, swales should be constructed to direct the drainage away from the house. They should be

placed approximately 10 feet from the house at a minimum 2% slope away from the house.

b) The Developer reserves the right to revise these Guidelines from time to time. The Developer reserves the right to refuse a color combination, and/or the siting, and/or detail and/or house style if it does not co-ordinate within the area by the Developer's standards.

c) If at the time of construction on site, errors or discrepancies are noticed from information received at the time of approval, or from engineering drawings, or from existing site grading, or existing homes the builder is to contact the Architectural Consultant so that the discrepancy may be reviewed and adjustments made to accommodate the existing site construction.

d) Unless otherwise noted in writing prior to house construction, all retaining walls are the responsibility of the builder/owner.

e) Neither the Developer, its Architectural Consultant nor the Developers other consultants take any responsibility for any retaining walls which may be required on or between lots. Any disputes that may arise regarding responsibility for retaining walls are to be resolved by the Builder and their contractors.

f) No approval by the Developer, its Architectural Consultant or its other consultants shall be other than an approval of the Developer's requirements and in particular shall not be any representation of compliance with any engineering requirements or any legal requirements of the Municipal District of Foothills or any other government agency or body, all of which are the sole responsibility of the Builder. The house plan approval process is provided as a service. While care is taken to provide precise data, the Developer and its Architectural Consultant and other consultants assume no responsibility for the accuracy of the information given in documents, or for any losses or damages resulting from the use thereof. It remains the responsibility of the Builder to ensure that the construction of any buildings on any Lot, conforms with Provincial or Municipal laws, regulations, By-Laws, or other enactments and encumbrances affecting the title to the Lot, including, without limitation, utility rights of way, easements, restrictive covenants and the requirements of the grade slip. The Builder is also responsible for the provision of all bearing certificates and footing elevation certificates which may be required for the installation of sulphate resistant concrete or any other precautions in foundations where necessary. THE DEVELOPER AND ITS ARCHITECTURAL CONSULTANT AND OTHER CONSULTANTS ASSUME ABSOLUTELY NO RESPONSIBILITY TO ENSURE THAT THE BUILDING COMPLIES WITH ALL THE FOREGOING.

g) A Security Deposit of $10,000.00 must be submitted to the Developer prior to the release of the Developer's approval.

h) The cost to repair damage caused by the Owner or his builders, to any utilities, roads, trees, drainage facility or other items, will be charged back to the Owner or may be deducted from the Security Deposit. The Owner shall be liable for the total cost of repairing such damage and the Owner's liability shall not be limited to the amount of the Security Deposit.

IN THE MATTER OF THE LAND TITLES ACT, R.S.A. 1980, c, L-5 AND AMENDMENTS THERETO; AND IN THE MATTER OF A RESTRICTIVE COVENANT MADE PURSUANT TO SECTION 52 THEREOF.

RESTRICTIVE COVENANT

The undersigned, as registered owners of an estate in fee simple, subject however to such reservations, exceptions, and encumbrances as are notified on the existing Certificates of Title, of the parcels of land legally described as:

Dominant Tenement: **Lots 1, 2, 3, 4, 5 and 6 all in Block 1 as shown on Plan _____,** excepting thereout all mines and minerals, (hereinafter referred to as the "Lands");

Servient Tenement: **Lots 1, 2, 3, 4, 5 and 6 all in Block 1 as shown on Plan _____,** excepting thereout all mines and minerals, (hereinafter referred to as the "Lands");

the owners desiring to maintain the general character of the natural and man-made drainage course on the Lands, do HEREBY DECLARE, establish, impose and annex to the Lands, and each of the lots comprising the Lands, the stipulations, restrictions and provisions hereinafter provided, such stipulations, restrictions and provisions to be enforced and to run with the Lands and to be binding on the owners of each of the lots comprising the Lands and all persons claiming under them. This covenant shall be binding upon and enure to the benefit of any person to whom the Lands, or any of the lots comprising the Lands, are conveyed such that the stipulation, reservation and provision hereinafter described shall run with the Lands and each of the lots comprising the Lands.

The stipulation, restriction and provision is as follows:

1. *The Owners of the Lands and each of the lots comprising the Lands, shall not make any alterations to the Lands that will impede, impound or divert the natural drainage or storm water drainage across the Lands, except for the provisions of Clause 2.*

2. *The Owners of the Lands and each of the lots comprising the Lands, may construct an access road across the natural drainage course(s) on the Lands, provided that the portion of the access road which crosses the natural or manmade drainage course, shall include a corrugated steel pipe culvert of sufficient size (minimum 450mm) such that it will transmit water flows through the culvert without creating any water ponding upstream of the access road.*

3. *These stipulations, restrictions and provisions may not be altered or deleted without the written permission of the Municipal District of Foothills No. 31, at its office at 309 MacLeod Trail, in the Town of High River, in the Province of Alberta T1V 1M7.*

This covenant is an addition to the requirements of the municipal or other government authorities having jurisdiction in respect of the use of the Lands and nothing herein contained shall be construed as permitting or authorizing anything which is not permitted, controlled or regulated by any statute, bylaw, regulation or like enactment having the force of law.

IN WITNESS WHEREOF the undersigned, have set their hand and seal this ____ day of _____, 2003.

_____ _____

Witness **James Stephen Brown**

_____ _____

Witness **Shelly Lynne Nielsen**

AFFIDAVIT OF EXECUTION

CANADA	)	I, Doug Badke of the City of Calgary
	)	in the Province of Alberta,
PROVINCE OF ALBERTA	)	MAKE OATH AND SAY AS FOLLOWS:
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TO WIT	)	

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